RMS ENTERPRISE

RMS-ENT (V4.6 OR HIGHER)

Resource Management Suite

AV FOR AN IT WORLD

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RMS Enterprise Installation Overview

Overview

RMS (Resource Management Suite®) *Enterprise* is an innovative meeting room management and equipment monitoring software package that provides centralized remote management of networked AV equipment and building systems. Use *RMS Enterprise* to:

- Simplify operation, support and security with enterprise scalable software
- Improve Help Desk performance to meet Service Level Agreements through proactive maintenance
- Reduce energy consumption and extend useful life of devices with enhanced reporting features

RMS Enterprise is a client/server application where the NetLinx system acts as the client and the RMS Enterprise application server listens for connections from NetLinx systems. NetLinx and the RMS Enterprise application server communicate using TCP/IP sockets. In order to establish communication, each NetLinx system must be able to resolve and connect to the RMS Enterprise application server. This can be accomplished with a variety of Network configurations including local area networks (LAN), wide area networks (WAN), and the Internet.

This document describes the process of installing RMS Enterprise on a server machine.

NOTE: *It is highly recommended that you read this document in its entirety before commencing an installation of RMS Enterprise. If, after reading this document you have specific questions about the requirements of your RMS system, please contact AMX Technical Support for assistance.*

The RMS Enterprise Installation Process

The installation process for RMS Enterprise consists of several steps, as described in this document:

1. Review the **RMS Enterprise Installation Checklist**. The *RMS Enterprise Installation Checklist* section on page 11 is provided to ensure all the necessary prerequisites are met and all the necessary configuration options are identified prior to the installation of the RMS server.
2. Install **Prerequisite Software** (as necessary). The *Installing Prerequisite Software* section on page 19 provides instructions for installing the two server software applications required by RMS Enterprise:
   - Java SE9 (JRE)
   - Tomcat v8.5
3. Complete the **RMS Server Installer**. The *AMX RMS Server Installer* section on page 35 provides instructions for installing the AMX RMS Enterprise Installer application.
4. Complete the **RMS Server Configuration**. The *RMS Server Configuration* section on page 38 provides instructions on running the *RMS Server Configuration* tool to register and enable your server, as well as configure your database connection.
5. Complete the **AMX License Manager**. The *AMX License Manager* section on page 50 provides instructions on installing the *AMX License Manager* application, which is required to install and manage software licenses for RMS Enterprise (as well as other AMX software applications).

Additional Add-On Features

- Once you have installed a registered version of RMS Enterprise (see the *Registering a Purchased License* section on page 61 for details), you can upgrade your RMS Entitlement with a Scheduling License. The Scheduling License enables support for various scheduling plug-ins for RMS Enterprise. Refer to the Installation Guide for your specific Scheduling plug-in for details.
- *RMS Transporter* is a software tool included with RMS Enterprise (v4.4.6 or higher) that allows simultaneous upload of firmware files to all the devices on your system's network. This tool also allows viewing of transfers to all devices in real time, so you can see at a glimpse the status of all file transfers, as well as the status of files that were transferred in previous sessions. Detailed log files are also available which allow viewing of historical data for each system or installation, whether it be one small room, or a campus wide system. See the *RMS Transporter Installation Manual* for details.

Upgrading From RMS v3.3 to RMS Enterprise

RMS Enterprise (SDK4) supports SDK3 legacy client connections without question and without making any changes to the code. In fact, many features will be available without any code changes (such as multi-stage and time delayed notifications and power use based on device type).

However, several advanced SDK features (including monitored power through PDU, Duet device native support, system modes, and web configured RMS clients) utilize SDK4 changes that will require registration of the room as new, with a corresponding loss of all history.

- If you migrate from RMS v3.3 to RMS Enterprise and change the code from 3.3 SDK to 4.x SDK, you will have all locations with 3.3 client gateways assigned but now OFFLINE and a completely new set of unassigned 4.x client gateways.
- If you intend to upgrade your system (Server and SDK) completely from RMS 3.3 to RMS Enterprise, it is necessary to delete the 3.3 Client Gateway from the location and assign the corresponding 4.x client gateway.

  Once the 3.3 Client Gateway has been deleted, there will be a loss of all of the history associated with the 3.x masters and assets.

If you intend to install RMS Enterprise on a server that is currently running RMS v3.3, there are a few important steps to follow to ensure that RMS Enterprise will operate correctly, as well as to preserve the pre-existing RMS v3.3 application. This provides a method of reverting back to the previous RMS v3.3, if necessary.

See the *Upgrading RMS v3.3 to RMS Enterprise* section on page 26 for details.

If you intend to use an existing Legacy (v3.x) RMS Database with RMS Enterprise, the data must be migrated.

See the *Migrating a Legacy RMS Database To RMS Enterprise* section on page 46 for details.

Accessing the RMS Enterprise UI

The RMS Enterprise UI is accessed via web browser (see *Supported Web Browsers* on page 12).

1. To open the main RMS Enterprise UI, enter the following URL in your browser's address bar:

   http://rmsServerURL/rms/#/

   or

   http://rmsServerURL:8080/rms/#/

   (depending on how Tomcat is configured - refer to the RMS Enterprise Installation Guide for details on Tomcat installation and configuration)

2. This opens the *Please Sign In* page (FIG. 1):

FIG. 1 Sign In

Enter a valid Username and Password, and click **Sign In** to access the main RMS Enterprise (HTML) UI (FIG. 2):

FIG. 2 Example RMS Enterprise HTML Interface (Dashboard view)

NOTE: *Refer to the RMS Enterprise (4.6 or higher) System Administrator's Guide for details on the RMS Enterprise HTML and "Classic UI" interfaces.*

Accessing RMS-ENT-CLOUD (RMS Enterprise Hosted Cloud Service) UI

RMS-ENT-CLOUD is accessed via web browser (see *Supported Web Browsers* on page 12). To open the main RMS Enterprise Web UI, enter the following URL in your browser's address bar:

http://rms-<servername>.amxservice.com/#/

NOTE: *Port 8080 is the default port for Tomcat (see Installing Apache Tomcat v8.5 on page 21). However, when installing of Tomcat, this port can be assigned to another value if desired. The value assigned to Tomcat is the value that is used in the URL.*

NOTE: *As of RMS Enterprise v4.6, many of the menus and options that are familiar to administrators of previous versions of RMS Enterprise are now contained in the "Classic UI". Click the Classic UI button in the HTML UI menu bar to open the Classic UI workspace. See the The RMS Enterprise Work Area (v4.6 or higher) section on page 20 for details.*

Additional RMS Enterprise Documentation

Refer to the following supplemental RMS Enterprise documents (available to view/download from www.amx.com):

- **RMS Enterprise NetLinx Programmers Guide** - Provides detailed NetLinx programming information for RMS systems.
- **RMS Update Manager Installation Guide** - Provides instructions for installing the RMS Transporter installation file (*RMSTransporter.exe*), in order to add RMS Update Manager functionality to RMS Enterprise.
- **RMS Scheduling Interface Installation Guides** - Provide instructions for installing and configuring the RMS Enterprise Scheduling Interfaces:
  - Installation Guide - RMS Enterprise Interface for Exchange EWS
  - Installation Guide - RMS Enterprise Interface for Lotus Notes Domino
  - Installation Guide - RMS Enterprise Scheduling Interface for Google Calendar
- **RMS-ENT-QR RMS QRS Quick Response Scheduling Quick Start Guide** - Provides quick-start instructions for adding Mobile Scheduling to your RMS Enterprise system.
- **RMS Enterprise Transporter Installation Guide** - Provides instructions for installing and configuring the RMS Enterprise Transporter Firmware File Transfer Utility for RMS Enterprise v4.4 (or higher).

RMS Enterprise Installation Checklist

Overview

RMS Enterprise is a true enterprise-level application, and has specific minimum system requirements that must be met to ensure a successful deployment.

This section is provided to ensure that all the necessary prerequisites are met, and that the necessary configuration options are identified prior to the installation of the RMS Enterprise server and RMS Database server.

- The system requirements provided in this section represent the results of AMX testing. Follow these guidelines to ensure that RMS Enterprise will perform successfully.
- *It is highly recommended that you read this document in its entirety before commencing an installation of RMS Enterprise.* If, after reading this document you have specific questions about the requirements of your RMS system, please contact AMX Technical Support for assistance.

Understanding System Recommendations & Requirements

Note that the overall performance of RMS Enterprise is a result of the server hardware and operating system used, as well as it's configuration. Other factors include the number of Locations, Assets and Users in the system, as well as how the system is used.

For example, as stated under *Supported Database Platforms* (see page 13), the "Express Editions" of Microsoft SQL Server are appropriate to use for RMS Enterprise systems with less than 50 locations. While this is true in most cases, it is important to note that an installation with a small number of rooms could be configured in such a way that it will generate a large amount of traffic to and from the server. As an example, a system with 50 locations, each of which contains a large number of devices with many control and monitoring functions running constantly, would certainly require at least the Standard version (possibly the Enterprise version) of Microsoft SQL Server in order to perform adequately, due to the large amount of traffic that would be generated.

When considering the server hardware to use with RMS Enterprise, it is important to understand not only the current requirements of the installation, but to also account for any potential upwards scaling of the system in the future. For example, an installation initially configured to manage less than 50 locations can use an "Express Edition" of Microsoft SQL Server. However, the "Express Editions" will no longer be appropriate, if and when more locations are added.

Server Hardware Recommendations

Verify that your server hardware meets or exceeds the following minimum requirements for RMS Enterprise (check the appropriate boxes below):

Server Hardware Recommendations			
Does your server meet the following Server Hardware Recommendations?		**Yes**	**No**
• Processor	Dual core Intel Xeon processor @ 2.67GHz (or equivalent)		
• Memory	8 GB		
• Display	1280 x 1024 resolution		
• Hard Disk	1 GB available space for RMS Enterprise application files. • Database size varies depending on the installation. • An additional 20 GB of space is needed for log files and firmware files if using RMS Transporter. Refer to the *RMS Enterprise Transporter Installation Manual* for details.		
Yes to all	Please continue to the next step.		
No to any	You must obtain a server that meets these minimum requirements to install RMS Enterprise.		

RMS Enterprise performs best when installed on a server that is exclusively dedicated to running the RMS Enterprise application.

- For optimal performance, it is strongly recommended that a dedicated RMS server is used to run the RMS Enterprise application - regardless of the size of the installation.
- *For systems with more than 50 rooms*, *it is a system requirement that the server running the RMS Enterprise application be dedicated exclusively to RMS*. In this case, it is crucial that no other applications are allowed to run on the RMS server.

Supported Virtual Servers

RMS Enterprise can also be hosted on a virtual server with either of the following virtualization systems:

- VMware ESXi (5.x or greater)
- Hyper-V

NOTE: *If RMS Enterprise is to be installed on a virtual server, verify that it has sufficient hardware resources to support these virtual hosts. The created virtual servers must meet the Minimum Server Hardware Requirements indicated above.*

Supported Server Operating Systems

Verify that your server's operating system (OS) meets the minimum requirements for RMS Enterprise:

Server Operating System (OS)		
Do you have a compatible server OS installed?	**Yes**	**No**
Supported Microsoft Server Operating Systems: Microsoft Windows Server 2012 R2 (x64) • Standard Edition / Datacenter Edition *Note: When using Windows Server 2012 R2, the administrator must install NET 4.0 or higher (required by the AMX License Tool).* Microsoft Windows Server 2008 R2 (x64): • Web Edition / Standard Edition / Enterprise Edition / Datacenter Edition		
Yes	Please continue to the next step.	
No	You must obtain a compatible server OS to install RMS.	
Do you have an administrative account to the server where RMS will be installed?	**Yes**	**No**
Note: RMS is a system level application and requires administrative access to install and configure RMS.		
Yes	Please continue to the next step.	
No	You must obtain an administrative logon account, or logon to the server with a user account that has administrative access to the server.	

NOTE: *RMS Enterprise v4.6 (or higher) is only supported on 64-bit systems.*

Additional Server Software Requirements

NOTE: *The software versions mentioned below have been tested successfully by AMX. No assumptions should be made relative to other versions (earlier or later) in terms of their compatibility with RMS Enterprise.*

Verify that your server has all required software installed (check the appropriate boxes below):

Additional Software Dependencies		
Does your server have all required software installed?	**Yes**	**No**
• Java 9 Runtime Environment(JRE V:9.0.4 recommended)		
• Tomcat - version 8.5		
Note: The following applications are not required, but are needed in order to view the RMS UI and help files directly on the server. • Web Browser (see *Supported Web Browsers* below) • Adobe Flash v10 • Adobe Acrobat Reader		
Yes to all	Please continue to the next step.	
No to any	Install any required software that is not present on the Server.	

NOTE: *Because RMS Enterprise requires a specific version of Java, it is important that Java's auto-update feature is disabled, to avoid compatibility issues in the future. See the Disabling Auto-Update For Java section on page 20 for details.*

Supported Server Operating Systems Languages

Supported Server OS Languages						
Chinese (Simplified, PRC)	English	French	Greek	Japanese	Russian	Turkish
Chinese (Classic, HK)	Flemish (Dutch)	German	Italian	Portuguese (Portugal)	Spanish	

Supported Web Browsers

The RMS UI is supported on the following web browsers:

Supported Web Browsers	
Windows	**Macintosh/Apple**
Internet Explorer v10, v11	Safari v5, v7
Mozilla Firefox v27	Mozilla Firefox v27
Google Chrome v33	Google Chrome v33

Supported SQL Database Platforms

The following 32-bit or 64-bit database platforms are supported:

Supported SQL Database Platforms	
Supported SQL Database Platforms (x32/x64, Enterprise/Standard/Express)	**Verified SQL Server Service Packs** The following service packs have been tested and verified by AMX to work with RMS Enterprise.
SQL Server 2014	SP1
SQL Server 2012	SP3
SQL Server 2008 R2	SP3
SQL Server 2008	SP4

To ensure optimal performance, it is important to follow these guidelines:

- The "Express Editions" of SQL Server (free download available from Microsoft) are only appropriate for systems with *less than 50 locations*. See *Appendix A: Installing SQL Server 2008 Express Edition* on page 78 for installation and configuration instructions.
- The RMS database *must* be installed on an external database server (not on the same server machine as the RMS Enterprise application). This includes database servers using SQL Server Express.

Check the appropriate box below:

Database Platform		Yes	No
Do you have a supported Database platform?			
Yes	Please continue to the next step.		
No	Install or obtain access to a compatible database platform for the RMS Enterprise database.		

Database Access

If you will be using SQL database authentication instead of Windows Authentication to access the database server, check the appropriate box below, and fill in the remaining information. If you are not using Windows Authentication, then enter the *Username* and *Password* that will allow access the database server.

Database Access			Yes	No
Using Windows Authentication?				
Yes	If you are using Windows Authentication to access the database server, then no username or password is needed.			
No	Username:			
	Password:			
SQL Server IP address or Host name				
SQL Server Port				
SQL Server Instance (optional)				
SQL Server Catalog (Database Name)				
			Yes	No
Using NTLMv2? *NTLMv2 provides improved security for connections between Windows NT clients and servers.*				

NOTE: *In order for the RMS installer to create a new database catalog instance, the database user account will require the "CREATE DATABASE" permissions. Alternatively if a new empty RMS database catalog is created outside of the RMS installer, then this database user account will only require "DB_OWNER" permissions to the newly created, empty RMS catalog.*

Active Directory Services

RMS Enterprise supports "*LDAP*" and "*Window Active Directory*" directory services. If you intend for RMS Enterprise to utilize one of these directory services, it will be helpful to have the following information prepared:

Active Directory		Yes	No
Does your installation require active directory services?			
No	Please continue to the next step.		
Yes	Which directory service will you will be using with RMS?		
	LDAP		
	Window Active Directory		
Fill in the following information (required for initial connection to the Directory Services Server):			
Bind DN			
Bind DN password			
URL of Directory Services Server			
Base DN			
Group Base Name			
Group Attribute Name			
		Yes	No
Using NTLMv2? *NTLMv2 provides improved security for connections between Windows NT clients and servers.*			

Legacy TCP/IP Communications

RMS Enterprise uses TCP/IP communications between Legacy (version 3.x or lower) clients and the RMS Enterprise server. Please complete the following information:

TCP/IP Communications			
TCP/IP Server Port Number *Default = 3839 (this is an IANA registered port number for Legacy RMS servers)*			
		Yes	No
Does your server have a firewall that will block TCP/IP communication for this port?			
Yes	Create an exception for TCP/IP communications on the specified TCP/IP port for RMS communications.		
No	Please continue to the next step.		
		Yes	No
Does your network router restrict or block traffic on this TCP/IP port?			
Yes	Create an exception for TCP/IP communications on the specified TCP/IP port for RMS communications.		
No	Please continue to the next step.		

Pre-Authentication Settings

RMS Enterprise supports pre-authentication. Please complete the following information:

Pre-Authentication Settings			Yes	No
Does your installation require pre-authentication?				
No				
Yes	Which pre-authentication method will you will be using with RMS?			
	Windows authentication			
	SiteMinder			

Control System Requirements

RMS SDK Support

- Touch panel files for G4 panels
- NetLinx modules (*RFID* is supported only on Duet-enabled NetLinx hardware)
- Each RMS Server supports up to 3000 Locations with SDK4, or up to 1000 SDK3 Locations

NOTE: *Systems with more than 50 locations require Microsoft SQL Server Standard or Enterprise Editions. Microsoft SQL Server "Express Editions" are not appropriate for system with more than 50 locations. See Supported SQL Database Platforms on page 13.*

Supported Central Controllers

Supported Central Controllers		
RMS SDK v4.6.x	**RMS SDK v4.0 / v3.0**	**RMS SDK v3.0 only**
• NX-1200/2200/3200/4200 • DVX-2210/2250/2255HD • DVX-3250/3255/3256HD • DGX8-ENC • DGX64-ENC *Note: NX Master Firmware Version 1.4.90 (or higher) is required for SDK v4.6.*	• NX-1200/2200/3200/4200 *RMS SDK v4.0 / v3.0 supports the following NI Central Controllers and Enova DVX/DGX Switchers with at least 64 MB RAM:* • NI-3101-SIG • NI-2100/3100/4100 • NI-700/900 • Enova DVX-2150/2155HD • Enova DVX-3150/3155HD • Enova DVX-2100/2110HD • Enova DGX16/32 • NXC-ME260/64 *Note: Master Firmware Version 4 is required for SDK v4.*	• NI-2000/3000/4000 • NI-700/900 (32 MB) • NXC-ME260 • NXC-MPE *Note: Support for RMS SDK v3.0 only Controllers is provided via the RMS Enterprise Backwards Compatibility service using the RMS 3.x SDK.* *These systems will continue to operate using the feature set of RMS 3.x. New features included in RMS Enterprise may not be available to these systems.*

- NX Master Firmware Version 1.4.90 (or higher) is required for SDK v4.6.
- RMS SDK v4 (or higher) is required when using RMS Cloud Services hosted by AMX due to port requirements.
- RMS SDK v4 requires NetLinx Master version 4 firmware; connection instability and Master lockups may result if using version 3 NetLinx Firmware with SDK v4.

64MB Controllers - Duet Memory Allocation

By default, Duet memory is set to the lowest possible amount to keep all available memory open for running NetLinx code. This assures that if the Controller is loaded with a very large NetLinx program but doesn't have any Duet modules, then the NetLinx code will run efficiently.

However, when Duet modules are added to the program, they use some of the (SDRAM) memory required by the Controller's web interface to load. In some cases, when a NI Controller or Enova DVX-2100HD All-In-One Presentation Switcher is connected to an RMS Server, the Controller (or Switcher) can eventually reach a point where the amount of available Duet memory gets too low to adequately support the Controller's web interface. If this occurs, the web interface will fail to load, and Telnet will report an out-of-memory error.

This issue can potentially affect any Controller with 64MB of SDRAM memory. Most NetLinx Integrated Controllers, as well as the Enova DVX-2100HD All-In-One Presentation Switcher feature 64 MB of SDRAM memory, with a default *Duet memory allocation* setting of 12MB. The NI Controllers and Enova All-In-One Presentation Switchers that come equipped with 64MB of RAM (and therefore could potentially experience this error) are listed in the following table:

NI Central Controllers and Enova All-In-One Presentation Switchers With 64MB of RAM			
NetLinx Integrated Controllers		**Enova DVX All-In-One Presentation Switchers**	
NI-700	FG2105-70	DVX-2100HD	FG1905-04, FG1905-05, FG1905-01, FG1905-02
NI-900	FG2105-90		
NI-2100	FG2105-04, FG2105-14		
NI-3100*	FG2105-05, FG2105-15		
NI-3101-SIG	FG2105-08		
NI-4100*	FG2105-06		
* The NI-3100 and NI-4100 are available with 256MB of SDRAM installed. See www.amx.com for details.			

To avoid this error, it may be necessary to increase the Duet memory allocation on the NI Controller or DVX-2100HD switcher. The Duet memory allocation setting can be viewed and adjusted via the telnet terminal commands described below:

DUET MEMORY Telnet Commands	
GET DUET MEMORY	Display the amount of memory allocated for Duet Java pool. This is the current Java memory heap size as measured in Megabytes. An example is a value of 12 = 12MB.
SET DUET MEMORY	Set the amount of memory allocated for Duet Java pool. This is the current Java memory heap size as measured in Megabytes. This feature is used so that if a NetLinx program requires a certain size of memory be allotted for its currently used Duet Modules, it can be reserved on the Central Controller. The default Duet memory allocation value for NI Central Controllers with 64MB of SDRAM (as well as the DVX-2100HD) is **12MB** *Note: This setting does not take effect until the next reboot.*

There are some considerations when doing this:

- The higher you increase the Duet memory, up to a maximum of 64Mb, the less memory there is for the NetLinx code to run. To find out how much Duet memory you need to run your program is by trial and error.
- We recommend increasing it by **2Mb**, then trying to run your program. Repeat this process until your code runs as expected.
- It is important to keep the amount of memory allocated to Duet as low as possible so there is maximum memory to run the NetLinx code.

Setting the Duet Memory Allocation Value

NOTE: *Terminal commands can be sent directly to the NI Controller or DVX-2100HD via either a Program Port or a Telnet terminal session. In your terminal program, type "Help" or a question mark ("?") and <Enter> to access the Help Menu, and display the supported Program port commands. Refer to the "NetLinx Integrated Controllers WebConsole and Programming Guide" for a full listing of supported telnet terminal commands.*

1. Telnet into the Controller (refer to the relevant *Operation/Reference Guide* for details).
2. Type SET DUET MEMORY. You will be presented with how much the memory is currently set to and a prompt for the new setting.
3. Enter the new setting (such as 14 to set the Duet memory allocation to 14MB), then press ENTER.
4. Reboot the master and test your code.
5. Repeat if necessary.

Licensing Information (Entitlement ID)

If you have purchased RMS Enterprise, you will need the Entitlement ID obtained from AMX in order to install the software (see the *AMX License Manager* section on page 50 for details).

RMS Enterprise Scheduling Interface

Scheduling Server Hardware Recommendations

Once you have installed a registered version of RMS Enterprise (see the *Registering a Purchased License* section on page 61 for details), you can upgrade your RMS Entitlement with a *Scheduling License*. The Scheduling License enables support for various scheduling plug-ins for RMS Enterprise. Refer to the Installation Guide for your specific Scheduling plug-in for details.

Verify that each server that will run the RMS Enterprise Scheduling Interface meets or exceeds the following minimum requirements (check the appropriate boxes below):

Scheduling Server Hardware Recommendations			
Does your Scheduling server meet the following Minimum Hardware Recommendations?		**Yes**	**No**
• Processor	Dual core Intel Xeon processor @ 2.67GHz (or equivalent)		
• Memory	8 GB		
• Display	1280 x 1024 resolution		
• Hard Disk	1 GB available space for RMS Enterprise Scheduling application files.		
Yes to all	Please continue to the next step.		
No to any	You must obtain a server that meets these minimum requirements to install RMS Enterprise.		

For installations with more than 50 locations that use the Scheduling Interface, a separate server from the RMS Application is required.

Scheduling Interface Operating System (OS)			
Do you have a compatible server OS installed?		**Yes**	**No**
Supported Microsoft Server Operating Systems: Microsoft Windows Server 2012 R2 (x64) • Standard Edition / Datacenter Edition *Note: When using Windows Server 2012 R2, the administrator must install .NET Framework 3.5 (required by the AMX License Tool).* Microsoft Windows Server 2008 R2 (x64): • Web Edition / Standard Edition / Enterprise Edition			
Yes	Please continue to the next step.		
No	You must obtain a compatible server OS to install RMS.		
Do you have an administrative account to the server where RMS will be installed?		**Yes**	**No**
Note: RMS is a system level application and requires administrative access to install and configure RMS, including the Scheduling Interface and Scheduling Configuration Tool .			
Yes	Please continue to the next step.		
No	You must obtain an administrative logon account, or logon to the server with a user account that has administrative access to the server.		

NOTE: *RMS Enterprise v4.6 (or higher) is only supported on 64-bit systems.*

RMS Transporter

RMS Transporter allows the simultaneous transfer of firmware to all devices on your system's network for a given firmware file. See the *RMS Enterprise System Admin Manual* for details.

RMS Transporter Server Hardware Recommendations

NOTE: *The RMS Transporter application should not be installed on the primary RMS Enterprise Server, as this can lead to performance issues on the RMS Enterprise UI (including potentially sluggish response times during transfer operations). To ensure optimal performance, always install RMS Transporter on a separate dedicated server.*

Verify that each server that will run RMS Transporter meets or exceeds the following minimum requirements (check the appropriate boxes below):

RMS Transporter Server Hardware Recommendations			
Does your RMS Transporter server meet the following minimum hardware recommendations?		**Yes**	**No**
• Processor	Dual core Intel Xeon processor @ 2.67GHz (or equivalent)		
• Memory	4 GB		
• Display	1280 x 1024 resolution		
• Hard Disk	12 GB available space to store AMX firmware files. *Note: While AMX firmware files will be stored locally on the Transporter Server, these files are automatically removed from the Server 90 days after their last use.*		
Yes to all	Please continue to the next step.		
No to any	You must obtain a server that meets these minimum requirements to install RMS Enterprise.		

RMS Transporter Operating System (OS)			
Do you have a compatible server OS installed?		Yes	No
Supported Microsoft Server Operating Systems: Microsoft Windows Server 2012 R2 (x64) • Standard Edition / Datacenter Edition *Note: When using Windows Server 2012 R2, the administrator must install .NET Framework 3.5 (required by the AMX License Tool).* Microsoft Windows Server 2008 R2 (x64): • Web Edition / Standard Edition / Enterprise Edition			
Yes	Please continue to the next step.		
No	You must obtain a compatible server OS to install RMS.		
Do you have an administrative account to the server where RMS will be installed?		Yes	No
Note: RMS is a system level application and requires administrative access to install and configure RMS, including the Scheduling Interface and Scheduling Configuration Tool .			
Yes	Please continue to the next step.		
No	You must obtain an administrative logon account, or logon to the server with a user account that has administrative access to the server.		

Multiple RMS Transporter servers can communicate with the RMS Enterprise Server.

- Each RMS Transporter server communicates with the RMS Enterprise Server over Port **80**.
- Each RMS Transporter Server communicates with AMX devices over port **1319**.
- Each RMS Transporter Server communicates with AMX devices via HTTP over port **8081** (default). This port can be changed in the Transporter configuration tool. Refer to the RMS Enterprise Transporter Installation Manual for instructions on installation and configuration.

NOTE: *RMS Transporter v1.2.x is only supported on 64-bit systems.*

Installing Prerequisite Software

Overview

As indicated in the *RMS Enterprise Installation Checklist*, RMS Enterprise requires two server software applications to be on the server before RMS is installed:

- Java SE9 (JRE V:9.0.4 recommended)
- Tomcat v8.5

If both of these applications are not already loaded on the server, download and install both before launching the RMS enterprise Installation executable file.

NOTE: *If Tomcat 8.5 is already installed on the server, please refer to the Configuring Apache Tomcat section on page 24 before installing RMS Enterprise.*

Installing Java SE9

Java SE9 (Standard Edition version 9) installation files are available to download from http://www.oracle.com/technetwork/java/javase/downloads/java-archive-javase9-3934878.html.

NOTE: *The minimum requirement for Java SE9 is the JRE (Java Runtime Environment). RMS Enterprise will also work with the JDK (Java Development Kit), since it includes the JRE.*

1. Download and launch the Java SE9 JRE installer. FIG. 3 shows the Java 9 JRE installer Welcome Screen.

FIG. 3 Java 9 JRE installer - Welcome screen

2. Click **Install** to begin the installation. Progress is indicated in the Installing Java dialog.

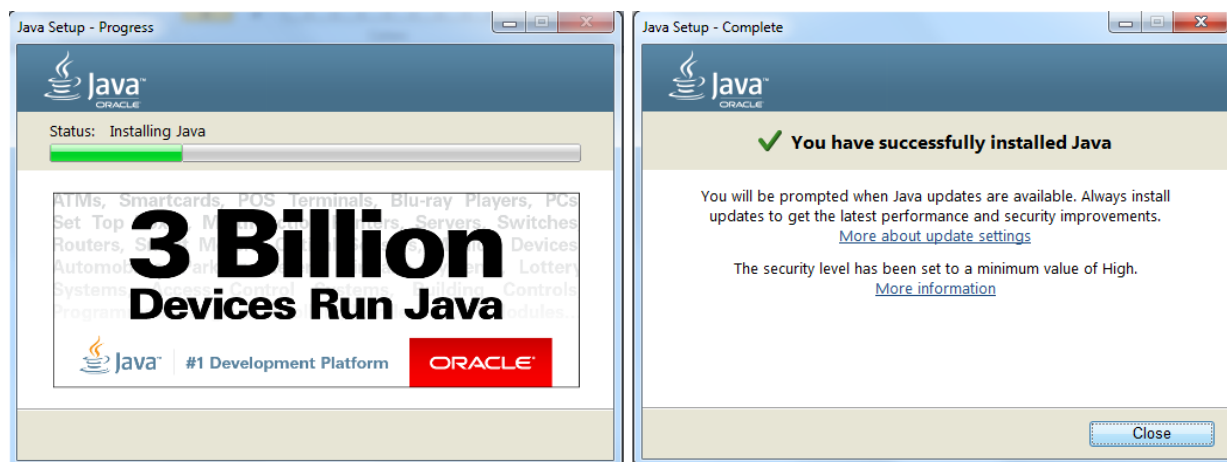3. When complete, close the Java SE9 JRE installer (FIG. 4).

FIG. 4 Java SE9 JRE installer

Disabling Auto-Update For Java

Because RMS Enterprise requires a specific version of Java, it is important that Java's auto-update feature is disabled, to avoid compatibility issues in the future:

1. On the main *Control Panel Page*, select **Java**. This opens the *Java Control Panel* (FIG. 5):
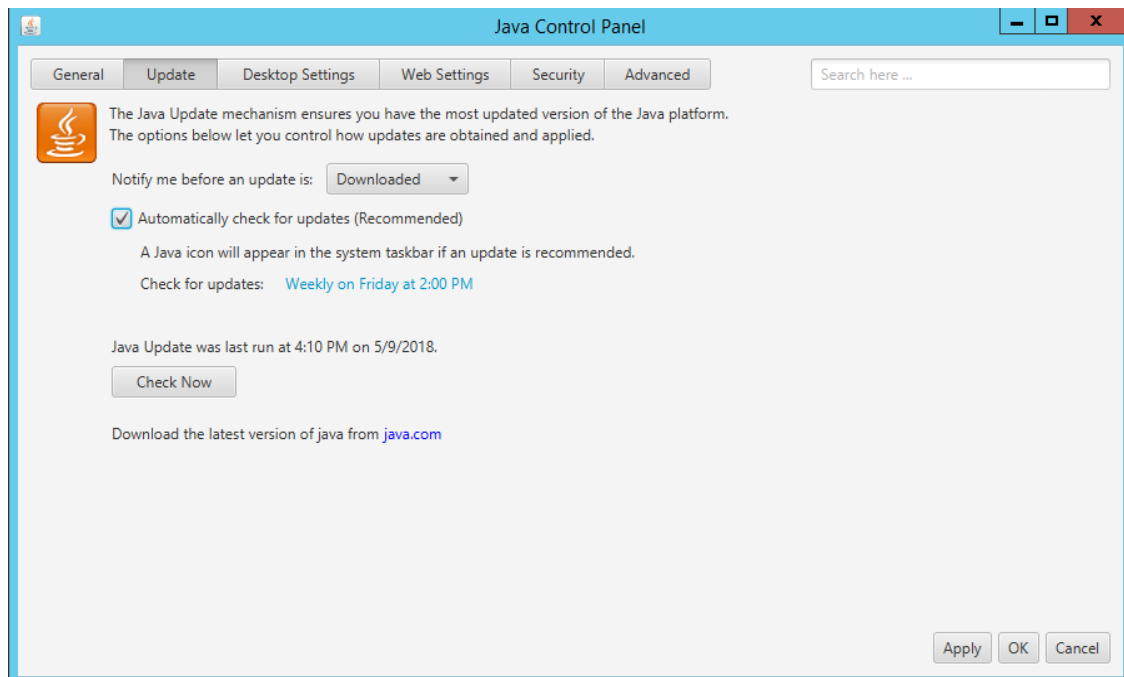

FIG. 5 Java Control Panel

2. Un-check the **Automatically check for updates** option.

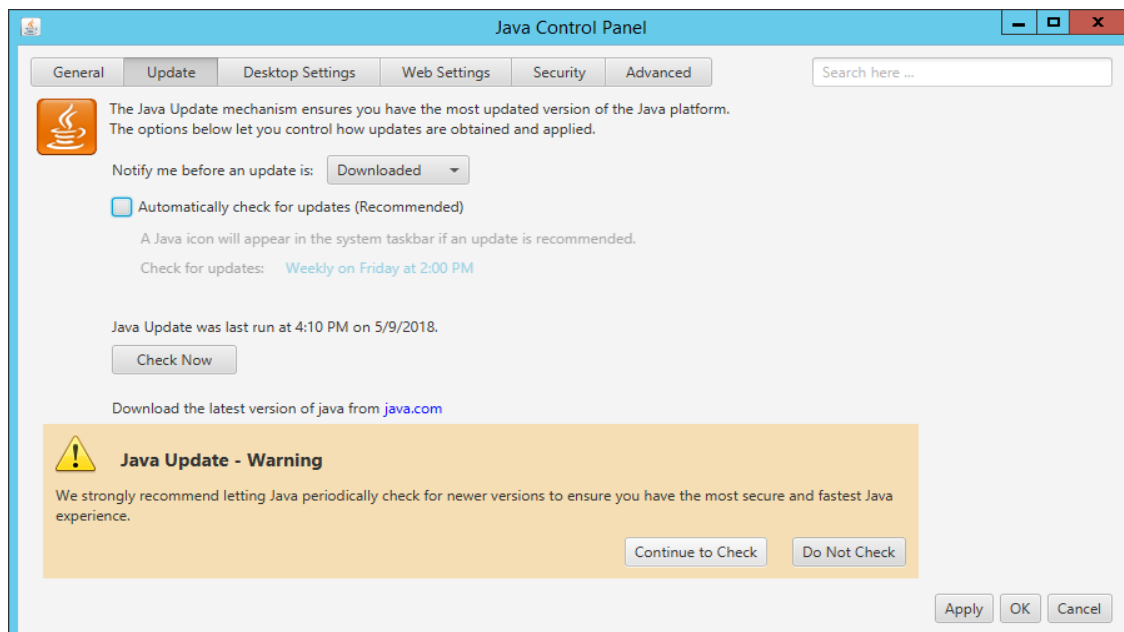3. Java will prompt you to verify this action - click **Do not check** and click on **Apply**.

FIG. 6 Java Update - Warning

4. Click **OK** to close this dialog.

Installing Apache Tomcat v8.5

RMS Enterprise v4.6.13 requires Tomcat v8.5. Apache Tomcat 8.5 installation files are available to download from http://tomcat.apache.org/download-80.cgi?spm=5176.doc51376.2.9.muOQM3&file=download-80.cgi.

NOTE: *If Tomcat 8.5 is already installed on the server, please refer to the Configuring Apache Tomcat section on page 24 before installing RMS Enterprise.*

1. Download and launch the Apache Tomcat 8.5 Windows Service. FIG. 7 shows the Welcome Screen for the Apache Tomcat Setup Wizard:
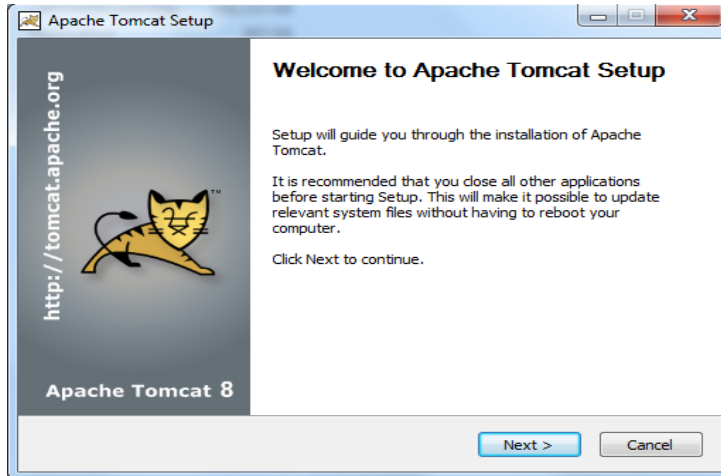

FIG. 7 Apache Tomcat Setup Wizard - Welcome Screen

2. Click **Next** to review the License Agreement. Click **I Agree** to proceed with the installation (FIG. 8):
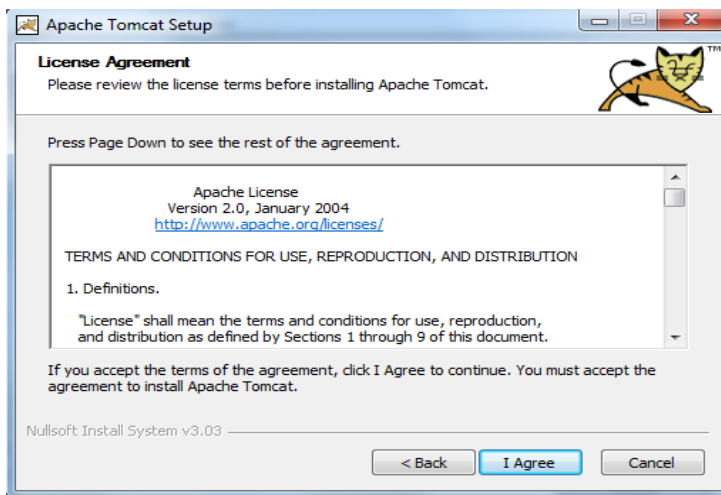

FIG. 8 Apache Tomcat Setup Wizard - License Agreement

3. In the *Choose Components* screen, review the default component selections and read the on-screen instructions (FIG. 9):
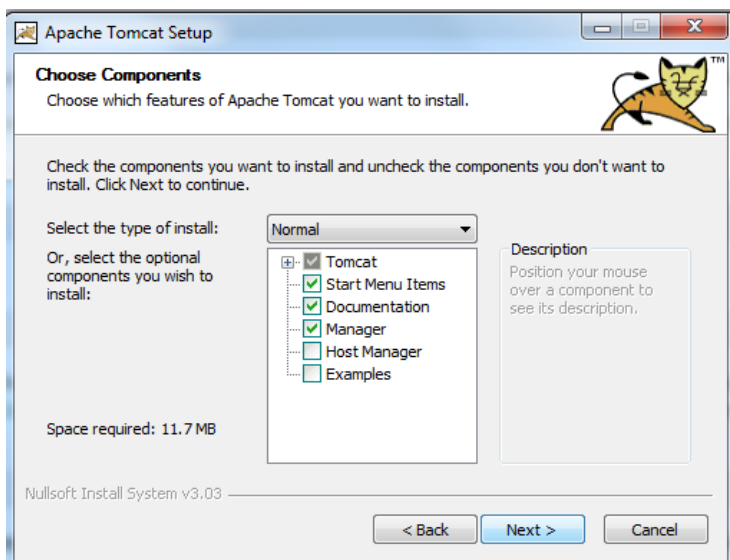
FIG. 9 Apache Tomcat Setup Wizard - Choose Components

4. Click **Next** to accept the default settings and continue to the *Configuration* screen (FIG. 10):
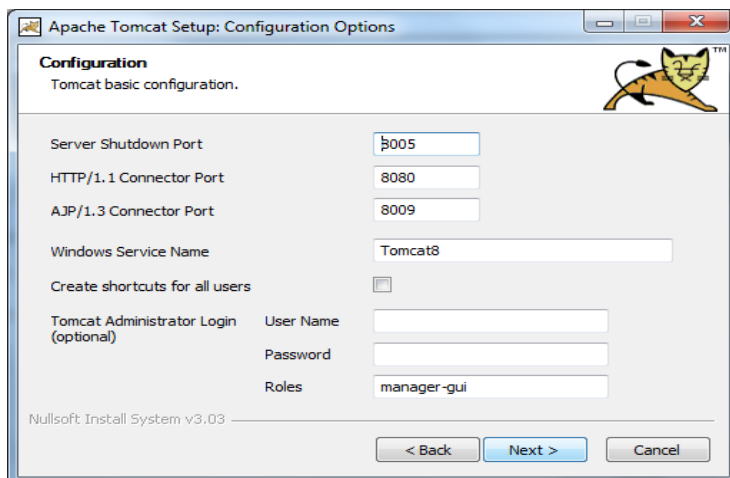

FIG. 10 Apache Tomcat Setup Wizard - Configuration

5. Fill in this information as required. Using the default settings, Tomcat will serve the web page content on port **8080**. If you wish for RMS to be hosted on the standard HTTP port 80 and you are not using IIS for Windows Authentication purposes then you may enter port **80** in this field before proceeding.

