Crestron Fusion® Software

Enterprise Management Platform

Installation Guide

Crestron Electronics, Inc.

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Crestron Fusion Software: Enterprise Management Platform

Introduction

This document is provided as an aid to the installation of Crestron Fusion software for deployment on servers or virtual machines running on-premises or hosted in a data center that has network connectivity to on-premises devices.

Refer to the Crestron® website for release notes on the features and fixes added to the latest release of the Crestron Fusion software.

For information regarding best practices for using the Crestron Fusion software, refer to Crestron Fusion Software Best Practices (Doc. 7891) at www.crestron.com/manuals.

Prerequisites

The software or software components described in this section must be installed and available to the system where Crestron Fusion is to be installed. The software must have access to these components either directly or over a network. Be sure that all of the latest updates for the software are also installed.

The prerequisites for a successful Crestron Fusion installation are discussed in this section.

NOTE: This guide assumes that the installer possesses a thorough knowledge of Microsoft® Windows Server® 2008 R2, Microsoft Windows Server 2012, Microsoft Windows Server 2012 R2, or Microsoft Windows Server 2016 operating systems and that the chosen Windows® server is correctly installed.

NOTE: Before installing the Crestron Fusion software, be sure that all Microsoft Windows software updates have been installed.

NOTE: The Crestron Fusion Installer installs all of the required operating system components when the server binaries are present on the server disk.

Installation Requirements

Operating System Requirements

The Crestron Fusion software supports Microsoft Windows Server 2008 R2, Microsoft Windows Server 2012, Microsoft Windows Server 2012 R2, and Microsoft Windows Server 2016 operating systems.

NOTE: Crestron Fusion software is not supported on the Microsoft Windows Server 2008 operating system (released prior to Microsoft Windows Server 2008 R2 operating system).

Operating System Component Requirements

The operating system roles and features (listed below) are required by Crestron Fusion software. The installer automatically installs any components that are not already present.

- Active Directory Lightweight Services for the Lookup Room Alias feature
- The Application Server Role with the following Application Server Role Services must include the following:
  - .NET Framework 4.5
  - COM+ Network Access
  - TCP Port Sharing
  - Web Server (IIS) support
  - Windows Process Activation Service Support including all subcomponents
- The Web Server (IIS) Role with the Web Server Role Service must include the following:
  - Web Server
  - Common HTTP features, including Static Content, Default Document, HTTP Errors, and HTTP Redirection
  - Health and Diagnostics, including HTTP Logging, Logging Tools, Request Monitor, and Tracing
  - Performance with Static and Dynamic Content Compression
  - Security with Basic Authentication, Windows Authentication, URL Authorization, Request Filtering, and IP and Domain Restrictions
  - Application Development, including ASP.NET, .NET Extensibility, ISAPI Extensions, and ISAPI Filters
  - Management Tools, including Management Console, Management Scripts and Tools, Management Service, Management Compatibility, Metabase Compatibility, WMI Compatibility, Scripting Tools, and Management Console

The following features must be installed:

- .NET Framework 3.5 features
- .NET Framework 4.5 features
- Message Queuing, including Message Queuing Service and Message Queuing Server with HTTP Support

- Remote Server Administration Tools, including Role Administration Tools with Active Directory Domain Services, Active Directory Lightweight Directory Services (AD LDS), AD LDS Snap-ins, Command-Line Tools, Active Directory module for Windows PowerShell® software, and Web Server Tools
- RPC over HTTP Proxy
- SMTP Server
- Windows Process Activation Service, including Process Model, .NET Environment, and Configuration APIs

Additional Requirements

Additional requirements for the Crestron Fusion application are shown below.

- SQL Server® Version: SQL Server 2008 R2, SQL Server 2012, SQL Server 2014, or SQL Server 2016 database is available to the Crestron Fusion software over the network.

  NOTE: SQL Express or Lite versions are not supported.

- Crestron Toolbox™ software or the Crestron Toolbox Server Edition should be installed using the current version available at www.crestron.com/software.
- Appropriate virtual directories must be set up for the RSS feeds used for publishing data from the CaptureLiveHD® system. If the Crestron Fusion software is not used in conjunction with the CaptureLiveHD system, the virtual directories are not required.
- One of these web browsers must be installed on workstations that access the Crestron Fusion server:
  - Internet Explorer® browser version 10.0 or later
  - Firefox® browser version 42.0 or later
  - Chrome™ browser version 47.0 or later
  - Safari® browser version 9.0.1 or later
- Crestron Fusion Insite technology requires that the Java® SE Runtime Environment (JRE) must be installed on every Crestron Fusion server to be able to import IFC files as interactive 3D building floor plans. JRE can be downloaded from the Oracle® website at http://www.oracle.com/technetwork/java/javase/downloads.

