



Cisco Smart+Connected Remote Management Server Installation Guide

Release 1.1

Americas Headquarters

Cisco Systems, Inc. 170 West Tasman Drive San Jose, CA 95134-1706 USA http://www.cisco.com Tel: 408 526-4000 800 553-NETS (6387) Fax: 408 527-0883

Text Part Number: OL-27359-02

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

Cisco Smart+Connected Remote Management Server Installation Guide © 2012 Cisco Systems, Inc. All rights reserved.



CONTENTS

Preface v

Obtaining Documentation and Submitting a Service Request $\quad {\bf v}$ Related Documentation $\quad {\bf v}$

CHAPTER 1	Overview 1-1
	Requirements 1-2
	Summary Steps 1-5
	Obtaining the Cisco RMS Server Software 1-6
	Obtaining and Installing Licenses 1-6
CHAPTER 2	Install and Configure the Cisco RMS Server 2-1
	Overview 2-1
	Prepare the Server and Network Environment 2-2
	Install and Configure the Cisco RMS Web Services 2-3
	Verify the Web Service and Access the Cisco RMS Console 2-16
	Verify the Cisco RMS Web Services Installation 2-19
	,
APPENDIX A	Define the Locator Lookup Rules and URLs A-1
	Locating the Locator A-1
	Configure the Location of the locator.xml File A-1
	Rule Based Lookup A-2
	XML Syntax A-2
	Proxy A-3
	Logical Operators A-4
	URLs A-4
	No Match A-5
	Device Specific DB Lookup A-6
	XML Rule Criteria A-6

Contents

iv



Preface

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.

Related Documentation

For more information about the Cisco Smart+Connected Residential products, see the following documents and websites:

Subject / Document Title	Location
General	
Product Information and Home Page	www.cisco.com/go/smartconnectedresidential
Cisco 1-Year Limited Hardware Warranty Terms	www.cisco.com/go/smartconnectedresidential warranty
Regulatory Compliance and Safety Information for Cisco Smart+Connected Residential Products	www.cisco.com/go/smartconnectedresidential/ docs
Cisco Support	www.cisco.com/cisco/web/support/
Technical Documentaion	

Release Notes	www.cisco.com/go/smartconnectedresidential/
Cisco Smart+Connected Residential Installation and Configuration Guide	docs
Installation and Configuration	
Cisco Smart+Connected Residential Installation and Configuration Guide	
Cisco RMS Installation and Administration	
Cisco Smart+Connected Remote Management Console Administration Guide	
Cisco Smart+Connected Remote Management Server Installation Guide	
Reference Guides	
Cisco Smart+Connected Controller 200 Reference Guide	
Cisco Smart+Connected Controller 250 Reference Guide	
Cisco Smart+Connected Controller 800 Reference Guide	
Cisco Smart+Connected 7" In-wall Display Reference Guide	
Cisco Smart+Connected Portable Tablet Reference Guide	
Cisco Smart+Connected I/O Extender Reference Guide	
Cisco Smart+Connected Universal Remote 150 Reference Guide	
Cisco Smart+Connected Universal Remote 250 Reference Guide	
Cisco Smart+Connected Video Door Station Reference Guide	
Cisco Smart+Connected Residential Licensing and Registration Guide	See your Cisco representative or partner for more information.
Smart Device Compatibility and other information:	www.cisco.com/go/smartconnectedresidential
Cisco Smart+Connected Smart Device License for Real Estate Developers	
Composer Pro User Guide	http://www.control4.com/documentation/Com poser_Pro_User_Guide/index.htm



For information about third-party hardware and software, see the manufacturer's product documentation and/or website.



CHAPTER

Overview

This document describes how to install and configure the Cisco Smart+Connected Remote Management Server. This server is a web application that performs the following functions:

- Host the Cisco RMS Web Services that are called by Cisco Controllers.
- Host the Cisco RMS Console browser-based interface used to manage commissioning and diagnostic tests and tasks.
- Host the Cisco RMS Locator web service, which directs Cisco Controllers to the correct Cisco RMS Server for your deployment. You can direct all Cisco Controllers to a single deployment, or create advanced rules to direct specific sets of Controllers to different Cisco RMS Servers, if necessary.

After the Cisco RMS Server and Cisco RMS Locator are installed, use the Cisco RMS Console to commission and monitor the Cisco Controllers in your deployment.



Note

This document describes how to install the Cisco RMS and Cisco RMS Locator web services on the same Windows 2008 server (the server can be a physical or virtual instance). The Cisco RMS installer includes the *Jakarta Isapi* redirector that allows both the Microsoft IIS web server and the Apache Tomcat web server to operate without conflict (The Microsoft IIS web server hosts the Cisco RMS Server and Management Console, while Tomcat hosts the Locator services).

Refer to the following topics for more information:

Contents

- Requirements, page 1-2
- Summary Steps, page 1-5
- Obtaining the Cisco RMS Server Software, page 1-6
- Obtaining and Installing Licenses, page 1-6
- Install and Configure the Cisco RMS Server, page 2-1
- Define the Locator Lookup Rules and URLs, page A-1

Requirements

Before you begin, verify that the following requirements are met.



The installer should be experienced in server and database installation and administration.

Table 1-1Requirements

Requirements	More Information	Requirement Complete? (\checkmark)
Network Requirements:	Prepare the Server and Network Environment, page 2-2	(•)
 One IP addresses for the Cisco RMS Server. 	Prepare the Server and Network Environment, page 2-2	
• A DNS entry for the Cisco RMS Server.		
• A DNS-A entry for c4locator that points to the Cisco RMS Server.		
• DHCP server with domain suffix configured to match <i>yourdomain.com</i> .		
Download and extract the Cisco RMS Server software	Obtaining the Cisco RMS Server Software, page 1-6	
A SSL certificate signed by Thawte for the Cisco RMS Server.	Install and Configure the Cisco RMS Server, page 2-1 http://www.thawte.com	
Cisco RMS licenses:	Obtaining and Installing Licenses, page 1-6	
One Cisco RMS Server license		
• One Cisco RMS Client license for each Cisco Controller in your deployment		
 A physical server that meets the following performance requirements can support up to 5,000 Cisco Controllers under normal operating conditions: Quad-core processor 8GB RAM Server-class disk subsystem (RAID 1 minimum) An Internet connection (required to download and install additional third-party software and Windows updates.) 	 See the server documentation for instructions to install the physical or virtual machine. The physical server requirements are the minimum hardware requirements for each group of 5,000 servers. A physical server with additional processor cores, RAM, and disk space can support additional Cisco RMS Server instances on the same machine. Tasks that require high levels of data transfer can cause decreased performance or unreliable operation. For example, initial configuration and commissioning of large numbers of Cisco Controllers, frequent polling and updating, or software update delivery by the Cisco RMS Server. To avoid performance or reliability issues, we recommend staggering data-intensive tasks, polling intervals and software updates. You can also add additional Cisco RMS Server instances to support less 	

Table 1-1Requirements

Requirements	More Information	Requirement Complete? (\checkmark)
Operating System: Microsoft Windows Server 2008 R2 or later (64-bit)	The Windows server can host both the Cisco RMS Server and Cisco RMS Locator web applications.	
	See the following link for additional information: www.microsoft.com/windowsserver2008/	
Database: Microsoft SQL Server Express	Included with the Cisco RMS Server installer.	Π
	The database is used by the Cisco RMS Server. See the following for more information:	
	• Install and Configure the Cisco RMS Server, page 2-1	
	• www.microsoft.com/express/database/	
Microsoft Internet Information Services (IIS)	The IIS server hosts the Cisco RMS Server web application.	Π
web server version 7 or later.	See the "Install and Configure the Cisco RMS Server" section on page 2-1 for more information.	
	See the following link for additional information: http://www.iis.net/	
Apache Tomcat and Java Development Kit	Included with the Cisco RMS Server installer.	
(JDK) 1.6	The Tomcat server hosts the Cisco RMS Locator web applications. JDK is required to run the web application.	
	• See the "Define the Locator Lookup Rules and URLs" section on page A-1 to install and configure the software.	
	• See the following links for additional information:	
	 Tomcat: http://tomcat.apache.org (click Tomcat 6 (http://tomcat.apache.org/download-60.cgi) Direct link: http://www.oracle.com/technetwork/java/javase/do wnloads/jdk6-downloads-1637591.html 	
	 JDK: http://www.oracle.com/technetwork/java/javase/do wnloads/index.html (under Java SE 6 Update 33, click the JDK Download link) 	