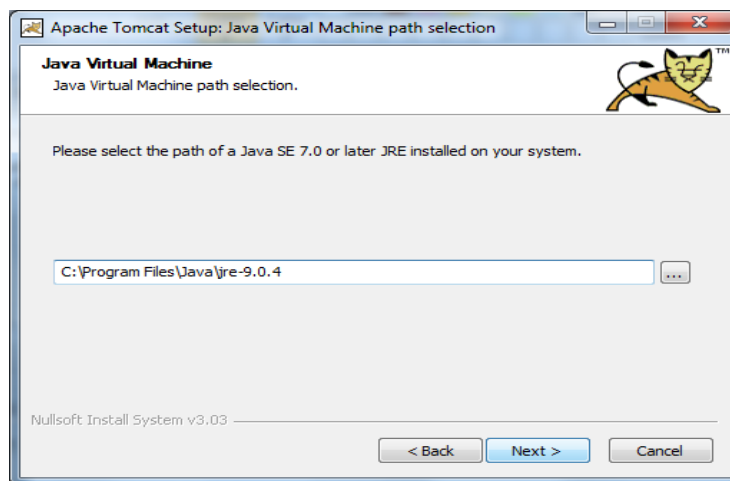Click **Next** to proceed to the *Java Virtual Machine* screen (FIG. 11):

FIG. 11 Apache Tomcat Setup Wizard - Java Virtual Machine

- It may be necessary to create a firewall rule to allow access to the port defined here (if other than 80).

- If you are installing Tomcat to run on port 80, then you must make sure that no other web servers are currently running (on port 80) on this server. It is not uncommon for Microsoft IIS server to already be installed on the server, you may need to disable the IIS server in order to run Tomcat on port 80. Tomcat will fail to start if another process is already listening on port 80.
- The Tomcat HTTP port can be changed at a later time after install, but it will require the manual editing of Tomcat configuration files.

6. Again, in most cases you should accept the default setting, and click **Next** to proceed to the *Choose Install Location* screen (FIG. 12):
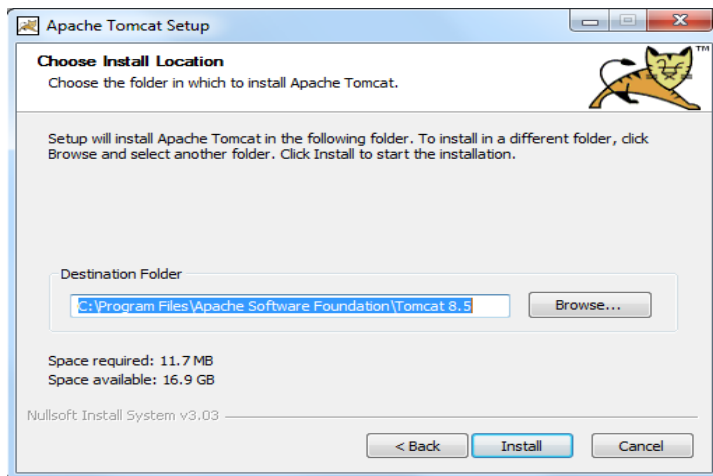

FIG. 12 Apache Tomcat Setup Wizard - Choose Install Location

7. Again, in most cases you should accept the default setting,

8. Click **Install** to begin the installation. Progress is indicated in the *Installing* dialog (FIG. 13):
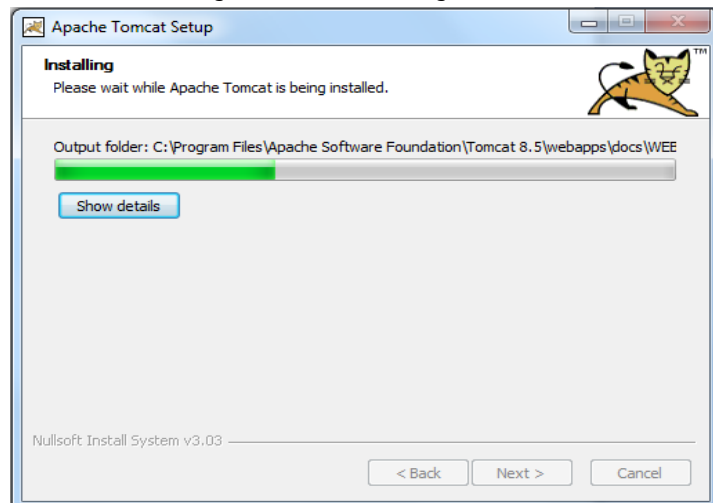

FIG. 13 Apache Tomcat Setup Wizard - Installing

9. When complete, click **Finish** to close the *Apache Tomcat Setup Wizard* (FIG. 14).
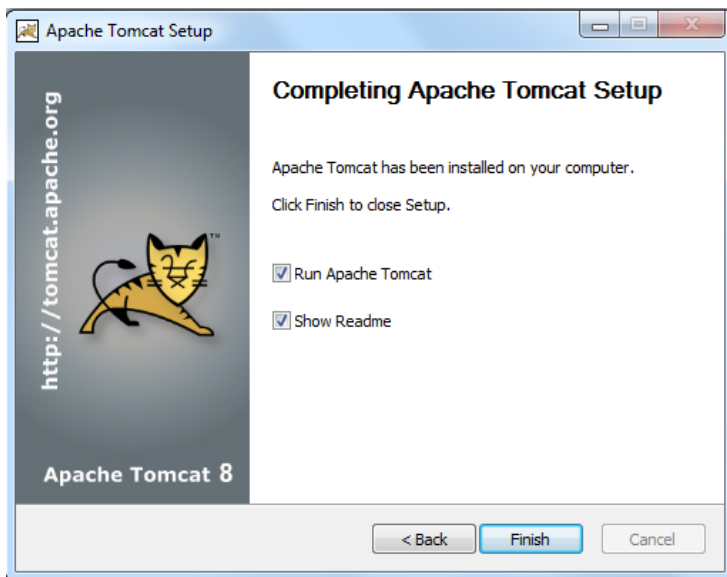
FIG. 14 Apache Tomcat Setup Wizard - Complete

10. Continue to the *Configuring Apache Tomcat* section.

Configuring Apache Tomcat

In order for Tomcat to function properly with RMS Enterprise, the following configuration changes must be made via the *Apache Tomcat 8.5 Properties* dialog:

1. With Tomcat running, right-click on the Tomcat icon in the Windows task bar, and select **Configure** from the context menu (FIG. 15). This opens the *Apache Tomcat 8.5 Properties* dialog

Tomcat icon (Windows Task Bar)
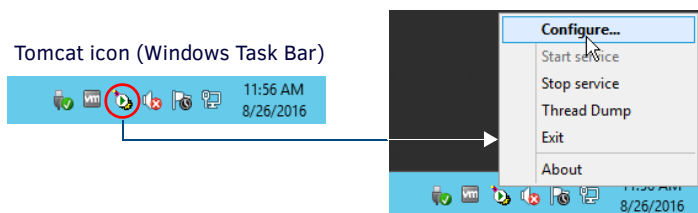
FIG. 15 Apache Tomcat context menu - select Configure

2. In the *General* tab, change the **Startup Type** from *Manual* to **Automatic** (select *Automatic* from the drop-down menu (FIG. 16):

Set Startup Type to **Automatic**

FIG. 16 Apache Tomcat 8.5 Properties dialog - General tab

3. In the *Java* tab, click inside the **Java Options** text box (FIG. 17), and scroll down to the last line.

   After the last line of code, enter the following line of code:

   -XX:MaxMetaspaceSize=200M

Recommended setting for *MaxMetaspaceSize* = 200M

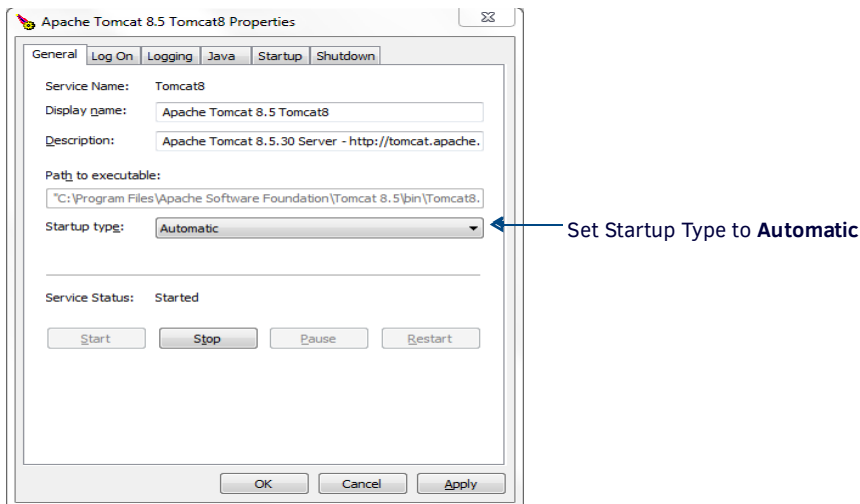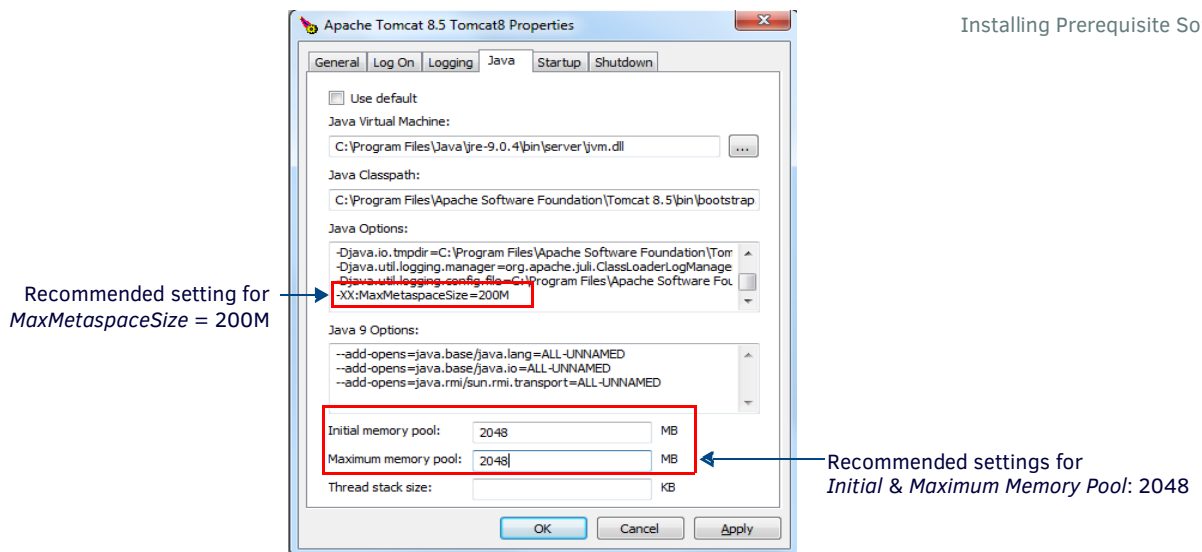Recommended settings for *Initial & Maximum Memory Pool*: 2048

FIG. 17 Apache Tomcat 8.5 Properties dialog – Java tab (editing Java Options)

4. Enter values in the **Initial Memory Pool** and **Maximum Memory Pool** fields.
    - In most cases, the *Initial Memory Pool* and *Maximum Memory Pool* values should be equal.
    - The recommended value for *Initial Memory Pool* and *Maximum Memory Pool* is **2048**MB (2GB).
    - The ideal values for these settings will depend on the number of clients connected to your RMS server. As a rule of thumb, consider allocating half of the server's available memory to Tomcat for use with RMS.

5. Click **OK** to save your changes.

6. At this point, test the settings by stopping, and restarting the Tomcat service before proceeding: Select **Stop service** from the Tomcat context menu, and when the service has stopped, select **Start service** (FIG. 18):
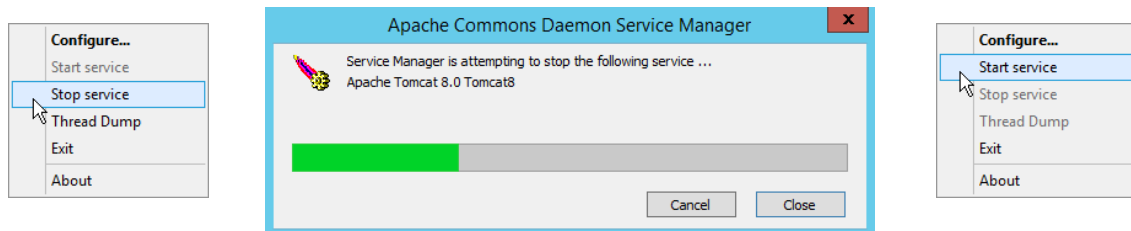
FIG. 18 Apache Tomcat context menu – Stop service, Start service

> **NOTE:** *If Tomcat fails to restart, please refer to the Appendix B: Advanced Tomcat Configuration section on page 89 to troubleshoot the Java memory allocation settings.*

7. Before proceeding, stop the Tomcat service.
    - Tomcat must be stopped before installing and configuring RMS Enterprise.
    - Once RMS Enterprise has been installed and configured, Tomcat must be restarted in order to run RMS Enterprise.

Upgrading RMS v3.3 to RMS Enterprise

Overview

IF YOU INTEND TO INSTALL RMS ENTERPRISE ON A SERVER THAT IS CURRENTLY RUNNING RMS V3.x, READ AND FOLLOW THESE INSTRUCTIONS FIRST!

These instructions describe upgrading RMS (v3.x) to RMS Enterprise (v4.x). For instructions on upgrading RMS Enterprise (v4.x) from a previous version of RMS Enterprise (v4.x), refer to the *Upgrading RMS Enterprise (v4.x to v4.6)* section on page 28.

Backwards Compatibility

RMS Enterprise includes support for legacy RMS 3.x clients.

NOTE: *RMS 3.x client connectivity is not available for AMX Cloud hosted Services.*

NOTE: *RMS Enterprise supports RMS legacy binary protocol for backwards compatibility purposes only. RMS Enterprise does not provide a means to secure the legacy communication channel. All systems requiring a secure communication path must upgrade the client SDK to a RMS Enterprise compatible version that supports secure communication.*

If you intend to install RMS Enterprise on a server that is currently running RMS v3.3, there are a few important steps to follow to ensure that RMS Enterprise will operate correctly, and to preserve the pre-existing RMS application. This provides a method of reverting back to the previously installed version of RMS, if necessary.

- Upgrading an existing installation of RMS to RMS Enterprise requires a base line of RMS v3.3, with a database version of 3.0.9 or greater. Older versions of RMS (v3.2 or lower) must be migrated to v3.3 prior to upgrading the system to RMS Enterprise as described in this section. Refer to RMS v3.x documentation for instructions.
- It is not necessary or recommended to un-install an existing version of RMS v3.3 in order to install RMS Enterprise on the same machine. These instructions describe stopping and then disabling RMS v3.3 services. If for any reason it is necessary to revert to the previous RMS v3.3 system, these services can be restarted.

1) Verify System Requirements for RMS Enterprise

Since the minimum system requirements for RMS Enterprise are different than those for RMS v3.3, it is important to verify that the current system does in fact meet these newer requirements.

Before proceeding with these instructions, verify that the current server meets the minimum system requirements for RMS Enterprise.

Refer to the *RMS Enterprise Installation Checklist* on page 11 for a detailed listing of Hardware System Requirements, supported Server Operating Systems, Additional Software Dependencies, and more.

NOTE: *Due to the system requirements for RMS v3.3, it will be unlikely that you will be able to install RMS 4.x on the same physical or virtual server a RMS 3.3 was using. Therefore, if you are using a local copy of SQL Express or a remote SQL Server, you will need to: (1) copy the database to the new system that you plan to use for RMS 4.x; and (2) verify that it meets the RMS 4.x requirements for SQL.*

If your system meets these requirements, proceed with the instructions below.

2) Stop RMS v3.3 Services

In the *AMX Resource Manager Suite Service Manager* (FIG. 19), stop all RMS Services (select each of the four services, and click the **Stop** button):
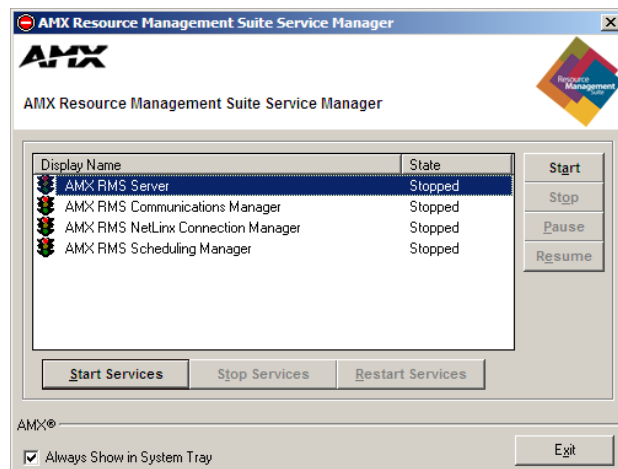

FIG. 19 RMS Service Manager - Stop RMS Services

This stops the RMS v3.3 services, until they are restarted manually, or the server is restarted.

3) Disable RMS v3.3 Services

Once the RMS v3.3 services are stopped, it is necessary to disable them in order to prevent them from restarting when the server is restarted.

1. Go to **My Computer > Manage > Server Manager** to access the Server Manager.

2. Select **Configuration > Services** to access the *Services* window. Note that the four RMS services are stopped (FIG. 20):
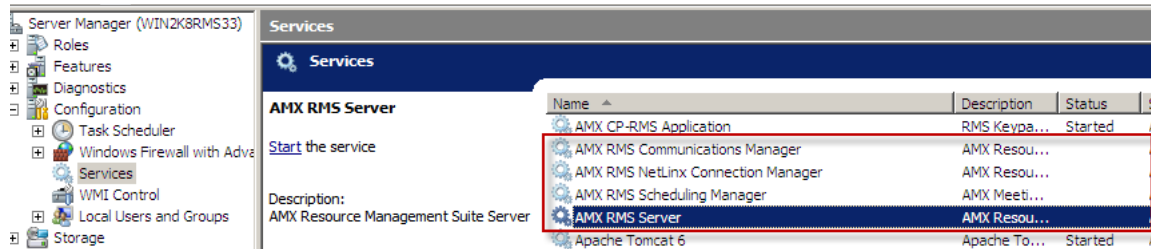

FIG. 20 Server Manager window

3. Right-click on the first RMS service listed, and select **Properties** to access a *Service Properties* dialog similar to the one shown in FIG. 21:
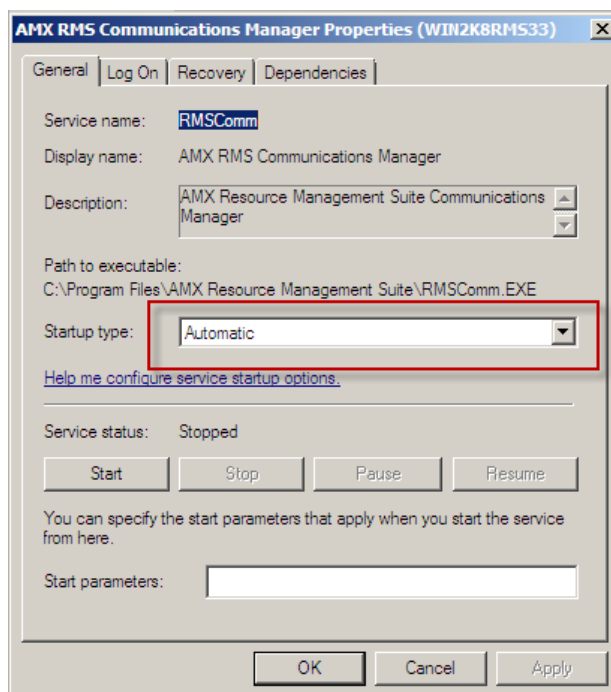

FIG. 21 Service Properties dialog

4. Change the *Startup Type* setting to **Disabled**.

5. Click **OK** to save changes and close the *Service Properties* dialog.

6. Repeat steps 3-5 for the remaining three RMS services.

Once all four RMS v3.3 services are disabled, you are ready to install RMS Enterprise.

Using a RMS v3.3 Database with RMS Enterprise

If you intend to use an existing Legacy (v3.3) RMS Database with RMS Enterprise, the data must be migrated.

See the *Migrating a Legacy RMS Database To RMS Enterprise* section on page 46 for details.

4) Installation

At this point you can proceed with the RMS 4.x Server software.

Once you get to the *Database Configuration* page of the installer configuration (see FIG. 51 on page 43), make sure to select that you are using an Existing RMS Database and provide it the correct host and catalog name.

Upgrading RMS Enterprise (v4.x to v4.6.13)

Overview

These instructions describe upgrading to RMS Enterprise v4.6x from a previous version of RMS Enterprise (v4.x).

NOTE: *For instructions on upgrading to RMS Enterprise from RMS v3.3, refer to the Upgrading RMS v3.3 to RMS Enterprise section on page 26.*

NOTE: *When upgrading RMS from v4.x to v4.6, several DVX and Touch Panel Control Methods may be duplicated (resulting from upgrading to the v4.6 SDK). While these duplicates will not prevent any Control Methods from working, they should be removed from the Control Methods*

1) Stop the Tomcat v7/8 Service

Previous versions of RMS Enterprise used Tomcat version 7 or Tomcat version 8. The first step in the upgrade process is to stop the Tomcat v7/8 service: Right-click on the Tomcat 7/8 Taskbar icon and select **Stop Service** (FIG. 22):
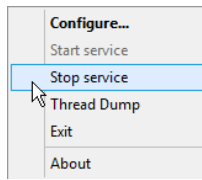

FIG. 22 Apache Tomcat 7 context menu - Stop service

2) Download Java v9 and Tomcat v8.5.x

RMS Enterprise v4.6.13 required Java version 9 and Tomcat version 8.5.x.

Downloading Java v9

Java SE9 (Standard Edition version 9) installation files are available to download from www.oracle.com.

NOTE: *The minimum requirement for Java SE9 is the JRE (Java Runtime Environment). RMS Enterprise will also work with the JDK (Java Development Kit), since it includes the JRE.*

Downloading Tomcat v8.5

RMS Enterprise v4.6.13 requires Tomcat v8.5.

Apache Tomcat 8.5 installation files are available to download from http://tomcat.apache.org/download-80.cgi?spm=5176.doc51376.2.9.muOQM3&file=download-80.cgi.

NOTE: *If Tomcat 8.5 is already installed on the server, please refer to the Configuring Apache Tomcat section on page 24 before installing RMS Enterprise.*

3) Install Java v9

The steps for installing Java v9 are provided in the *Installing Java SE9* section on page 19.

In this case (upgrading from a previous version of RMS Enterprise that used Java 7 or Java 8), the Java 9 installation routine includes a prompt to uninstall Java 7 (FIG. 23): Uninstall Java 8 manually from the control panel.

FIG. 23 Java v9 Setup - Previous version (Java 7) found

Click **Uninstall** to uninstall Java 7from this machine before Java 9 is installed.

4) Install Tomcat v8.5

The steps for installing Tomcat v8.5 are provided in the *Installing Apache Tomcat v8.5* section on page 21.

5) Stop the Tomcat v8.5 Service

Before proceeding to the RMS Server upgrade, it is necessary to stop the Tomcat v8.5 service.

Note that at this point, there are two version of Tomcat (v7/8 and v8.5) represented in the Windows Task Bar - one is running and one is stopped (FIG. 24):
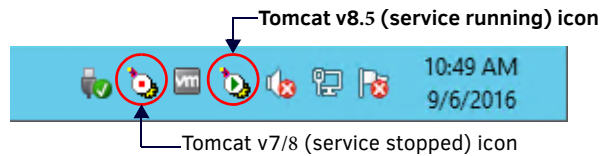
Tomcat v8.5 (service running) icon

Tomcat v7/8 (service stopped) icon

FIG. 24 Windows Task Bar - Tomcat v7/8 (stopped) and Tomcat v8.5 (running) icons

Since only Tomcat v8.5 is currently running, right-click on the Tomcat icon that features a green arrow (indicating that the service is currently running).

Note that it may take a moment for the service to stop. To verify that the service has in fact stopped before proceeding to the next step, open Windows Task Manager (*Processes* tab) and check under *Commons Daemon Service Running* for the *Apache Tomcat 8.5* (FIG. 25):
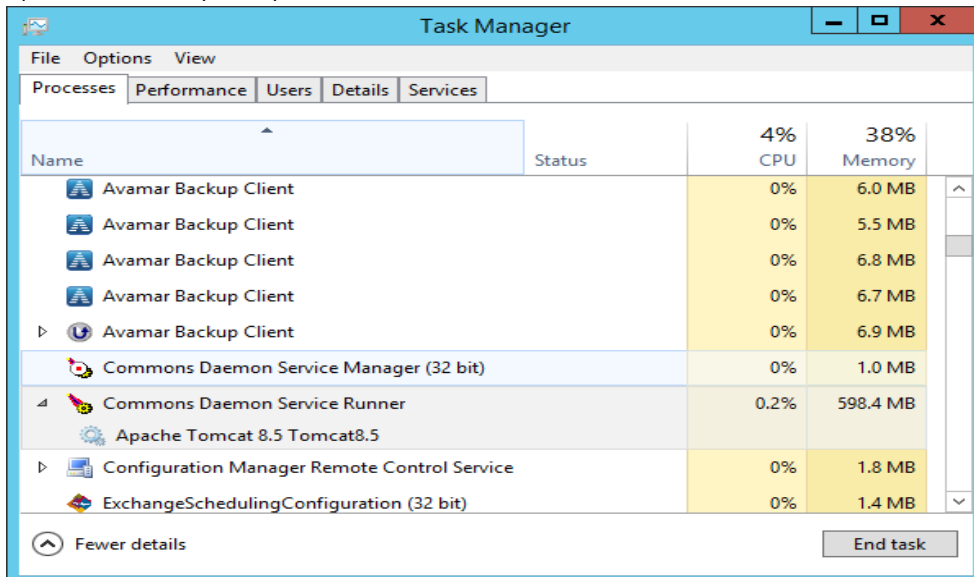

FIG. 25 Windows Task Manager - indicating that Apache Tomcat 8.5 is still running.

When the Tomcat 8.0 service is stopped, this item will disappear from the list.

6) Configure Tomcat v8.5

Right-click on the Tomcat v8.5 Taskbar icon and select **Configure** to open the *Apache Tomcat 8.5 Tomcat8 Properties* dialog:

1. In the *General* tab, change the **Startup Type** from *Manual* to **Automatic** (select *Automatic* from the drop-down menu (FIG. 26):
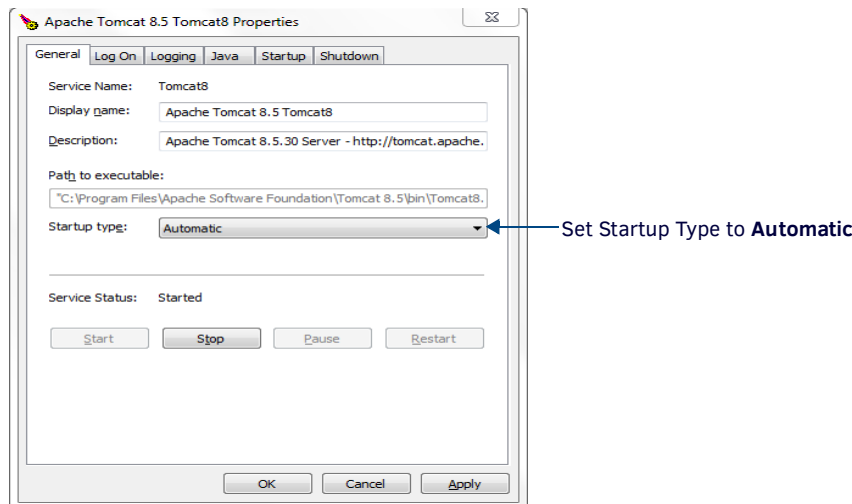
Set Startup Type to Automatic

FIG. 26 Apache Tomcat 8.0 Tomcat8 Properties dialog - General tab

2. In the *Java* tab, click inside the **Java Options** text box (FIG. 27), and scroll down to the last line.
    After the last line of code, enter the following line of code:
    -XX:MaxMetaspaceSize=200M

Recommended setting for *MaxMetaspaceSize* = 200M

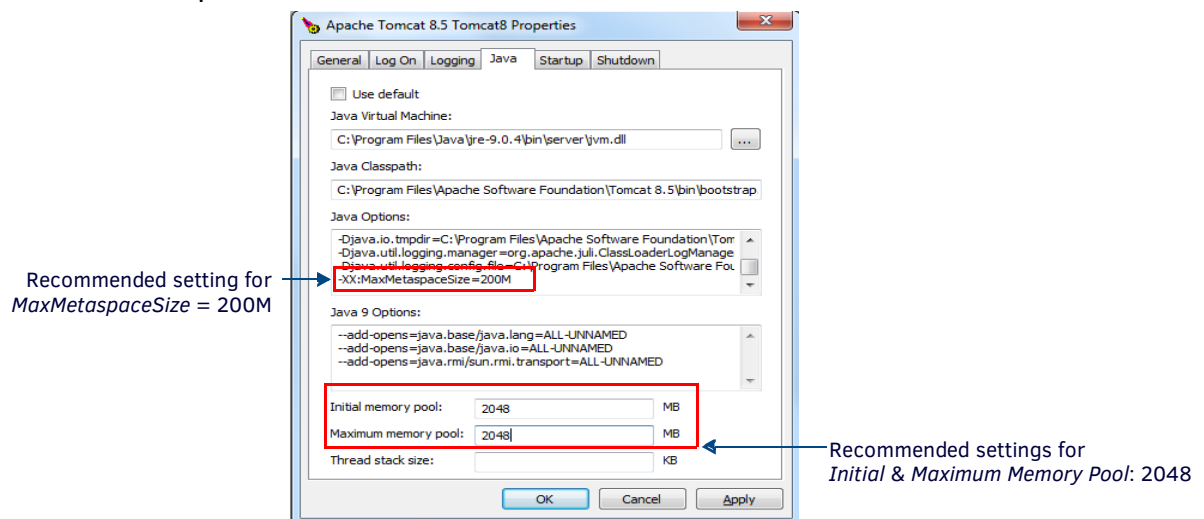Recommended settings for *Initial & Maximum Memory Pool*: 2048

FIG. 27 Apache Tomcat 8.5 Properties dialog - Java tab (editing Java Options)

3. Enter values in the **Initial Memory Pool** and **Maximum Memory Pool** fields.
    - In most cases, the *Initial Memory Pool* and *Maximum Memory Pool* values should be equal.
    - The recommended value for *Initial Memory Pool* and *Maximum Memory Pool* is **2048**MB (2GB).
    - The ideal values for these settings will depend on the number of clients connected to your RMS server. As a rule of thumb, consider allocating half of the server's available memory to Tomcat for use with RMS.

4. Click **OK** to save your changes.

5. At this point, test the settings by starting the Tomcat service before proceeding: Select **Start service** from the Tomcat context menu (FIG. 22):
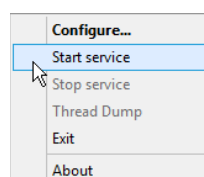
FIG. 28 Apache Tomcat context menu - Start service

NOTE: *If Tomcat fails to start, please refer to the Appendix B: Advanced Tomcat Configuration section on page 89 to troubleshoot the Java memory allocation settings.*

Once Tomcat starts successfully, the service can be stopped in order to complete the next step, upgrading the RMS server (select Stop Service from the Tomcat context menu (FIG. 29):
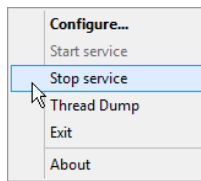
FIG. 29 Apache Tomcat context menu - Stop service

7) Upgrade the RMS Server

At this point, the system is ready to install RMS v4.6.13

NOTE: *The AMX RMS Enterprise Installer application is available for AMX dealers to download from www.amx.com/rms/.*

For instructions on installing RMS Server, refer to the *AMX RMS Server Installer* section on page 35.

1. When upgrading from a previous version 4.x of RMS Enterprise, the program will indicate that a previous version has been detected (FIG. 30):
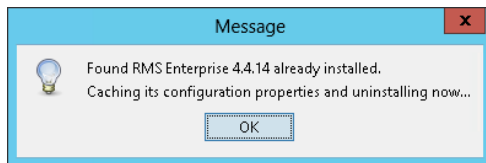
FIG. 30 Found RMS Enterprise 4.x already installed

2. Click **OK** to proceed with the upgrade installation. Installation progress is indicated in the *AMX RMS Server Installer* dialog (FIG. 31):
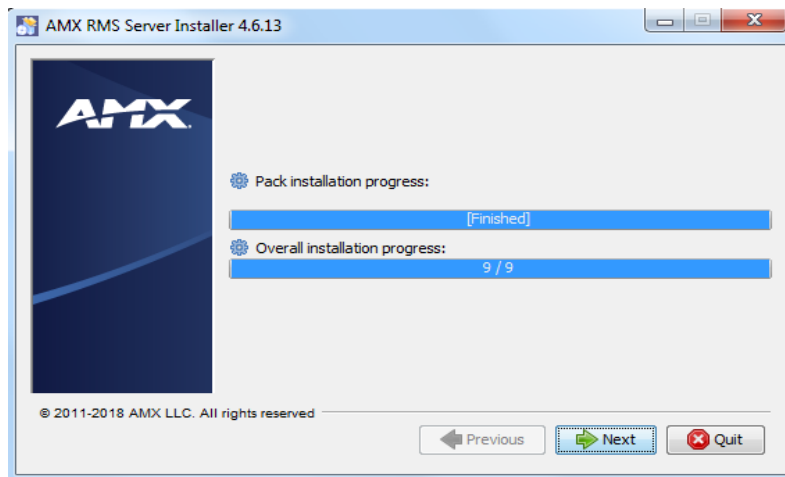
FIG. 31 AMX RMS Server Installer dialog

3. When the RMS Server installation is complete, click **Next** in the *AMX RMS Server Installer - Installation Complete* dialog to launch the RMS Configuration tool
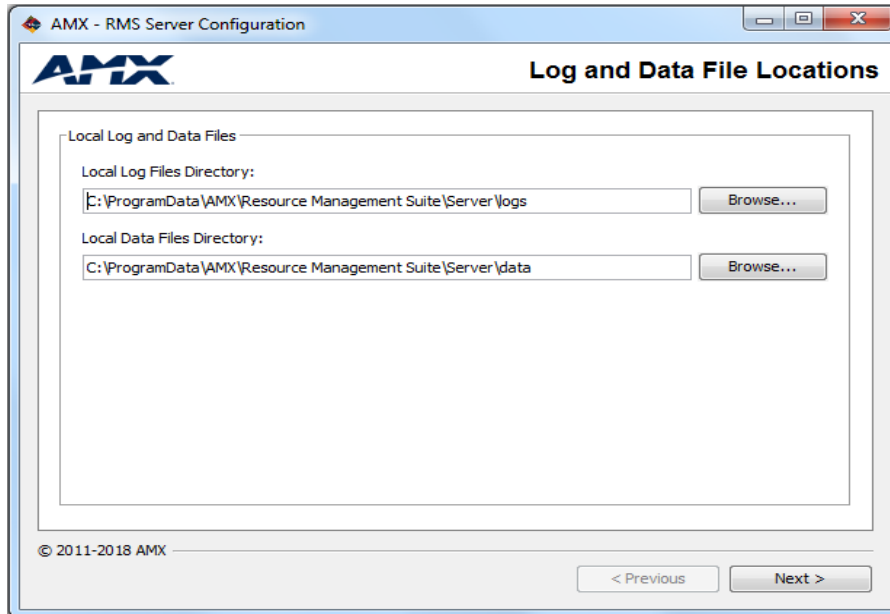
FIG. 32 RMS Server Configuration tool

Note that the configuration options from the previous version of RMS are indicated in the RMS Configuration tool. Click **Next** in each dialog to review these settings. For details on RMS Server Configuration options, refer to the *RMS Server Configuration* section on page 38.