  The user must first accept the Oracle Binary Code License Agreement, and then select the Windows x64 EXE download to proceed with the installation. JRE version 7u79 is the minimum version that is compatible with Fusion Insite.

Domain Service Account Requirements

By default, Crestron Fusion software is installed with Local System Accounts. However, it is recommended that the Crestron Fusion services are run from a Domain Service Account. To install the Crestron Fusion software with a Domain Service Account, the following procedure must be performed in addition to meeting the prerequisites described in the “Operating System Component Requirements” section on page 2.

NOTE: If using a Domain Service Account for installation or upgrade, the service account must have the SysAdmin role on the SQL Server database.

1. Determine the Domain Service Account to be used.
2. Configure the Crestron Fusion services to run using this account.
3. Add the account to the SQL Server database with **db_owner** and **public permissions** mapped to the Crestron Fusion catalog.

Windows vs. Forms Authentication

Authentication dictates how a user logs into Crestron Fusion software. User access to the software is based on the group membership and the security policies that have been defined for those groups within the software.

In Windows authentication, users and groups are accessed from the Active Directory. The user accesses Crestron Fusion software with the same credentials that were used to log into the computer. These credentials are passed to the Crestron Fusion software which retrieves a list of groups from Active Directory. The group list is compared to the security access policies defined in Crestron Fusion software. Access is assigned based on the policies for the user's groups. Windows authentication is more secure than Forms authentication. Windows Authentication requires management and configuration from within Active Directory.

In Forms authentication, users and groups are defined within Crestron Fusion. Security is applied the same way as Windows authentication, but it is applied to the groups and users that have been defined within Crestron Fusion. Active Directory is not used.

User access is easily managed by Crestron Fusion administrators and can accommodate users that are not part of the domain or that do not have domain credentials. However, Forms authentication is less secure and entails more management.

Windows Active Directory Integration (Windows Authentication) Requirements

For installations using Windows Authentication, Active Directory groups provide different levels of access to the software. Existing Active Directory groups can be used. For example, Active Directory Domain Groups and Domain User Accounts can be set up as follows:

- For Crestron Fusion administrators, add the Domain User Accounts to the DOMAIN\RoomViewAdmins group.
- For Crestron Fusion users, add the Domain User Accounts to the DOMAIN\RoomViewUsers group.
- For Crestron Fusion managers, add the Domain User Accounts to the DOMAIN\RoomViewManagers group.

Apply these groups to the Functional and Object security policies in Crestron Fusion.

NOTE: When entered into Crestron Fusion software, group names used for Windows Authentication are case sensitive.

E-mail Alert Requirements

For installations using e-mail alerts, an SMTP Server must be available for sending e-mail.

Microsoft Exchange Requirements

For Microsoft Exchange environments, the following must be available:

- Microsoft Exchange 2010 or Microsoft Exchange 2013 with Exchange Web Services (EWS) Managed (preferred)
- Full mailbox access to Microsoft Exchange resource mailboxes using domain credentials or a domain service account that uses EWS impersonation for the resource accounts

Notes® and Domino® Software Requirements

For installations integrating Domino (versions 7.0, 8.0, 8.5, and 9.0) as the scheduling calendar, the following must be present in addition to the prerequisites shown in the "Operating System Component Requirements" section on page 2.

- User information must be entered in the **Domino Settings** tab in the Schedule Service settings of the Crestron Fusion Configuration Web Client.
- The Notes Client software must be installed on the Crestron Fusion server.

Before Installing Crestron Fusion

Before Crestron Fusion software is installed, the SQL Server Agent must be running.

For more information, refer to Crestron True Blue Online Help Answer ID 5429, or contact the Crestron Fusion Support Group (FSG) at 855-754-5962 or e-mail fsg@crestron.com for assistance.