Table 1-1Requirements

Requirements	More Information	Requirement Complete? (\checkmark)
Microsoft .Net 4.0	Included with the Cisco RMS Server installer.	Π
	Microsoft .Net 4.0 is required to support the web applications.	
	• See the "Define the Locator Lookup Rules and URLs" section on page A-1 to install and configure the software.	
	• See the following link for additional information: http://www.microsoft.com/net	
Microsoft ASP.NET MVC 3 Tools	Included with the Cisco RMS Server installer.	
	The MVC 3 Tools are required to support the web applications.	-
	• See the "Define the Locator Lookup Rules and URLs" section on page A-1 to install and configure the software.	
	• See the following link for additional information: www.asp.net/mvc/mvc3.	

Summary Steps

Complete the following steps to install and configure the Cisco RMS Solution on your network.

	Task	Related Documentation	Task Complete? (✓)
Step 1	Complete the requirements, including software installation downloads, SSL certificates, network requirements, IP addresses and other requirements.	Requirements, page 1-2	
Step 2	Download and decompress the Cisco RMS Server installation files.	Obtaining the Cisco RMS Server Software, page 1-6	
Step 3	Physically install the server on your existing IP network, or create a virtual machine (VM) for the Cisco RMS Server installation.	See your server or VM documentation for more information	
Step 4	Install the Windows Server 2008 on the physical server or VM instance.	www.microsoft.com/windowss erver2008/	
Step 5	Revise the network and server properties.	Prepare the Server and Network Environment, page 2-2	
Step 6	Install the Microsoft IIS Web Server.	Prepare the Server and Network Environment, page 2-2 http://www.iis.net/	
Step 7	Install a nd configure the web service software, including the Cisco RMS Server and Cisco RMS Locator.	Install and Configure the Cisco RMS Web Services, page 2-3	
Step 8	Verify the Installation.	Verify the Web Service and Access the Cisco RMS Console, page 2-16	
		Verify the Cisco RMS Web Services Installation, page 2-19	
Step 9	(Optional) Deployments with multiple Cisco RMS Servers can create Cisco RMS Locator discovery rules for Cisco Controllers.	Appendix A, "Define the Locator Lookup Rules and URLs"	
Step 10	Deploy Cisco Controllers and related equipment using the browser-based Cisco RMS Console.	Cisco Smart+Connected Remote Management Console Administration Guide	

Obtaining the Cisco RMS Server Software

To obtain the latest Cisco RMS Server software for your release, see the Release Notes for the Cisco Smart+Connected Residential Solution.

Obtaining and Installing Licenses

A valid license file with the .lic extension must be installed on each Cisco RMS Server. Each license file contains the server and client licenses you must purchase as described in the Release Notes for the Cisco Smart+Connected Residential Solution (the license file includes the number of clients supported by the server, and the license expiration date).

Obtaining the License File

To obtain the license file, purchase one Cisco RMS Server license and the number of required Cisco RMS Client licenses, as described in the following procedure. You will then receive a single license file for installation.

See the Release Notes for the Cisco Smart+Connected Residential Solution for more information.

Installing the License File

To install a license file, copy the file to the rms directory on the drive where you installed the Cisco RMS data. For example, **E:\rms\RMC.lic**.

See the Step 4 (select the data partition) and Step 18 (copy the license file to the rms directory) of the "Install and Configure the Cisco RMS Server" section for more information.

Procedure

Complete the following procedure to purchase and obtain the Cisco RMS Server license file that includes the number of clients required by your deployment.

- **Step 1** Purchase the license:
 - a. Determine the part numbers for the license you want to purchase (see the Release Notes for the Cisco Smart+Connected Residential Solution).
 - **b.** Purchase the licences by contacting your Cisco sales representative or Cisco reseller. For more information, visit http://www.cisco.com/en/US/ordering/index.shtml.
 - **c.** When the purchase is complete, you are issued a Product Authorization Key (PAK) in paper form, or in an email message.
- **Step 2** Obtain the license file:
 - **a.** Locate the Product Authorization Key (PAK) created with the purchase of the optional feature.
 - **b.** In a Web browser, open the Cisco Product License Registration Web page.

http://www.cisco.com/go/license/

- **c.** Follow the onscreen instructions to complete the form and enter the Product Authorization Key (PAK).
- d. Wait for the a license file to be sent to your email address.
- e. Transfer the file to the PC or a removable drive that can be accessed during the configuration.

Step 3 Install the license file as described in the "Install and Configure the Cisco RMS Server" section on page 2-1.







Install and Configure the Cisco RMS Server

The Cisco RMS Server includes a web application that performs two functions:

- Host the Web Services that are called by the Cisco Controllers.
- Host the Cisco RMS Console browser-based interface.

Complete the following procedures to install and configure Cisco RMS Server and associated web services.

Contents

- Overview, page 2-1
- Prepare the Server and Network Environment, page 2-2
- Install and Configure the Cisco RMS Web Services, page 2-3
- Verify the Web Service and Access the Cisco RMS Console, page 2-16
- Verify the Cisco RMS Web Services Installation, page 2-19

Overview

The Cisco RMS Server installation software includes the following software components and settings. Complete the "Install and Configure the Cisco RMS Web Services" section on page 2-3 to install the software and complete the initial configuration.

- Cisco RMS Server software (hosted by the Microsoft IIS web server on a Microsoft 2008 server)
- Microsoft SQL Server Express
- Microsoft .Net 4.0
- Microsoft ASP.NET MVC 3 Tools
- (Locator Installations only) Apache Tomcat, Java Development Kit (JDK) 1.6, and *Jakarta Isapi* redirector.
- The settings and configurations required to host the Cisco Smart+Connected Remote Management Solution.

Prepare the Server and Network Environment

Complete the following tasks before installing the Cisco RMS Server software.

Procedure

Step 1 Physically install the server on your existing IP network, or create a virtual machine (VM) for the Cisco RMS Server installation.

See the server or VM product documentation for more information.

- **Step 2** (Optional) Create a user with administrator rights, and using that user to install Cisco RMS (best practice is to always create a second user with administrator rights rather than use the default administrator account).
- **Step 3** Change the computer name, description and primary DNS suffix.
 - a. Go to Start > Computer > Properties > Change Settings > Computer Name
 - b. Click Change.
 - c. Enter a *Computer name*. For example, RMS_Server.
 - d. Add the server as a member of a domain, if necessary. For example, cisco.com
 - e. Click More and enter the *Primary DNS Suffix of This Computer* to define the Fully Qualified Domain Name (FQDN). For example, cisco.com
- **Step 4** Configure the server network properties, such as a static IP address.
- **Step 5** On the DNS server, add an entry for the Cisco RMS Server.

We recommend using the default server name rms. For example, rms.<your_domain>.com

- **Step 6** (Optional but recommended) Create a data partition where the Cisco RMS web services files will be installed.
 - For example, open the Disk Management utility and create a new volume (Figure 2-1).
 - You may need to shrink the size of the c: volume to free up space for the new partition.
 - Assign the volume a drive letter, such as E: and assign a meaningful name such as rms_data.
 - We recommend creating an 8 GB partition in the NTFS format.