4. In the *Configuration Complete* dialog (FIG. 33), click **Finish** to close the RMS Server Configuration tool.
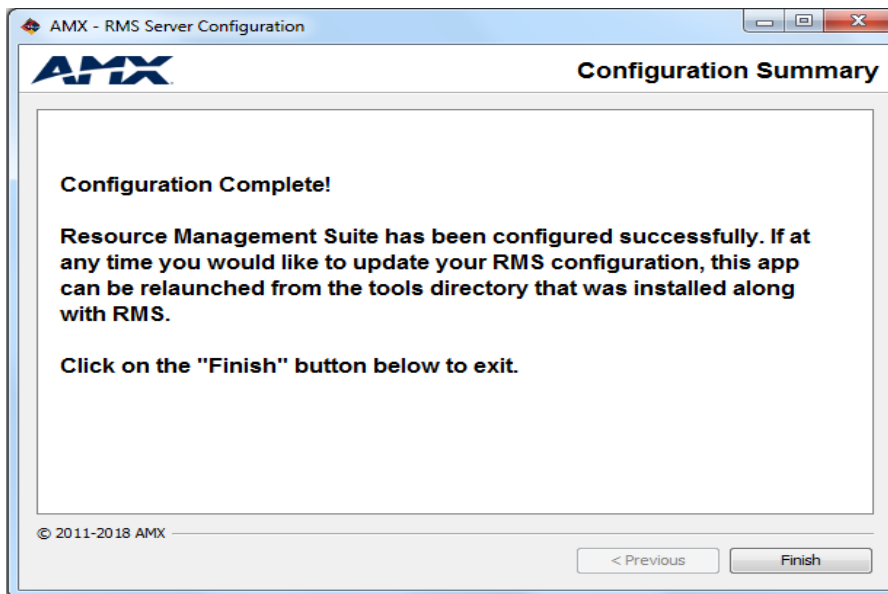

FIG. 33 RMS Server Configuration tool - Configuration Complete

5. When the RMS Server v4.6 installation and configuration is complete, the program will indicate that the RMS Database is out of data, and needs to be upgraded in order to work with RMS v4.6 (FIG. 34):
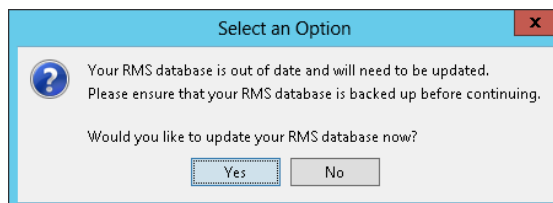

FIG. 34 System prompt - RMS Database is Out of Date

6. Select **Yes** to proceed. The progress of the Database upgrade process is indicated in the *Updating RMS Database* dialog (FIG. 35):
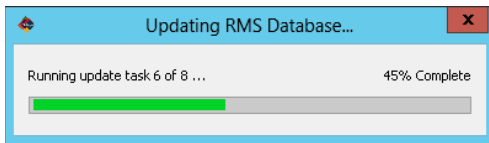
FIG. 35 Updating RMS Database

8) Uninstall Tomcat v7/8

To finalize the installation, it is necessary to remove Tomcat v7 or v8, via Windows Control Panel (select **Apache Tomcat v7/v8** and click *Uninstall*):

1. In the *Apache Tomcat Uninstall* dialog, verify that **Tomcat 7.0** is selected, and click **Uninstall** (FIG. 36):
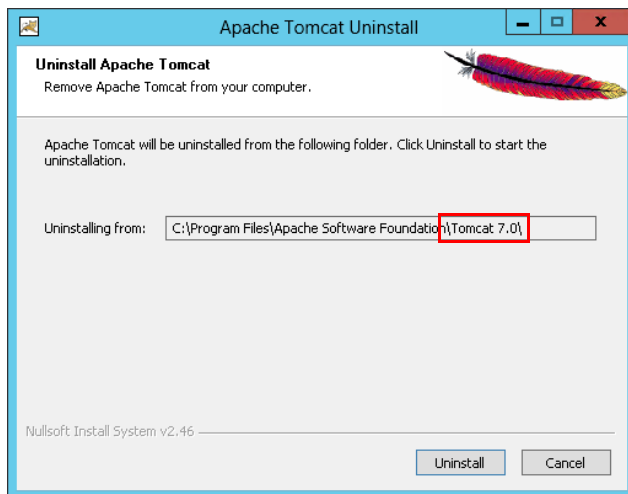
FIG. 36 Apache Tomcat Uninstall dialog (Tomcat v7.0)

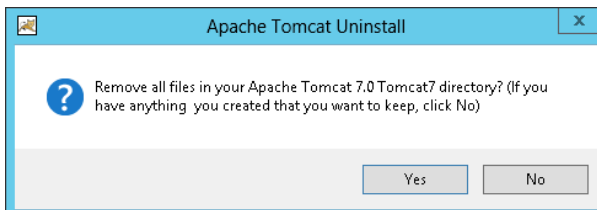2. The system will prompt you to remove all files in the Apache Tomcat 7.0 Tomcat7 directory (FIG.

FIG. 37 Apache Tomcat Uninstall prompt - Remove All Files from Tomcat 7 directory?

3. When upgrading from a previous version of RMS, the correct selection is "No":
   - If you have modified data in either the **Server.XML** or the **Web.XML** files, then select **No** to preserve the data.
   - If you select **Yes**, all custom data will be overwritten.

4. ## Start the Tomcat v8.5 Service

At this point, the Tomcat v8.5 service is stopped. To use RMS, it must be restarted:

1. Right-click on the Tomcat icon in the Windows task bar, and select **Start Service** from the context menu (FIG. 38).
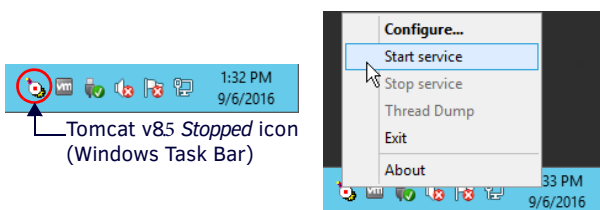
Tomcat v8.5 *Stopped* icon
(Windows Task Bar)

FIG. 38 Tomcat Task Bar icon (Tomcat service stopped) and context menu - starting the Tomcat v8.5 service

2. Note that once Tomcat is started, the Tomcat v8 Task Bar icon changes to indicate that the service is running (FIG. 39):
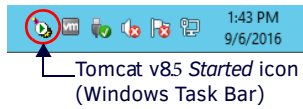
Tomcat v8.5 *Started* icon
(Windows Task Bar)

FIG. 39 Apache Tomcat Task Bar icon (Tomcat v8.5 service running)

10) Open the RMS Enterprise UI via Web Browser

To open the main RMS Enterprise UI, enter the following URL in your browser's address bar (see *Supported Web Browsers* on page 12):

http://rmsServerURL/rms/#/

or

http://rmsServerURL:8080/rms/#/

(depending on how Tomcat is configured - refer to the *Configuring Apache Tomcat* section on page 24 for details).

Duplicate Control Methods

When upgrading RMS from v4.x to v4.6.13, there are several Control Methods (specific to DVX and Touch Panel assets) that may be duplicated as a result of the v4.6 SDK upgrade.

If duplicate Control Method entries are found (in the *Asset Management* page - Control Methods tab), they should be removed as described in the *RMS Enterprise v4.6 (or higher) System Administrators Manual*.

Refer to "Working With Control Methods" in the "Management - Assets (Classic UI) section" of the *RMS Enterprise v4.6 (or higher) System Administrators Manual*.

AMX RMS Server Installer

Overview

The AMX RMS Enterprise Installer application is available for AMX dealers to download from www.amx.com/rms/.

NOTE: *Tomcat must be stopped during the process of installing RMS Enterprise. If Tomcat is running, stop the service before continuing with the RMS Enterprise installation.*

1. Download the RMS Enterprise installation file (i.e. **ResourceManagementSuite.exe**) from www.amx.com/rms/.
2. On the server that will run RMS, double-click the file to launch the *AMX RMS Server Installer.* The initial dialog is the **Welcome** dialog (FIG. 40):
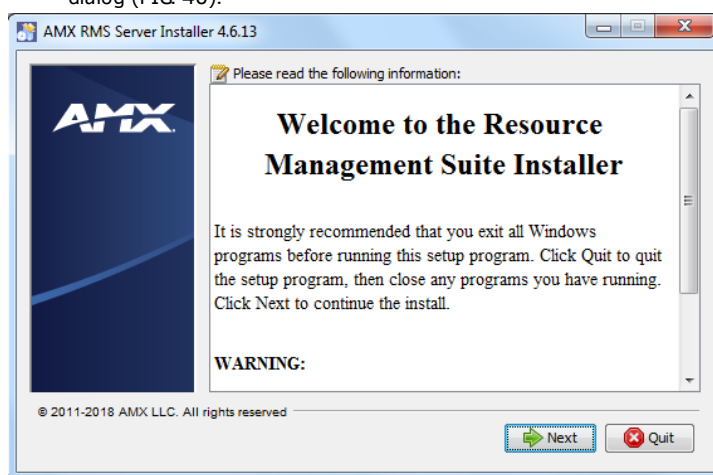

FIG. 40 AMX RMS Server Installer - Welcome dialog

3. Review the notes and copyright information, and click **Next** to proceed to the *License Agreement* dialog (FIG. 41):
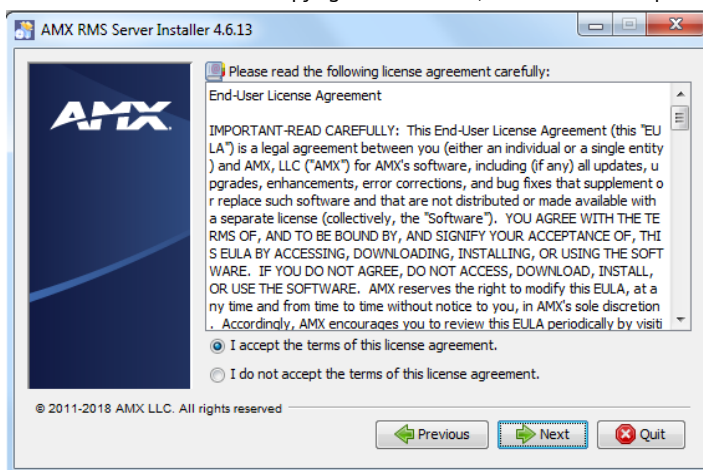

FIG. 41 AMX RMS Server Installer - License Agreement dialog

4. Read the license agreement, and select **I accept the terms of this license agreement**.
5. Click **Next** to proceed to the next dialog, where you can specify installation directories for both the RMS and Tomcat installations (FIG. 42). Enter specific file path information for each if necessary (click the *Browse* buttons to navigate to the desired directories in the *Choose Your Directory* dialog). However, in most cases, the default directory settings can be used.
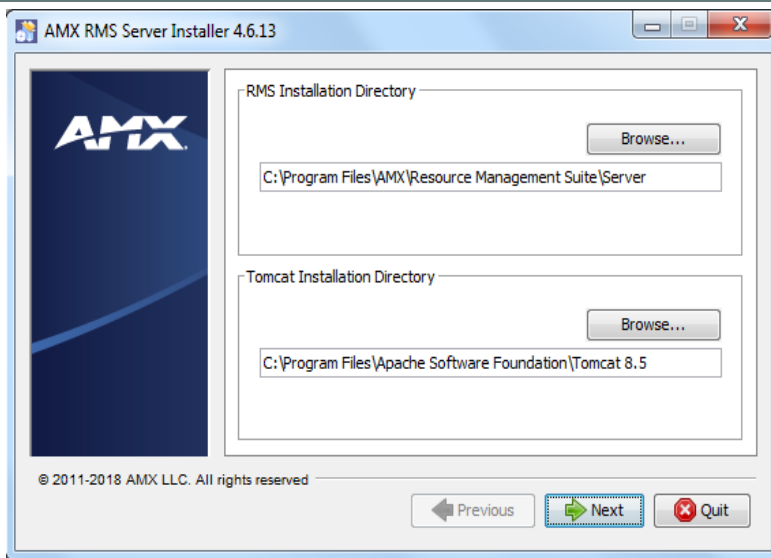
FIG. 42 AMX RMS Server Installer - Installation Directories

NOTE: *The Tomcat installation procedure is described in the previous section. At this point, Tomcat should have already been installed. The Tomcat Installation Directory path should only be changed if Tomcat was installed to a directory other than the default, as described in the Installing Apache Tomcat v8.5 section on page 21.*

6. Click **Next** to proceed. This action initiates the installation, as indicated in the *Installation Progress* dialog (FIG. 43):
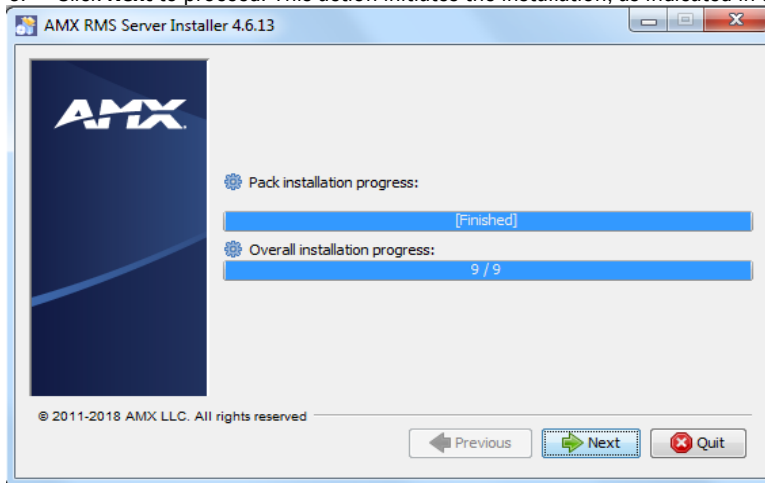

FIG. 43 AMX RMS Server Installer - Installation Progress

7. When the installation is complete, the *Next* button is enabled. Click **Next** to proceed to the *Setup Shortcuts* dialog (FIG. 44). This dialog allows you to specify where to install RMS program shortcuts:
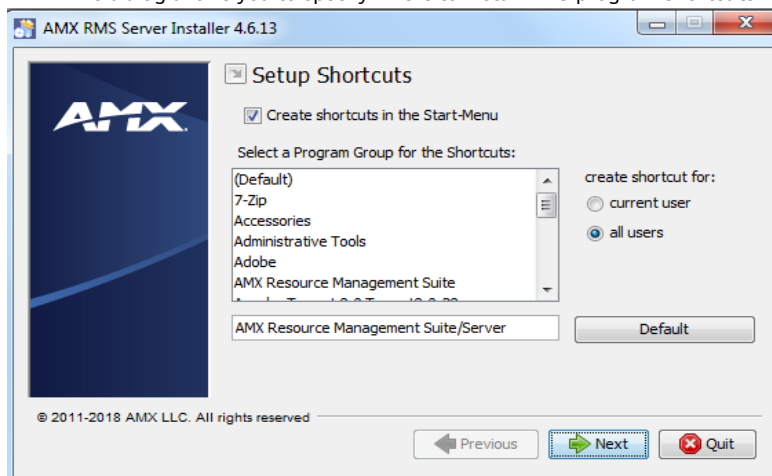

FIG. 44 AMX RMS Server Installer - Setup Shortcuts

- By default, the **Create shortcuts in the Start-Menu** option is selected. De-select this option to prevent shortcuts from being added to the Start menu.

- By default, shortcuts are created for **all users** that access this server (as indicated under *create shortcut for:*). Select **current user** to limit shortcut creation to the current user's UI only.
- By default, shortcuts are created in the **AMX Resource Management Suite/Server** directory. To change the target directory for shortcuts, enter a different file path in the text field provided. Click the **Default** button to reset the path to the default.

Click **Next** to proceed.

8. Once the *Installation Progress* dialog indicates *Finished*, click **Next** to proceed to the *Installation Complete* dialog (FIG. 45):
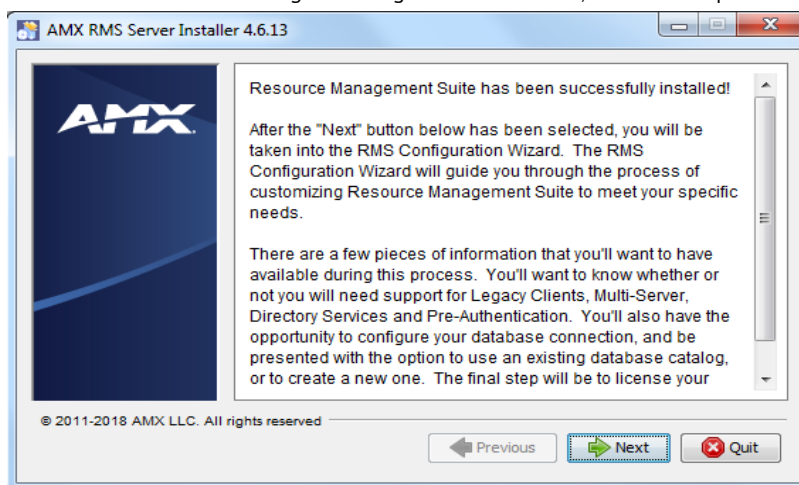

FIG. 45 AMX RMS Server Installer - Installation Complete

As indicated in this dialog, RMS Server has been successfully installed at this point.

9. Click **Next** to launch the *RMS Server Configuration* tool (described in the next section - see page 38).

The *Installation Complete* dialog (FIG. 45) also provides the option to **Quit**, in which case the RMS Server Installer will close. Note that at this point, the RMS Server has been *installed*, but not *configured*.

The *RMS Configuration Wizard* must be completed before RMS Enterprise can be used, therefore the installation process is not yet complete.

- It is highly recommended to click **Next** and continue to the *RMS Configuration Wizard* to complete the installation process. However, if it is necessary for any reason to stop at this point, Tomcat can be restarted if desired.
- Remember that Tomcat must be stopped again before running the RMS Configuration Wizard.

RMS Server Configuration

Overview

After installing the RMS Server application (see the *AMX RMS Server Installer* section on page 35) you must complete the *RMS Server Configuration* tool to register and enable your server.

The *RMS Server Configuration* tool also provides an opportunity to configure your database connection, and whether to use an existing database catalog or create a new one.

There are a few pieces of information that you'll want to have available during this process. Specifically, whether or not you will need support for:

- Legacy Clients
- Multi-Server
- Directory Services
- Pre-Authentication

1. Launch the *RMS Server Configuration* tool:
   - The *RMS Server Configuration* tool described in this section is how the Server Configuration dialogs are presented when accessed via the **Next** button in the final dialog of the AMX RMS Server Installer (see FIG. 45 on page 37).
   - You can also access the *RMS Server Configuration* options at any time to modify system settings or diagnose system related problems.

     To manually launch the *RMS Server Configuration* application, select:

     C:\Program Files\ AMX\Resource Management Suite\Server\RMS Configuration

     Note that when the application is launched manually, the options are presented as tabs rather than the serial dialogs presented in the Wizard.

2. The first dialog in the wizard is the *Log and Data Files Locations* dialog. The options in this dialog allow you to specify directories on the server for both Log Files and Data Files (FIG. 46).
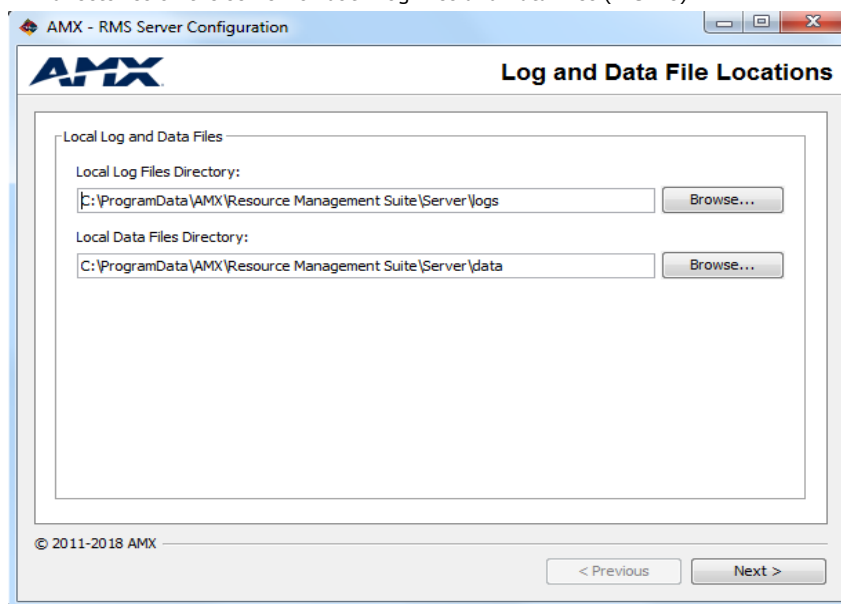

FIG. 46 RMS Server Configuration tool - Log and Data Files Locations dialog

Note that these options are presented in the *File Location* tab (if the *RMS Server Configuration* application was launched manually).

3. Enter specific file path information for each file type if necessary (click the *Browse* buttons to navigate to the desired directories in the *Choose Your Directory* dialog). However, in most cases, the default directory settings should be used.

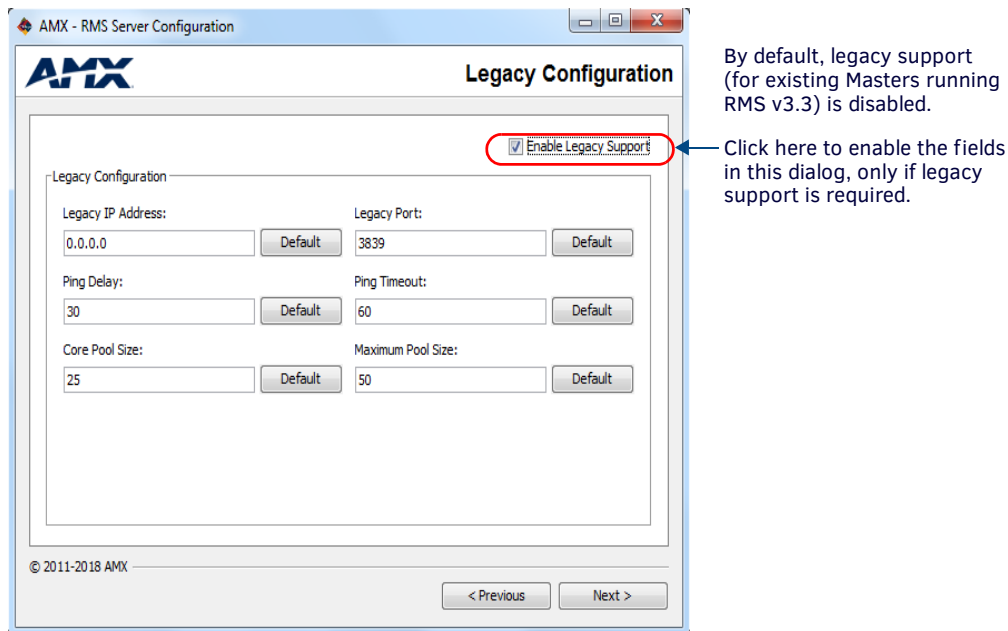4. Click **Next** to proceed to the *Legacy Configuration* dialog (FIG. 47).

By default, legacy support
(for existing Masters running
RMS v3.3) is disabled.

Click here to enable the fields
in this dialog, only if legacy
support is required.

FIG. 47 RMS Server Configuration tool - Legacy Configuration dialog

NOTE: *Throughout the dialogs in the RMS Server Configuration tool, any required fields that are not filled in are indicated with red shading.*

- *Legacy Configuration* refers to the process of configuring existing NetLinx Masters running **RMS v3.3** code for use with RMS Enterprise servers.
- Note that by default, Legacy Support is disabled (as indicated by the un-checked *Enable Legacy Support* option in the upper-right corner of the dialog). The options in this dialog are only available if the *Enable Legacy Support* option is selected (as shown above).
- If you are not planning to use NetLinx Masters running RMS v3.3 code with RMS Enterprise servers, leave this option de-selected, and click **Next** to proceed.
- If you are migrating to RMS Enterprise from a previous version of the RMS SDK, either fill in these fields, or accept the default values:

Legacy Configuration Options	
• Legacy IP Address	This field identifies the IP address of the RMS Enterprise server. *Note: This value should only be changed if there are multiple NIC cards in the RMS Enterprise Server (as in a multi-server installation).* Default = **0.0.0.0**
• Legacy Port	This field identifies the IP port on which the Legacy (v3.3) RMS server accepts connections from legacy NetLinx masters. Default = **3839** (this is an IANA registered port for Legacy (v3.3) RMS communications).
• Ping Delay	The Ping Delay setting is used to ensure that NetLinx clients are connected to the RMS server. On this configured time interval, the RMS server broadcasts request messages to the NetLinx clients. If the NetLinx clients do not respond within a specified amount of time, the RMS server assumes the connection has been lost and the NetLinx system is offline. Default = **30** (seconds)
• Ping Timeout	This value sets the maximum amount of time that the RMS server allows between NetLinx client ping responses. If the NetLinx client does not return a ping response within this amount of time, the RMS server assumes the connection has been lost and the NetLinx system is offline. Default = **60** (seconds)
• Core Pool Size	This value specifies the minimum number of threads allocated by the RMS Enterprise Server to talk to Legacy (v3.x) RMS Servers. Default = **25**
• Maximum Pool Size	This value specifies the maximum number of threads allocated by the RMS Enterprise Server to talk to Legacy (v3.x) RMS Servers. Default = **50**

Note that these options are presented in the *Legacy* tab (if the *RMS Server Configuration* application was launched manually).

5. Click **Next** to proceed to the *Multi-Server Configuration* dialog.

The options in this dialog allow you to configure RMS systems that use multiple servers (FIG. 48).
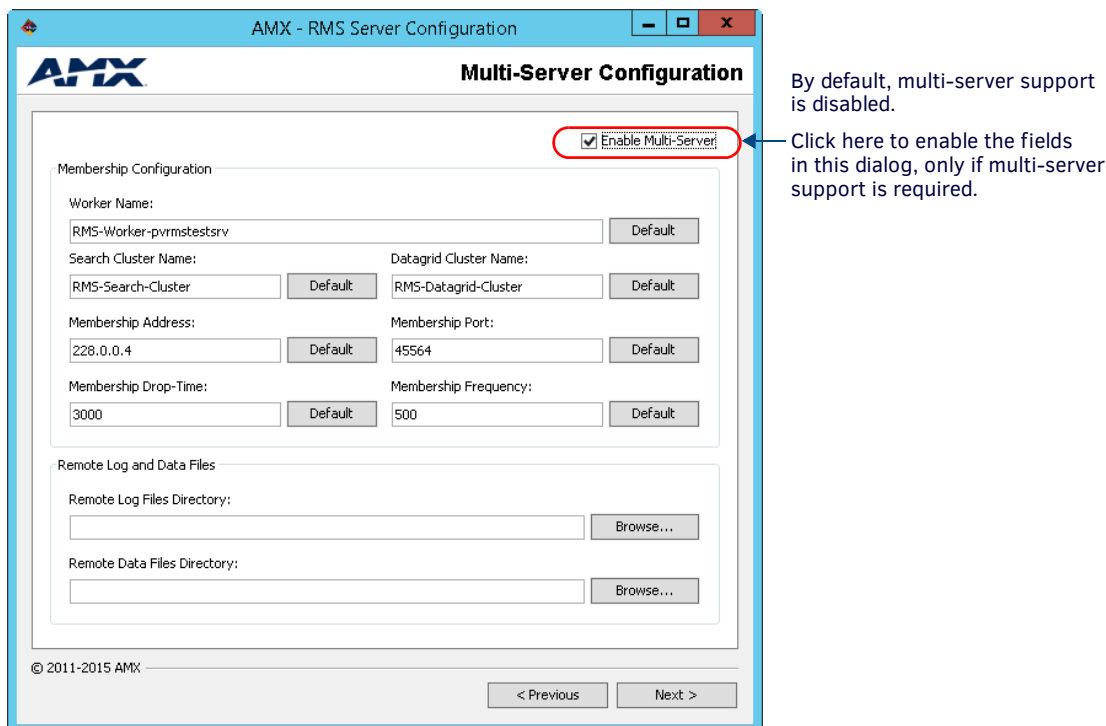
FIG. 48 RMS Server Configuration tool - Multi-Server Configuration dialog

NOTE: *For multi-server installations, each server must be configured individually via this portion of the wizard.*

- Note that Multi-Server Support is disabled by default. The options in this dialog are only available if the *Enable Multi-Server* option is selected. If you are not installing RMS in a multi-server environment, leave this option de-selected, and click **Next** to proceed.
- If you are installing RMS in a multi-server environment, either fill in these fields, or accept the default values:

Multi-Server Configuration Options	
Membership Configuration	
• Worker Name	Enter the host name or IP Address of this server as it exists in the load balancing server's Worker List. The Worker Name must be unique and must match the name that identifies this server on the Load Balancing Server.
• Search Cluster Name	Enter the name of the Search Cluster to which this server will be added. The Search Cluster Name must be identical for all servers in the multi-server farm.
• Datagrid Cluster Name	Enter the name of the Datagrid Cluster in which this server will participate. The Datagrid Cluster Name must be identical for all servers in the multi-server farm.
	Note: Search Cluster Name and Datagrid Cluster Name only need to be changed from their default values in cases where two distinct RMS multi-server farms are being installed.
• Membership Address	Enter the multicast address on which the servers will broadcast their presence and listen for other membership broadcasts. *Note: Verify that your network is enabled for multicast traffic.* The multicast address, in conjunction with the port is what creates a cluster group. To divide up your farm into several different groups, change the port or the address. Default = **228.0.0.4**
• Membership Port	Enter the multicast port address. The multicast port, in conjunction with the address is what creates a cluster group. To divide up your farm into several different groups, change the port or the address. Default = **45564**
• Membership Drop-Time	The membership component will time out members and notify the Channel if a member fails to send a membership broadcast within the time-frame specified here. If a membership broadcast is not received from a member in the specified time-frame, the cluster will be notified. *Note: On a high latency network you may wish to increase this value, to protect against false negatives (premature drops).* Default = **3000 (ms)**
• Membership Frequency	Enter the frequency in milliseconds in which membership broadcasts are sent out. Changing this value simply changes the interval in between membership broadcasts. Default = **500 (ms)**

Multi-Server Configuration Options (Cont.)	
Remote Log and Data Files	
• Remote Log Files Directory	Remote Log Files represent a compilation of log files for all servers in the RMS installation. *Note: Log file names are prepended with the Worker Name to distinguish them from each other.* Enter specific path information for the target directory to be used for Remote Log Files (click the Browse buttons to navigate to the desired directory in the *Choose Your Directory* dialog). • The remote log file path should be a common shared network path that is accessible by all RMS servers. • This same directory path should be configured the same on each RMS server participating in the RMS web server farm.
• Remote Data Files Directory	All servers in the RMS installation utilize the same search index. Remote Data Files represent a compilation of data files for all servers in the RMS installation. Enter specific path information for the target directory to be used for Remote Data Files (click the Browse buttons to navigate to the desired directory in the *Choose Your Directory* dialog). • The remote data file path should be a common shared network path that is accessible by all RMS servers. • This same directory path should be configured identically on each RMS server participating in the RMS web server farm. *Note: If the search index is lost (due to hardware failure or file corruption), it can be rebuilt via the Rebuild Search Index option in the RMS Enterprise UI.*

Note that these options are presented in the *Multi-Server* tab (if the *RMS Server Configuration* application was launched manually). Refer to *Appendix C: Clustered Deployment* on page 93 for more information.

NOTE: *It is strongly recommended that the Windows firewall be disabled on all servers in a multi-server installation, to avoid having communications required by RMS being blocked.*

6. Click **Next** to proceed to the *Directory Services Configuration* dialog. The options in this dialog allow you to configure RMS to use directory services (*LDAP* or *Windows Active Directory*) for authentication and user management (FIG. 49):
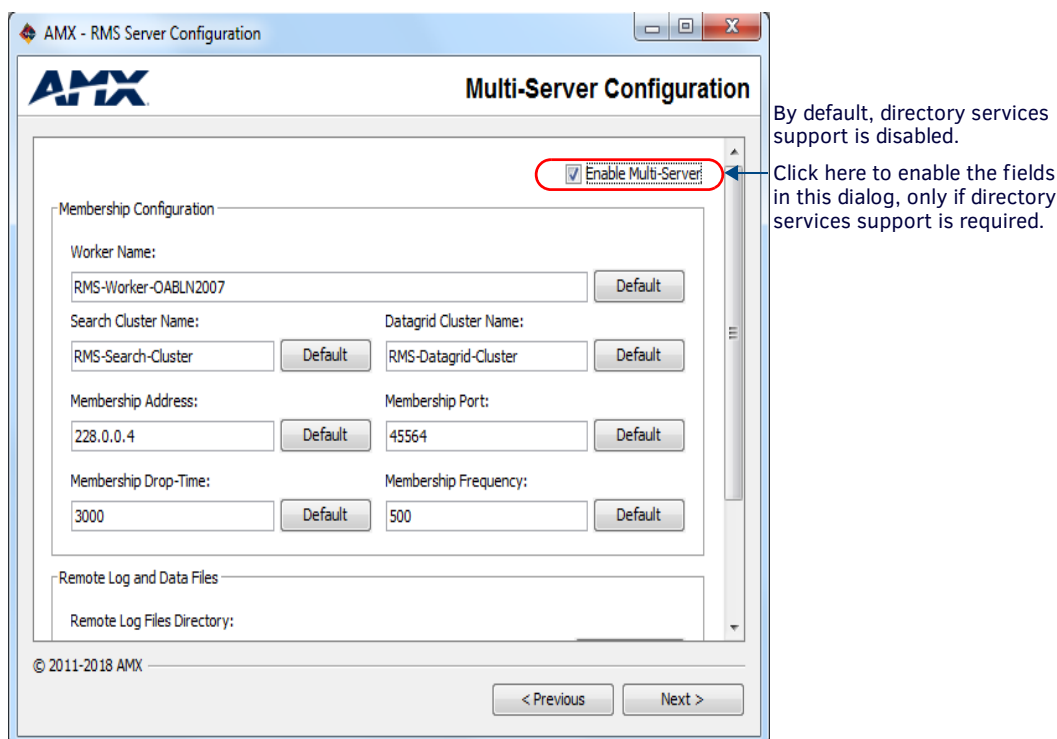

FIG. 49 RMS Server Configuration tool - Directory Services Configuration dialog

NOTE: *The Directory Services supported by RMS Enterprise are "LDAP" and "Windows Active Directory".*

Note that by default, Directory Services Support is disabled (as indicated by the un-checked *Enable Directory Services* option in the upper-right corner of the dialog). The options in this dialog are only available if the *Enable Directory Services* option is selected (as shown above).

● If you are not installing RMS in a directory-enabled environment, leave this option de-selected, and click **Next** to proceed.
● If you are installing RMS in a directory-enabled environment, either fill in these fields, or accept the default values:

Directory Services Configuration Options	
Directory Connection	
• Bind DN	Enter the Distinguished Name (DN) of the Active Directory user account that RMS will use for connecting to the Active Directory server and searching for / reading directory information. This field is required and cannot be left blank.
• Bind DN Password	Enter the password corresponding to the Bind DN in this field. After being input, it will be encrypted.
• URL	Enter the URL of the of the Directory Services server in this field.
Directory Configuration	
• Base	Enter the base DN used to search for users.
• Group Base	Enter the base DN used to search for groups.
• User Attribute Name	Enter the name of the attribute on the Directory Services server that specifies the names of group members for a group entry.
• Group Attribute Name	Enter the name of the attribute on the Directory Services server that specifies the group name for a group entry.
Missing User Cleanup Thresholds	
RMS provides an automatic User Cleanup process that periodically compares User records in the RMS database to User records in the Directory Services server database. This is to avoid situations where a User is removed from the Directory Services server database, but still exists in the RMS database. Prior to any accounts being removed as a result of this comparison, a basic check is performed to ensure the count of users to remove is below a fixed total and percentage of existing users. If the number of users scheduled for removal exceeds either of these values, no accounts will be removed. This is simply to prevent the accidental removal of RMS user account in specific cases. Missing User Cleanup thresholds are controlled by these two entries: • **Max Number Users** - If during account verification the total number of user accounts to be eliminated exceeds this value, no accounts will be removed from RMS. • **Max Percent Users** - The value assigned here is defined as a percentage of total RMS accounts. If the number of accounts to be purged exceeds this percentage, no accounts will be removed from RMS. *Note: In most cases, these numbers can be set at high thresholds, which effectively disables this function.*	

Note that these options are presented in the *Directory Services* tab (if the *RMS Server Configuration* application was launched manually).

NOTE: *Refer to the RMS Enterprise System Administrator's Guide (Appendix: Using Directory Services) for details on the RMS Enterprise support of service directories.*

7. Click **Next** to proceed to the *Pre-Authentication Configuration* dialog. Pre-authentication allows Users that have already successfully logged in to the network to access RMS without having to provide additional login credentials specifically for RMS. The options in this dialog allow you to select between *Windows* or *SiteMinder* as the Pre-Authentication Filter type (FIG. 50).
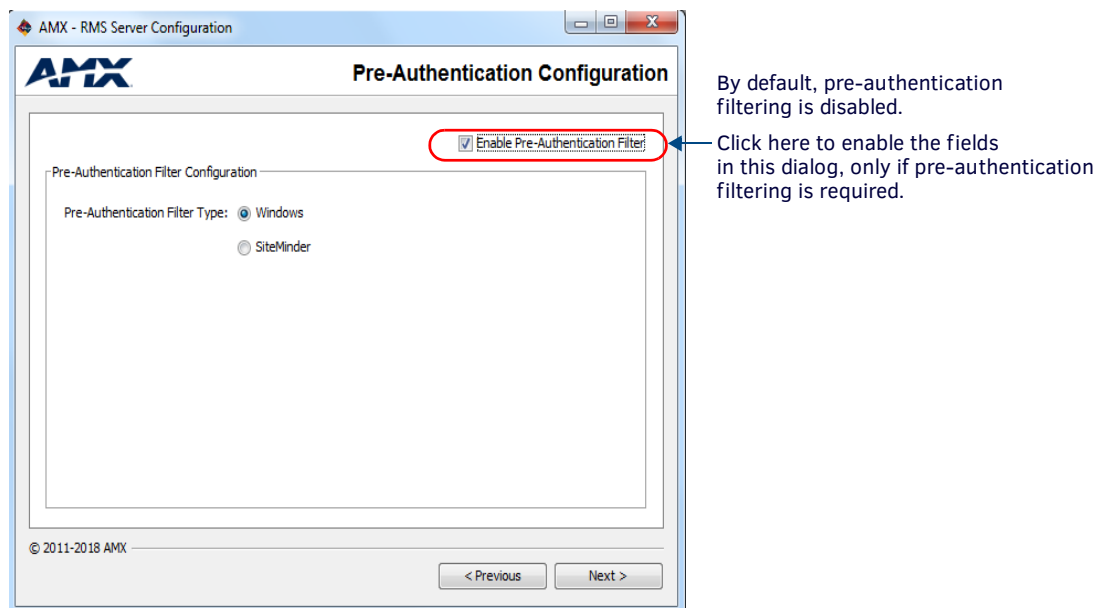

By default, pre-authentication filtering is disabled.

Click here to enable the fields in this dialog, only if pre-authentication filtering is required.

FIG. 50 RMS Server Configuration tool - Pre-Authentication Configuration dialog

● These options are presented in the *Pre-Authentication* tab (if the *RMS Server Configuration* application was launched manually).
● **Windows** is selected by default.

NOTE: *The Pre-Authentication information entered here allows end-users to access the RMS user-interface, and is separate from Database Authentication requirements (defined in the Database Configuration dialog (see below).*

8.   Click **Next** to proceed to the *Database Configuration* dialog. Use the options in this dialog to configure the RMS database or connect to an existing RMS database (FIG. 51):

FIG. 51 RMS Server Configuration tool - Database Configuration dialog

Database Configuration Options	
Database Setup	
Create New RMS Database	Select this option to create a new RMS Enterprise database.
	Note: This option should be used anytime you are installing a new RMS Enterprise system. This option will create a new RMS database catalog, install the RMS database schema, and populate the RMS default data records.
	If a new empty database catalog was created externally, then the database installer will skip the create catalog step and proceed with installing schema and data.
	• An empty database catalog means that no tables, views, or stored procedures exist in the catalog.
	• RMS will not install schema or default data to an existing catalog that is not empty.
	Note for Multi-Server Installations: The first server in a multi-server installation should use the Create New Database option. The remaining servers should use the Use Existing Database option, and utilize the same database as the first configured server.
Use Existing RMS Database	Select this option to use an existing RMS database.
	Note: This option should only be used when migrating data from an existing RMS 3.x (Legacy) database or when upgrading the RMS Enterprise server and you want to continue using an existing RMS Enterprise database.
	• If you will be specifying an existing RMS 3.x ("Legacy") database, the database must be migrated to become compatible with RMS Enterprise.
	• See the *Migrating a Legacy RMS Database To RMS Enterprise* section on page 46 for details.
	• See the Note above for multi-server installations.