📑 Disk Managen	nent					_	
File Action Vie	ew Help						
(= =) 🖬 🚺	3 🖬 🕴 🖬 🖩	3					
Volume	Layout	Туре	File System	Status	Capacity	Free Space	% Fr
💷 (C:)	Simple	Basic	NTFS	Healthy (B	55.90 GB	43.27 GB	77 %
🔮 ENU (D:)	Simple	Basic	CDFS	Healthy (P	4.08 GB	0 MB	0%
📼 rms_data (E:)	Simple	Basic	NTFS	Healthy (P	8.00 GB	7.93 GB	99 %
🗔 System Reserve	d Simple	Basic	NTFS 🔪	Healthy (S	100 MB	72 MB	72 %
Disk 0 Basic	System Reser			¥			
64.00 GB Online	100 MB NTFS Healthy (System	(C:) 55.90 GB N1 Healthy (Bo	IFS ot, Page File, Cras	8	rms_data (E:) 8.00 GB NTFS Healthy (Primary I	Partition)	

Figure 2-1 Creating a Data Partition for the Cisco RMS Files

Install and Configure the Cisco RMS Web Services

Procedure

- Step 1Complete the network, server and other requirements necessary to install and operate the Cisco
Smart+Connected Remote Management Solution. See the following for more information:
 - Requirements, page 1-2
 - Prepare the Server and Network Environment, page 2-2
- **Step 2** Download and extract the .zip rms installer package.
 - See the "Obtaining the Cisco RMS Server Software" section on page 1-6 for more information.
 - See the "Overview" section on page 2-1 for a summary of the software components included in the installer archive.
 - The files are extracted to the /rms_install directory on your local drive (Figure 2-2).

	ator → Downloads → rms_install → rms_install →			- 🔛	Search rms_install
rganize 🔻 🛅 Open 🤤	ihare with 🔻 Print New folder				
🚖 Favorites	Name *	Date modified	Type	Size	
E Desktop Downloads	SQL Scripts	10/22/2012 8:40 AM 10/22/2012 8:40 AM 10/22/2012 8:40 AM 8/24/2012 12:31 PM	File folder File folder File folder		
🔰 Libraries 📄 Documents 🎝 Music	Tests UploadedFiles Website	10/22/2012 8:40 AM 10/22/2012 8:40 AM 10/22/2012 8:40 AM	File folder File folder File folder		
E Pictures	apache-tomcat-7.0.29	8/24/2012 3:50 PM 8/24/2012 2:11 PM 8/29/2012 4:49 PM	Application Application WAR File	8,541 KB 22,136 KB 45,709 KB	
Ucanputer Local Disk (C:) CD Drive (D:) ENU Cn S_data (E:)	 Control on-chip hocket of service. wat ^B dotNetFx40_Full_x86_x64 ^{Sol} jibiconv2.dll ^{Sol} libiconv2.dll ^{Sol} libind3.dll 	8/24/2012 2:51 PM 8/24/2012 2:51 PM 8/24/2012 3:55 PM 3/15/2008 12:21 AM 5/6/2005 10:52 PM	Application Application Application extension Application extension	49,268 KB 92,174 KB 985 KB 101 KB	
🙀 Network	 Marcana megex2.dll ms_setup sed sql_init.sql SQLConfigurationFile 	10/24/2007 1:10 PM 10/3/2012 10:59 AM 12/27/2010 5:10 PM 8/27/2012 11:32 AM 8/27/2012 11:14 AM	Application extension Windows Batch File Application SQL File Configuration settings	78 KB 13 KB 76 KB 3 KB 11 KB	
	SQLEXPRWT_x64_ENU	10/1/2012 5:07 PM	Application	253,463 KB	

Figure 2-2 Installer Directory and .bat (Batch) File

- Step 3 Launch the rms_setup.bat installer file located in the /rms_install directory (Figure 2-2).
- **Step 4** In the terminal window, enter the initial prompts (Figure 2-3):
 - a. Enter the drive where the installer files will be stored. For example: E:
 - **b.** Enter **Y** to install the Cisco RMS Locator service.

Note We recommend installing the Cisco RMS Locator service Each a Cisco RMS client (Controller) cannot access a Locator, then the Controller will attempt to access rms.<yourdomain>.com.

🖦 C:\Windows\system32\cmd.exe	
Enter the drive where RMS data should be stored (example I:) E: Would you like to install locator services as well? y/n: y	_
k	

Figure 2-3 Initial Installer Prompts

- **Step 5** Wait for the various installation tasks to complete (Figure 2-4). For example:
 - **a**. The directory structure is created.
 - **b.** Cisco RMS resources such as tests, tasks, themes, project backup and other features are installed and configured.
 - c. The .NET 4.0 Framework is installed.
 - d. The Microsoft ASP.NET MVC 3 Tools are installed.
 - e. Other required software and configurations are installed and implemented.

Administrator: C:\Windows\system32\cmd.exe -	rms_setup.bat	
Tests\SYSTEM-System_Uptime.zip Tests\Timezone.zip Tests\UPDATES-Device_Build_Version.zi Tests\UPDATES-Device_Update_Status.zi Tests\UPDATES-Update_State.zip Tests\UPN-Connection_Status.zip 100 File(s) copied	p	
Tasks\Cancel Pending Updates.zip Tasks\Load Template Project.zip Tasks\Load Template Project.zip Tasks\Project Backup.zip Tasks\Project Restore.zip Tasks\Reboot All Devices.zip Tasks\Refresh Navigators.zip	Microsoft .NET Framework 4 Setup Installation Progress Please wait while the .NET Framework is being installed.	Microsoft .NET
Tasks\Restart All Navigator_zip Tasks\Set NTP Server List_zip Tasks\Set System Password_zip Tasks\Set Theme_zip Tasks\Set Timezone_zip Tasks\Set Zigbee Channel_zip Tasks\Set Zigbee Channel_zip Tasks\Set Zigbee Update_zip 14 File(s) copied 1 file(s) moved. Insalling IIS please be patient	File security verification: All files were verified successfully.	_
		0
	Installing .NET Framework 4 Client Profile	
		Cancel

Figure 2-4 Installation Window Samples

Wait for the ASP.Net configuration to complete (Figure 2-5). Step 6

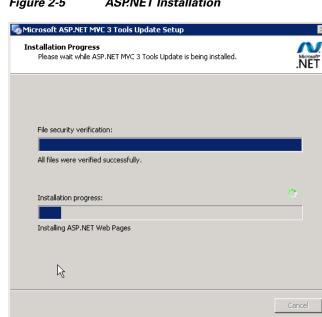


Figure 2-5 **ASP.NET** Installation

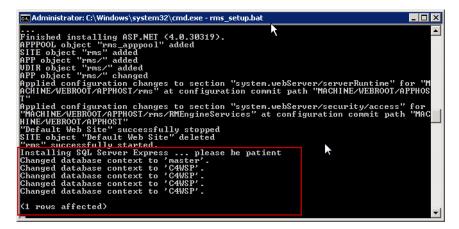
- Step 7 Wait for the additional configurations to be applied in the CLI (Figure 2-6).
 - For example, the IIS Web Server Role is installed.
 - The "Default Web Site" is also deleted and replaced by an "RMS" website (and the new RMS ٠ website is started).

Figure 2-6 **IIS Web Server Installation**

📷 Administrator: C:\Windows\system32\cmd.exe - rms_setup.bat	
Tests\SYSTEM-System_Uptime.zip	
Tests\Timezone.zip	
Tests\UPDATES-Device_Build_Version.zip	
Tests\UPDATES-Device_Update_Status.zip	
Tests\UPDATES-Update_State.zip	
Tests/VPN-Connection_Status.zip	
100 File(s) copied	
Tasks\Cancel Pending Updates.zip	
Tasks\Change Version.zip	
Tasks\Load Template Project.zip	
Tasks\Project Backup.zip	
Tasks\Project Restore.zip	
Tasks\Reboot All Devices.zip	
Tasks\Refresh Navigators.zip	
Tasks\Restart All Navigator.zip	
Tasks\Set NTP Server List.zip	
Tasks\Set System Password.zip	
Tasks\Set Theme.zip	
Tasks\Set Timezone_zip	
Tasks\Set Zigbee Channel.zip	
Tasks\Software_Update.zip	
14 File(s) copied	
1 file(s) moved.	
Insalling IIS please be patient	

- **Step 8** Wait for the Microsoft SQL Server Express installation and configuration to complete (Figure 2-7).
 - This process also configures the SQL server for use with Cisco RMS (for example, the database is created, the schema is applied, the tables and other settings are also created.

Figure 2-7 SQL Express Installation



- **Step 9** (Locator installations only) Follow the on-screen instructions to install the Java Development Kit (JDK). (Figure 2-8).
 - Click Next or Close when prompted to complete the installation.
 - Close the Java registration site if it appears.

得 Java SE Development Kit 7 Update 6 (64-bit) - Setup	
Welcome to the Installation Wizard for Java SE Development Kit 7 Up	date 6
This wizard will guide you through the installation process for the Java SE Develop Kit 7 Update 6.	iment
The JavaFX SDK is now included as part of the JDK.	
<u>Next ></u>	Cancel

Figure 2-8 Java (JDK) Installation

- **Step 10** Wait for the installation to complete (Figure 2-9).
 - For example, the Registry values for the ISAPI redirector are created if you are installing the Cisco RMS Locator.

Figure 2-9 Final Installation Settings

📾 Administrator: C:\Windows\system32\cmd.exe - rms_setup.bat
SUCCESS: Specified value was saved.
Updating registry values for ISAPI redirection
The operation completed successfully.
The operation completed successfully. The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
1 file(s) copied.
UDIR object "rms/jakarta" added
Applied configuration changes to section "system.webServer/security/isapiCgiRest
riction" for "MACHINE/WEBROOT/APPHOST" at configuration commit path "MACHINE/WEB ROOT/APPHOST"
Applied configuration changes to section "system.webServer/isapiFilters" for "MA
CHINE/WEBROOT/APPHOST" at configuration commit path "MACHINE/WEBROOT/APPHOST"
Applied configuration changes to section "system.webServer/handlers" for "MACHIN
E/WEBROOT/APPHOST" at configuration commit path "MACHINE/WEBROOT/APPHOST"
symbolic link created for C:\Users\Administrator\control4 <<===>> C:\control4
1 file(s) copied.
1 file(s) copied.
1 file(s) moved.

Step 11 (Locator installations only) Click **Start** in the *Apache Tomcat 7.0 Tomcat7 Properties* window (Figure 2-10) to start the Tomcat web server.

Note	Be sure the startup type is set to Automatic (Figure 2-10).

Figure 2-10 Apache Tomcat Properties

🍗 Apache Tomcat	7.0 Tomcat7 Properties	×
General Log On	Logging Java Startup Shutdown	~~ I
Service Name:	Tomcat7	
Display <u>n</u> ame:	Apache Tomcat 7.0 Tomcat7	
Description:	Apache Tomcat Server - http://tomcat.apache.org/	
Pat <u>h</u> to executabl	e:	
C:\tomcat7\bin\1	omcat7.exe //RS//Tomcat7	
Startup typ <u>e</u> :	Automatic	- I
	1	
Service Statur:	Stopped	_
<u>S</u> tart	Stop <u>P</u> ause <u>R</u> estart	
	-	
	OK Cancel App	¥

- Step 12 Restart the Windows 2008 server (Start > Restart) to restart the IIS and Tomcat web servers.
- **Step 13** Log in to the Administrator account on the Windows 2008 server.
- **Step 14** When the *Initial Configuration Tasks* window appears (Figure 2-11), verify that the *Web Server (IIS)* role appears. This indicates that the web server was successfully installed.

	figuration Tasks rform the following tasks to configure this	: server			Windows Server 2008 R2 Standard
1	Provide Computer Information			?	Specifying computer information
	Activate Windows	Product ID:	Not activated		
	Set time zone	Time Zone:	(UTC-08:00) Pacific Time (US & Canada)		
	Configure networking	Local Area Connection:	IPv4 address assigned by DHCP, IPv6 ena	abled	
	Novide computer name and domain	Full Computer Name: Workgroup:	WIN-3AV56SE2GDN WORKGROUP		
2	Update This Server			?	Updating your Windows server
	Enable automatic updating and feedback	Updates: Feedback:	Not configured Windows Error Reporting off Not participating in Customer Experience In	nprove	ement Program
	Pownload and install updates	Checked for Updates: Installed Updates:	Never Never		
З	Customize This Server			?	Customizing your server
	Add roles	Roles:	Web Server (IIS)		
	Add features	Features:	Remote Server Administration Tools, .NET	Frame	ework 3.5.1 Features
	Supervisional Experiments Free Provided Action Free Provided Action Free Provided Action Provi	Remote Desktop:	Enabled		
	Configure Windows Firewall	Firewall:	Public: On		
Print,	, e-mail, or $\underline{s}ave$ this information				
	o not show this window at logon				

Figure 2-11 IIS Web Server Role

Step 15 Create the security certificate.

Note

Production Cisco RMS Servers communicate using a secure, encrypted HTTPS connection that is enabled by a certificate from a recognized Certificate Authority (such as Thawte). Self-signed certificates are not secure and are useful only for verifying the web site configuration. Cisco Controllers will not sync with an RMS server that is using a self-signed certificate.

- a. Open the Internet Information Services (IIS) Manager (Start > Administrative Tools > Internet Information Services (IIS) Manager).
- **b.** In *Connections*, select the root server (Figure 2-12).

Number Information Services (II	5) Manager						
🚱 💽 📲 🕨 WIN-3AV565E2GD	N 🕨						🖸 🖆 🗹
<u>File View H</u> elp							
Ele View Help Connections Start Page WIN-3AV56SE2GDN (WIN-3AV56 Application Pools Sites	Filter: ASP Error Pages Logging Worker Processes Managem	Authentication	CGI CGI Handler Mappings Modules	Home	iroup by: Default Document ISAPI and CGI Restrictions Reguest Filtering	Directory Browsing ISAPI Filters Server Certificates	Actions Open Feature Manage Server Restart Start Start Stop View Application Pools View Sites Change .NET Framework Version Help Online Help
			¥=			•	
	Features Vie	ew / Content \	/iew				
Ready							•

Figure 2-12 IIS Manager Server Certificates

- **c.** Double-click the **Server Certificates** icon (Figure 2-12) in the middle pane to display the Server Certificates window.
- **d.** Select **Create Certificate Request** (right pane) to request a new certificate from a recognized Certificate Authority (Figure 2-12).

Number Information Services (II	iS) Manager			
G S win-sav565E2gD	N 🕨			🔄 🖸 🖾 🖬 1 🕑 🗸
Eile <u>V</u> iew <u>H</u> elp				
Connections Start Page WIN-3AV565E2GDN (WIN-3AV56 Application Pools Construction Pools Construction Pools Construction Pools	Server Certificat Use this feature to request and mar configured for SSL. Name	es nage certificates that the Web server Issued To	can use with Web sites	Actions Import Create Certificate Request Complete Certificate Request Create Domain Certificate Create Self-Signed Certificate Phap
4	Features View Content View		Þ	Online Help
Ready				1 .:

Figure 2-13 Create Certificate Request

- **e.** Complete the form to request a new certificate from a recognized Certificate Authority (such as Thawte).
- f. Submit the certificate request code on the Certificate Authority website.
- **g.** You will receive a certificate code from the Certificate Authority. Paste the certificate code into a file and save on your drive.
- **h.** Click **Complete Certificate Request** to upload the certificate you receive from the Certificate Authority.



See the Microsoft and Thawte documentation for more information.

- **Step 16** Add the HTTPS binding and add the certificate.
 - a. Select the RMS web site (for example Sites > rms) from the left pane (Figure 2-14).
 - b. Click Bindings (right pane under Actions tab).
 - c. Click Add in the Site Bindings window.