Database Configuration Options (Cont.)	
Database Name	
SQL Server Host	Enter the SQL Server Host name or IP address required to connect to the server. Default = **localhost**
SQL Server Port	Enter the SQL Server port number required to connect to the server. Default = **1433**
SQL Server Instance	If applicable to your installation, enter the instance name of the SQL server used by RMS.
SQL Server Catalog	Enter the name of the SQL Server Catalog (Database) used by RMS.
Database Authentication	
Authentication Type	Select an Authentication Type: • **SQL Authentication** - this option requires that you specify a *username* and *password* in the text fields below. • Windows Authentication • **Windows Authentication with provided username and password** - this option requires that you specify a *username* and *password* as well as a *Windows Domain* name in the text fields below. *Note: In order for the RMS installer to create a new database catalog instance, the database user account will require the "CREATE DATABASE" permissions. Alternatively, if a new empty RMS database catalog is created by any means outside of the RMS installer and configuration tools, then this database user account will only require "DB_OWNER" permissions to the externally created, empty RMS catalog.*

Note that these options are presented in the *Database* tab (if the *RMS Server Configuration* application was launched manually).

a. If **Create New RMS Database** is selected (under *Database Setup*), click **Next** to proceed to the *RMS Admin and User Passwords* dialog. Use the options in this dialog to specify the password that will be applied to the RMS administrator account after your RMS database has been created (FIG. 52).
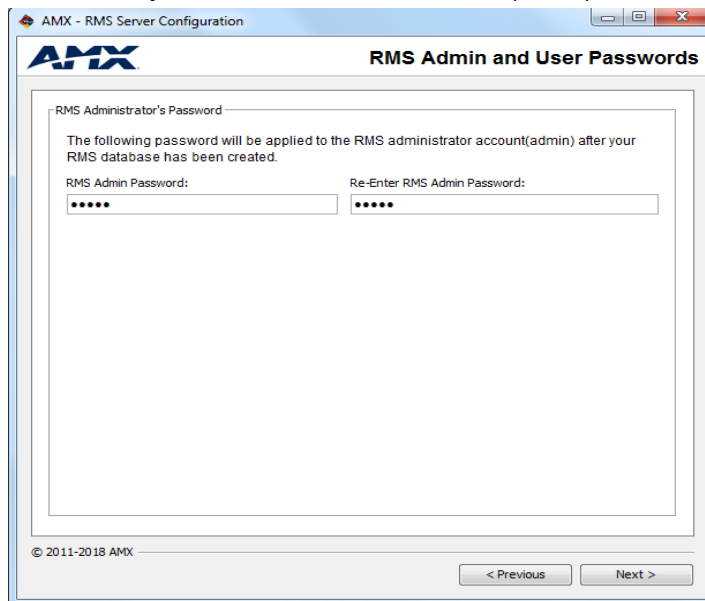
FIG. 52 RMS Server Configuration tool - RMS Admin and User Passwords dialog

Enter the password in both text fields and click **Next**. This launches the database updates procedure, as indicated in the *Database Updates* dialog (FIG. 53).
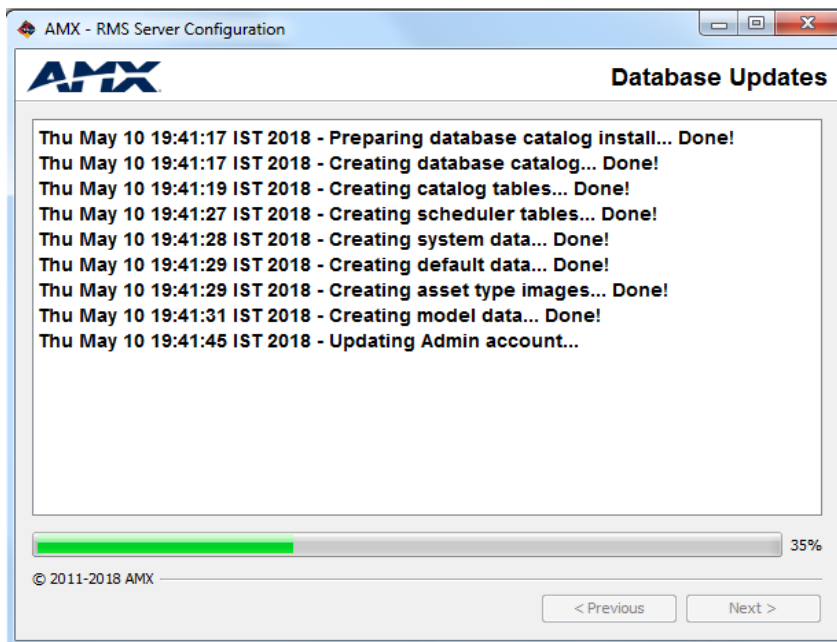
FIG. 53 RMS Server Configuration tool - Database Updates dialog

When this dialog indicates that the process is complete (as shown above), click **Next** to proceed:

b. If **Use Existing RMS Database** is selected (under *Database Setup*), and the existing database is an *RMS Enterprise* database, then click **Next** to proceed to the *License Configuration* dialog, described in **Step #9** (below).

c. If **Use Existing RMS Database** is selected (under *Database Setup*), and the existing database is a *Legacy (RMS v3.x or earlier)* database, then follow the instructions provided in the *Migrating a Legacy RMS Database To RMS Enterprise* section on page 46.

9. The options in the *License Configuration* dialog allow you to configure RMS Enterprise licenses (FIG. 54). To complete the configuration, a valid RMS Enterprise license must be provided at this point. Select **Configure RMS Licenses** to launch the *AMX License Manager* application. The *AMX License Manager* steps you through the process of licensing RMS (described in the next section - see page 50).
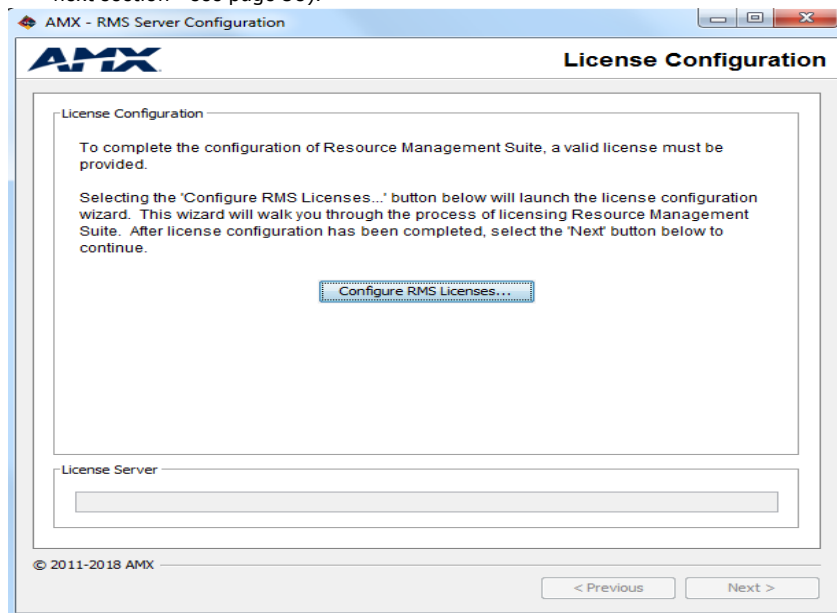
FIG. 54 RMS Server Configuration tool - License Configuration dialog

Note that these options are presented in the *Licensing* tab (if the *RMS Server Configuration* application was launched manually).

Migrating a Legacy RMS Database To RMS Enterprise

If you will be using an existing Legacy (RMS 3.x) database (as specified in the *Database Configuration* dialog in the RMS Server Configuration tool), the database must be migrated to become compatible with RMS Enterprise, as described below:

1. Launch the *RMS Server Configuration* application by selecting:

    C:\Program Files\ AMX\Resource Management Suite\Server\RMS Configuration

2. Click **Next** to proceed to the *Legacy Configuration* dialog (FIG. 55).

By default, legacy support (for existing Masters running RMS v3.3) is disabled.

Click here to enable the fields in this dialog, only if legacy support is required.
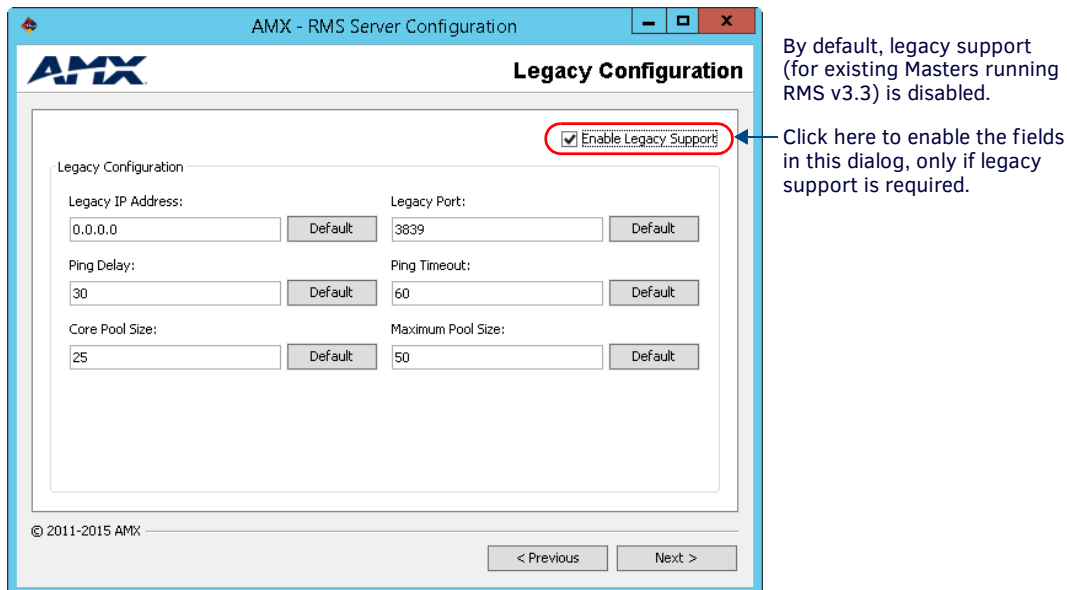
FIG. 55 RMS Server Configuration tool – Legacy Configuration dialog

3. Click **Next** to proceed to the *Database Configuration* dialog. Use the options in this dialog to configure the RMS database or connect to an existing RMS database (FIG. 56):
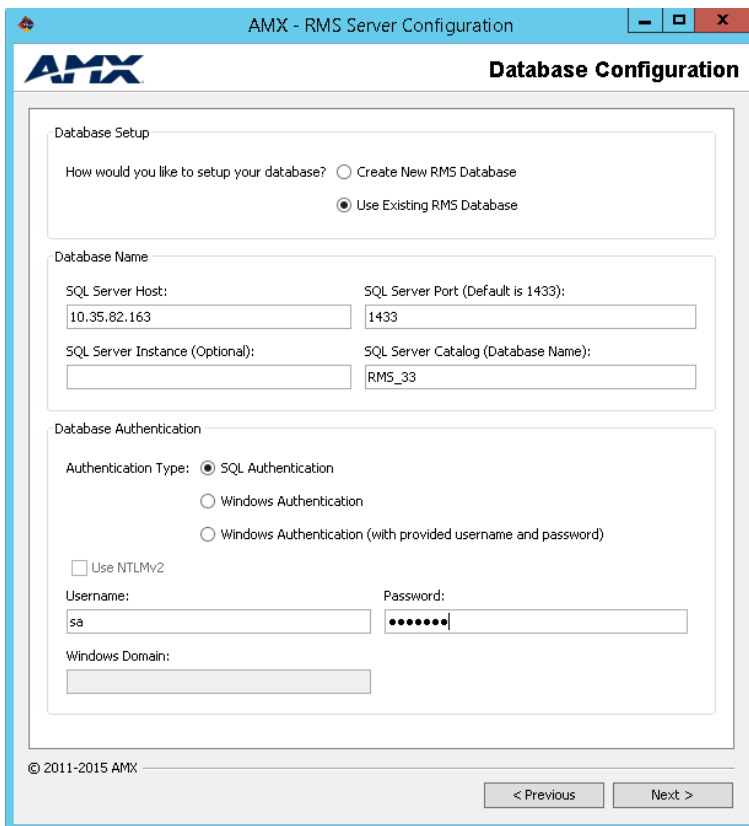
FIG. 56 RMS Server Configuration tool – Database Configuration dialog

4. Enter the IP Address or hostname of the Legacy Database Server in the **SQL Server Host** field.

5. Enter the v3.x database name in the **SQL Server Catalog** field.

6. Enter **Database Authentication** information as required by the specified server.

7. Click **Next** to proceed. At this point the application will prompt you to verify the action of migrating the data from the Legacy database (FIG. 57):
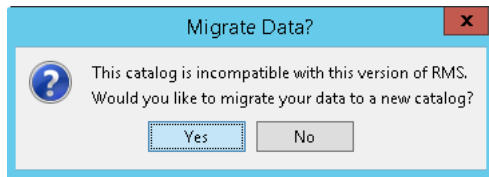
FIG. 57 Migrate Data prompt

8. Click **Yes** to proceed to the *Where would you like to create your new catalog?* dialog (FIG. 58):
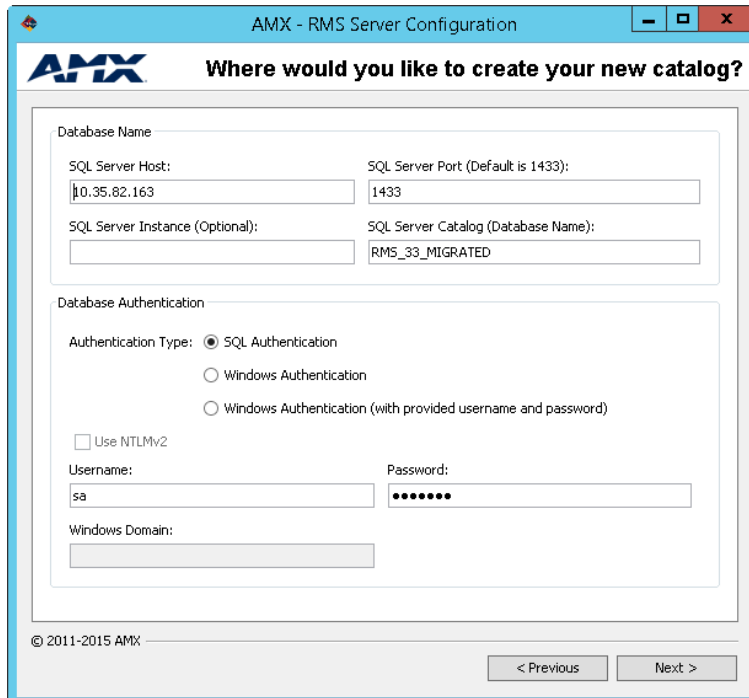
FIG. 58 RMS Server Configuration tool – Where would you like to create your new catalog? dialog

Note that by default, the new catalog is created on the same Server, with the same *SQL Server Catalog* name, with "*_MIGRATED*" appended to it (for example "RMS3_3" becomes "RMS3_3_MIGRATED").

9. Review this information and make any necessary changes, then click **Next** to proceed to the *RMS Admin and User Passwords* dialog (FIG. 59).
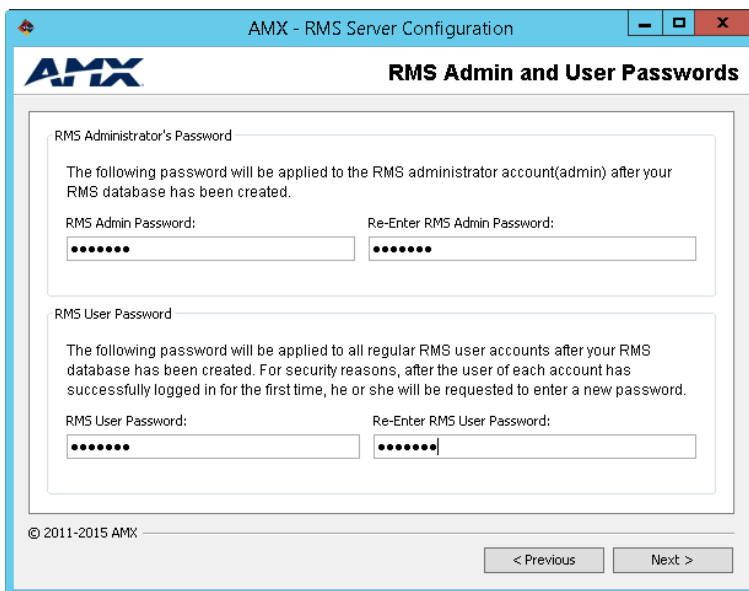
FIG. 59 RMS Server Configuration tool - RMS Admin and User Passwords dialog

    a. Under *RMS Administrator's Password*, enter an **RMS Admin Password**, and re-enter it in the next field. This password will be applied to the RMS administrator account after your RMS database has been created.

    b. Under *RMS User Password*, enter an **RMS Admin Password**, and re-enter it in the next field. This password will be applied to all regular RMS user accounts after your RMS database has been created. For security reasons, after the user of each account has successfully logged in for the first time, he or she will be requested to enter a new password.

10. Click **Next** to proceed to the *Database Updates* dialog, which indicates the progress of the migration procedure (FIG. 60):
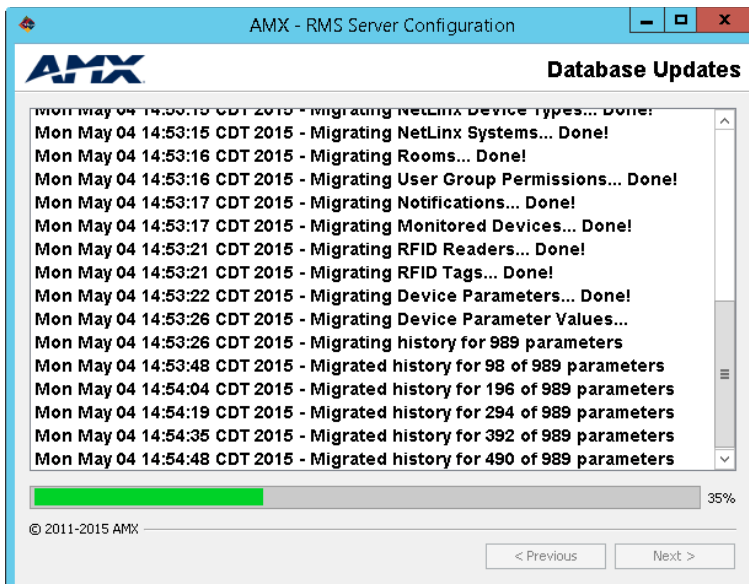
FIG. 60 RMS Server Configuration tool - Database Updates dialog

11. When the process is complete, click **Next** to proceed to the *License Configuration* dialog (see FIG. 54 on page 45). The options in the *License Configuration* dialog allow you to configure RMS Enterprise licenses.

12. Proceed to the next section - *AMX License Manager* on page 50.

13. Once the RMS Enterprise license has been successfully configured, the *Configuration Summary* dialog is presented (FIG. 61):
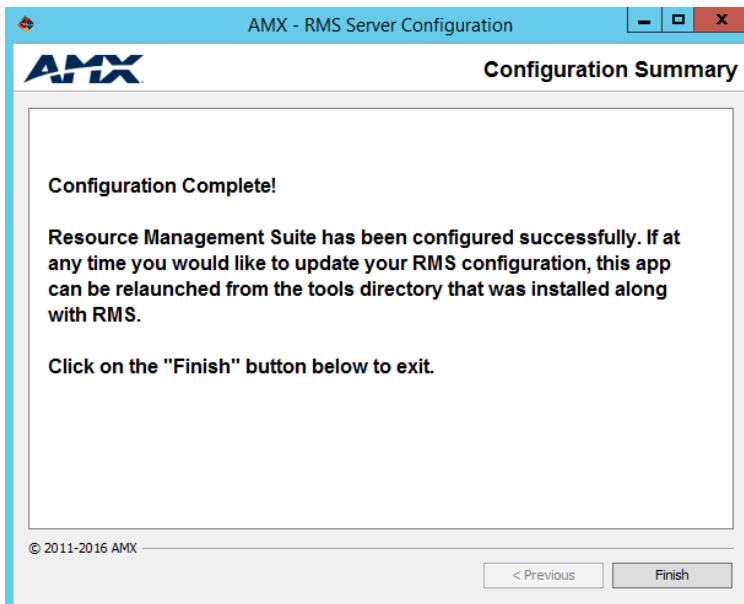
FIG. 61 RMS Server Configuration tool - Configuration Summary dialog

Click **Finish** to close the *AMX-RMS Server Configuration* dialog.

Editing RMS Server Configuration Settings

The RMS Configuration application can be opened at any time - select RMS Configuration from the programs list. This opens the RMS Configuration application as a multi-tabbed dialog (FIG. 62):
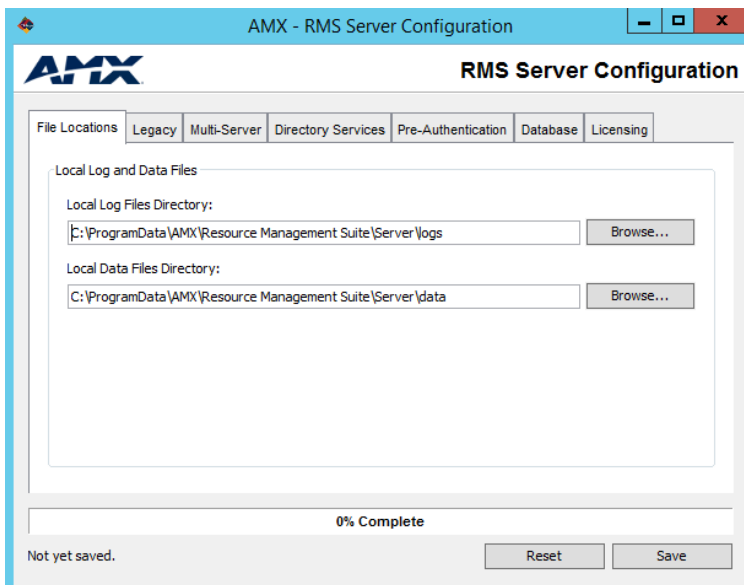
FIG. 62 RMS Server Configuration application (tabbed dialog)

Open any of the tabs to view/edit the information entered in the initial configuration wizard.

Accessing the RMS Enterprise Web UI

Once the installation is complete, the RMS Enterprise Web UI is accessed via web browser (see *Supported Web Browsers* on page 12).

To open the main RMS Enterprise Web UI, enter the following URL in your browser's address bar:

> **http://***servername***:8080/rms**

NOTE: *Port 8080 is the default port for Tomcat (see Installing Apache Tomcat v8.5 on page 21). However, when installing of Tomcat, this port can be assigned to another value if desired. The value assigned to Tomcat is the value that is used here in the URL.*

Refer to the *RMS Enterprise System Administrator's Guide* for details on using the RMS Enterprise Web UI.

AMX License Manager

Overview

The *AMX License Manager* application is used to install and manage software licenses for RMS Enterprise (as well as other AMX software applications). *AMX License Manager* handles two distinct aspects of the RMS Enterprise installation:

1. Installation of the *AMX License Server* application, which identifies existing licenses of AMX software products (including RMS Enterprise) present on the server. See *Installing the AMX License Server Application* below for details.

2. Entry of the RMS Entitlement information required to install and activate your RMS Enterprise Server and Client Licenses. See the *Licensing Options Menu dialog* section on page 56 for details.

Licensing in Multi-Server Installations

Multi-server installations require a single instance of *AMX License Server* that can be accessed by the other servers in the installation. Therefore, *AMX License Server* is only installed on the Primary RMS Enterprise server (the first server configured), and shared among all of the subsequent servers. Note that RMS Enterprise does not support clustering of the *AMX License Server*. The diagram in FIG. 63 indicates the basic relationship between the AMX License Server and the server nodes in a multi-server installation:
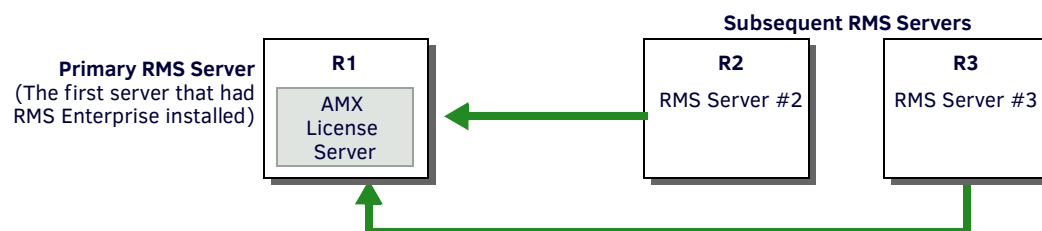
FIG. 63 Licensing in Multi-Server Installations

As indicated in FIG. 63, if in the unlikely case that the Primary RMS Server were to fail, then subsequent servers (R2 and R3) will not have access to the *AMX License Server*. This situation will lead to a fault condition in which the RMS system will cease to function after a fault period of *24 hours*.

NOTE: *This fault condition will not generate an error message from RMS Enterprise; check the cluster to see if the Primary RMS Server has failed.*

In order to avoid a loss of RMS functionality, the AMX License Server must be restored to an operational state. All of the RMS Servers will expect the AMX License Server to be hosted at the same hostname / IP address.

Installing the AMX License Server Application

RMS Enterprise uses a network license server to store and manage the product licenses. This is the "*AMX License Server*" application referred to in the instructions below. The *AMX License Manager* application described in this section is used to install software licenses for AMX products, including RMS Enterprise.

1. Select **Configure RMS Licenses** in the *License Configuration* dialog (the last dialog in the RMS Server Configuration tool - see FIG. 54 on page 45) to launch the *AMX License Manager* application. The initial view is the *Welcome to AMX Licensing Manager* dialog (FIG. 64).
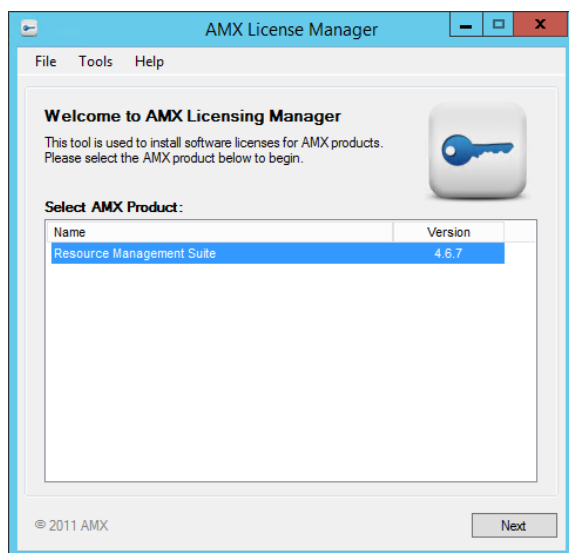
FIG. 64 AMX License Manager - Welcome dialog

2. Select *Resource Management Suite* and click **Next** to proceed to the *Select License Server* dialog. Use the options in this dialog to install the *AMX License Server* application on this machine, or select an existing network license server (FIG. 65).
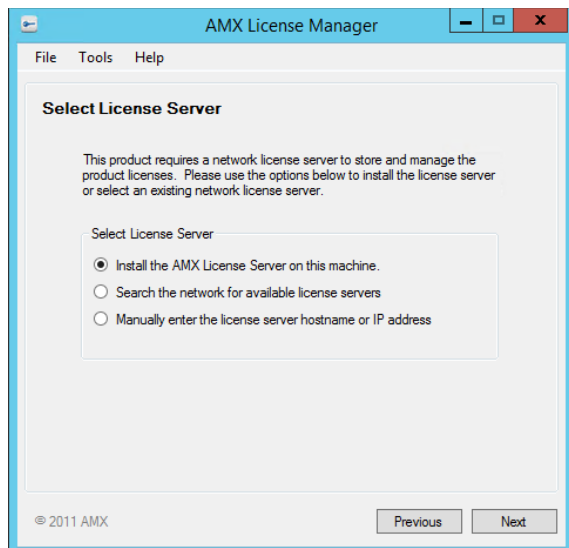
FIG. 65 AMX License Manager Wizard - Select License Server

3. Choose one of the *Select License Server* options:
    *   **Install the AMX License Server on this machine -** Use this (default) option if the *AMX License Server* application is not currently installed on this machine**.** This option is also appropriate for configuring the first server in a multi-server installation (see page 51).
    *   **Search the network for available license servers -** Use this option if the *AMX License Server* application is on the network. This option can be used to locate and select the AMX License Server in multi-server installations (see page 53).
    *   **Manually enter the license server hostname or IP address** - Use this option to manually enter the hostname or IP address of the *AMX License Server* that you will connect to. This option can be used to specify the AMX License Server in multi-server installations (see page 54).

Install the AMX License Server on this machine

If the *AMX License Server* application has not previously been installed on this server, then the first option (selected by default) is to install the *AMX License Server* on this machine.

1. Select the **Install the AMX License Server on this machine** option in the *Select License Server* dialog (see FIG. 65).
2. Click **Next** to install the *AMX License Server* application (FIG. 66):
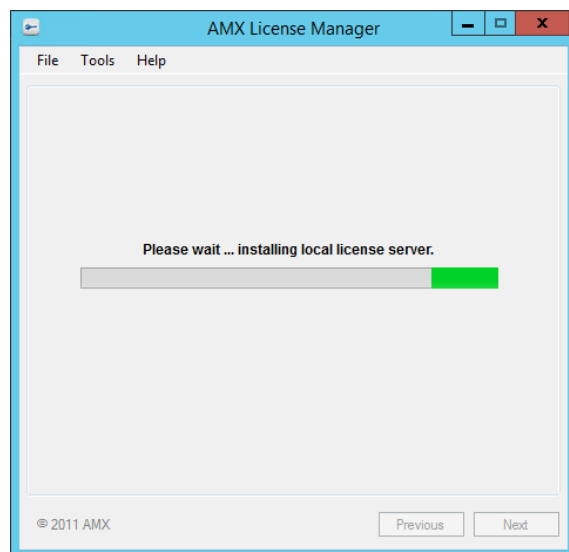
FIG. 66 AMX License Manager Wizard - Select Licensing Option dialog

3. Once the installation is complete, AMX License Manager searches for product licenses.
4. When no licenses are found on the server, the *Select Licensing Option* dialog is presented (FIG. 67):
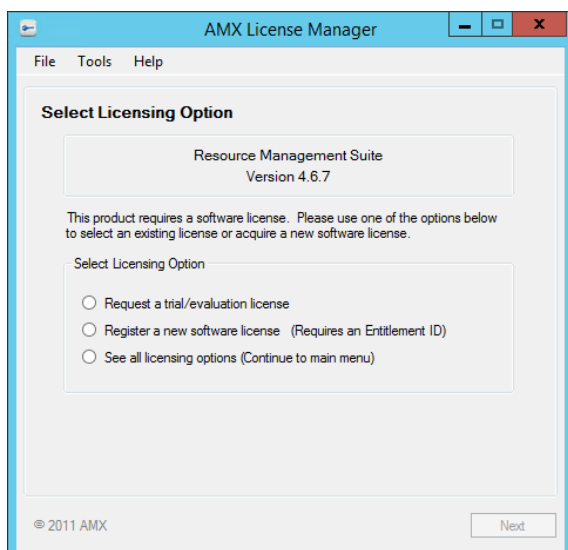
FIG. 67 AMX License Manager Wizard - Select Licensing Option dialog

5. Select one of the licensing options listed and then click **Next**.
   - If **Request a trial/evaluation license** is selected, the next dialog presented is the *Contact Information* dialog. Refer to the *Requesting a Trial/Evaluation License* section on page 51 for instructions.
   - If **Register a new software license (Requires an Entitlement ID)** is selected, the next dialog presented is the *Contact Information* dialog. Refer to the *Registering a Purchased License* section on page 61 for instructions.
   - If **See all licensing options (Continue to main menu)** is selected, the next dialog presented is the *Licensing Options Menu* dialog. Refer to the *Selecting a Licensing Option* section on page 55 for instructions.

Select License Server Options

Use the local license server installed and running on this machine

Once the *AMX License Server* application has been installed locally (as described in the previous section), the first option in the *Select License Server* dialog changes to "*Use the local license server installed and running on this machine*" (FIG. 68).
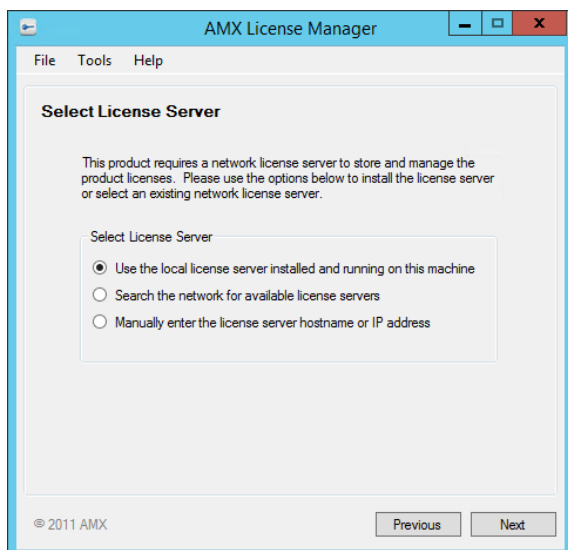
FIG. 68 Select License Server - Use the previously configured license server

1. With this option selected, click **Next** to proceed to the *Licensing Options* dialog if no licenses have been activated (see FIG. 73 on page 55), or the *Licensing Status* dialog if licenses (including free trial licenses - see FIG. 67 on page 52) have been activated.
2. Click **Finished** to close the AMX License Manager.

Search the network for available license servers

1. In the initial *Select License Server* dialog, select the **Search the network for available license servers** option (FIG. 69):
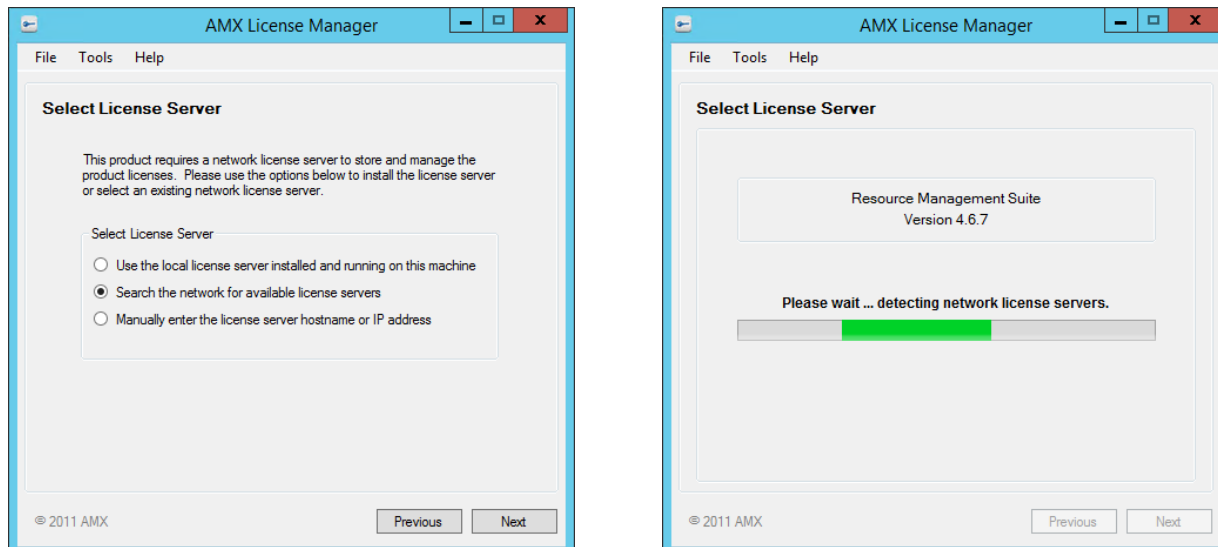
FIG. 69 AMX License Manager - Select a Different License Server

2. Click **Next** to proceed to the next *Select License Server* dialog. This dialog provides a listing of all AMX License Servers detected on the LAN (FIG. 70):
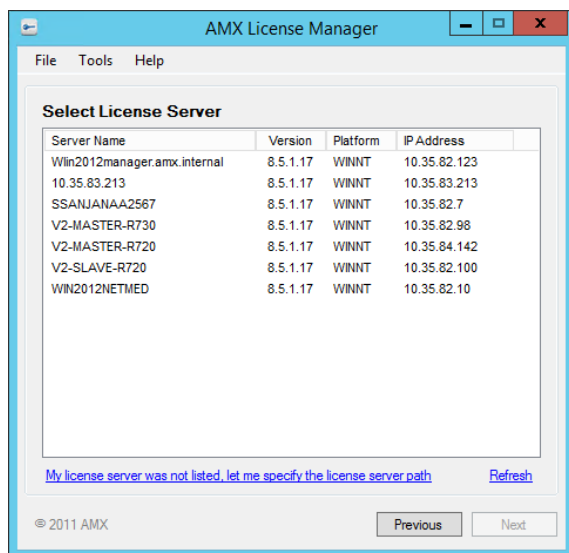
FIG. 70 AMX License Manager - Select License Server (Server Name list)

3. Select the desired AMX License Server and click **Next** to proceed to the *Select Licensing Option* dialog (see the *Selecting a Licensing Option* section on page 55).
    - If your server does not appear in the list, click **Refresh**.
    - If after refreshing the server list, you still do not see your server, click on **My License server was not listed, let me specify the license server path** to open the *Specify Network License Server* dialog - see FIG. 72 on page 54.
4. Click **Next** to proceed to the *Licensing Options Menu* dialog (see the *Selecting a Licensing Option* section on page 55).

Manually enter the license server hostname or IP address

1. In the *Select License Server* dialog, select **Manually enter the license server hostname or IP address** (FIG. 71):
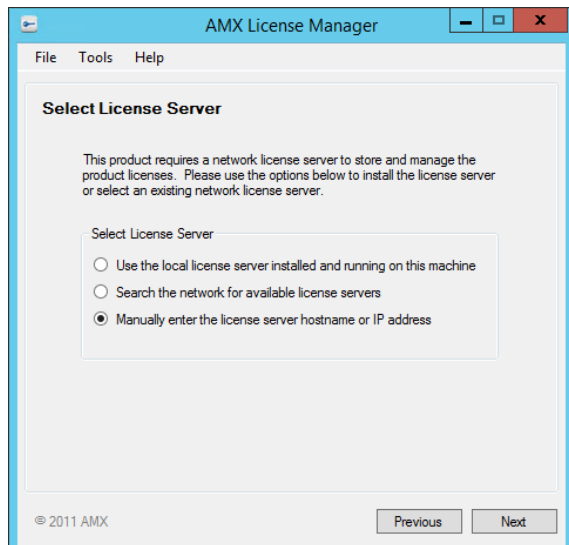
FIG. 71 Select License Server - Manually enter the license server hostname or IP address

2. Click **Next** to proceed to the *Specify Network License Server* dialog (FIG. 72):
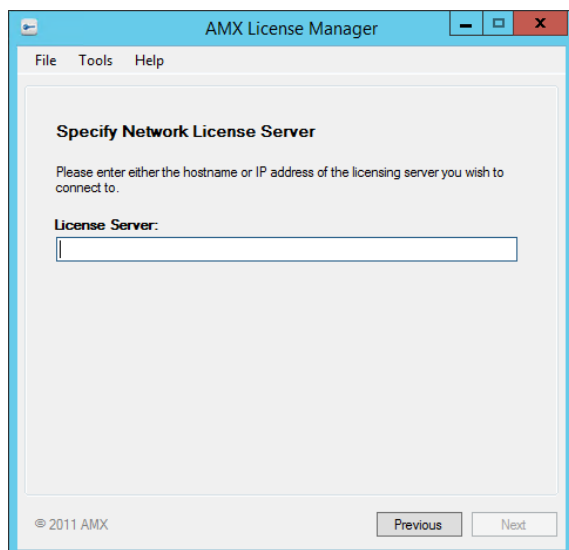
FIG. 72 AMX License Manager Wizard - Specify Network License Server

3. Enter either the hostname or IP address of the Network License Server that you will connect to in the **License Server** field.

4. Click **Next** to attempt to connect to the specified server.

5. Once a connection is established with the Network License Server, click **Next** to proceed to the *Select Licensing Option* dialog (see the *Selecting a Licensing Option* section on page 55).