Finternet Information Services (I)	(S)	Manage	r						
	ON	 Sites 	▶ rms ▶						🗾 🖸 🗠 🟠 I 🔞 •
<u>Eile View H</u> elp									
Connections								Ac	tions
🔍 - 🔒 🖄 🕼	1	2	rms Home						Explore
Start Page		Filter:		- AG Go	- 🔙 Show <u>A</u> ll	Group by:			Edit Permissions
WIN-3AV56SE2GDN (WIN-3AV56 Application Pools	Ľ	ASP.NE	T	00-			▼	۱.	Edit Site
🗄 📲 🙆 Sites			.		4				Bindings
÷. 😜 rms	Si	ite Bindi	ngs				? ×		Basic Settings
		Туре	Host Name	Port	IP Address	Binding	Add		View Applications
		http	riestriane	80	*				View Virtual Directories
							Edit	Ma	anage Web Site 🛛 🔗
							<u>R</u> emove	2	Restart
							Browse	▶	Start
									Stop
		•				•			Browse Web Site
							⊆lose	•	Browse *:80 (http)
									Advanced Settings

d. Select the following in the Add Site Bindings window (Figure 2-15):

Figure 2-15 Add Site Bindings

<u>File V</u> iew <u>H</u> elp		
Connections	irms Home	Actions
🔍 - 🗔 🖄 🕵		🔉 Explore
Start Page	Filter:	Edit Permissions
Application Pools	ASP.NET	Edit Site
🗄 🔂 Sites		Bindings
	Site Bi Add Site Binding	Basic Settings
	Typ Type: IP address: Port:	View Applications
	http: All Unassigned 💽 443	View Virtual Directories
	Host name:	Manage Web Site
		🗳 Restart
	SSL certificate:	Start
	Not selected View	Stop
		Browse Web Site
	OK Cancel	Browse *:80 (http)
		Advanced Settings

- Type—https
- IP Address—All Unassigned
- Port-443
- SSL certificate—Select the SSL certificate you created in Step 15.

Step 17 Import the certificate file that allows Cisco Controllers to connect to the RMS server.

To do this, import the installation file **clientca.pem** to the server's *Trusted Root Certification Authorities*. The **clientca.pem** is in the *Resources* directory of the extracted Cisco RMS installation files.

- a. Select **Start > Run > mmc** to launch the MCC.
- b. Select File > Add/Remove Snap-in...
- c. Double-click Certificates (under Available Snap-ins) and click OK.

You can also select Certificates and click Add.

- d. Select My user account (In the dialog *This snap in will always manage certificates for*) and click Finish.
- e. Expand CERTIFICATES > TRUSTED ROOT CERTIFICATION AUTHORITIES and select the Certificates folder (Figure 2-16).

The current list of certificate authorities on the server is displayed (Figure 2-16).

Figure 2-16 Trusted Root Certification Authorities

🧱 Console1 - [Console Root\Certificates - C	urrent User\Trusted Root Certificat	ion Authorities\Certificates]			
🚘 File Action View Favorites Window	Help				_ 8 ×
🗢 🔿 🙇 🖬 📋 🙆 😼					
Console Root	Issued To 🔺	Issued By	Expira	Actions	
☐ ☐ Certificates - Current User ① Personal	Class 3 Public Primary Certification	Class 3 Public Primary Certification A	8/1/20 1/7/20	Advance Andriana a	^
Trusted Root Certification Authorities Certificates	Copyright (c) 1997 Microsoft Corp.	Copyright (c) 1997 Microsoft Corp. Equifax Secure Certificate Authority	12/30, 8/22/2		•
 	GTE CyberTrust Global Root	GTE CyberTrust Global Root Microsoft Authenticode(tm) Root Au	8/13/2 12/31,		
	Microsoft Root Authority	Microsoft Root Authority Microsoft Root Certificate Authority	12/31, 5/9/20		
	NO LIABILITY ACCEPTED, (c)97 V	NO LIABILITY ACCEPTED, (c)97 Veri Thawte Premium Server CA	1/7/20 1/1/20		
	🔄 Thawte Premium Server CA 🔄 thawte Primary Root CA	Thawte Premium Server CA thawte Primary Root CA	12/31, 7/16/2		
	Thawte Timestamping CA	Thawte Timestamping CA UTN-USERFirst-Object	12/31, 7/9/20		
	🖕 WIN-3AV565E2GDN	WIN-3AV565E2GDN	10/21,		
	All Tasks	Import			
	Refresh				
	Export List	•••			
	Arrange Ic	ons 🕨			
	Line up Ico	ns			
۲	Help		Þ		
Add a certificate to a store				<u> </u>	

- f. Right-click the center pane and select All Tasks > Import.
- g. A wizard will appear.
- **h.** Using the *Certificate Import Wizard*, click **Next** and **Browse** to select the **clientca.pem** file (located in the \Resources directory of the extracted Cisco RMS installation files). See Figure 2-17.



Select the All Files (*.*) file type to display the .pem file (Figure 2-17).

×
2
(?)
Ţ

Figure 2-17 Select the .PEM File

- i. Click **Open** and then **Next**.
- j. Select Place all certificates in the following store and verify that Trusted Root Certification Authorities appears in *certificate store* (Figure 2-18).

Figure 2-18 Certificate Store

ificăte l	(mport Wizard
ertifical	e Store
Certi	ficate stores are system areas where certificates are kept.
Wind the c	ows can automatically select a certificate store, or you can specify a location for ertificate.
C	Automatically select the certificate store based on the type of certificate
	Place all certificates in the following store Certificate store: Trusted Root Certification Authorities Browse
	,
earn mor	e about <u>certificate stores</u>

- k. Click Next.
- I. Click **Finish** to complete the certificate import wizard.
- m. Click Yes to accept any security warnings and install the certificate.
- n. Click **OK** when the import process is successful.

- o. Exit the console and click No when asked to save the Console settings.
- Step 18 Install the .lic Cisco RMS license file.

The license file enables a single Cisco RMS Server and the number of clients purchased as client licenses. See the "Obtaining and Installing Licenses" section on page 1-6 for more information.

- **a.** Navigate to the location where the .lic license file is stored. For example, a USB flash drive. See the Step 2 (extract the installation files) for more information.
- **b.** Copy the RMC.lic file to the rms directory on the drive where you installed the Cisco RMS data. For example E:\rms\. See the Step 4 (select the data partition) for more information.
- **Step 19** (Locator installations only) Define the default Cisco RMS Server that Cisco Controllers will use by default.

Cisco Controllers will be redirected to the specified Cisco RMS Server by the Cisco RMS Locator service. To create advanced rules for deployments that include multiple Cisco RMS Servers, see Appendix A, "Define the Locator Lookup Rules and URLs."

a. Navigate to the C:\control4\ems directory (Figure 2-19).

Figure 2-19 Cisco RMS Locator.xml Configuration File

🕌 ems	ems					
Computer	G C Computer + Local Disk (C:) + control4 + ems					
Organize 👻 🏀 Open 👻	New folder				8==	
🔆 Favorites	Name *	Date modified	Туре	Size		
🧮 Desktop	🖺 locator	10/22/2012 9:36 AM	XML Document	1 KB		
🐞 Downloads 📃 Recent Places	locatorservice-config.properties	10/22/2012 9:36 AM	PROPERTIES File	1 KB		
	locatorservice-db.properties	10/22/2012 9:36 AM	PROPERTIES File	1 KB		
🔚 Libraries	log4j.properties	8/29/2012 4:49 PM	PROPERTIES File	3 KB		
Documents						
🎝 Music						
Pictures						
📑 Videos						
🖳 Computer						
🚢 Local Disk (C:)						

- **b.** Open the locator.xml file using a text or XML editor such as Notepad++ (Figure 2-20).
- **c.** Replace the default IP address or hostname with the IP address or hostname for your Cisco RMS Server:

The Cisco RMS hostname is the computer name defined in Step 3 of the "Prepare the Server and Network Environment" section on page 2-2.

For example, change

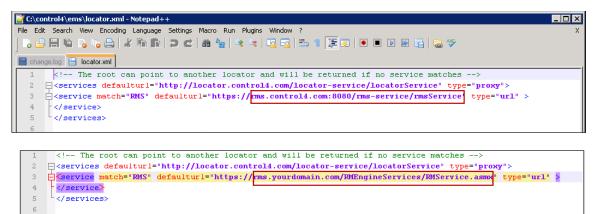
rms.control4.com:8080/rms-service/rmsService

to

rmstest.yourdomain.com/RMEngineServices/RMService.asmx

See Figure 2-20.





Step 20

0 Verify the installation as described in the following topics:

- Verify the Web Service and Access the Cisco RMS Console, page 2-16
- Verify the Cisco RMS Web Services Installation, page 2-19

Verify the Web Service and Access the Cisco RMS Console

Complete the following procedure to verify that the web services are accessible and that you can log on to the Cisco RMS Console.



If you are unable to access the we services or management console, refer to the "Verify the Cisco RMS Web Services Installation" section on page 2-19 to verify that the web server files and settings were installed correctly.

Procedure

```
Step 1 Enter localhost (or the Cisco RMS Server IP address) to verify web server connectivity (Figure 2-21).
```

Note You may experience a delay the first time you connect while Cisco RMS tests and tasks (and other files) are added to the system.

For example, enter one of the following URLs in a web browser to verify connectivity:

• If connecting from the local machine, enter **localhost** and wait for the web page to redirect to the https site:

https://localhost/locator-service

 If connecting from a different machine: https://<IP Address>/locator-service



The page will redirect to the secure https site if you enter the non-secure "http".

Step 2 Log in to the Cisco RMS Console (Figure 2-21):

The default credentials are:

- Username—admin@control4.com
- Password—p@ssw0rd

Figure 2-21 Cisco RMS Console Login Page

🗎 Management Console 🛛 🗙 💽	
← → C 👔 🕹 🖉 ()/locahost	☆ ≡
	Management Console
	Login
	Email: odmin@control4.com Password:
	Remember Me: Login

Note The "https" will be displayed in red with a line through it if you installed a self signed certificate for testing. Self signed certificates are not secure and do not support Controller connections.

Step 3 Select **Configuration > Tests** and **Configuration > Tasks** to verify that the default set of tests and tasks were successfully created (Figure 2-22).

Figure 2-22 Cisco RMS Console Tests and Tasks

Home Admin Systems Configuration Rep	Home Admin Systems Configuration Reports		Home Admin Systems Configuration Reports	•
Profiles Tags Tests Tasks Builds Templates Set	tings		Profiles Tags Tests Taske Builds Templates Settings	1
Create Remove Modify			Create Remove Modify	
Name	Version		Name	Version
1 Minute CPU Load Average	1.0.0.0		Cancel Pending Updates	1.0.0
15 Minute CPU Load Average	1.0.0.0		Change System Password	1.0.0
6 Minute CPU Load Average	1.0.0.0		Change Version	1.0.8
CPU Usage - Audioclient	1.0.0.0	-	Change ZigBee Channel	1.0.0
CPU Usage - Audioserver	1.0.0.0	~	Load Template Project	1.0.10.0
CPU Usage - C4lookup	1.0.0.0		Project Backup	1.0.0.0
CPU Usage - C4perfd	1.0.0.0		Project Restore	1.0.0.0
CPU Usage - Cilserver	1.0.0.0		Reboot all devices	1.0.0.1
CPU Usage - Crond	1.0.0.0		Refresh Navigators	1.0.0
CPU Usage - Director	1.0.0.0		Restart All Navigators	1.0.0
CPU Usage - Diserver	1.0.0.0		Set NTP Server List	1.0.0.1
CPU Usage - Lighttpd	1.0.0.0		Set Theme	1.0.0.0
CPU Usage - Navigator	1.0.0.0		Set Timezone	1.0.0.3
CPU Usage - Netusbreiver	1.0.0.0		Software Update	1.0.0.0
L	14]

- **Step 4** Verify that the Cisco RMS Locator service is available (Figure 2-23).
 - a. Enter the Cisco RMS Server URL:

https://localhost/locator-service

b. Verify that the *AdministrationService* and *LocatorService* appears in the *Available SOAP services* web page.

vailable SOAP services:		
AdministrationService • up date URL getControllerInfo • addControllerInfo • addControllerInfoList • remove URL • globalUp date URL • removeCustomer • up dateCustomer • getControllerInfo getControllerInfoList • removeAllControllers • removeControllers	Endpoint address: https://localhost/locator-service/administrationService WSDL : <u>[http://services.locatorservice.ems.control4.com/]AdministrationSoapServiceImplService</u> Target namespace: http://services.locatorservice.ems.control4.com/	
LocatorService • getServerEndPoint • list • locate	Endpoint address: https://localhost/locator-service/locatorService WSDL : <u>[http://services.locatorservice.ems.control4.com/]LocatorSoapServiceImplService</u> Target namespace: http://services.locatorservice.ems.control4.com/	
LocatorService getServerEndPoint list locate 	Endpoint address: https://localhost/locator-service/v1/soap WSDL : <u>(http://services_locatorservice.ems.control4.com/)LocatorSoapServiceImplService</u> Target namespace: http://services.locatorservice.ems.control4.com/	

Figure 2-23 Cisco RMS Locator Service

Step 5 Verify that the Cisco RMS engine services are available (Figure 2-24).

a. Enter the Cisco RMS Server URL:

https://localhost/RMEngineServices

b. Verify that the RMService.asmx file is present.

Figure 2-24 Cisco RMS Engine Service



OL-27359-02

Verify the Cisco RMS Web Services Installation

If you are unable to access the web services or management console, complete the following procedure to verify that the web server files and configurations were successfully installed.

Procedure

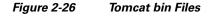
- **Step 1** Verify that the Tomcat files are installed correctly.
 - a. Open the Windows file explorer and navigate to the C:\tomcat7\cong directory.
 - **b.** Verify that the uriworkermap.properties and workers.properties.minimal are present (Figure 2-25).

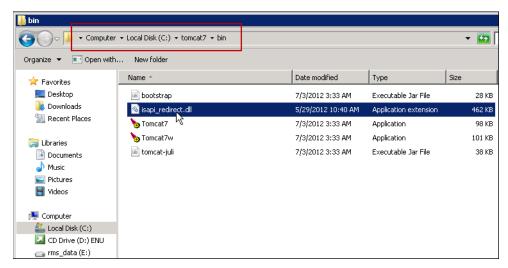
Figure 2-25 Tomcat Configuration Files

📙 conf			
Computer	Local Disk (C:) + tomcat7 + conf +		
Organize 👻 Include in libra	iry 🔻 Share with 👻 New folder		
☆ Favorites	Name ^	Date modified	Туре
🧮 Desktop	鷆 Catalina	10/22/2012 10:00 AM	File folder
Downloads	📄 catalina.policy 🛛 🗟	7/3/2012 3:33 AM	POLICY File
🔛 Recent Places	Catalina.properties	7/3/2012 3:33 AM	PROPERTIES File
📜 Libraries	📄 context	7/3/2012 3:33 AM	XML Document
Documents	logging.properties	7/3/2012 3:33 AM	PROPERTIES File
J Music	📄 server	10/22/2012 9:36 AM	XML Document
📔 Pictures	itomcat-users	10/22/2012 9:36 AM	XML Document
H Videos	uriworkermap.properties	10/22/2012 9:36 AM	PROPERTIES File
🖳 Computer	🖀 web	7/3/2012 3:33 AM	XML Document
Local Disk (C:)	workers.properties.minimal	10/22/2012 9:36 AM	MINIMAL File
CD Drive (D:) ENU			
👝 rms_data (E:)			

c. Navigate to the C:\tomcat7\bin directory and verify that the isapiredirect.dll file is present. (Figure 2-26).

Cisco Smart+Connected Remote Management Server Installation Guide





- **Step 2** Verify that the RMS web configuration file is properly installed.
 - a. Open the C:\rms_web\web.config file in a text editor such as Notepad++.
 - **b.** Scroll down to the <appSettings> section and verify that no entries include the "%" placeholder symbol (Figure 2-27).