Selecting a Licensing Option

Once you have connected to the AMX License Server, the *Select Licensing Option* dialog prompts you to select a licensing option for RMS Enterprise (FIG. 73):
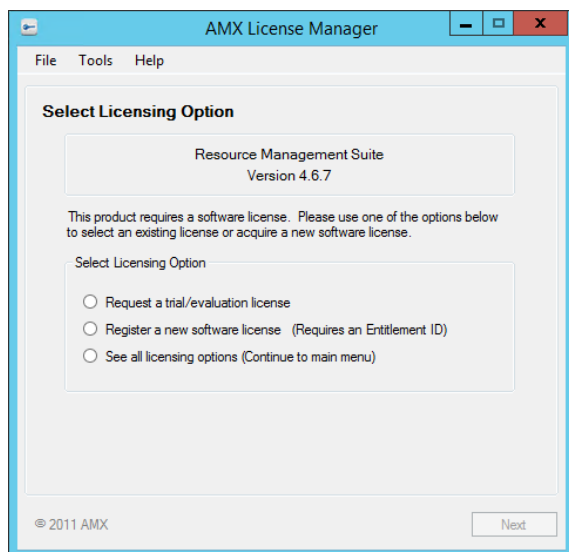
FIG. 73 AMX License Manager - Select Licensing Option dialog

Request a trial/evaluation license

Select this option if you want to request a free 90-day Trial License. Trial Licenses provide 1 RMS Server License and 1000 RMS Enterprise Client Licenses.

This option requires that you have Internet access (in order to contact the AMX Licensing Server). Refer to the *Installing the AMX License Server Application* section on page 50 for instructions on installing and running the Licensing Server.

- A trial license for RMS Enterprise can only be obtained one time for a server. When the trial license expires after 90 days, another trial license cannot be obtained. A registered license must be activated to continue using RMS Enterprise.
- Refer to the *Requesting a Trial/Evaluation License* section on page 51 for instructions.

Register a new software license (Requires an Entitlement ID)

Select this option if you are installing a new license for RMS Enterprise. This requires a valid RMS Enterprise *Entitlement ID* (obtained from AMX).

This option requires that you have a valid RMS Enterprise Entitlement ID (obtained from AMX).

- Entitlement IDs begin with the prefix "**ENT-**".
- Refer to the *Registering a Purchased License* section on page 61 for instructions.
- If your network configuration precludes the ability to reach the Internet, then your product license will have to be activated manually as described in the *Manually Activating the Product License* section on page 66.

See all licensing options (Continue to main menu)

Select this option if you have already installed your RMS Enterprise Server License and want to register additional licenses, update an existing license, or view your current licenses. See the *Licensing Options Menu dialog* section on page 56 for details.

This option invokes the *Licensing Options Menu* dialog (see below).

Note that the Licensing Options that are available when you select this option depend on the type of license (Trial or Purchased) already installed:

- If a *Trial License* has been installed, the available options are **Register License By: Entitlement ID** and **View Existing Licenses**. See the *Request a trial/evaluation license* section on page 55.
- If a *Purchased License* has been installed, the available options are **Register License By: Asset ID** and **View Existing Licenses**. See the *Register a new software license (Requires an Entitlement ID)* section on page 55.

Licensing Options Menu dialog

The options in this dialog allow you to select a licensing option for RMS Enterprise (FIG. 74):
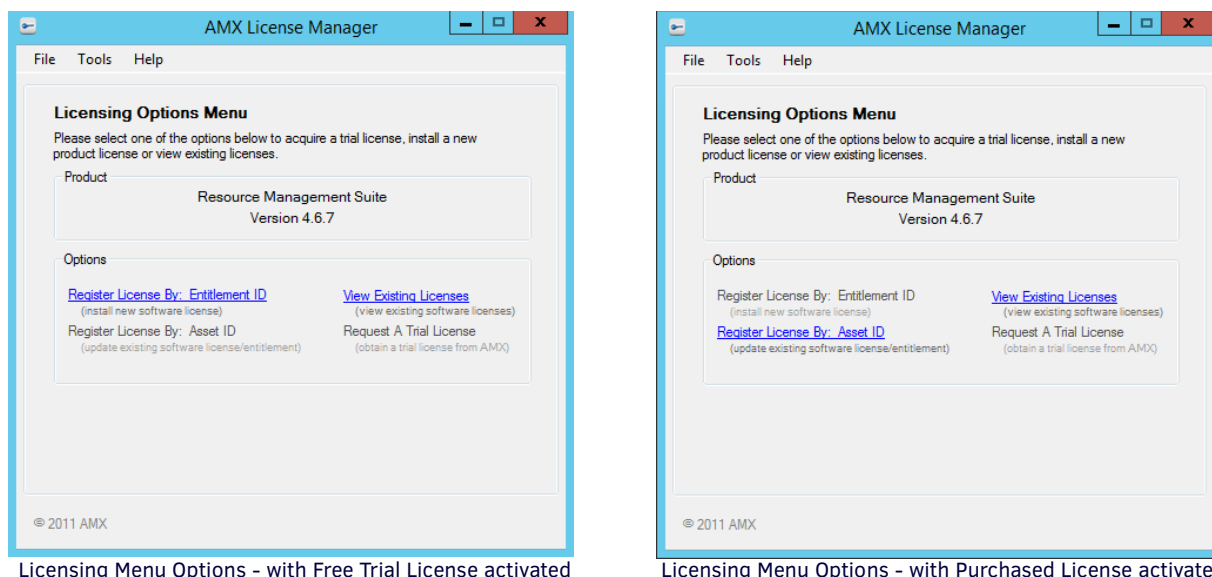
Licensing Menu Options – with Free Trial License activated

Licensing Menu Options – with Purchased License activated

FIG. 74 AMX License Manager Wizard - Licensing Options Menu dialog

NOTE: *Note that once a License has been activated, the Register License By: Entitlement ID and Request a Trial License options are disabled (as shown above).*

Select the licensing option that corresponds with the desired goal:

Register License By: Entitlement ID

This option requires that you have a valid RMS Enterprise *Entitlement ID* (obtained from AMX). After purchasing software from AMX, you will receive a Entitlement ID. The Entitlement ID is required to acquire and activate the initial license, and will also be required when requesting support services from AMX.

NOTE: *This option is the same as the Register a new software license (Requires Entitlement ID) option in the Select Licensing Option dialog (see FIG. 67 on page 52).*

Select this option if:

- This server is not licensed at all.
- This server already has a trial license that you want to upgrade to a permanent license. See the *Upgrading From a Trial License To a Registered License* section on page 56.
- See the *Registering a Purchased License* section on page 61 for instructions.

Register License by Asset ID

This option requires that you have already installed and activated a license for a purchased version of RMS Enterprise, and you have obtained additional Asset Licenses from AMX.

- Asset IDs are used to activate additional Asset Licenses, in order to add Locations to your RMS System.
- See the *Adding Asset IDs (Locations)* section on page 69 for instructions.

View Existing Licenses

This option allows you to view all existing RMS software licenses detected by the AMX License Manager.

See the *Viewing Existing Licenses* section on page 79 for details.

Request a Trial License

This option allows you to download and install a Trial/Evaluation license of RMS Enterprise.

NOTE: *This option is only available if a purchased license has not already been activated.*

- This option is identical to the **Request a Trial/Evaluation License** option presented in the *Select Licensing Option* dialog (see FIG. 73 on page 55). The only difference is that the *Licensing Options Menu* dialog can be accessed at any time via the *Licensing* tab of the RMS Server Configuration application (**Start > Programs > Resource Management Suite > Server > RMS Configuration**).

  The process of installing a Trial License is identical, regardless of which method of access is used.

- See the *Request a trial/evaluation license* section on page 55 for details.

Requesting a Trial/Evaluation License

Once you have access to the AMX License Server, you can request a 90-day Trial/Evaluation license of RMS Enterprise. *A trial license of RMS Enterprise can only be obtained one time for a server. When the trial license expires after 90 days, another trial license cannot be obtained. A registered license must be activated to continue using RMS Enterprise. See the Upgrading From a Trial License To a Registered License* section on page 62 *for details.*

To launch the AMX License Manager application, click the **Configure RMS Licenses** button in the *Licensing* tab of the RMS Server Configuration application (FIG. 75):
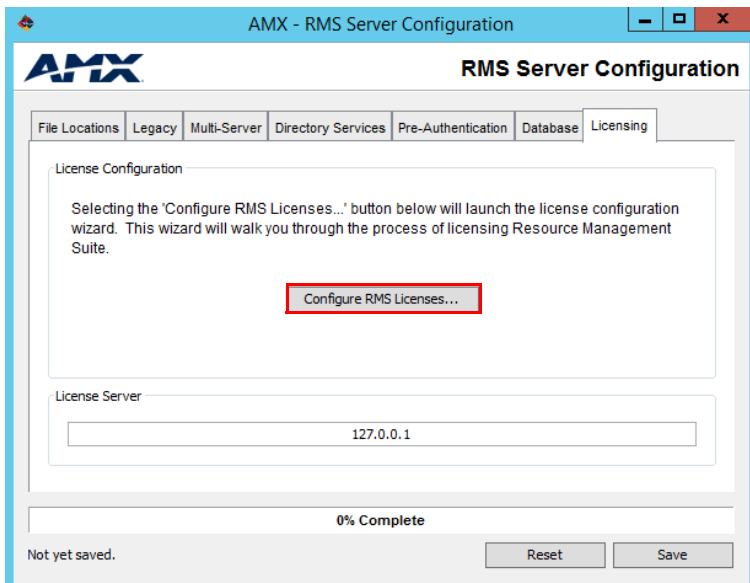
FIG. 75 RMS Server Configuration application - Licensing tab (Configure RMS Licenses option)

1. When the AMX License Server is launched, assuming that it detects no licenses on the server, the *Select Licensing Option* dialog is presented (FIG. 76):
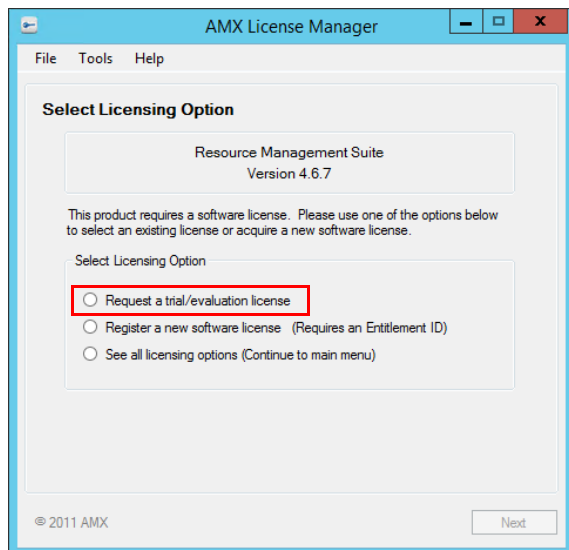
FIG. 76 Select Licensing Option dialog

2. Click the **Request a trial/evaluation license** option.
3. Click **Next** to proceed to the *Contact Information* dialog (FIG. 77):

Click to auto-fill these fields based on your AMX.COM user account

FIG. 77 AMX License Manager Wizard - Contact Information

If you already have an AMX.COM account, click on **Lookup Account** to provide your credentials (email address and password) to automatically populate the contact information for this license based on your existing AMX account information, in the *Contact Information Lookup* dialog (FIG. 78):

FIG. 78 AMX License Manager Wizard - Contact Information Lookup dialog

    a. Enter the *Email Address* and *Password* associated with your **www.amx.com** User Account.
    b. Click **Next** to proceed to the *Requesting Contact Information* dialog (FIG. 79):
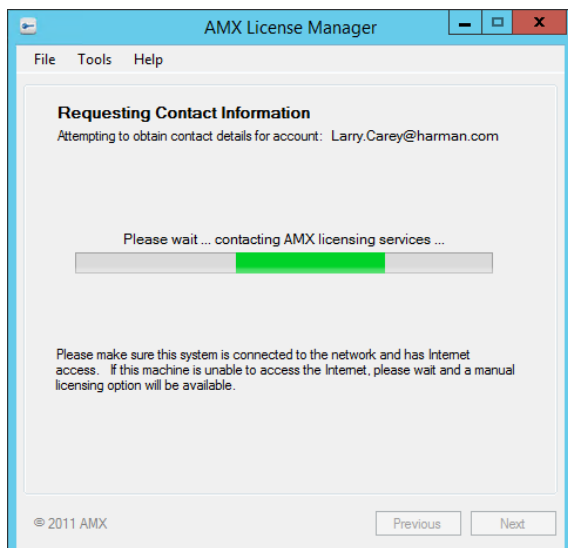
FIG. 79 AMX License Manager Wizard - Requesting Contact Information

    c.   Once the information has been successfully retrieved, it is populated into the *Contact Information* dialog.

    NOTE: *In the event that Lookup Account fails, simply enter your contact information in the Contact Information dialog.*

4.   Once the contact information has been entered, click **Next** to proceed to the *Customer Information* dialog. The drop-down menu on this dialog allows you to select the market that most applies to your application (FIG. 80).
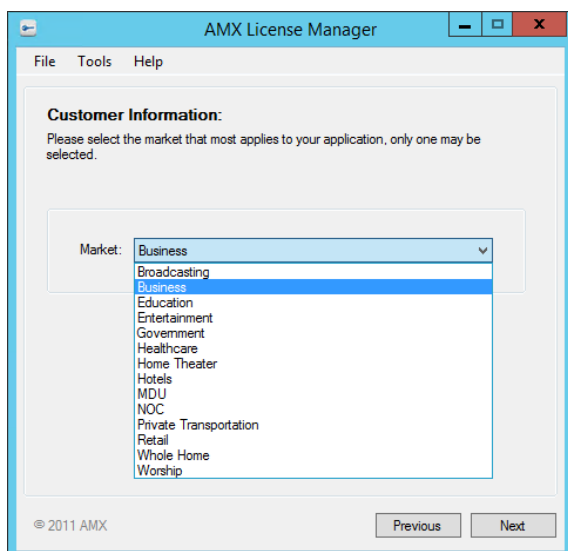
FIG. 80 AMX License Manager Wizard - Customer Information

5.   Select from the drop-down menu and click **Next** to contact the AMX Licensing Server to obtain a trial license. Progress is indicated in the *Requesting Trial License* dialog (FIG. 81), as the AMX License Server is contacted and the trial license is requested.
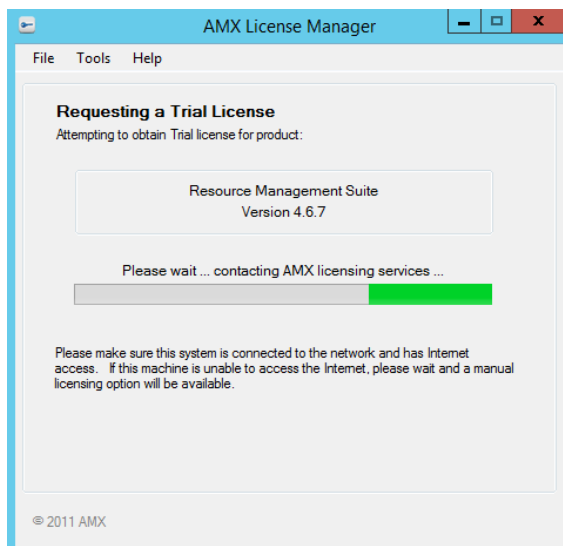
FIG. 81 AMX License Manager Wizard – Requesting Trial License dialog

6.   Once the trial license has been obtained, it is automatically activated (FIG. 82):
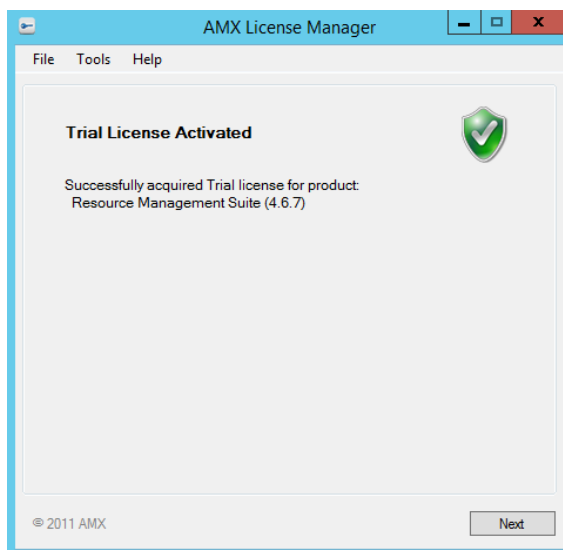
FIG. 82 AMX License Manager Wizard - Trial License Activated

7.   Click **Next** to proceed to the *Licensing Options Menu* dialog (FIG. 83).
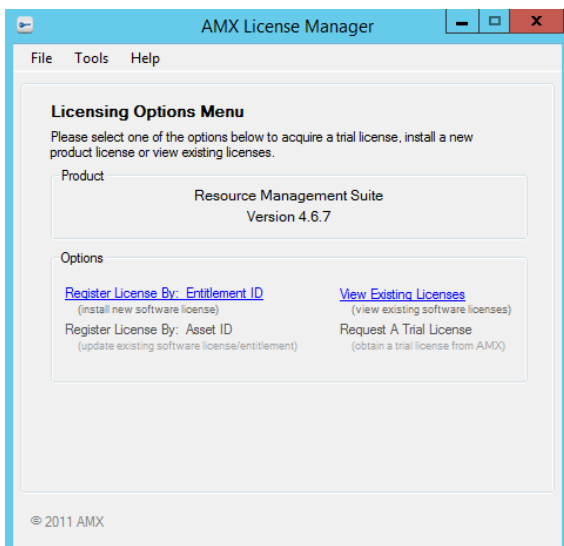
FIG. 83 AMX License Manager Wizard - Licensing Options Menu dialog

8.   Click *View Existing Licenses* to open the *Installed Product Licenses* dialog (FIG. 84). Note that the 90-Day Trial Licenses are indicated as:

RMS Enterprise Location Licenses (quantity = 1000)

RMS Scheduler License (quantity = 1)

RMS Enterprise Server License (quantity = 1)
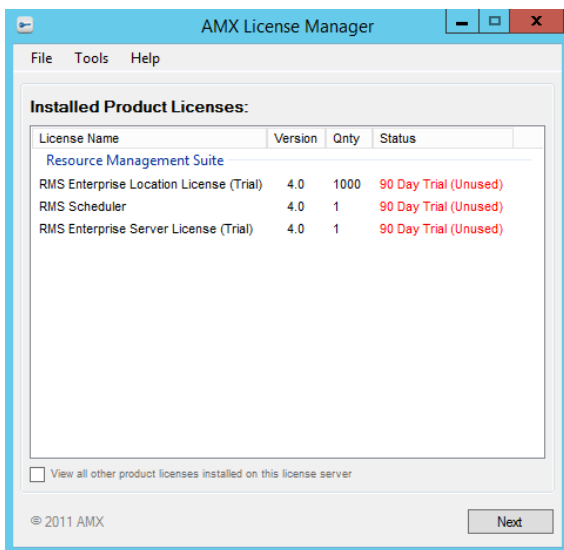
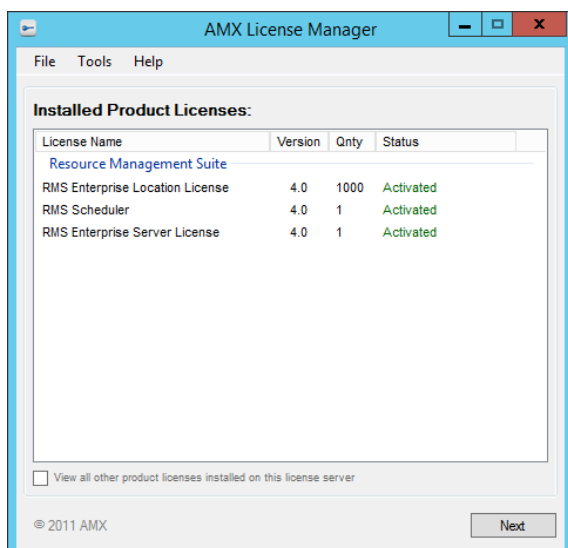**FIG. 84** AMX License Manager Wizard - Installed Product Licenses (showing Trial Licenses)

See the *Upgrading From a Trial License To a Registered License* section on page 62 for information on upgrading a Trial license to a purchased RMS Enterprise license.

Upgrading From a Trial License To a Registered License

When a Trial License is upgraded to a Purchased License, the existing license information is replaced by the Purchased License information, but any system information entered/gathered under the Trial License is available to the purchased license. This option requires that you have a valid RMS Enterprise Entitlement ID (obtained from AMX).

To launch the AMX License Manager application, click the **Configure RMS Licenses** button in the *Licensing* tab of the RMS Server Configuration application (see FIG. 75 on page 57).

1. When the AMX License Server is launched, it opens to the Welcome screen (FIG. 85):

FIG. 85 AMX Licensing Manager application (Welcome screen)

2. Select *Resource Management Suite*, and click **Next** to proceed to the *Select License Server* dialog (FIG. 86):
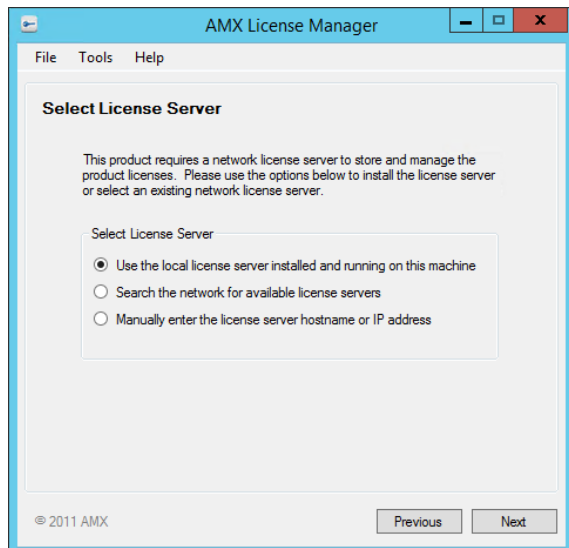
FIG. 86 AMX License Manager - Select License Server

3. With the **Use the local license server installed and running on this machine** option selected, click **Next** to proceed to the *Licensing Status* dialog (FIG. 87):
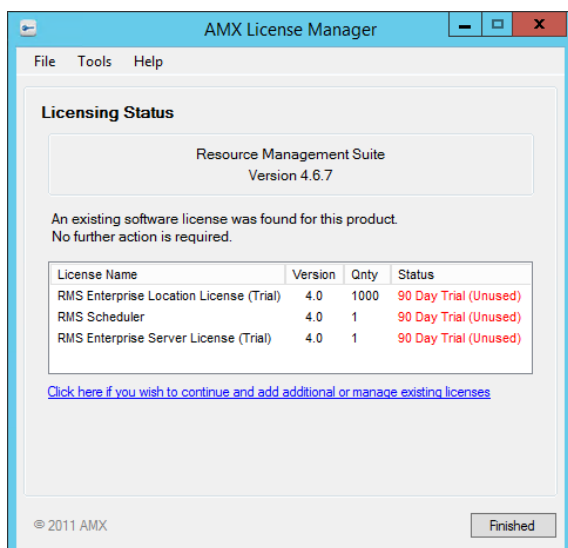
FIG. 87 AMX License Manager - Licensing Status dialog

4. Click on the **Click here if you wish to continue and add additional or manage existing licenses** link to access the *Licensing Options Menu* dialog (FIG. 88):
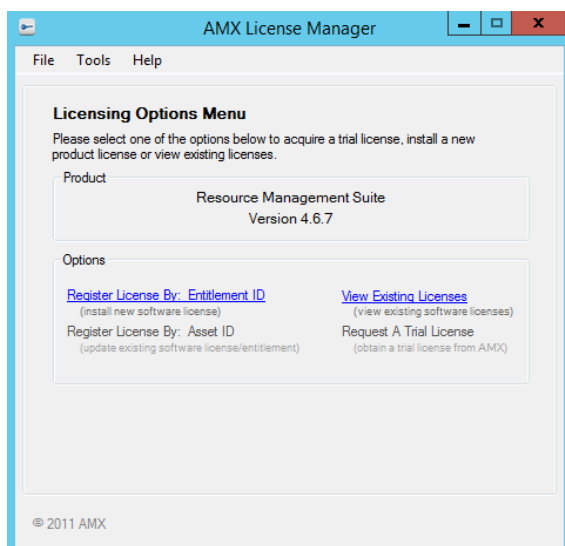
FIG. 88 AMX License Manager - Licensing Options Menu dialog

5. Select the **Register License by Entitlement ID** option.

6. This selection invokes the *Contact Information* dialog (see FIG. 77 on page 58). Enter your contact information.

7. Click **Next** to proceed to the *Customer Information* dialog (see FIG. 80 on page 59). Select from the drop-down menu.

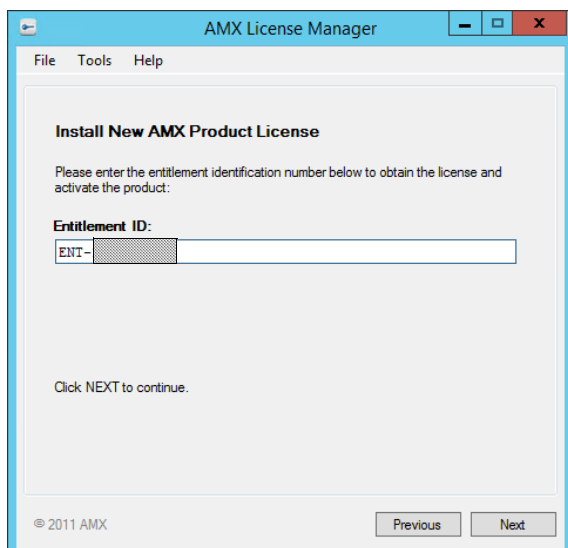8. Click **Next** to proceed to the *Install New AMX Product License* dialog. (FIG. 89):
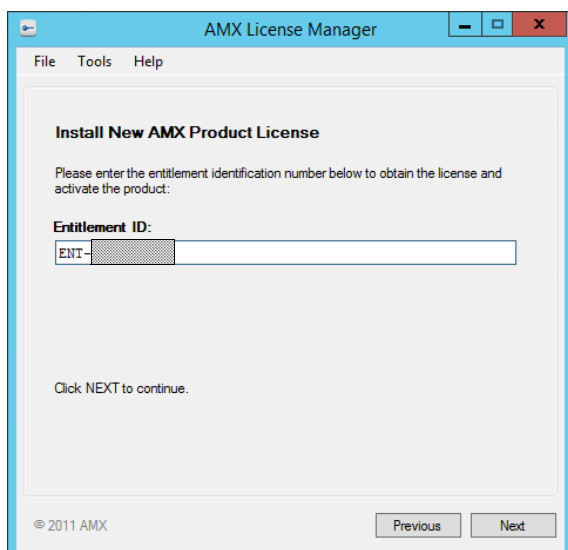
FIG. 89 AMX License Manager Wizard - Install New AMX Product License

9. Enter your **Entitlement ID** in this field.
   - Entitlement IDs begin with the prefix "**ENT-**".
   - The Entitlement ID is obtained from AMX after purchasing RMS Enterprise.

10. Click **Next** to prompt the License Manager to contact the AMX Licensing Server and activate the license associated with the provided Entitlement ID, in the *Requesting License* dialog (FIG. 90):
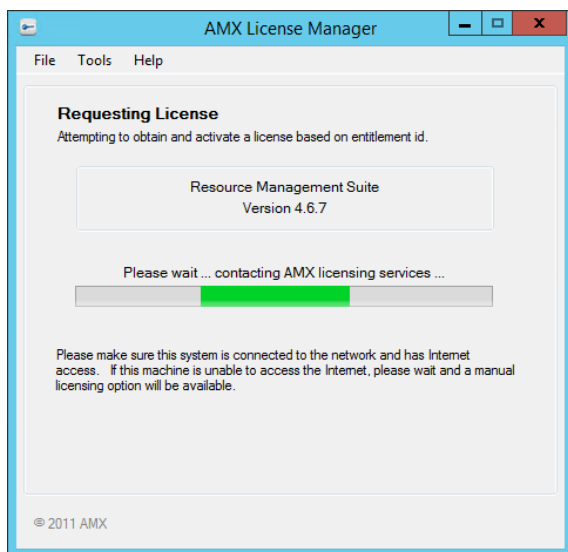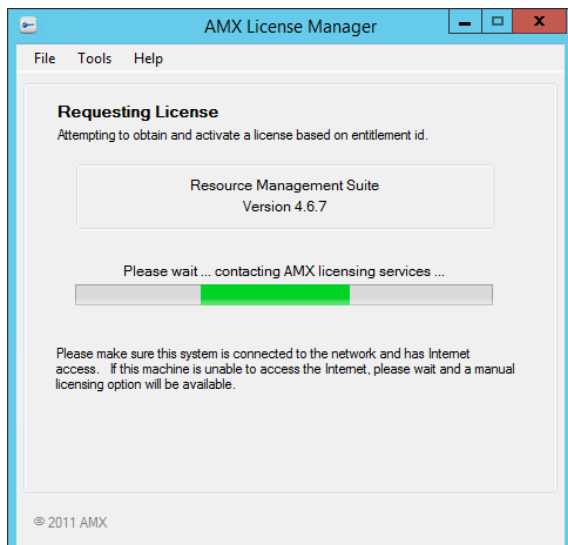

FIG. 90 AMX License Manager – Requesting License dialog

NOTE: *An error message will be displayed if the entitlement has already been registered to another system or if the entitlement ID is invalid. Please contact AMX customer service if you encounter any difficulties obtaining your product license.*

11. The *License Activated* dialog indicates that the license was successfully activated (FIG. 91):
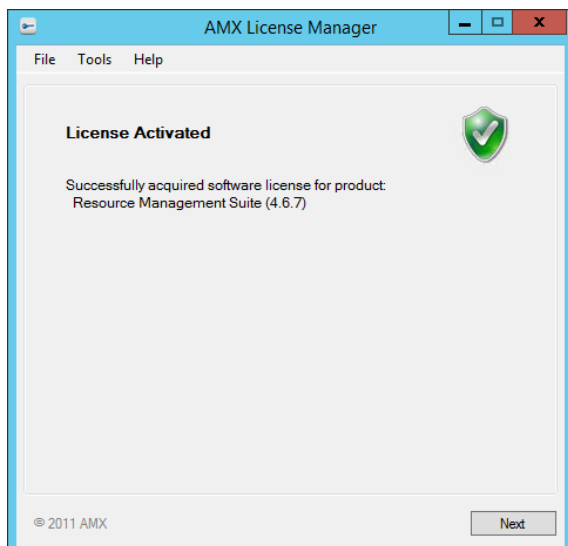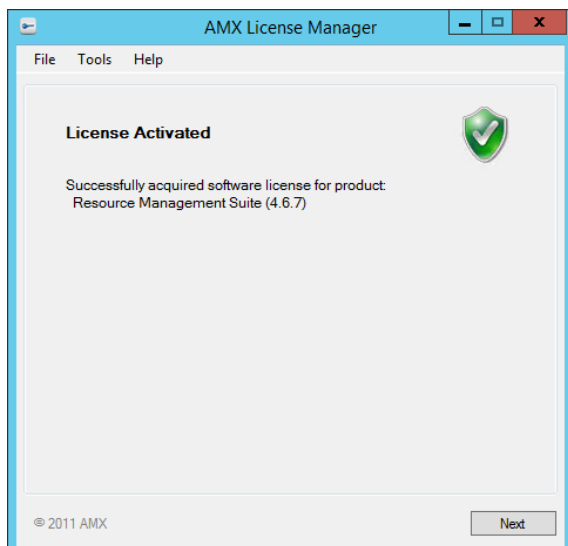
FIG. 91 AMX License Manager - License Activated dialog

12. Click **Next** to return to the *Licensing Options Menu* dialog (FIG. 92):
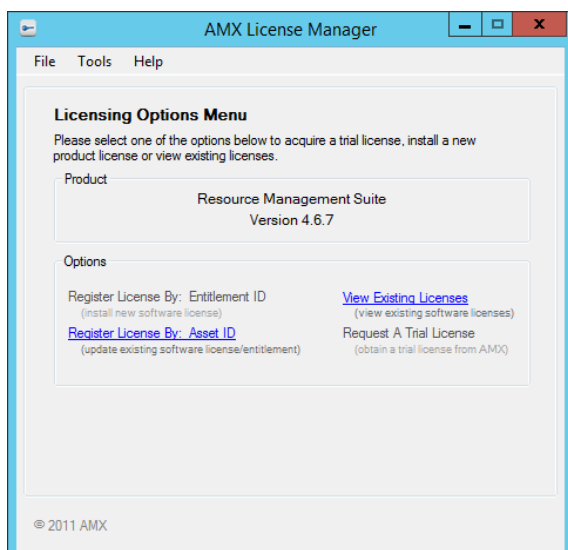
FIG. 92 AMX License Manager - Licensing Options Menu dialog

> **NOTE:** *After upgrading to a registered license, the only available options are Register License By: Asset ID and View Existing Licenses.*

13. Click *View Existing Licenses* to open the *Installed Product Licenses* dialog (FIG. 93). Note that the purchased Licenses are indicated as:

RMS Enterprise Location Licenses (quantity = 1000)

RMS Scheduler License (quantity = 1)

RMS Enterprise Server License (quantity = 1)

FIG. 93 AMX License Manager Wizard - Installed Product Licenses (showing Purchased Licenses)

Registering a Purchased License

Once you have access to the AMX License Server, you can register a new software license for RMS Enterprise. See the *Installing the AMX License Server Application* section on page 50 for instructions on installing and connecting to the AMX License Server application.

- This option requires that you have a valid RMS Enterprise Entitlement ID (obtained from AMX).
- For instructions on upgrading from a Trial License to a Registered (purchased) License, see the *Upgrading From a Trial License To a Registered License* section on page 56.

1. Launch AMX License Manager: In the RMS Server Configuration application - *Licensing* tab, click on **Configure RMS Licenses** (see FIG. 75 on page 57).

2. When the AMX License Server is launched the *Welcome to AMX Licensing Manager* dialog is presented (see FIG. 85 on page 62).

3. Under *Select AMX Product*, click on **Resource Manager Suite** and click **Next** to proceed to the *Select License Server* dialog (see FIG. 86 on page 62).

4. Select **Use the local license server installed and running on this machine**, and click **Next** to proceed to the *Select Licensing Option* dialog (FIG. 94):
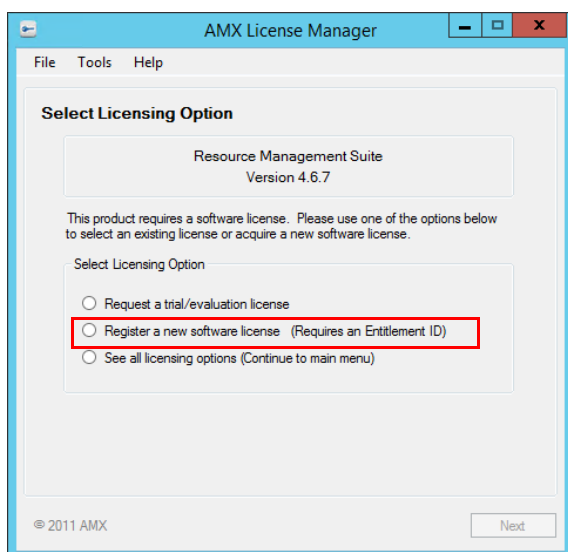
FIG. 94 Select Licensing Option dialog

5. Select the **Register a new software license (Requires an Entitlement ID)** option.

6. Click **Next** to open the *Contact Information* dialog (FIG. 77 on page 58). Enter your contact information.

7. Click **Next** to proceed to the *Customer Information* dialog. The drop-down menu on this dialog allows you to select the market that most applies to your application (FIG. 80 on page 59).

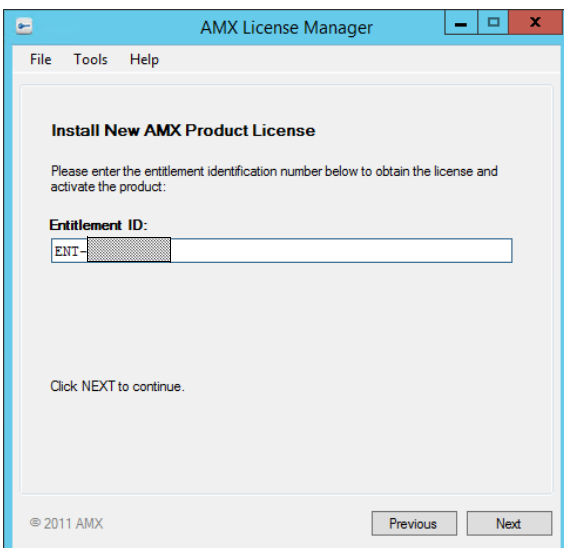8. Click **Next** to proceed to the *Install New AMX Product License* dialog. (FIG. 89):

FIG. 95 AMX License Manager Wizard - Install New AMX Product License

9.   Enter your **Entitlement ID** in this field.
   ● The Entitlement ID is obtained from AMX after purchasing RMS Enterprise.
   ● Entitlement IDs begin with the prefix "**ENT-**".

10.   Click **Next** to contact the AMX Licensing Server and activate the licenses associated with the provided Entitlement ID, via the Requesting License dialog (FIG. 96):

   NOTE: *To request a license, this system must be connected to the network and have Internet access. If the machine is unable to access the Internet, a manual option will be provided. See the Manually Activating the Product License (No Internet Access) section on page 69 for details.*

FIG. 96 AMX License Manager Wizard - Requesting License

   NOTE: *An error message will be displayed if the entitlement has already been registered to another system or if the entitlement ID is invalid. Please contact AMX customer service if you encounter any difficulties obtaining your product license.*

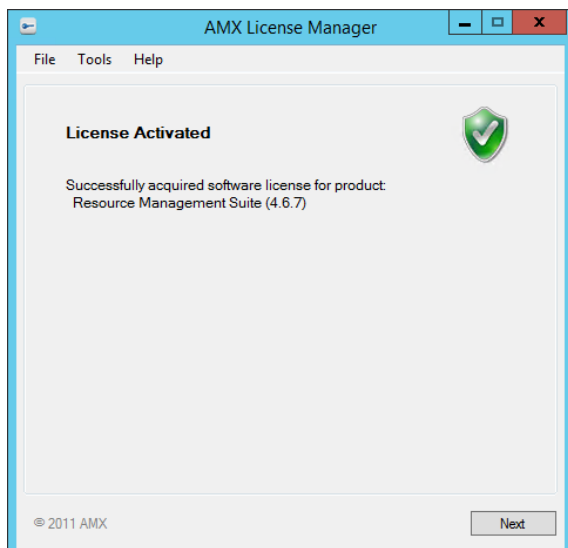11.   The *License Activated* dialog indicates that the license was successfully activated (FIG. 97):

FIG. 97 AMX License Manager Wizard - License Activated

12. Click **Next** to return to the *Licensing Options Menu* dialog (FIG. 98):
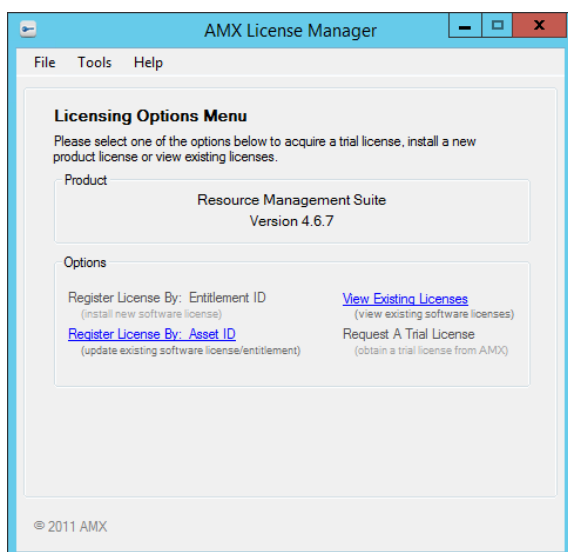
FIG. 98 AMX License Manager - Licensing Options Menu dialog

> **NOTE:** *If this server has previously had a Trial License registered by Entitlement ID, the trial license will no longer be listed in the Installed Product Licenses dialog. Once a license is registered, only valid registered licenses are displayed. See the Viewing Existing Licenses section on page 79 for details.*

Manually Activating the Product License (No Internet Access)

To register a new RMS Enterprise License, you must have a valid RMS Enterprise *Entitlement ID* (obtained from AMX). Typically, this process also requires Internet access (in order to contact the AMX Licensing Server). However, if your network configuration precludes the ability to reach the Internet, then your product license will have to be activated manually as described below.