Figure 2-27 Website Configuration File

📔 C:\rm:	s_web\web.config - Notepad++X
File Edit	Search View Encoding Language Settings Macro Run Plugins Window ? X
] 🕞 🖻	H N 15 15 A X N A D C A N 15 15 15 15 1 1 1 1 2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
📄 web.c	config
40	
41	
42	<appsettings></appsettings>
43	<add key="LogRawWebserviceXml" value="false"></add>
44	<add key="LogWebServiceCallParameters" value="false"></add>
45	<add key="UpdatesUr1" value="http://localhost/Updates.asmx"></add>
46	<add key="TaskDllsLocation" value="E:\\rms_data\\TaskDLLs"></add>
47	<add key="ProjectDebugDirectory" value="E:\\rms_data\\ProjectDebug"></add>
48	<add key="BackupFilesLocation" value="E:\\rms_data\\Backup"></add>
49	<add key="TaskImportLocation" value="E:\\rms_data\\TaskImport"></add>
50	<add key="TestImportLocation" value="E:\\rms_data\\TestImport"></add>
51	<add key="ThemeFilesLocation" value="E:\\rms_data\\Themes"></add>
52	<add key="RequireControllerCertificates" value="false"></add>
53	<add key="PollingInterval" value="15"></add>
54	<add key="NumberOfBackups" value="1"></add>
55	<add key="BackupUsername" value=""></add>
56	<add key="BackupPassword" value=""></add>
57	<add key="LicenseKey" value=""></add>
58	<add key="TemplateFilePath" value="E:\\rms data\\UploadedFiles\\Templaes\"></add>
59	<add key="LicenseFilePath" value="E:\\rms data\\RMS.lic"></add>
60	
61	<system.web></system.web>
62	<compilation targetframework="4.0"></compilation>
63	<assemblies></assemblies>
64	<pre><add assembly="System.Web.Abstractions, Version=4.0.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364</pre></th></tr><tr><th>65</th><th><add assembly=" culture="neutral," publickeytoken='31BF3856AD364E35"</th' system.web.helpers,="" version="1.0.0.0,"></add></pre>
66	<add <="" assembly="System.Web.Routing, Version=4.0.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35" th=""></add>
67	<pre><add assembly="System.Web.Mvc, Version=3.0.0.0, Culture=neutral, PublicKeyToken=31BF3856AD364E35"></add></pre>
68	

- **Step 3** Verify that the Web Site directories and files are properly installed in the hard disk data partition you created in Step 6.
 - a. For example, navigate to E:\rms-data.
 - **b.** Verify that it includes the data directories similar to those displayed in Figure 2-28.

Figure 2-28 RMS Data Directories

rms_data				
Comput	er → rms_data (E:) → rms_data →			•
rganize 🔻 🛛 Include in li	brary 👻 Share with 👻 New folder			
🔆 Favorites	Name *	Date modified	Туре	Size
🧮 Desktop	🔑 Backup	10/22/2012 9:21 AM	File folder	
🗼 Downloads 🗐 Recent Places	🄑 Logs 🔣	10/22/2012 9:55 AM	File folder	
		10/22/2012 9:21 AM	File folder	
🔚 Libraries	퉬 TaskDLLs	10/22/2012 9:21 AM	File folder	
Documents	퉬 TaskImport	10/22/2012 9:55 AM	File folder	
🌙 Music	🌗 Templates	10/22/2012 9:21 AM	File folder	
E Pictures	퉬 TestImport	10/22/2012 9:55 AM	File folder	
🚼 Videos	🌗 Themes	10/22/2012 9:21 AM	File folder	
🖳 Computer	🔑 UploadedFiles	10/22/2012 9:21 AM	File folder	
🚢 Local Disk (C:)				
🞑 CD Drive (D:) ENU				
👝 rms_data (E:)				

Step 4 Verify that the Cisco RMS Locator files are installed at C:\control4\ems (Figure 2-29).

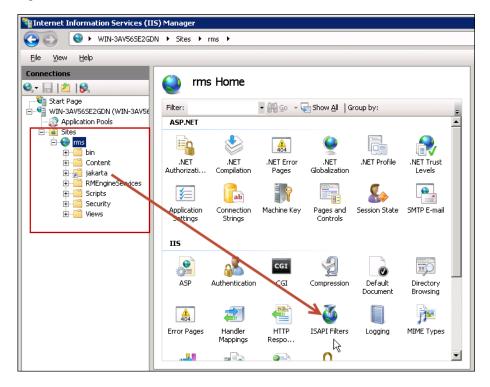
Name Date modified Pavorites Date modified Desktop In/22/2012 9:36 AM Downloads In/22/2012 9:36 AM Recent Places In/22/2012 9:36 AM Iccatorservice-db.properties 1n/22/2012 9:36 AM	🕘 🔾 🗸 📕 🗸 Computer	· + Local Disk (C:) + control4 + ems		
Favorites Image: Constraint of the second secon	Organize 🔻 <i>é</i> Open 🔻	New folder		
Downloads Iocatorservice-config.properties 10/22/2012 9:36 AM Recent Places Iocatorservice-db.properties 10/22/2012 9:36 AM Iocatorservice-db.properties 10/22/2012 9:36 AM Iocatorservice-db.properties 10/22/2012 9:36 AM Iocatorservice-db.properties 10/22/2012 9:36 AM Iocatorservice-db.properties 8/29/2012 4:49 PM Iocatorservice-db.properties 10/22/2012 4:49 PM	🚖 Favorites	Name *	Date modified	Ту
Recent Places Indicatorservice-db.properties 10/22/2012 9:36 AM Image: Indicatorservice-db.properties 8/29/2012 4:49 PM Image: Indicatorservice-db.properties 8/29/2012 4:49 PM	🧮 Desktop	🔮 locator	10/22/2012 9:36 AM	XM
Image: Construct of the service of	-	locatorservite-config.properties	10/22/2012 9:36 AM	PR
Documents	🔚 Recent Places	locatorservice-db.properties	10/22/2012 9:36 AM	PR
	🥽 Libraries	log4j.properties	8/29/2012 4:49 PM	PR
🎝 Music	Documents			
	🌙 Music			
E Pictures	📔 Pictures			

Figure 2-29 Cisco RMS Locator Configuration Files

Step 5 Verify that the Jakarta Isapi redirector was successfully installed.

- a. Launch Internet Information Services (IIS) Manager (Start > Administrative Tools > Internet Information Services (IIS) Manager).
- **b.** In the *Connections* page, select the **rms** site.
- c. Verify that the jakarta virtual directory is present.
- d. In the middle pane, verify that the ISAPIFilters icon is present. (Figure 2-30).

Figure 2-30 Jakarta ISAPI Filters



Step 6 Verify that the Jakarta Isapi redirector was successfully added to the Windows registry.

- **a.** Select **Start > Run** and enter **regedit** to verify that the Isapi redirector registration entries were added.
- **b.** Verify that the following directory is present (Figure 2-31):

HKEY_LOCAL_MACHINE\SOFTWARE\Apache Software Foundation\Jakarta Isapi Redirector\1.0

Computer	Name	Туре	Data	
	👲 (Default)	REG_SZ		
HKEY_CURRENT_USER	ab @	REG_SZ		
HKEY_LOCAL_MACHINE	extension_uri	REG_SZ	/jakarta/isapi_redirect.dll	
🗄 📲 BCD0000000	ablog_file	REG_SZ	C:\tomcat7\logs\isapi_redirect.log	
COMPONENTS	bg_level	REG_SZ	error	
E HARDWARE	ab worker_file	REG SZ	C:\tomcat7\conf\workers.properties.minimal	
E-SAM	worker_mount_file	REG SZ	C:\tomcat7\conf\uriworkermap.properties	
SECURITY	~	-		
B- b SOFTWARE				
🖻 퉲 Apache Software Found				
🖃 🦺 Jakarta Isapi Redire		\mathbb{R}		
		N		
CBSTEST				
⊕ Gasses				
I JavaSoft				
H-Microsoft				
🗄 🔚 MozillaPlugins				
🗄 🛄 Oracle				
🕀 🛄 Policies				
🗄 🌗 Wow6432Node				
🗄 📲 SYSTEM				
HKEY_USERS				

Figure 2-31 Jakarta Isapi Redirector Registry Entries







Define the Locator Lookup Rules and URLs

The purpose of the Locator service is to automatically redirect Cisco Controllers to a Cisco RMS Server based on the Controller properties and a set of Locator lookup rules. This section defines the Locator lookup rules that can be entered in the **locator.xml** file.

Refer to the following topics for more information:

- Locating the Locator, page A-1
- XML Rule Criteria, page A-6
- Rule Based Lookup, page A-2
- XML Syntax, page A-2
- Proxy, page A-3
- Logical Operators, page A-4
- URLs, page A-4
- No Match, page A-5
- Device Specific DB Lookup, page A-6
- XML Rule Criteria, page A-6

Locating the Locator

The Locator is discovered by the Cisco Controllers using a manually entered DNS-A record. See the "Requirements" section on page 1-2.

Configure the Location of the locator.xml File

After installation there should be a configuration file in:

<user home>/control4/ems/locatorservice-config.properties

In this file there is a property locator.rules.path that should be set to the path of the locator.xml file that includes the lookup rules. For example:

Unix example:

locator.rules.path=/Users/rms/control4/ems/locator.xml

Windows example:

locator.rules.path=C:\\rms\\control4\\ems\\locator.xml

If the location of the rules, or the rules themselves have changed the Locator service needs to be restarted.

Rule Based Lookup

The primary lookup mechanism is a list of rules that determines what location should be returned.

The input to the Locator is a set of optional parameters where each has a name and a value. A few examples are *Service name*, *Device IP address*, *Common Name* and *Domain*.

The output from the Locator contains a URL.

The first lookup criteria is what service is requested. If the Service Name is for example RMS the device is looking for the RMS service.

Once the requested service is determined a list of rules for this service are applied in order to find a match for the submitted parameters. The first successful match will be used and the resulting URL is assembled.

Here is a simple high level example of rules:

Service: RMS

1. IP address range: 10.10.X.X => http://rms1.mydomain.com/rms-service

2. IP address range: 10.20.X.X => http://rms2.mydomain.com/rms-service

Default => http://defaultrms.control4.com/rms-service

No services match => http://defaultlocator.control4.com/locator-service (PROXY)

If a device requests the RMS service and has the IP address 10.10.0.1 it will match the first rule and the Locator will return the URL http://rms1.mydomain.com/rms-service. If the device instead had the IP address 10.20.250.200 it would match the second rule and get the URL

http://rms2.mydomain.com/rms-service back. The default http://defaultrms.control4.com/rms-service is returned if there was no other rule match for the requested RMS service. If the ACCOUNT service was requested it would return http://defaultlocator.control4.com/locator-service, and in this case it is another Locator, a proxy.

XML Syntax

The rules are expressed in XML and the example above could have the following syntax:

The /16 in the IP address match means that the rule will try to match the first 16 bits in the IP address.

The URL components are inherited from higher up in the tree, so another way to express the same rules are as follows:

Input Para	ameters	
Service	IP address	Locator response
RMS	10.10.40.50	http://rms1.mydomain.com/rms-service
RMS	10.20.40.50	http://rms2.mydomain.com/rms-service
RMS	99.01.40.50	http://defaultrms.control4.com/rms-service

Proxy

The result URL returned from the lookup has a type associated with it. The type can be URL or PROXY. PROXY typically means that it points to another Locator.

Input Para	meters	
Service	IP address	Locator response
ACCT	30.10.40.50	http://defaultlocator.control4.com/locator-service (PROXY)
RMS	30.10.40.50	http://defaultrms.mydomain.com/rms-service (URL)
RMS	10.20.40.50	http://rms.mydomain.com/rms-service (URL)

Logical Operators

Logical "and" and "or" can be used in the rules for more flexibility. They can be nested in the tree. For example here is a set of rules that uses both to match two separate IP ranges and a portion of the common name:

```
<services defaulturl="http://defaultlocator.control4.com/locator-service" type="proxy" >
       <service match="RMS" defaulturl="http://rms1.mydomain.com/rms-service" type="url">
           <rule name="RMS1" >
               <and>
<or>
                       <ip match="10.10.0.0/16" />
<ip match="10.20.40.0/24" />
</or>
<commonName match= "MyCommonName[0-9]+" >
</and>
           </rule>
           <rule name="RMS2" host="rms2.mydomain.com" >
              <ip match="10.20.0.0/16" />
           </rule>
       </service>
</services>
```

The commonName match is using a regular expression to match common names that starts with "MyCommonName" followed by one or more numbers.

	Input Parameters		
Service	IP address	Common Name	Locator response
RMS	10.10.40.50	MyCommonName123123	http://rms1.mydomain.com/rms-service
RMS	10.20.40.50	MyCommonName123123	http://rms1.mydomain.com/rms-service
RMS	10.20.40.50	MyOtherName123123	http://rms2.mydomain.com/rms-service

URLs

The services node and the service nodes have a mandatory defaulturl and type.

defaulturl=https://rms1.mydomain.com/rms-service type="url"

The services defaulturl is used when there is no service matching the given service name.

The service defaulturl is used when none of the rules for that service are matching.

Each rule may define any URL components protocol, host, port, path or type which will override what is in the defaulturl. If they are not overridden the defaults will be inherited and used.

For example:

Note that URL components are inherited so they don't have to be specified for each rule. In the example the first rule specifies port 8888. If this rule would match, the port would be 8888 and the other URL components would come from the defaultur1: https://rms1.mydomain.com:8888/rms-service

Input Par	ameters		
Service	IP address	Common Name	Locator response
RMS	10.30.40.50	MyCommonName123123	https://rms1.mydomain.com:8888/rms-service
RMS	10.20.40.50	MyCommonName123123	https://rms2.mydomain.com:9999/rms-service

No Match

If there is no match for even the service name the services defaulturl will be used. This services default typically should point to another Locator.

If the service name matches but there is no match for any rules in that service, the service defaulturl will be used.

```
<services defaulturl="http://defaultlocator.control4.com/locator-service" type="proxy" >
        <service match="RMS" defaulturl="https://defaultrms.mydomain.com/rms-service"</pre>
type="url">
           <rule name="RMS1" port="8888" >
               <and>
<or>
                        <ip match="10.10.0.0/16" />
<ip match="10.30.40.0/24" />
</or>
<commonName match= "MyCommonName[0-9]+" >
</and>
            </rule>
            <rule name="RMS2" port="9999" host="rms2.mydomain.com" >
               <ip match="10.20.0.0/16" />
            </rule>
        </service>
</services>
```

Input Para	meters	
Service	IP address	Locator response
RMS	11.30.40.50	https://defaultrms.mydomain.com/rms-service
Other	10.20.40.50	http://defaultlocator.control4.com/locator-service (PROXY)

Device Specific DB Lookup

If common name and service name is submitted from the device a database lookup will be attempted before trying to match any rule. If the particular device common name is in the database for that service, the particular service URL mapped to that common name will be returned. This feature requires that the Locator database is pre populated with common name to service URL mappings.

XML Rule Criteria

The currently supported set of XML rule criteria are shown in the following table:

XML criteria name	Description	Match type	
commonName	Common name	Regular expression	
macAddress	Device mac address	Regular expression	
primaryDns	Primary DNS IP address	IP address match using CIDR bit mask	
defaultGateway	Default Gateway	IP address match using CIDR bit mask	
ip	Device IP address	IP address match using CIDR bit mask	
domain	Domain	Regular expression	
dhcpMacAddress	DHCP server MAC address	Regular expression	
secondaryDns	Secondary DNS IP address	IP address match using CIDR bit mask	
userAgent	User-Agent HTTP Header	Regular expression	