1. In the *Licensing Options Menu* dialog (see FIG. 53 on page 44), select **Register License by Entitlement ID** (FIG. 88):
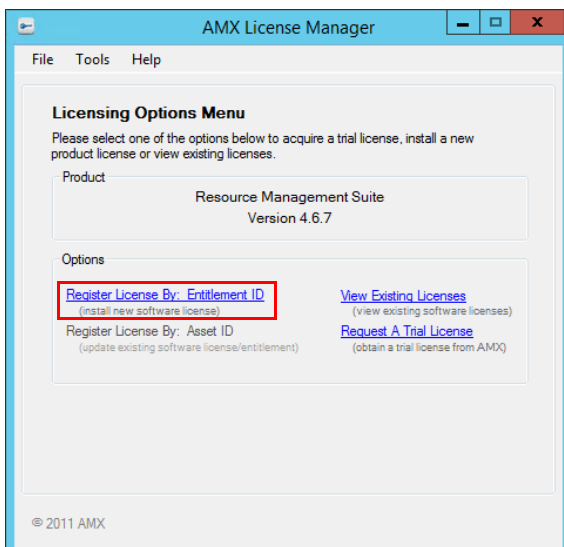
FIG. 99 AMX License Manager - Licensing Options Menu dialog

2. This selection invokes the *Contact Information* dialog (see FIG. 77 on page 58). Enter your contact information.

3. Click **Next** to proceed to the *Customer Information* dialog (see FIG. 80 on page 59). Select from the drop-down menu.

4. Click **Next** to proceed to the *Install New AMX Product License* dialog (FIG. 100):

FIG. 100 AMX License Manager - Install New AMX Product License

5. Enter your Entitlement ID in the text field provided.
   - The Entitlement ID is obtained from AMX after purchasing RMS Enterprise.
   - Entitlement IDs begin with the prefix "**ENT-**".

6. Click **Next** to prompt the License Manager to contact the AMX Licensing Server and activate the license associated with the provided Entitlement ID.

   In this case, the AMX Licensing Server will not be reached, and the *Unable To Contact AMX Licensing Services* dialog is invoked (FIG. 101):
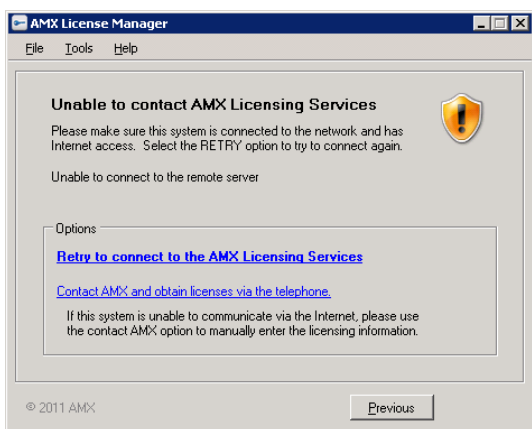
FIG. 101 AMX License Manager - Unable To Contact AMX Licensing Services dialog

7. Select **Contact AMX and obtain licenses via the telephone**. This selection invokes the *Manually Activate Product License* dialog (FIG. 102):
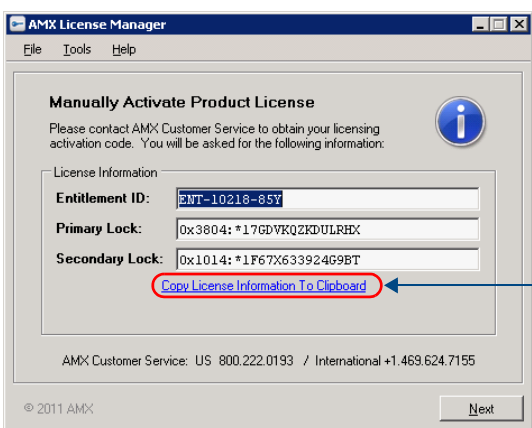
Click to copy the license information to the clipboard (if you intend to email this information to AMX)

FIG. 102 AMX License Manager - Manually Activate Product License dialog

- Note that the *Entitlement ID*, *Primary Lock* and *Secondary Lock* identifiers are automatically populated.
- Click the link: *Copy License Information To Clipboard* if you intend to e-mail the information to your AMX Customer Support Representative.

8. Call your AMX Customer Representative on the phone and relay the information from this dialog to your AMX Customer Support Representative. You will be provided with a *License Activation Code* (in the form of an email).

9. Click **Next** to proceed.

10. Copy the License Activation Code from the email into the *License Activation Code* field (FIG. 103):
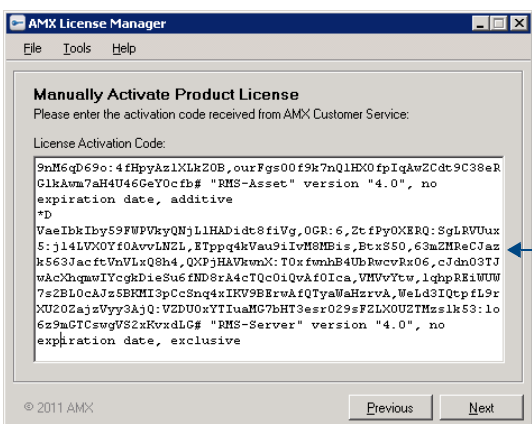
Example License Activation Code pasted from email into the text field

FIG. 103 AMX License Manager - Manually Activate Product License dialog

11. Click **Next** to activate the specified Entitlement ID and proceed to the *License Activated* dialog (FIG. 104):

FIG. 104 AMX License Manager Wizard - License Activated dialog

12. Click **Next** to return to the *Licensing Options Menu* dialog (FIG. 88 on page 63).

Adding Asset IDs (Locations)

Once you have installed a registered version of RMS Enterprise (see the *Registering a Purchased License* section on page 61 for details), you can upgrade your RMS Entitlement with additional Asset Licenses.

- Asset IDs are used to activate additional Asset Licenses, in order to add Locations to your RMS System. Each Location requires an Asset License.
- Assets can be manually added to Systems that are not network-accessible. See the *Manually Adding Assets (No Internet Access)* section on page 76 for instructions.

1. Launch AMX License Manager: In the RMS Server Configuration application - *Licensing* tab, click on **Configure RMS Licenses** (see FIG. 75 on page 57).

2. When the AMX License Server is launched the *Welcome to AMX Licensing Manager* dialog is presented (see FIG. 85 on page 62).

3. Under *Select AMX Product*, click on **Resource Manager Suite** and click **Next** to proceed to the *Select License Server* dialog (FIG. 86):
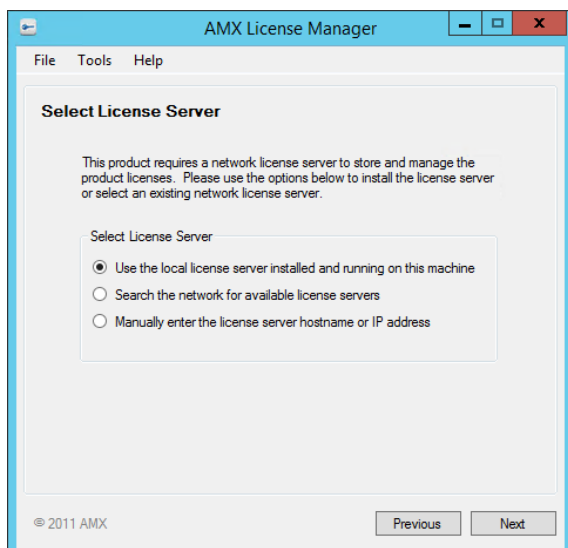
FIG. 105 AMX License Manager - Select License Server

4. Select the **Use the local license server installed and running on this machine** option, and click **Next** to proceed to the *Licensing Status* dialog (FIG. 87):
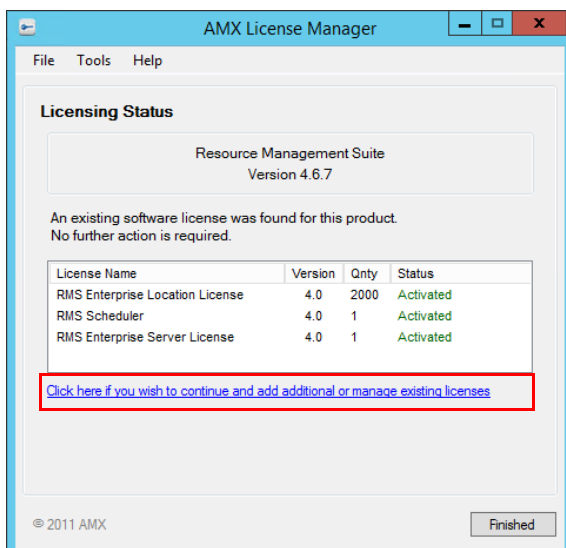
FIG. 106 AMX License Manager - Licensing Status dialog

5. Click on the **Click here if you wish to continue and add additional or manage existing licenses** link to access the *Licensing Options Menu* dialog (FIG. 88):
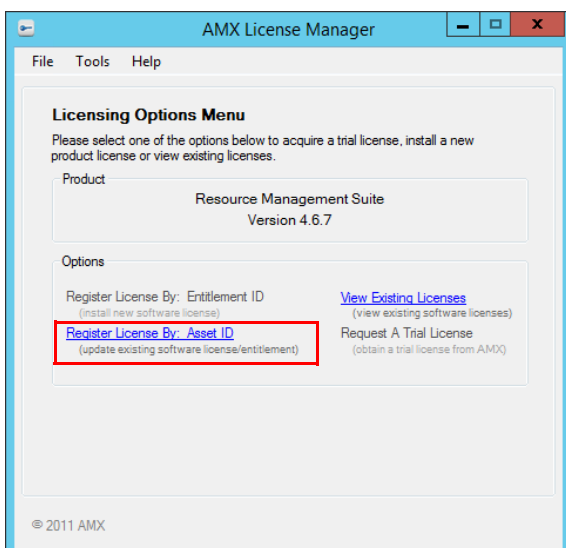
FIG. 107 AMX License Manager - Licensing Options Menu dialog

6. Click on **Register License By: Asset ID** to proceed to the *Select Entitlement* dialog (FIG. 108):
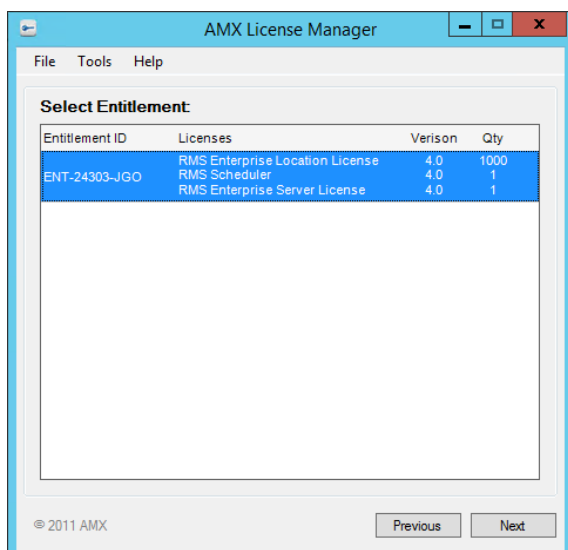
FIG. 108 AMX License Manager - Select Entitlement dialog

7.   Click to select the Entitlement to be updated.

8.   Click **Next** to proceed to the *Entitlement Asset ID* dialog (FIG. 109):
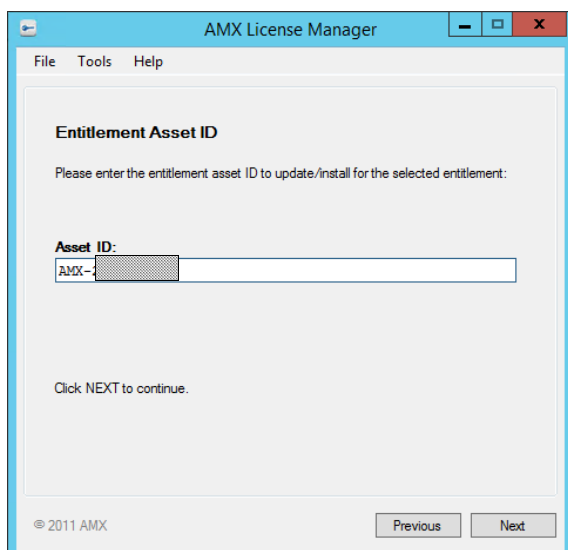
FIG. 109 AMX License Manager - Entitlement Asset ID dialog

9.   Enter the **Asset ID** obtained from AMX.

10. Click **Next** to proceed to the *Requesting License Entitlement Update* dialog (FIG. 110):
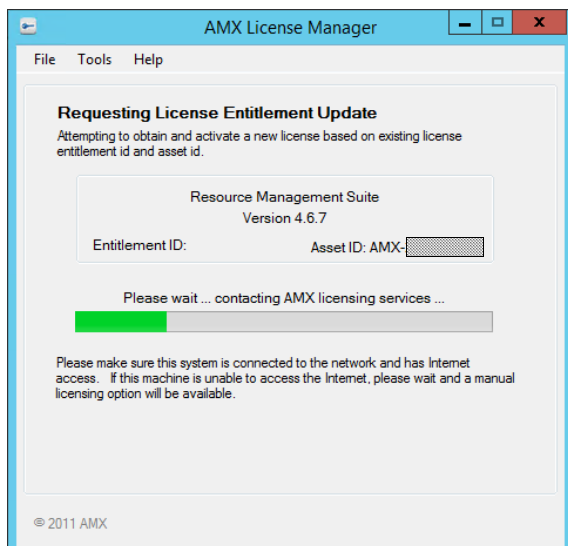
FIG. 110 AMX License Manager - Requesting License Entitlement Update dialog

11. The system will then request to update the existing license. A successful activation results in the presentation of the *License Activated* dialog (FIG. 111):
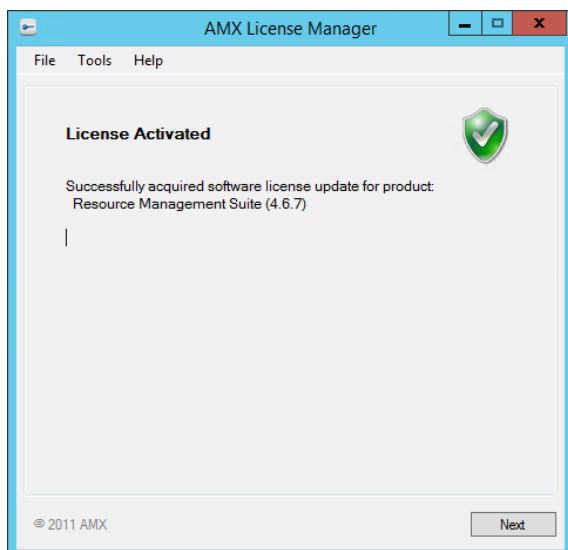
FIG. 111 AMX License Manager - License Activated dialog

12. Click **Next** to return to the *Licensing Options Menu* dialog (FIG. 112):
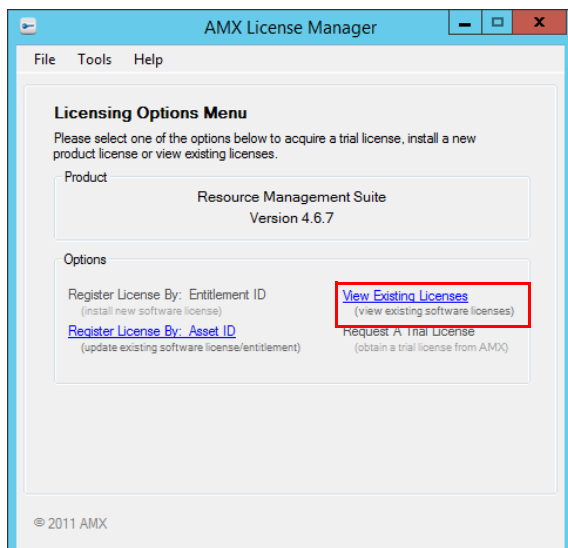
FIG. 112 AMX License Manager - Licensing Options Menu dialog.

- Click on **View Existing Licenses** to see the additional Asset Licenses represented as new **RMS Location Asset Licenses** in the *Installed Product Licenses* dialog. The example in FIG. 113 shows that 1000 Locations have been added to the original 1000, for a total of 2000 Locations:
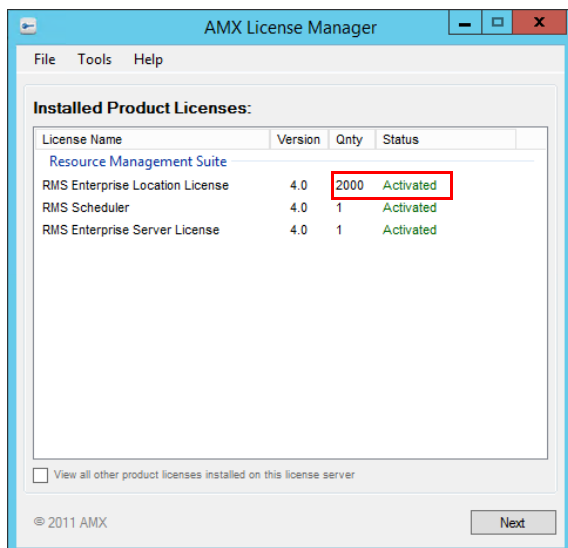
FIG. 113 AMX License Manager - Installed Product Licenses dialog.

- Alternatively, select **Tools > View Entitlements** to open the the *Installed Entitlements* dialog (FIG. 114) to see the new Assets (listed as **RMS Enterprise Location Licenses)**:
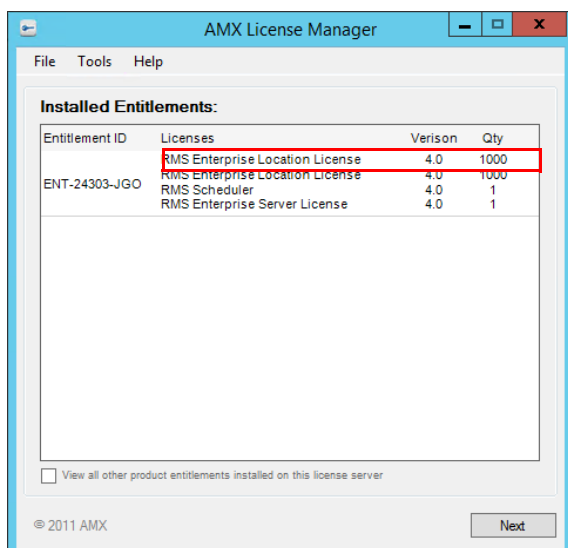
FIG. 114 AMX License Manager - Installed Entitlements dialog

13. Click **Next** to return to the *Licensing Options Menu* dialog.

Manually Adding Assets (No Internet Access)

To add an Asset License, you must have a valid *Asset ID* (obtained from AMX). Typically, this process also requires Internet access (in order to contact the AMX Licensing Server). However, if your network configuration precludes the ability to reach the Internet, then your Asset license will have to be activated manually as described below.

1. In the *RMS Server Configuration* tool - *Licensing* tab, click on **Configure RMS Licenses** to access the *AMX Licensing Manager - Welcome* screen (see FIG. 85 on page 62).

2. Select R*esource Management Suite* and click **Next** to proceed to the *Select License Server* dialog (see FIG. 86 on page 62).

3. With the **Use the local license server installed and running on this machine** option selected, click **Next** to proceed to the *Licensing Status* dialog (see FIG. 87 on page 63).

4. Click the **Click here if you wish to continue and add additional or manage existing licenses** link to access the *Licensing Options Menu* dialog (FIG. 115):
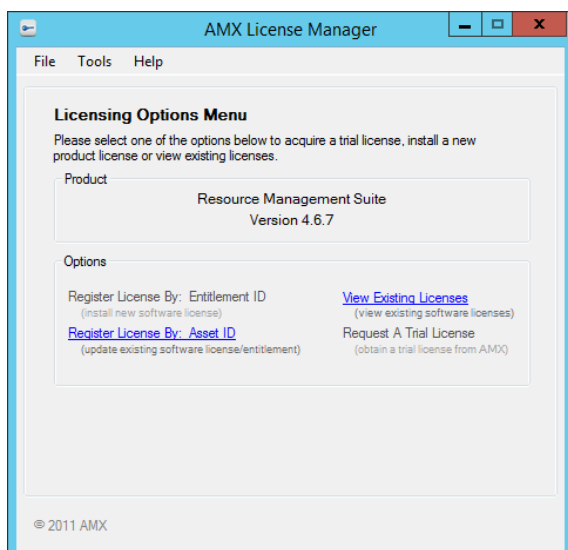
FIG. 115 AMX License Manager - Licensing Options Menu dialog

5. Click on **Register License By: Asset ID** to proceed to the *Select Entitlement* dialog (FIG. 116):
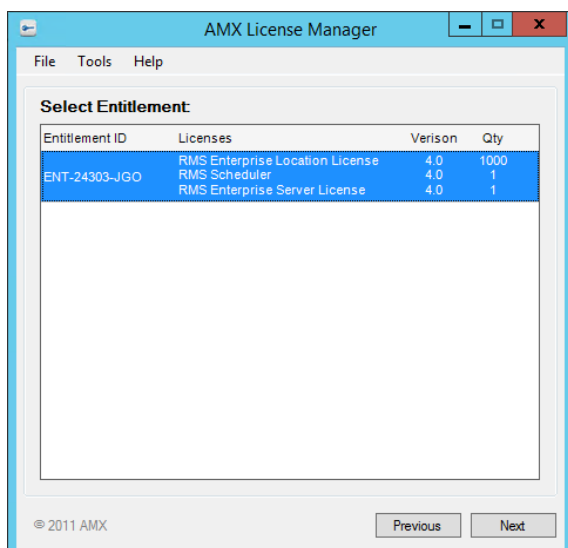
FIG. 116 AMX License Manager - Select Entitlement dialog

6. Click to select the Entitlement to be updated.

7. Click **Next** to proceed to the *Entitlement Asset ID* dialog (FIG. 117):
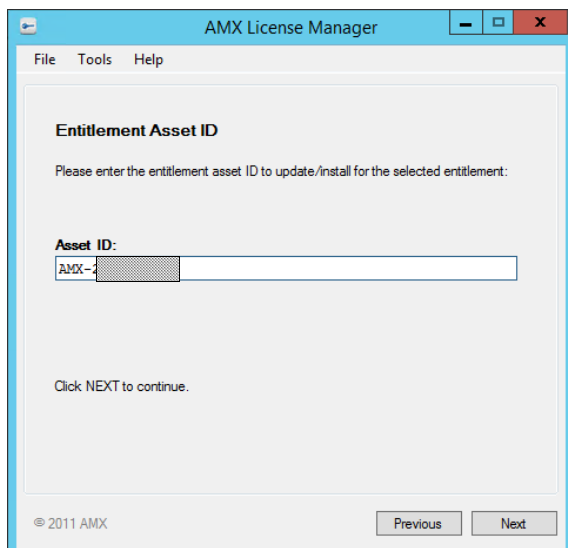
FIG. 117 AMX License Manager - Entitlement Asset ID dialog

8. Enter the **Asset ID** obtained from AMX. and click **Next** to proceed.

9. The system will attempt to contact AMX Licensing Services to update the license and activate the new Assets. In this case (without network access) it will fail, as indicated in the *Unable to contact AMX Licensing Services* dialog (FIG. 118):

FIG. 118 AMX License Manager – Unable to contact AMX Licensing Services dialog

10. Click on the **Contact AMX and obtain licenses via the telephone** link to open the *Manually Activate Product License* dialog (FIG. 119):
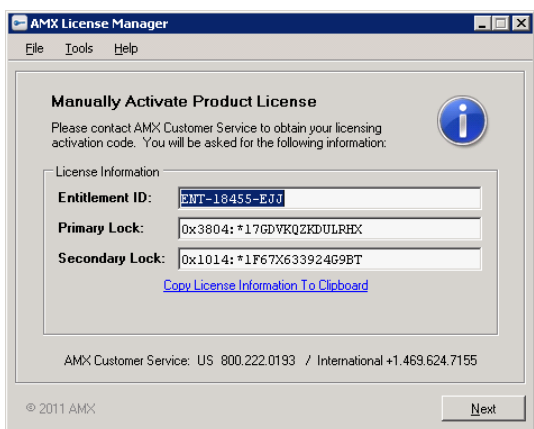
FIG. 119 AMX License Manager – Manually Activate Product License dialog (License Information)

11. The information in this dialog along with the following information must be provided to AMX Customer Service:
   - Product being added
   - Quantity of this product
   - Order Number or Dealer Number
   - Date of the order

   AMX Customer Service will then provide the updated license key.

12. Click the **Next** button to proceed to the *Manually Activate Product License* dialog, and enter the key from received from AMX Customer Service into the *License Activation* field (FIG. 120).
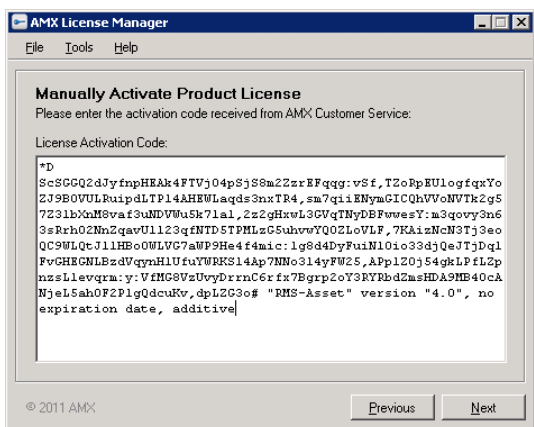
FIG. 120 AMX License Manager – Manually Activate Product License dialog (License Activation)

13. Click **Next**, to update the license and proceed to the *License Activation Success* dialog upon a successful update of the license (FIG. 121):
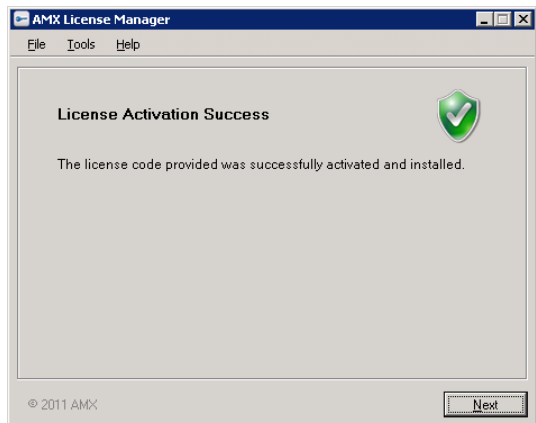
FIG. 121 AMX License Manager – License Activation Success dialog

14. Click **Next** to proceed to the *Licensing Options Menu* dialog.

15. Click on **View Existing Licenses** to view the updated licenses in the *Installed Product Licenses* dialog (FIG. 122):
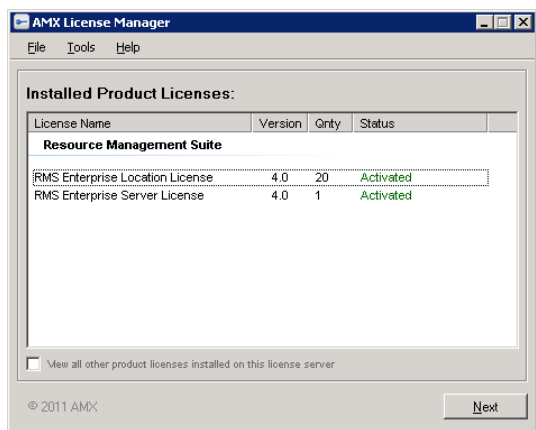
FIG. 122 AMX License Manager – Installed Product Licenses dialog

16. Click **Next** to view the updated entitlement in the *Installed Entitlements* dialog (FIG. 123):
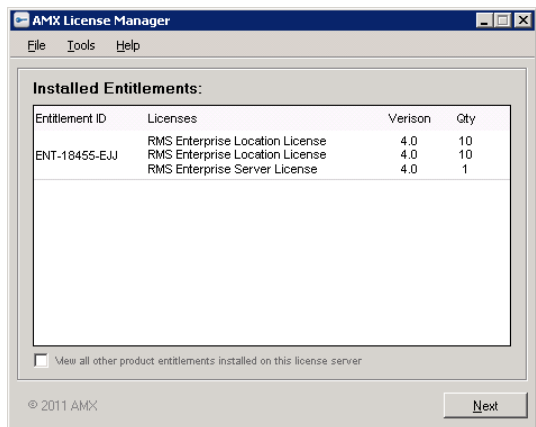
FIG. 123 AMX License Manager – Installed Entitlements dialog

17. Click **Next** to return to the *Licensing Options Menu* dialog (FIG. 88 on page 63).

Viewing Existing Licenses

The **View Existing Licenses** option in the *Licensing Options Menu* dialog allows you to view all existing RMS software licenses detected by the AMX License Manager.

1. In the *Welcome to AMX Licensing Manager* dialog, select *Resource Management Suite* and click **Next** to proceed to the *Select License Server* dialog (FIG. 124).
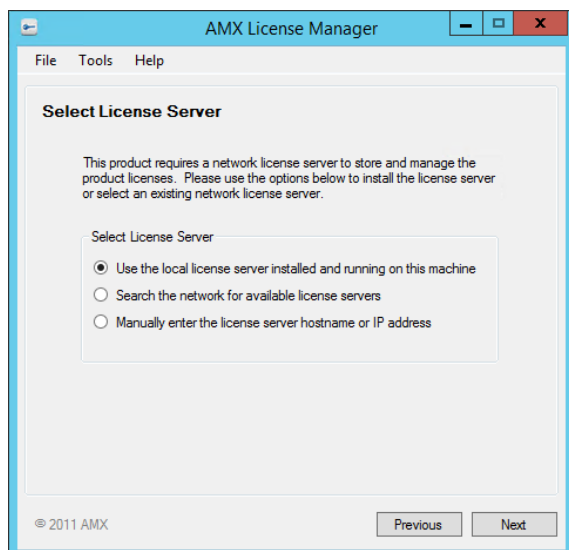
FIG. 124 AMX License Manager - Select License Server dialog

2. Select a License Server option (see *Selecting a Licensing Option* on page 55), and click **Next** to proceed to the *Licensing Status* dialog (FIG. 125). This dialog lists all licenses currently installed, with their current Status.:
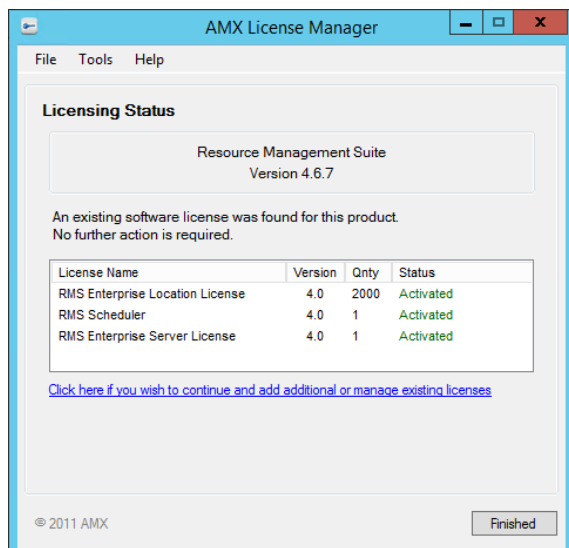
FIG. 125 AMX License Manager - Licensing Status dialog

3. Click on **Click here if you wish to continue and add additional or manage existing licenses** to access the *Licensing Options Menu* dialog (FIG. 126):

FIG. 126 AMX License Manager - Licensing Options Menu dialog

4.   Select **View Existing Licenses** to open the *Installed Product Licenses* dialog (FIG. 127):
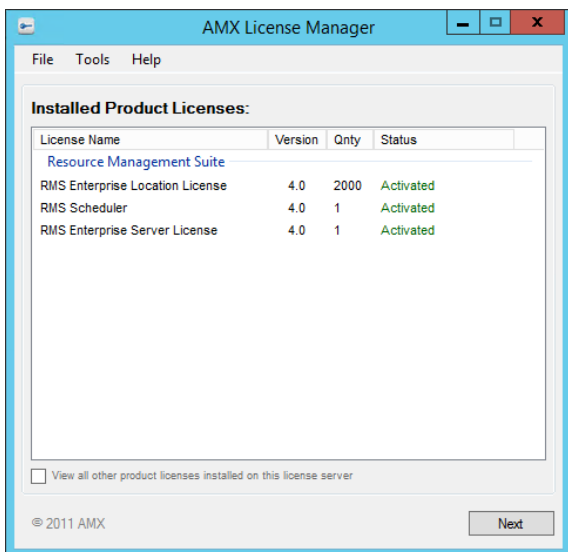
FIG. 127 AMX License Manager Wizard - Installed Product Licenses

- Hover over any entry in the Installed Product Licenses list to view details in a tool-tip window similar to the one shown in FIG. 128:
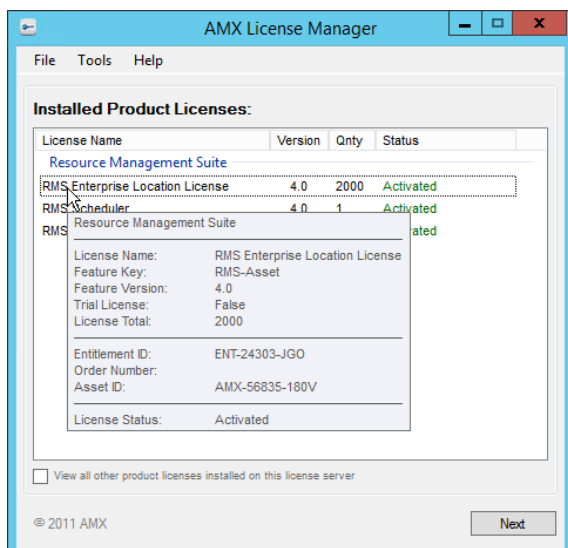
FIG. 128 Installed Product Licenses - Location Asset License Details window

- Click the **View all other product licenses installed on this license server** option to expand the list to show all AMX product licenses (including non-RMS licenses).

5. Click **Next** to return to the *Licensing Options Menu* dialog.

Accessing the RMS Enterprise Web UI

Once the installation is complete, the RMS Enterprise Web UI is accessed via web browser (see *Supported Web Browsers* on page 12).

Start the Tomcat Service

In order to access the RMS Enterprise UI, the Tomcat service must be running: Select **Start service** from the Tomcat context menu (FIG. 129):
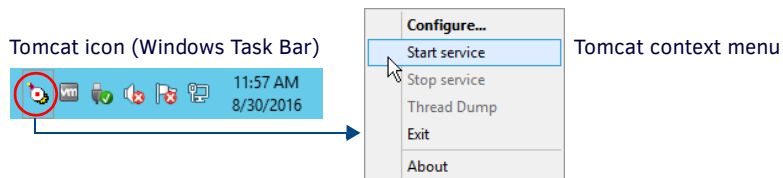
FIG. 129 Apache Tomcat context menu - Stop service, Start service

- If Tomcat fails to restart, please refer to *Appendix B: Advanced Tomcat Configuration* on page 89 to troubleshoot the Java memory allocation settings.
- Port **8080** is the default port for Tomcat (see *Installing Apache Tomcat v8.5* on page 21). However, when installing of Tomcat, this port can be assigned to another value if desired. The value assigned to Tomcat is the value that is used here in the URL.

To open the main RMS Enterprise Web UI, enter the following URL in your browser's address bar:

http://*servername***:8080/rms**

NOTE: *Refer to the* RMS Enterprise System Administrator's Guide *for details on using the RMS Enterprise Web UI.*

Appendix A: Installing SQL Server 2014 Express Edition

Overview

The instructions in this Appendix are intended to assist in installing and configuring SQL Server 2014 Express Edition for use with RMS Enterprise.

- While RMS does support Microsoft SQL Express 2014 databases, the RMS services and website must connect using a TCP/IP connection or named pipes.
- Connecting to SQL Express 2014 via shared memory is not supported.
- The Network Administrator should perform this type of configuration.

NOTE: *SQL "Express" is only appropriate for systems with less than 50 locations. See the Supported SQL Database Platforms section on page 13 for details.*

Installing SQL Server Express

The steps below describe installing SQL Server Express for RMS Enterprise via the SQL Server 2014 Setup installation routine.

The following section (*Configuring SQL Express via the SQL Server Configuration Manager* on page 86) describes configuring SQL Server Express for use with RMS Enterprise.

NOTE: *You can use the SQL Server Configuration Manager utility to configure (or change the current configuration of) the SQL Server after it has been installed.*

1. Download the *SQL Server 2014Express Edition* (SP1 or higher) installation file from Microsoft.
2. Run the downloaded file to launch the *SQL Server Installation Center.*
3. Click on **Installation** in the menu pane to open the page shown in FIG. 130:

FIG. 130 SQL Server 2014 Installation Center

4. Click on **New SQL Server stand-alone installation or add features to an existing installation** to proceed to the *Product Key* page.
5. On the *License Terms* page, click **I accept the license terms**, and click **Next** to proceed.
6. In the *Microsoft Update* page, select **Use Microsoft Update to check for updates**.
7. Click **Next** to proceed through the *Product Updates*, *Install Setup Rules* and *Install Rules* pages without making changes.
8. In the *Feature Selection* page, verify that all features are selected (default setting) in the *Features* window (FIG. 131):
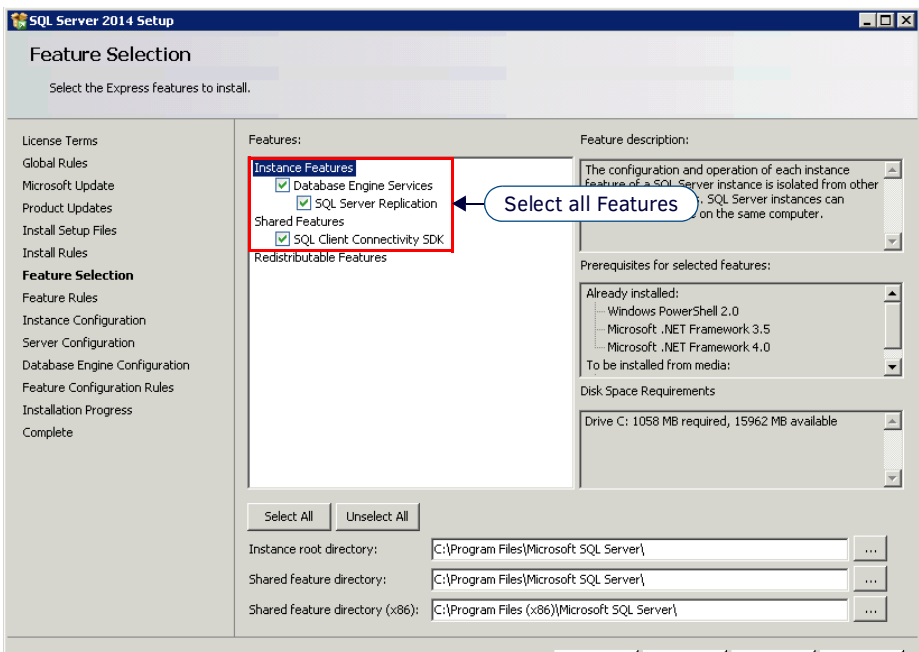
FIG. 131 SQL Server 2014 Setup - Feature Selection page

9. Click **Next** to proceed to the *Feature Rules* page (no changes required).

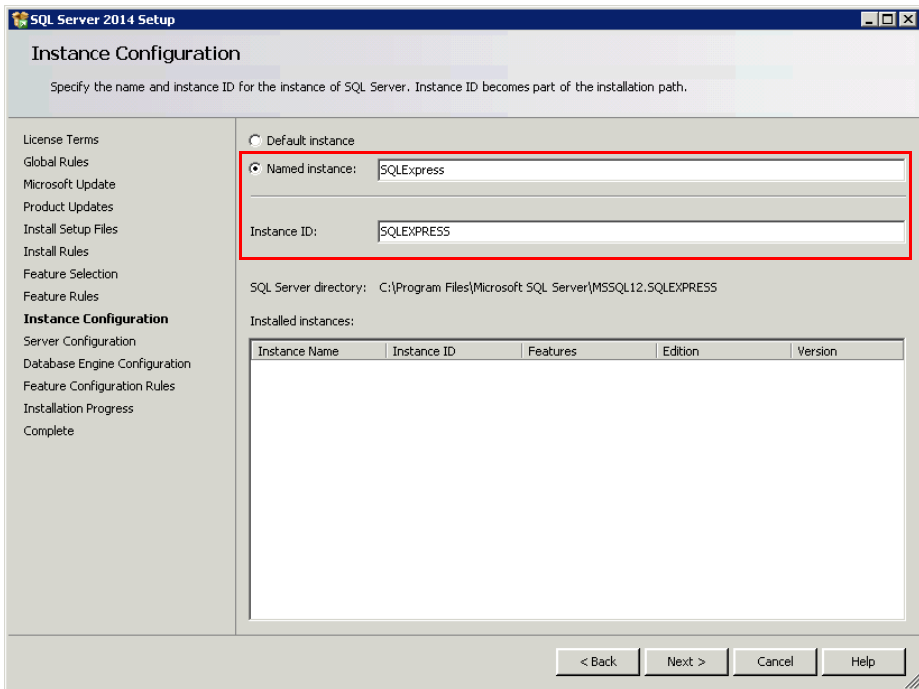10. Click **Next** to proceed to the *Instance Configuration* page (FIG. 132):

FIG. 132 SQL Server 2014 Setup - Instance Configuration page

11. Verify that a valid instance name is entered in the **Named Instance** and **Instance ID** text fields.

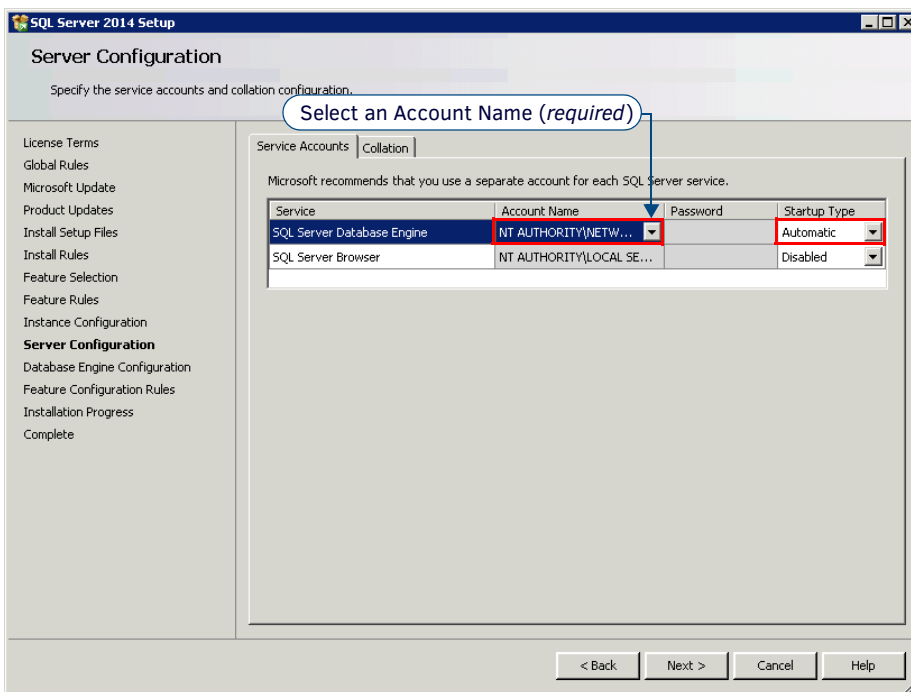12. Click **Next** to proceed to the *Server Configuration* page (FIG. 133):

FIG. 133 SQL Server 2014 Setup - Server Configuration page

13. In the *Server Configuration* page (*Server Accounts* tab):
    a. For *SQL Server Database Engine*, verify that the appropriate **Account Name** is selected (*required*).
    b. Click **Next** to proceed to the *Database Engine Configuration* page - *Server Configuration* tab (FIG. 134):
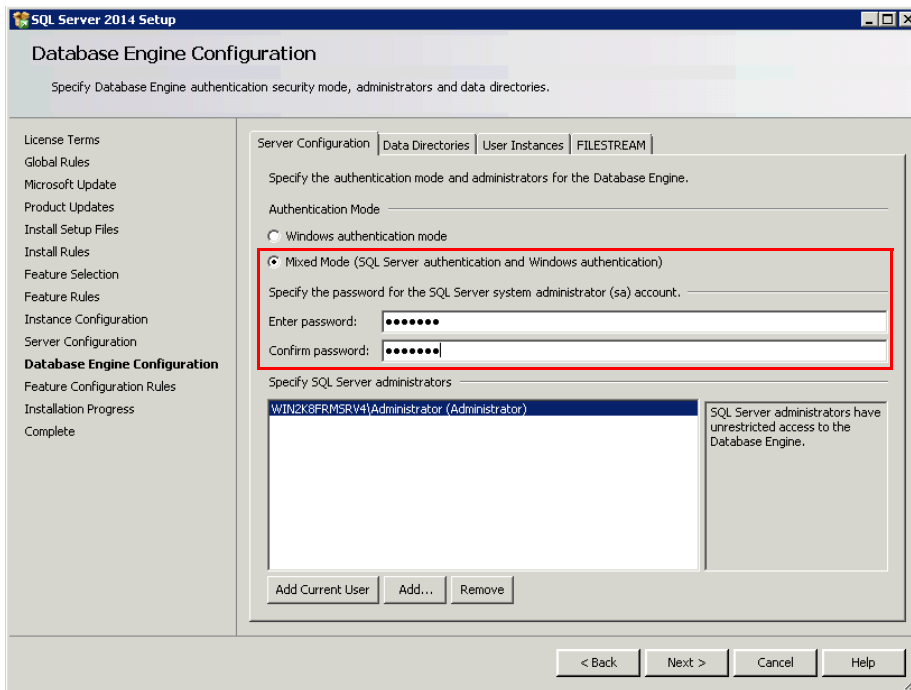
FIG. 134 SQL Server 2014 Setup - Database Engine Configuration page (Server Configuration tab)

NOTE: *RMS Enterprise supports both Windows Authentication and SQL Authentication. SQL Authentication is recommended simply due to the simplicity of installation.*

14. In the *Database Engine Configuration* page:
    a. Under *Authentication Mode*, select **Mixed Mode.**
    b. Enter and confirm a **Password** to apply to the SQL Server System Administrator account.
    c. Click **Next** to proceed through the *Feature Configuration Rules* page.

15. In the *Installation Progress* page, click **Install** to begin the installation. Progress is indicated in the *Installation Progress* page.

16. Once this page indicates *Complete*, click **Next** to proceed to the *Complete* page (FIG. 135):
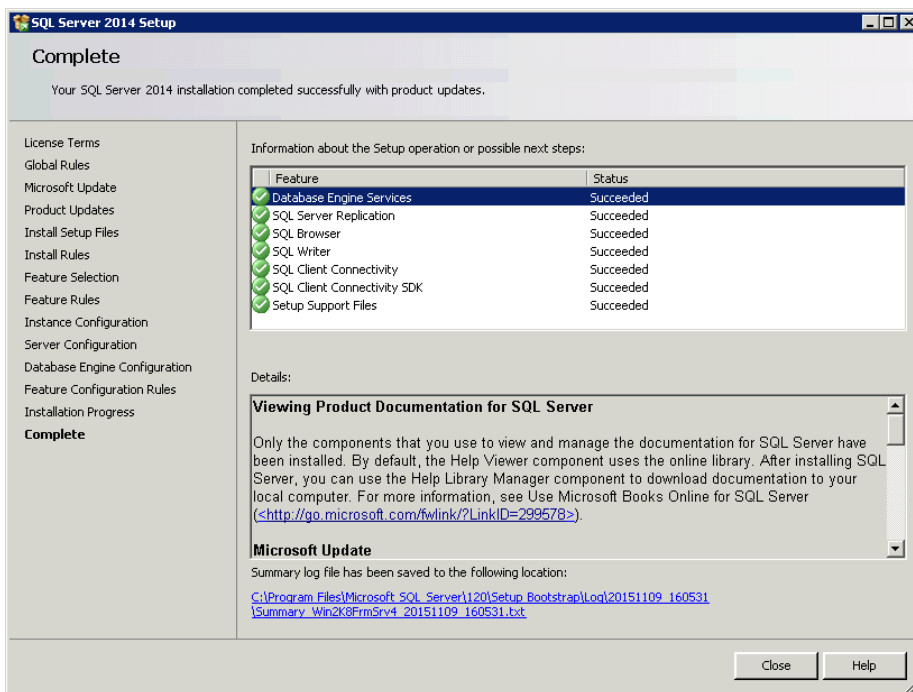
FIG. 135 SQL Server 2014 Setup - Complete page

17. Click **Close** to close the SQL Server 2014 Setup program.

Configuring SQL Express via the SQL Server Configuration Manager

The following steps describe using the *SQL Server Configuration Manager* to configure (or change the current configuration of) the SQL Server after it has been installed.

NOTE: *The screen caps included n this section represent the SQL Express 2014 User Interface (UI). If you are using SQL Express 2014, you may notice cosmetic differences in the UI, but the principles are the same.*

1. With SQL Server Express already installed, launch the *SQL Server Configuration Manager* utility. This may vary based on the Operating System SQL was installed on.

2. In the left menu pane, select *SQL Server Network Configuration* > **Protocols for SQLEXPRESS** (FIG. 136):
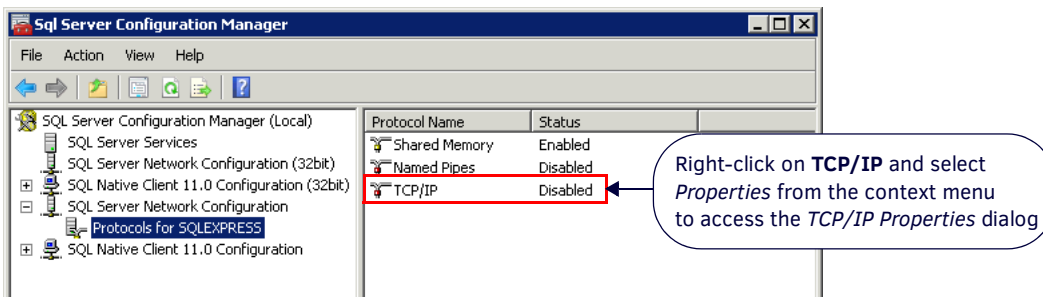
FIG. 136 SQL Server Configuration Manager - SQL Server Network Configuration > Protocols for SQLEXPRESS

3. Right-click on **TCP/IP** and select **Properties** from the context menu. This selection invokes the *TCP/IP Properties* dialog.

4. In the *Protocol* tab, change the *Enabled* setting to **Yes** (FIG. 137):
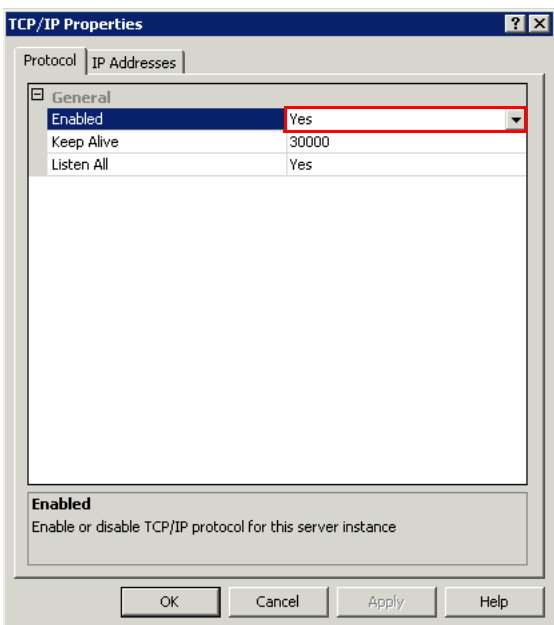
FIG. 137 TCP/IP Properties dialog (Protocol tab)

5. Click **Apply** to save these changes.

6. In the *IP Addresses* tab, change the *TCP Port* setting under each IP listed (*IP1*, *IP2*, *IP3*, etc) to **1433** (FIG. 138):
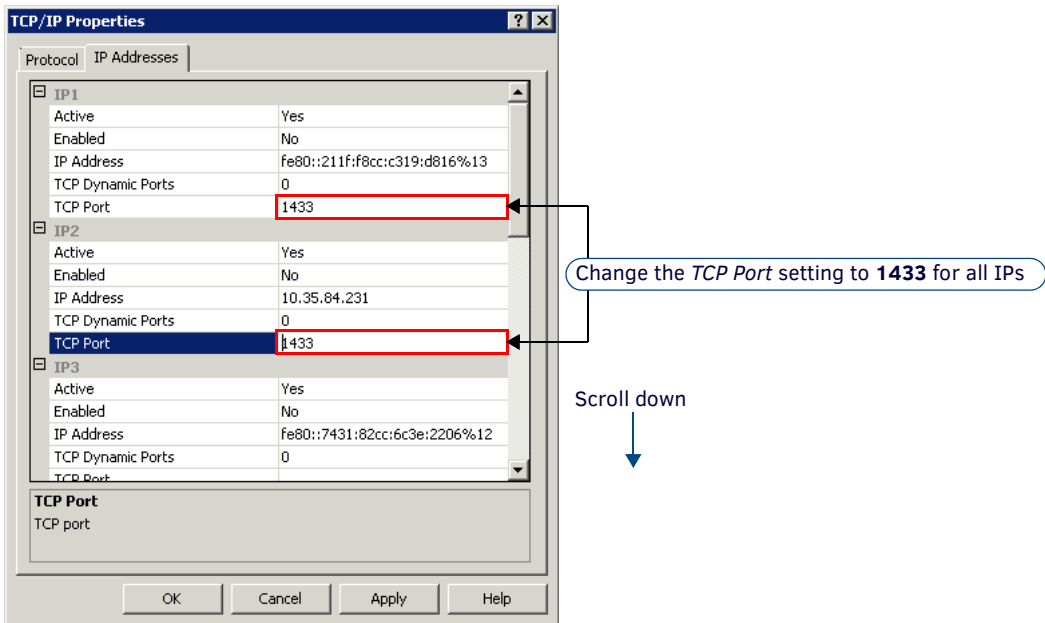
FIG. 138 TCP/IP Properties dialog (IP Addresses tab)

7. Click **Apply** to save these changes, and click **OK** to close this dialog.

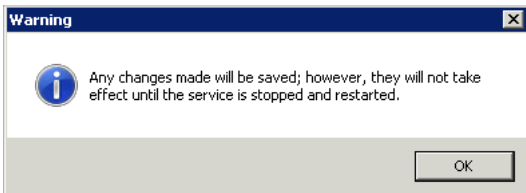8. The program will prompt you to stop and restart the service for these changes to take effect (FIG. 139):

FIG. 139 TCP/IP Properties – Warning dialog

9. Click **OK** to close this dialog and return to the main screen of the *SQL Server Configuration Manager*.

10. *Stop* and *Restart* the SQL Server Services:

   a. In the left menu pane, select **SQL Server Services** (FIG. 140):
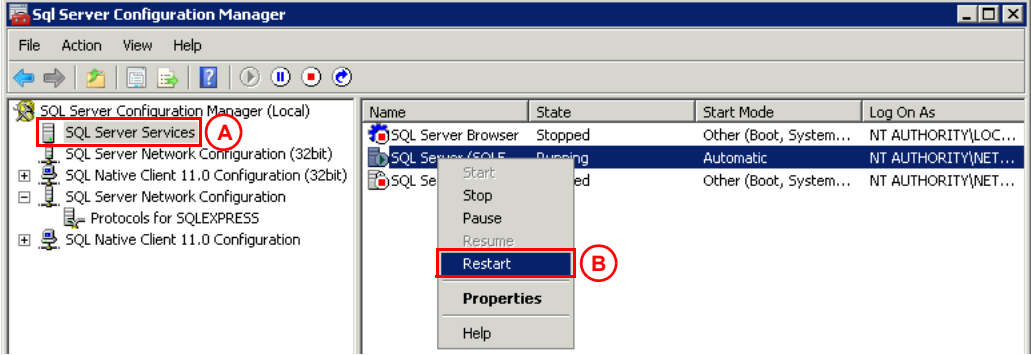
FIG. 140 SQL Server Configuration Manager - SQL Server Services

   b. Right-click on *SQL Server (SQLEXPRESS)* and select **Restart** from the context menu (FIG. 140).

Appendix B: Advanced Tomcat Configuration

Overview

In configuring RMS Enterprise, there are system variables involved that include:

- The size of the RMS system (for example, the number of rooms in the system as well as the number of devices in each room).
- The characteristics of the network on which RMS is installed.
- The manner in which the RMS system is designed, programmed and used.
- The hardware and software configuration of the RMS server and RMS database server.

All of these variables can affect the overall performance of the RMS system.

In particular, the *MaxPermSize*, *Initial Memory Pool* and *Maximum Memory Pool* settings for Tomcat may need to be adjusted from the suggested default values that are provided in the *Configuring Apache Tomcat* section on page 24.

As indicated in the *Installing Apache Tomcat v8.5* section on page 21, Tomcat must be restarted after the final step in the configuration procedure.

Testing has indicated that in some cases, Tomcat will not restart if the recommended memory settings are incompatible with a specific PC (usually due to the hardware configuration of the server). Specifically, the Tomcat Start/Start options in the task bar are disabled, and the system manager indicates that Tomcat is in "*Starting*" mode. The recommended method of troubleshooting this issue is to perform a test that will establish valid values for *MaxPermSize*, *Initial Memory Pool* and *Maximum Memory Pool*, for the server that will run the RMS Enterprise application.

Testing for Acceptable Java Memory Settings

1. Open a command prompt on the server that will run the RMS Enterprise application.
2. Enter the following command at the Command prompt:

   ```
   java –Xms<MB> –Xmx<MB> –XX:MaxMetaspaceSize=<MB>
   ```

   where:

   - **Xms** - *Minimum heap size*
   - **Xmx** - *Maximum heap size*

3. Enter values (in MB) for the minimum and maximum heap size as well as for MaxPermSize.
   a. If the values entered are acceptable for this server, then no error message will be displayed. Instead, you will only see the standard command usage output as shown below (FIG. 141):

FIG. 141 Java memory settings - no errors

   b. However, if the values entered are not acceptable for this server, then you will see an error message following the standard command usage output as shown below (FIG. 142):

FIG. 142 Java memory settings - Java memory allocation errors

    c. In this case, adjust the enter a different set of values. It may be necessary to repeat this process until the acceptable values are found. Use this method until you are able to establish memory allocation values that do not generate these errors.

4. Once you have determined these values. change these settings in the Java tab of the *Apache Tomcat 8.5 Properties* dialog (FIG. 143).
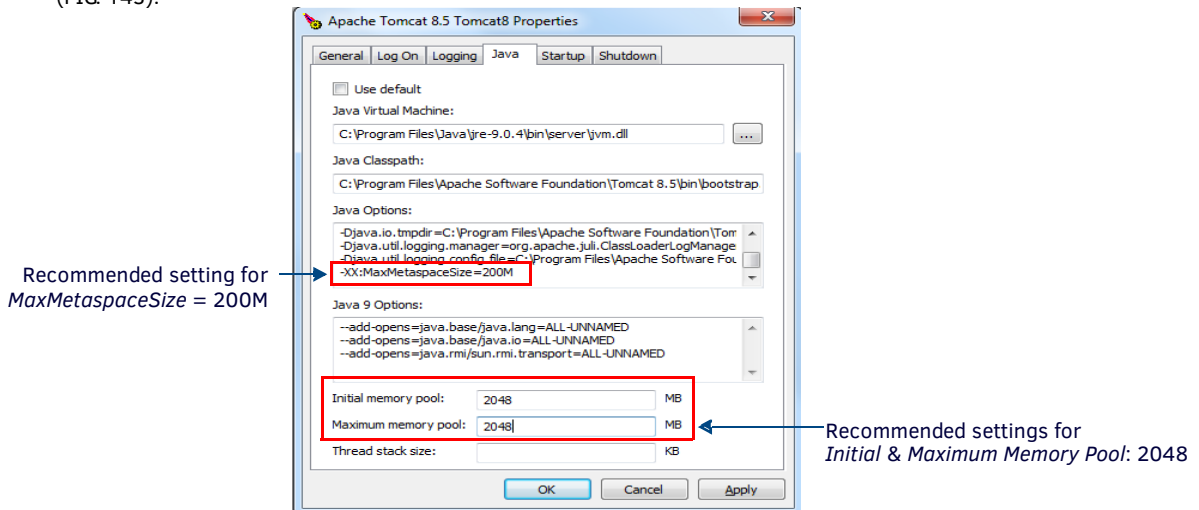

Recommended setting for *MaxMetaspaceSize* = 200M

Recommended settings for *Initial & Maximum Memory Pool*: 2048

FIG. 143 Apache Tomcat 8.5 Properties dialog - Java tab

    NOTE: *Since it is recommended that the "Initial memory pool" and "Maximum memory pool" values match each other, enter the value that was established in this test for Maximum heap size in both the Initial memory pool and Maximum memory pool fields in this dialog.*

5. Delete the logs in the Tomcat 8.5 directory (Program Files > Apache Software Foundation > Tomcat 8.5 > logs) so they can re-initialize (FIG. 144):
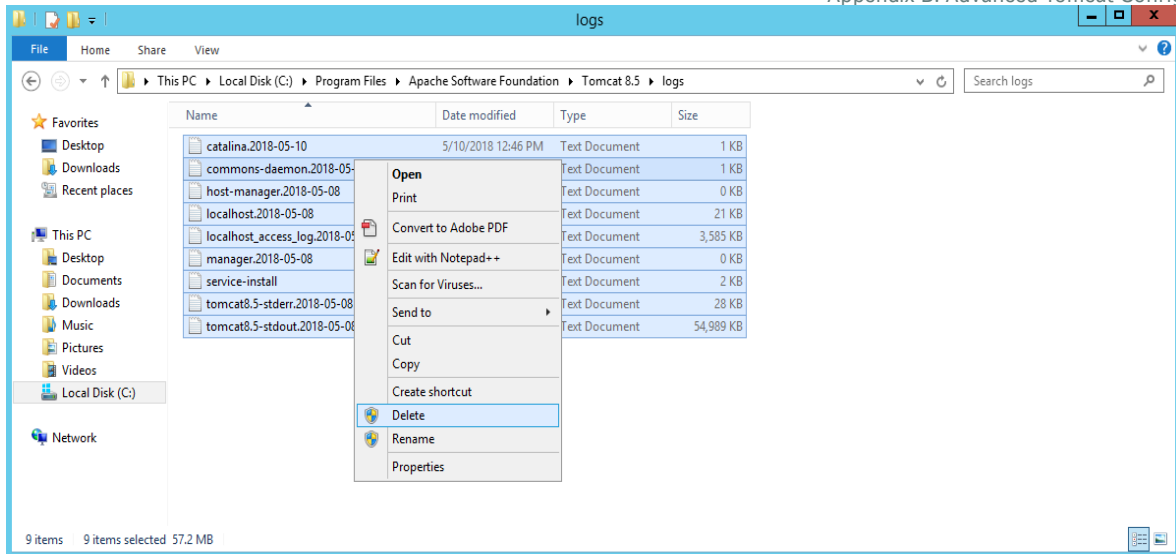
FIG. 144 Apache Tomcat 8.5 Logs (delete all)

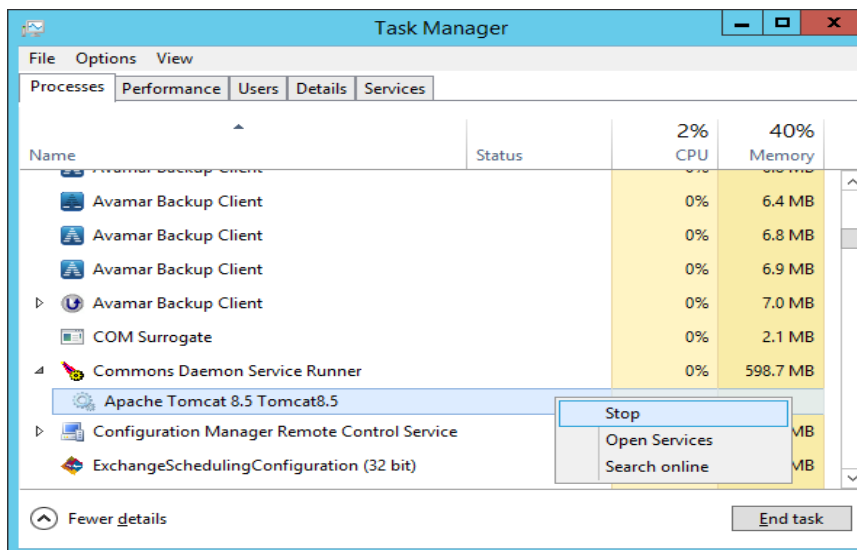6.   In *Task Manager*, select **Stop** on the **Tomcat8.**5 process (FIG.

FIG. 145 End Process - Apache Tomcat 8.5

NOTE: *Since proper memory allocation settings are dependent on the hardware and software configuration of the RMS server and RMS database server, if any changes are made to either the software or hardware on the server, these steps may need to be repeated.*

7.   At this point you should be able to restart Tomcat (right-click on the Task bar icon and select **Start Service**).

NOTE: *The Tomcat 8.*5 *service must be running in order to access and use the RMS Enterprise Web UI.*

Tomcat Logging

In Tomcat 8.5, Access Logging is turned ON by default, which may result in large files that consume disc space. For instructions on managing Tomcat 8.5 logging, please see:
https://tomcat.apache.org/tomcat-8.5-doc/logging.html.

- For specifics concerning how to configure Access Logging, please see: https://tomcat.apache.org/tomcat-8.5-doc/config/valve.html.

Enabling HTTPS

HTTPS protocol may be optionally used for web user interface with the installation and configuration of a SSL certificate.

NOTE: *NetLinx master endpoint device communication must communicate via port 80. Web user interface communication can be restricted to only use HTTPS 443.*

In order to enable https for RMS, it is necessary to edit Tomcat's web.xml.

The following lines need to be added to the **TOMCAT_HOME/conf/web.xml** file:

```
<security-constraint>
    <web-resource-collection>
    <web-resource-name>RMS Web Application User Interface</web-resource-name>
        <url-pattern>/index.html</url-pattern>
        <url-pattern>/rms.swf</url-pattern>
        <url-pattern>/flex-http.crossdomain</url-pattern>
        <url-pattern>/flex-https.crossdomain</url-pattern>
        <url-pattern>/libs/*</url-pattern>
        <url-pattern>/messagebroker/*</url-pattern>
        <url-pattern>/logfile/*</url-pattern>
        <url-pattern>/resources</url-pattern>
        <url-pattern>/report/*</url-pattern>
    </web-resource-collection>
    <user-data-constraint>
        <transport-guarantee>CONFIDENTIAL</transport-guarantee>
    </user-data-constraint>
</security-constraint>
```

NOTE: *For additional information, refer to https://tomcat.apache.org/tomcat-8.5-doc/ssl-howto.html.*

Appendix C: Clustered Deployment

Overview

The following points address common question relative to installing RMS in a clustered deployment.

Sticky Sessions

The term "*sticky session*" refers to the feature of many commercial load balancing solutions for web-farms to route the requests for a particular session to the same physical machine that serviced the first request for that session.

In a sticky session, the user is always sent to the same physical server as they page through the Web site. This is usually done at the router or switch layer, and it keeps the session variables of the user available.

- For users coming through the Flex interface, sticky sessions are a requirement. In the event of a fail-over to another node, the user's session will not exist on the new node and they'll be forced back to the login screen.
- For programmatic clients coming through the REST interface, sticky sessions aren't a requirement, but still desirable for performance reasons.

Shared file storage

Shared file storage serves two purposes:

- Server log files are written to a shared log directory. This provides the application a single place to download log files via the Flex UI.

  If access to the shared log directory is lost, the individual servers will continue to also write their log files to a local directory on their own hard drive.
- Shared file storage houses the search index. All nodes in the cluster need to be able to read this index data. Searches against this data only happen from the Flex UI (e.g. the Asset Management UI uses searches against this index exclusively).

  If access to this search index is lost, searches will fail.
- Tomcat's Session Replication feature is not used by RMS.

In the event of node failure

When a node fails, the transactions in-work on that server will not be committed to the database.

- Human users will be forced to login again and start their workflow over.
- Programmatic clients (or NetLinx controllers) will have their current request fail and subsequent requests will be routed to another server. They use Digest authentication and will simply re-authenticate transparently.

Recommended procedure to restore a failed node

This will depend on the kind of failure:

- If the JVM or Tomcat crashed, just restart Tomcat.
- If the hard drive crashed, then a new drive and a reinstall is required.

  If the hard drive crashed on the server that hosts the Sentinel Licensing service, then restoring that node will likely also involve resetting the licenses with AMX so they can be reactivated on a new hard drive.

If a node loses connectivity to the database

If a node loses database connectivity it does not remove itself from the cluster. It will just issue errors to both the Flex and REST clients. The underlying database connection pool will begin working to restore database connectivity. Without the database, the application simply will not function.

From a UI perspective, RMS may show an error retrieving the Hotlist, but if database connectivity is restored the UI will recover and begin working again.

Network infrastructure requirements

In a clustered deployment, the nodes must find each other using multicast UDP communication and need to all be on the same subnet.

By default, RMS uses the following multicast ports for a clustered deployment: **45564**, **45588**, and **46655**

Communication between the nodes provides a variety of functions:

1. Configuration changes made via the Flex UI. For example, when a configuration change within the Flex UI is made (e.g. SMTP Server), that change is persisted to the database and propagated to the other servers.
2. Search index write operations: when locations are created and client gateways and their assets are registered with the server, this information must be indexed on the shared file storage.

   Only one server can write to the index at a time, so RMS employs a dynamic master-slave approach:
   - The first server to start in a cluster becomes the master, and subsequent servers become slaves.
   - The slaves send their index updates to the master who will perform the index writes for them.
   - If the master node goes down, the second server that was started becomes the new master and performs the index writes.
3. Search index read operations (via SMB network file storage).
4. A distributed data grid (between the nodes) stores the last time each REST-based client gateway communicated with the server. This allows RMS to determine when a client has gone off-line.

5. Licensing checks. Each server must communicate with the Sentinel license service approximately every 10 minutes.

   If the Sentinel license service goes down, RMS will continue to operate for a 24 hour grace period.

Bandwidth costs

Many factors influence the bandwidth costs, including the number of servers in the cluster as well as the number of locations, client gateways, and assets.

Appendix D: Manually Removing & Moving Licenses

Overview

The instructions in this section describe using the *AMX License Manager* tool to remove (revoke) existing RMS Enterprise Licenses, as well as move revoked licenses to a different server. This information is intended to be used in scenarios where purchased RMS Enterprise Licenses need to be transferred from the server on which they were initially installed, to a different replacement server.

Before You Start

Contact AMX Customer Support

Revoking and/or moving an active RMS Enterprise License requires contacting your AMX Customer Support representative. Your representative will provide a RMA number, which you will need in order to complete the revocation process.

Returning (Revoking) a License

This process will remove all licenses from the selected entitlement installed on this machine allowing you to activate the entitlement on another machine.

1. In the *RMS Server Configuration* tool - *Licensing* tab, click **Configure RMS Licenses** to launch the *AMX License Manager* (*Welcome* dialog - see FIG. 64 on page 50).

2. Select *Resource Management Suite* and click **Next** to proceed to the *Select License Server* dialog (see FIG. 65 on page 51). You should be able to use the default selection - **Use the local license server installed and running on this machine**.

   NOTE: *If the license server was installed elsewhere, select the appropriate option in this dialog and click Next to connect to the license server.*

3. Click **Next** to proceed to the *Licensing Status* dialog, which provides a listing of all licenses detected on the license server (FIG. 146):
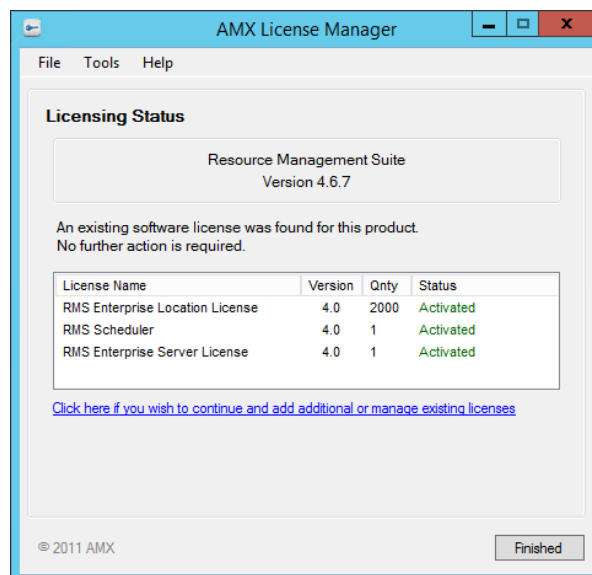

FIG. 146 AMX License Manager - Licensing Status dialog

4. Select the License that you want to remove.

If the Server is Connected to the Internet

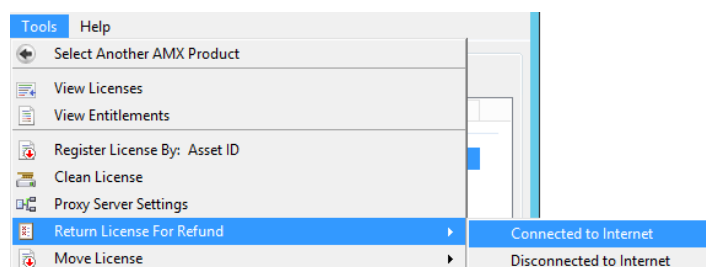1. In the **Tools** menu, select **Return License For Refund > Connected to Internet** (FIG. 150):

FIG. 147 AMX License Manager - Active License Selected For Removal

2. The program will prompt you to verify this action (FIG. 148) - click **Yes** to proceed:
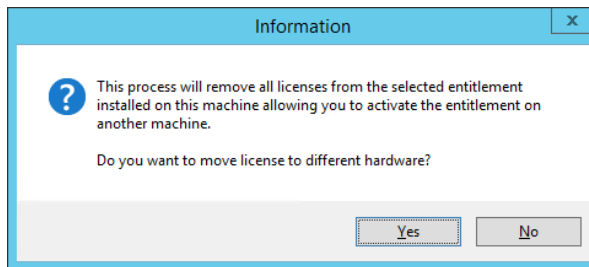

FIG. 148 AMX License Manager - Information dialog

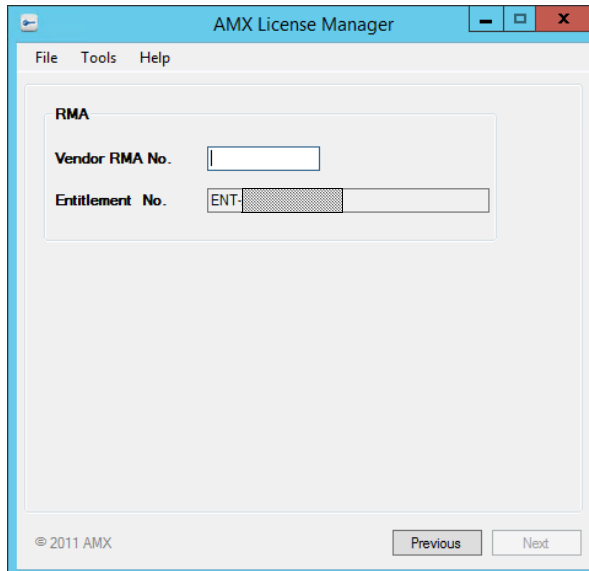3. In the *RMA* dialog, enter the **Vendor RMA** Number (FIG. 149):

FIG. 149 AMX License Manager - RMA

The *Vendor RMA No.* is a 6-digit RMA number provided by AMX Customer Support.

Note that the Entitlement number for the selected License is indicated in the *Entitlement No.* field (read-only)

4. Click **Next** to contact AMX Licensing Services and return the selected License.

If the Server is Not Connected to the Internet

1. In the **Tools** menu, select **Return License For Refund > Disconnected to Internet** (FIG. 150):
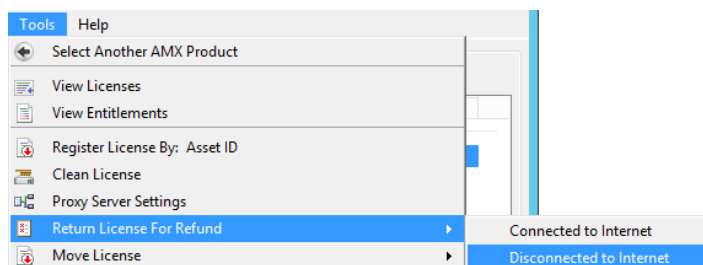
FIG. 150 AMX License Manager - Active License Selected For Removal

2. The program will prompt you to verify this action - click **Yes** to proceed (FIG. 151):
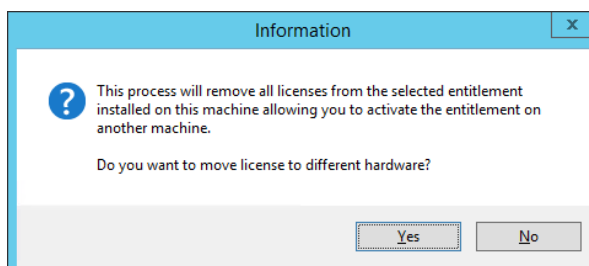
FIG. 151 AMX License Manager - Information dialog

3. This selection invokes the *Manually Return AMX Product License* dialog (FIG. 152):

FIG. 152 AMX License Manager - Manually Return AMX Product License

4. In the **RMA Number** field, enter the 6-digit RMA number provided by AMX Customer Support.

5. Click the *Copy License Information To Clipboard* link and email the information to your Customer Service representative. Customer service will create a *Revoke Permission Ticket* based on this information, and send the Permission Ticket information to you. This Permission Ticket information is required in the next step:

6. Click **Next** to proceed to the *License Revocation Permissions Ticket* dialog (FIG. 153):

FIG. 153 AMX License Manager - License Revocation Permissions Ticket

7. Copy and paste the Permissions Ticket code received from AMX Customer Support into the *Permissions Ticket* text field. Assuming the entered code is valid, this enables the **Next** button.

8. Click **Next** to prompt the license server to validate the Permissions Ticket code, and return a revocation verification ticket if the permission ticket matches. The Revocation Verification Ticket code is provided in the *License Revocation Verification Ticket* dialog (FIG. 154):

FIG. 154 AMX License Manager - License Revocation Permissions Ticket

9. Click the **Copy License Information to Clipboard** link, paste the Revocation Verification Ticket code in an email, and send it to Customer Service for revocation.

10. After the revocation verification ticket code has been sent to Customer Service, click **Next** to proceed to the *AMX License Revoke* dialog (FIG. 155):

FIG. 155 AMX License Manager - AMX License Revoke

11. Click **Next** to close this dialog, completing the process in the *AMX Licensing Manager.*

Your Customer Service representative will complete the revocation process, and inform you of the final status.

Manually Moving a License (To a Different Server)

NOTE: *If using vMotion prior to RMS Enterprise 4.4, it will necessary to follow the instructions below, and then relicense the server once it is installed.*

1. In the *AMX License Manager* (*Welcome* dialog), click **Next** to proceed to the *Select License Server* dialog. You should be able to use the default selection - **Use the local license server installed and running on this machine**.

   NOTE: *If the license server was installed elsewhere, select the appropriate option in this dialog and click Next to connect to the license server.*

2. Click **Next** to proceed to the *Licensing Status* dialog, which provides a listing of all licenses detected on the license server (FIG. 156):
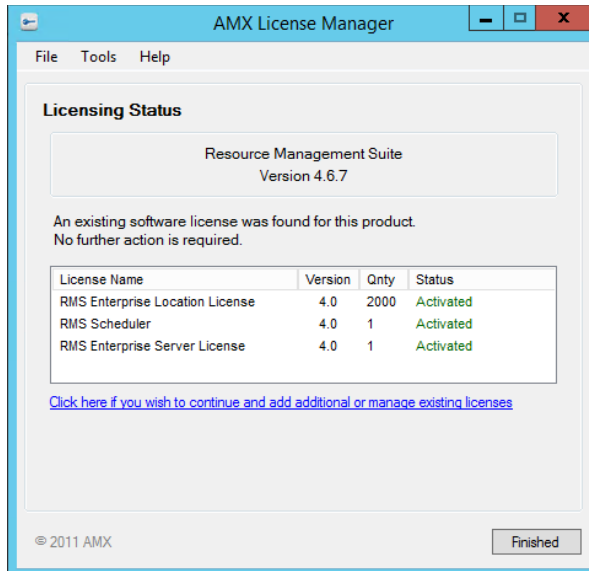

FIG. 156 AMX License Manager - Licensing Status dialog

3. Select the License that you want to move.

If the Server is Connected to the Internet

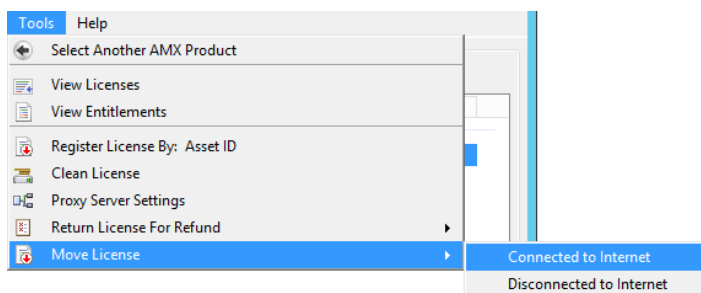1. In the **Tools** menu, select **Move License > Connected to Internet** (FIG. 157):

FIG. 157 AMX License Manager - Move License > Connected to Internet

2. The program will prompt you to verify this action - click **Yes** to proceed (FIG. 151):
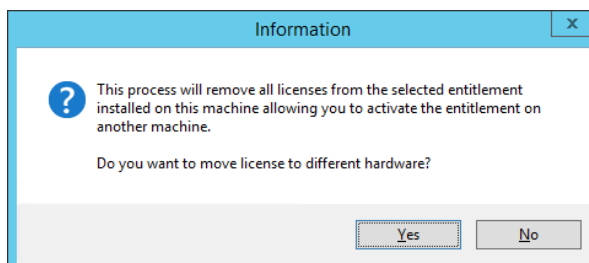

FIG. 158 AMX License Manager - Information dialog

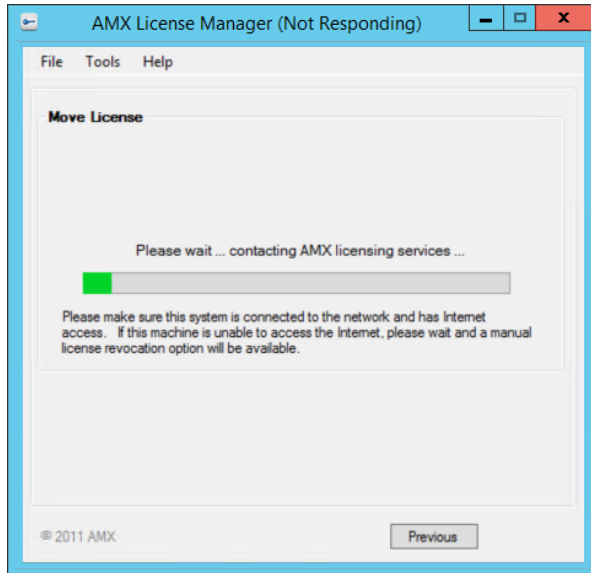3. This selection invokes the *Move License* dialog (FIG. 159):

FIG. 159 AMX License Manager - Move License dialog

Once the system connects to AMX, the selected licenses are moved. The *License Move* dialog indicates that the entitlement has been returned, and is available to be re-activated on another machine (FIG. 160):
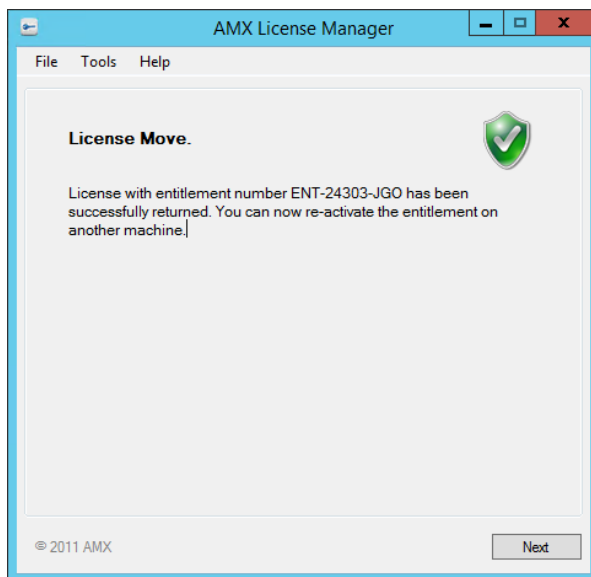
FIG. 160 AMX License Manager - License Move dialog

4. Click **Next** to return to the *Licensing Options Menu* dialog.

If the Server is Not Connected to the Internet

1. In the **Tools** menu, select **Move License > Disconnected to Internet** (FIG. 161):
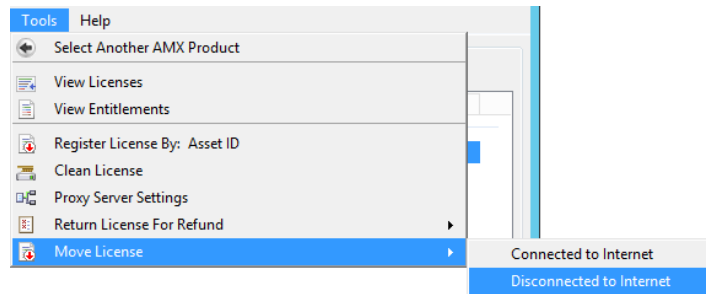

FIG. 161 AMX License Manager - Move License > Disconnected to Internet

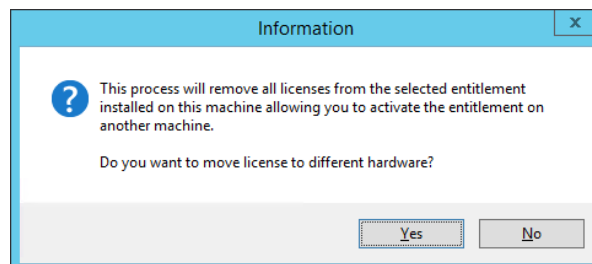2. The program will prompt you to verify this action - click **Yes** to proceed (FIG. 162):

FIG. 162 AMX License Manager - Information dialog

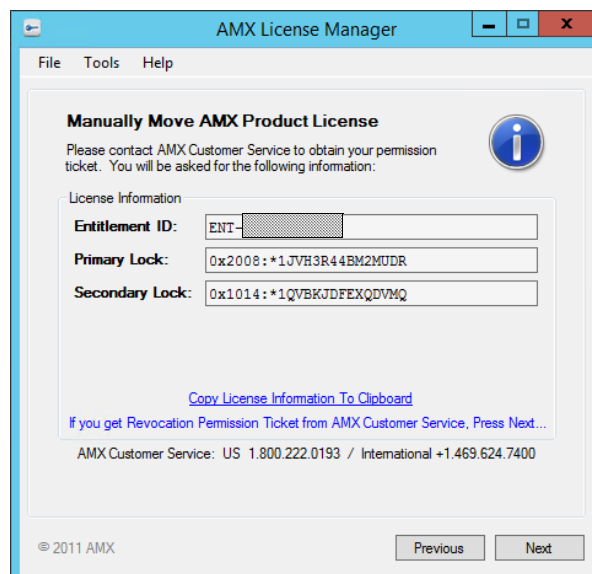3. This selection invokes the *Manually Move AMX Product License* dialog (FIG. 163).

FIG. 163 AMX License Manager - Manually Move AMX Product License dialog

4. Click the *Copy License Information To Clipboard* link and email the information to your Customer Service representative.
    Customer service will create a *Revoke Permission Ticket* based on this information, and send the Permission Ticket information to you. This Permission Ticket information is required in the next step:

5. Click **Next** to proceed to the *License Revocation Permissions Ticket* dialog (FIG. 164):
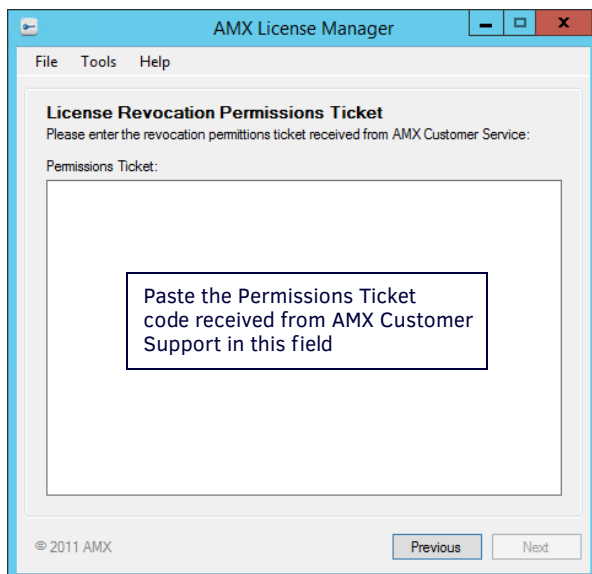
FIG. 164 AMX License Manager - License Revocation Permissions Ticket

6. Copy and paste the Permissions Ticket code received from AMX Customer Support into the *Permissions Ticket* text field. Assuming the entered code is valid, this enables the **Next** button.

7. Click **Next** to prompt the license server to validate the Permissions Ticket code, and return a revocation verification ticket if the permission ticket matches. The Revocation Verification Ticket code is provided in the *License Revocation Verification Ticket* dialog (FIG. 165):

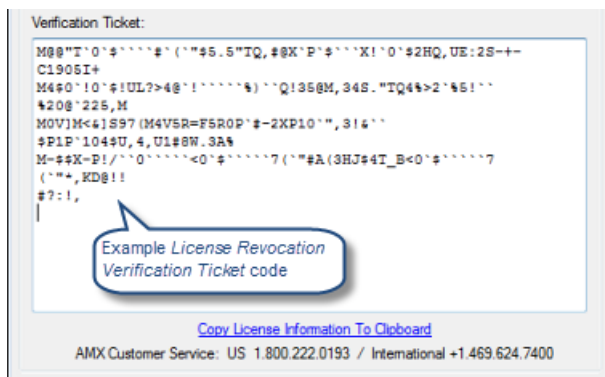**FIG. 165** AMX License Manager - License Revocation Permissions Ticket

8. Click the **Copy License Information to Clipboard** link, paste the Revocation Verification Ticket code in an email, and send it to Customer Service for revocation.

9. After the revocation verification ticket code has been sent to Customer Service, click **Next** to proceed to the *AMX License Return* dialog (FIG. 166):

FIG. 166 AMX License Manager - AMX License Return

10. Click **Next** to return to the *Licensing Options Menu* dialog.

Your Customer Service representative will complete the return process, inform you of the final status, and prompt you to re-activate it on another machine. Refer to the *Registering a Purchased License* section on page 61 for instructions.

Appendix E: Windows Pre-Authentication Configuration

Overview

Purpose

The purpose of configuring Windows-based pre-authentication in RMS Enterprise is to provide users with a single sign-on (SSO) solution. Users who have already logged into their Windows computers can immediately access RMS Enterprise via their browser and not be challenged with a login prompt by RMS.

How It Works

Microsoft's Internet Information Services (IIS) must be installed and sit in front of the Tomcat Server that hosts RMS Enterprise. IIS can be hosted on the same physical server as Tomcat or can be on a different server altogether. Users access RMS through IIS rather than browsing to the Tomcat Server directly. IIS receives the Windows user name from the browser and then packages that user name into a request header before forwarding the request on to the Tomcat Server. The RMS application, when configured for pre-authentication, retrieves the user name from the request header and trusts IIS that the user's identity has already been authenticated.

- All users that want to leverage SSO must already have an RMS User account in the RMS database.
- Another possibility would be if RMS is configured for LDAP / Active Directory User management, the user account must already exist in that repository for SSO to work.

Security Implications

Because the RMS Enterprise Windows Pre-Authentication mechanism depends on a trust between IIS and Tomcat, it is strongly advised that the **HTTP/1.1** Connector in Tomcat be disabled (see *Appendix B: Advanced Tomcat Configuration* on page 89 for more details).

All web traffic to RMS Enterprise should come through IIS, and no users should be able to access Tomcat directly.

NOTE: *If the Tomcat HTTP/1.1 Connector is left enabled, it is trivial to spoof any RMS user by simply putting the appropriate header into the HTTP request.*

Client Gateway Authentication

Client gateways built upon the RMS 4 SDK do not participate in SSO, but they do communicate to RMS through IIS when the system is configured for Windows Pre-Authentication. In this case, a client gateway's requests simply pass through IIS anonymously and the RMS application challenges the client gateway to authenticate with Digest Authentication.

NOTE: *Client gateways built with the RMS 3 Legacy SDK still communicate directly to the RMS Server through port 3839. They have no authentication.*

Browser Support

Internet Explorer

Internet Explorer (IE) versions 6, 7, and 8 have been tested and all work with Windows Pre-Authentication.

IE 9 and 10 should also work with no problem.

Chrome

Chrome version 24 has been tested and works with Windows Pre-Authentication.

Firefox

Firefox version 14 (and newer) has native support for Windows Pre-Authentication, but it is not enabled by default. The easiest way to enable and configure it is by installing a Firefox add-on such as *Integrated Authentication for Firefox*.

Configuration of RMS Enterprise

Enable Window Pre-Authentication

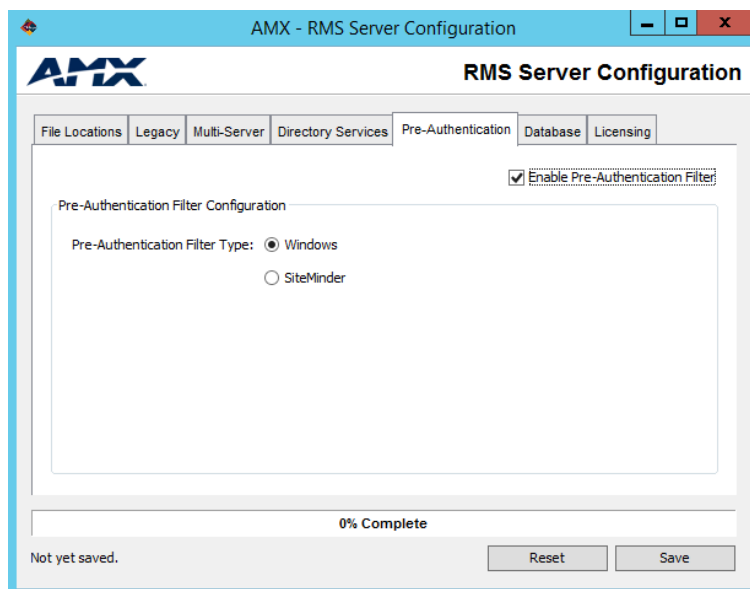Run the RMS Configuration Tool and enable the Windows type of Pre-Authentication (FIG. 167):

FIG. 167 RMS Server Configuration - Pre-Authentication Configuration

Configuration of Tomcat

Tomcat has a primary configuration file named server.xml that needs to be changed with a text editor such as Notepad. These changes will only take effect after restarting the Tomcat service.

Executor Thread Pool

Tomcat can make use of a shared Executor that provides a thread pool. By default, the Executor is commented out. Uncomment the **<Executor>** element.

```
<Executor name="tomcatThreadPool" namePrefix="catalina-exec-"
    maxThreads="150" minSpareThreads="4"/>
```

HTTP Connector

The **HTTP/1.1** Connector is enabled by default. Comment this Connector out due to the security implications described earlier.

```
<!--
<Connector port="8080" protocol="HTTP/1.1"
    connectionTimeout="20000" redirectPort="8443" />
-->
```

AJP Connector

Change the **AJP/1.3** Connector by adding a reference to the Executor and turning Tomcat authentication off.

NOTE: *The tomcatAuthentication key must be added, since it is not part of the basic Tomcat installation.*

```
<Connector port="8009" protocol="AJP/1.3" redirectPort="8443"
    Executor="tomcatThreadPool" tomcatAuthentication="false"/>
```

Configuration of ISAPI Redirect

The Apache Tomcat site has Tomcat Connectors available for download. One of those connectors is for IIS and is named **ISAPI-redirect**. It is a DLL that can be installed into IIS, but before the IIS configuration, the ISAPI-redirect DLL must itself be configured.

Two instances of the ISAPI-redirect are required to make RMS Enterprise Windows Pre-Authentication work. One of them is from the RMS UI and the other is for the RMS REST API used by the client gateways.

Tomcat Connectors Download

http://tomcat.apache.org/download-connectors.cgi

From this web site, browse to the "**Binary Releases**" and then choose the "**windows**" subdirectory. There are numerous zip files that can be downloaded, but either the i386 or the x86_64 version for IIS is what is required.

- tomcat-connectors-1.2.37-windows-i386-iis.zip
- tomcat-connectors-1.2.37-windows-x86_64-iis.zip

Tomcat Connectors Documentation

http://tomcat.apache.org/connectors-doc/

This link is for the Tomcat Connectors documentation. The "*Reference Guide*" section has very useful information that describes all of the individual settings. The following sections are important for Windows Pre-Authentication:

- workers.properties
- uriworkermap.properties
- IIS

Directory Structure

The following directories need to be created. The exact names and paths can be changed, but the paths are important and referenced in some of the configuration files.

```
C:\isapi-redirect-rms-api
C:\isapi-redirect-rms-api\conf
C:\isapi-redirect-rms-api\logs
C:\isapi-redirect-rms-ui
C:\isapi-redirect-rms-ui\conf
C:\isapi-redirect-rms-ui\logs
```

Unzip the Connector

There is no installer for the Tomcat Connector. It needs to be unzipped twice into two these directories:

```
C:\isapi-redirect-rms-api
C:\isapi-redirect-rms-ui
```

Properties File for RMS API

In the **C:\isapi-redirect-rms-api** directory, create a file named **isapi_redirect.properties**, and put the following contents into the file with a text editor:

```
# Configuration file for the Jakarta ISAPI Redirector

# The path to the ISAPI Redirector Extension, relative to the website

# This must be in a virtual directory with execute privileges
extension_uri=/rms-api/isapi_redirect.dll

# Full path to the log file for the ISAPI Redirector
log_file=c:\isapi-redirect-rms-api\logs\isapi_redirect.log

# Log level (debug, info, warn, error or trace)
log_level=warn

# Full path to the workers.properties file
worker_file=c:\isapi-redirect-rms-api\conf\workers.properties


# Full path to the uriworkermap.properties file
worker_mount_file=c:\isapi-redirect-rms-api\conf\uriworkermap.properties

auth_complete=0
```

Properties File for RMS UI

In the **C:\isapi-redirect-rms-ui** directory, create a file named **isapi_redirect.properties**, and put the following contents into the file with a text editor:

```
# Configuration file for the Jakarta ISAPI Redirector

# The path to the ISAPI Redirector Extension, relative to the website
# This must be in a virtual directory with execute privileges
extension_uri=/rms-ui/isapi_redirect.dll

# Full path to the log file for the ISAPI Redirector
log_file=c:\isapi-redirect-rms-ui\logs\isapi_redirect.log

# Log level (debug, info, warn, error or trace)
log_level=warn

# Full path to the workers.properties file
worker_file=c:\isapi-redirect-rms-ui\conf\workers.properties

# Full path to the uriworkermap.properties file
worker_mount_file=c:\isapi-redirect-rms-ui\conf\uriworkermap.properties
```

URI Worker Map Properties for RMS API

In the **C:\isapi-redirect-rms-api\conf** directory, create a file named **uriworkermap.properties**, and put the following contents into the file with a text editor:

```
/rms|/api/*=worker1
/jkmanager=jkstatus
```

URI Worker Map Properties for RMS UI

In the **C:\isapi-redirect-rms-ui\conf** directory, create a file named **uriworkermap.properties**, and put the following contents into the file with a text editor:

```
/rms|/*=worker1
/jkmanager=jkstatus
```

Workers Properties for RMS API

In the **C:\isapi-redirect-rms-api\conf** directory, create a file named **workers.properties**, and put the following contents into the file with a text editor:

```
worker.list=worker1, jkstatus

worker.worker1.type=ajp13
worker.worker1.host=localhost
worker.worker1.port=8009

worker.balancer.type=lb
worker.balancer.balance_workers=worker1
worker.balancer.sticky_session=true

worker.jkstatus.type=status
worker.jkstatus.mount=/jkmanager
```

NOTE: *If IIS is hosted on a different machine than Tomcat, then the property worker.worker1.host needs to be set to an actual DNS host name or IP address of the Tomcat server rather than localhost.*

Workers Properties for RMS UI

In the **C:\isapi-redirect-rms-ui\conf** directory create a file named "**workers.properties**" and put the following contents into the file with a text editor:

```
worker.list=worker1, jkstatus

worker.worker1.type=ajp13
worker.worker1.host=localhost
worker.worker1.port=8009
worker.worker1.lbfactor=1

worker.balancer.type=lb
worker.balancer.balance_workers=worker1
worker.balancer.sticky_session=true
```

```
worker.jkstatus.type=status
worker.jkstatus.mount=/jkmanager
worker.jkstatus.read_only=True
```

If IIS is hosted on a different machine than Tomcat, then the property worker.worker1.host needs to be set to an actual DNS host name or IP address of the Tomcat server rather than localhost.

Configuration of IIS

Internet Information Services (IIS) can be configured with the IIS Manager found in Computer Management > Services and Applications > IIS Manager.

ISAPI and CGI Restrictions

1.   With the root node (see AHARRISA1135) selected, double-click **ISAPI and CGI Restrictions** (FIG. 168):
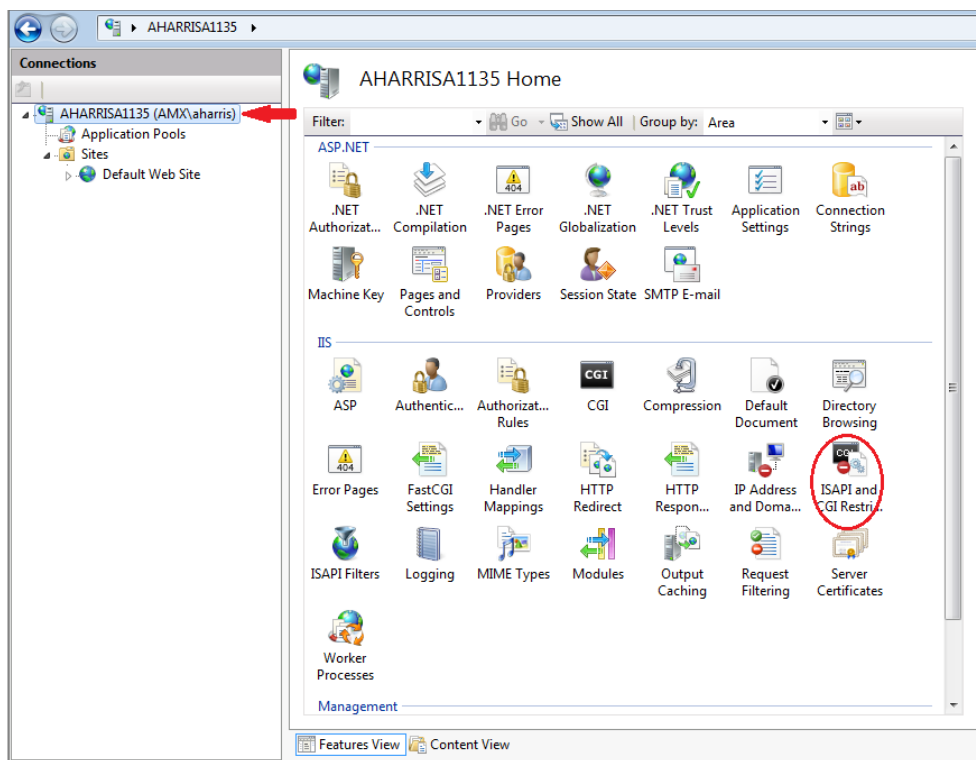
FIG. 168   IIS Manager - ISAPI and CGI Restrictions

2.   Add two new restrictions and point each of them to the **isapi_redirect.dll** in the respective RMS API and RMS UI directories created earlier.

3.   Click **"Allow extension path to execute"** (FIG. 169):
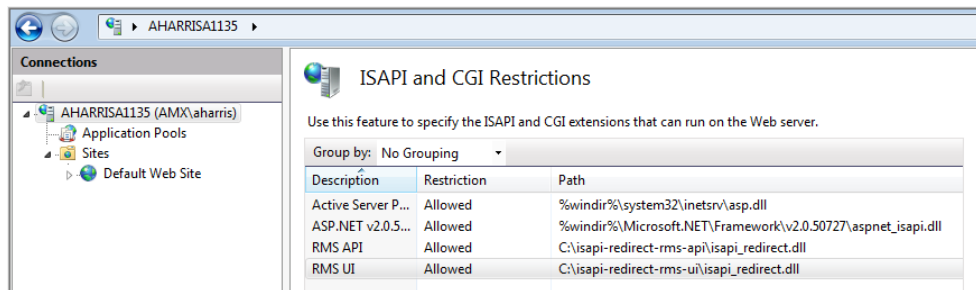
FIG. 169   ISAPI and CGI Restrictions

ISAPI Filters

1. With the "**Default Web Site**" node selected, double-click "**ISAPI Filters**" (FIG. 170):
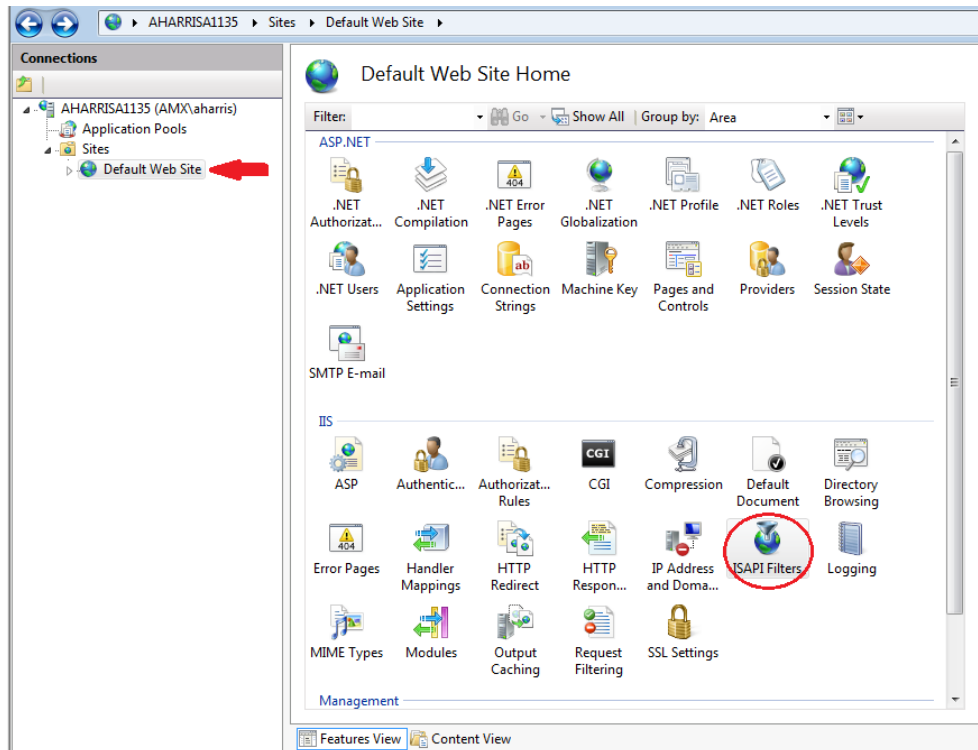
FIG. 170 IIS Manager - ISAPI Filters

2. Add two new ISAPI Filters and point each of them to the **isapi_redirect.dll** in the respective RMS API and RMS UI directories created earlier (FIG. 171):
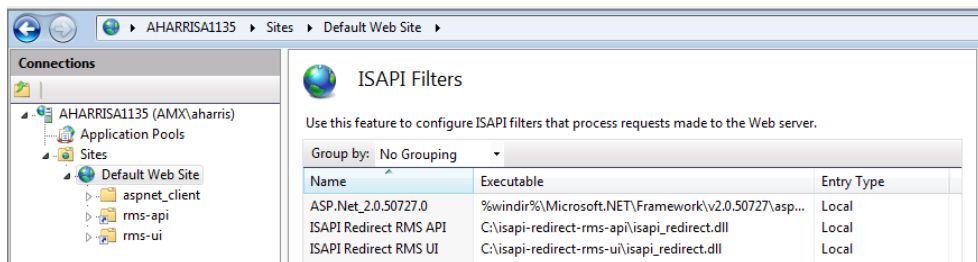

FIG. 171 ISAPI Filters

Virtual Directories

Two new virtual directories need to be added; one for RMS API and another for RMS UI. Right-click on the "**Default Web Site**" node, and select "**Add Virtual Directory...**"
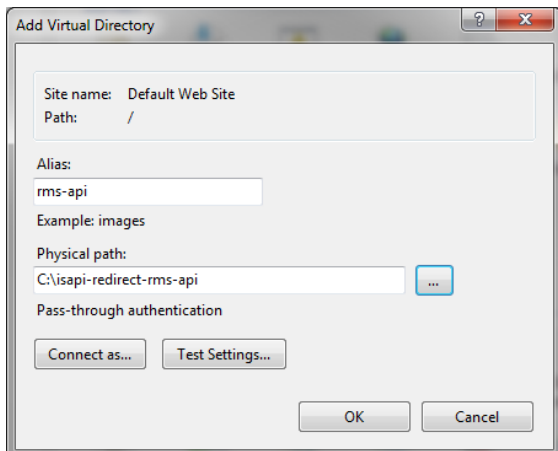
RMS API

FIG. 172 Add Virtual Directory - RMS API

RMS UI
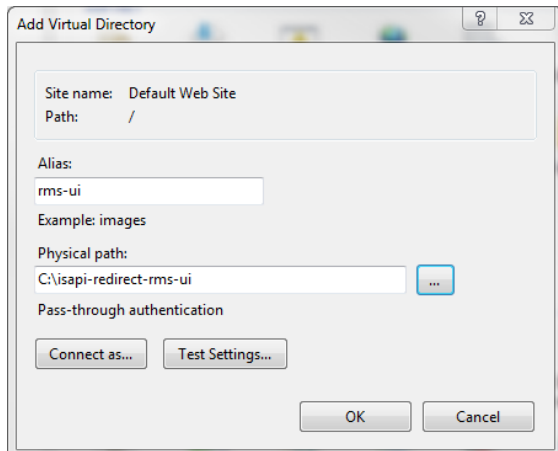
FIG. 173 Add Virtual Directory - RMS UI

It is imperative that the aliases given match what is in the **extension_uri** property in the **isapi-redirect.properties** files from earlier.

Authentication Settings

1. On each of the new virtual directories just added, visit the *Authentication* page (FIG. 174):
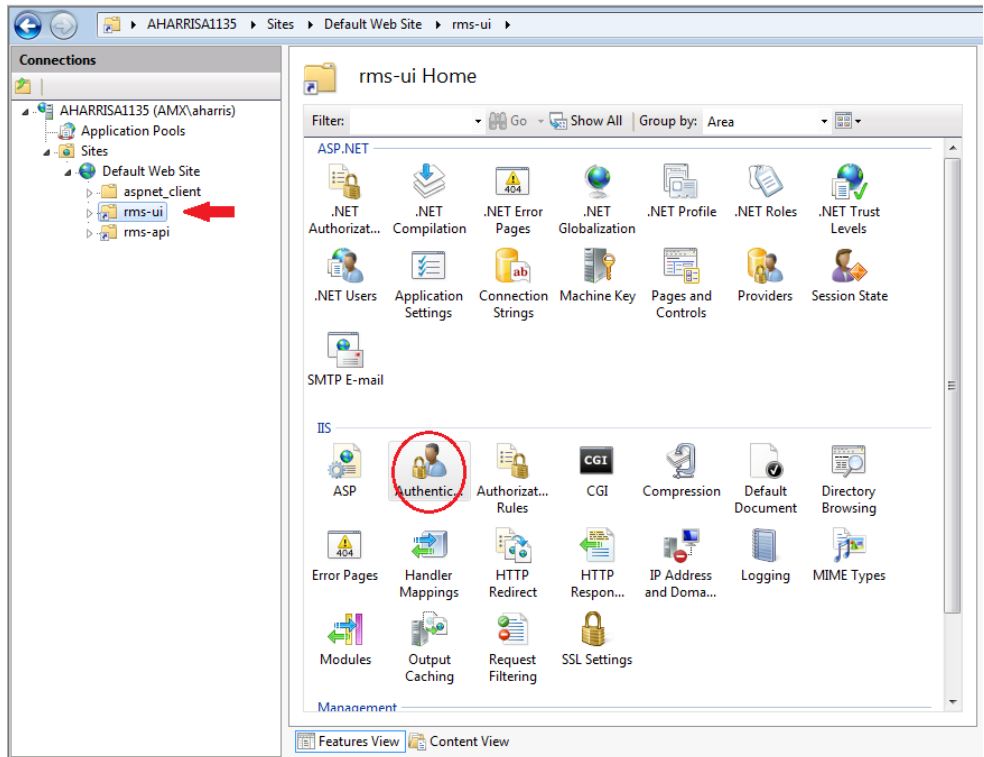
FIG. 174 rms-ui Home page - Authentication option

2. For the **rms-api** virtual directory, confirm that *Anonymous Authentication* is enabled, and all other forms are disabled. The RMS Enterprise application will be responsible for enforcing digest authentication for client gateways, not IIS (FIG. 175):
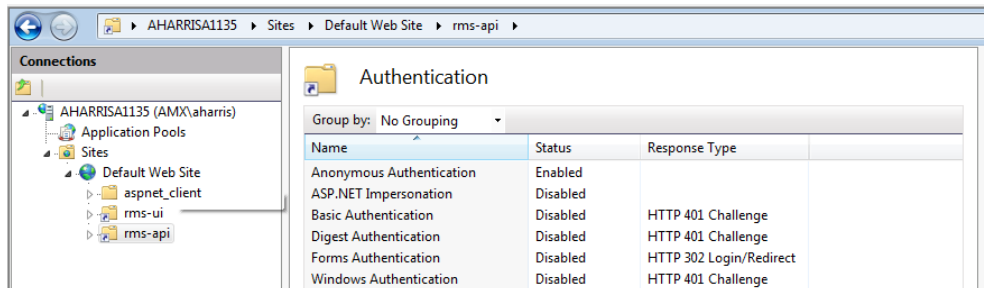

FIG. 175 rms-api - Authentication page

3. For the **rms-ui** virtual directory, disable *Anonymous Authentication* and enable *Windows Authentication*. All other forms of authentication should be disabled (FIG. 176):
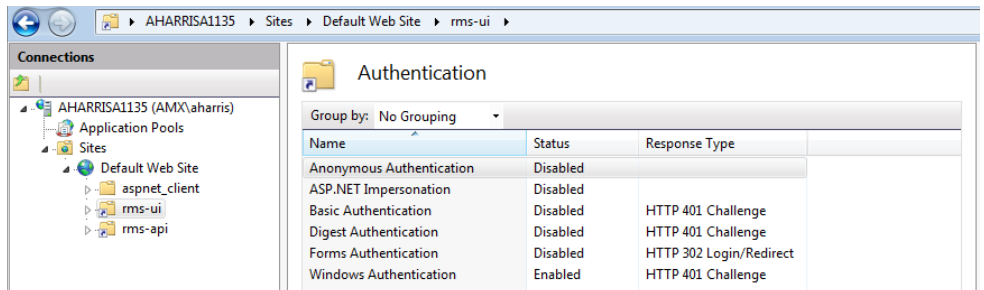
FIG. 176 rms-ui - Authentication page

Handler Mappings on Virtual Directories

1. Select the **rms-api** virtual directory, and then double-click **Handler Mappings**.

    It will look similar to FIG. 177, with ISAPI-dll in a disabled state:
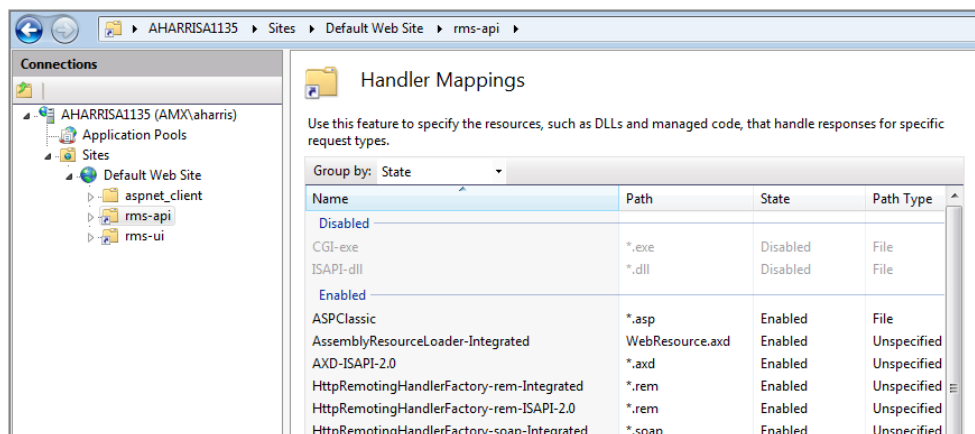

FIG. 177 rms-api - Handler Mappings page

2. Right-click on ISAPI-dll, and click **Edit Feature Permissions...** , and click **Execute**.

3. Repeat this process for **rms-ui** virtual directory.

Restart IIS

Finally, restart the IIS service. Now browsing to the RMS application through the IIS server should result in the user bypassing the login page and going straight into the application.

Final Remarks

-   Since the RMS application will be accessed through IIS, remember to not include port 8080 in the URL to the application (e.g. http://myserver.com/rms).
-   Any clients that were previously configured to connect on port 8080 will need to be reconfigured to connect using port **80**.
-   The administrator needs to take software and network firewalls into consideration and make any necessary changes for this new deployment. IIS needs to talk to Tomcat over port 8009. If IIS and Tomcat are hosted on different machines or VMs, this port must be open.