Rights

The account installing Crestron Fusion software must have the following rights:

- Local Administrator's rights on any server where Crestron Fusion components are installed
- SQL Server login with SysAdmin rights (runtime does not require SysAdmin, it requires only db_owner on the Crestron Fusion database)
- A Domino User Account with read access to the Domino Directory and read/write access to the Resource Reservations database (if Lotus Notes® software is being used for scheduling)

NOTE: By default, the Domino Resource Reservations database is named Resource.nsf, and the Domino Directory is named names.nsf. However, in some installations these names may be changed and may be composed of multiple databases spanning Domino servers and domains. Therefore, the user that has access to the Domino database should have access to all necessary resource reservations databases and the main Domino Directory Server.

Installation Procedure

The installation is performed using a setup wizard should take approximately one hour.

NOTE: After the installation procedure is complete, changes to the Crestron Fusion components can be made in Configuration Manager. Refer to the "Configuration Procedure" section on page 12.

1. Log in to the Crestron Fusion server with the Domain Service Account or another Local Administrator Account. For more information, refer to the "Domain Service Account Requirements" section on page 3.
2. Right-click the **Installer** icon from the desktop and select **Run as administrator**.

   Installer Icon

   The installer checks the system to see if all of the prerequisites to run Crestron Fusion software are in place. If any prerequisites are missing, they are installed at this time.

   NOTE: For specific details on prerequisites, refer to the "Prerequisites" section on page 1.

3. If the **User Account Control** window opens asking the user to allow the program to make changes to the computer, click **Yes**.

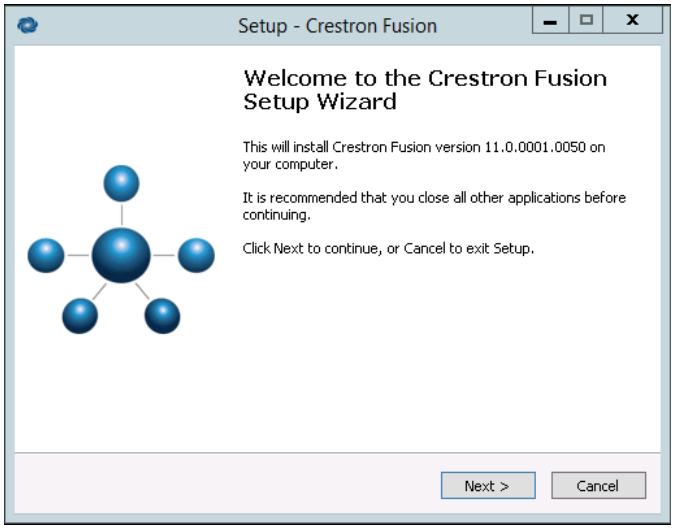
   NOTE: The installation of Microsoft .NET Framework 4.5 may require a reboot. The reboot occurs silently without a prompt. If the installation is accepted, be prepared to allow the server to reboot.

   Once the process is complete, the **Crestron Fusion Installation** window opens. The progress of the installation is displayed at the bottom of the window.

   Crestron Fusion Installation Window

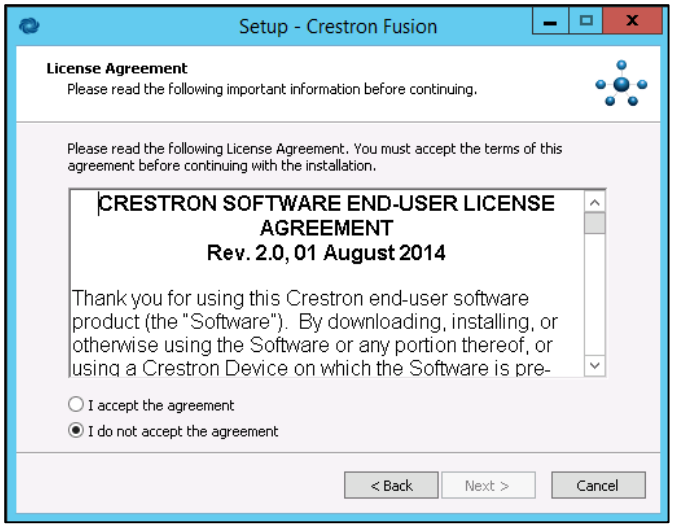
When the **Welcome to the Crestron Fusion Setup Wizard** window opens (after a short delay), review the instructions on the screen.

Welcome to the Crestron Fusion Setup Wizard Window



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

License Agreement Window

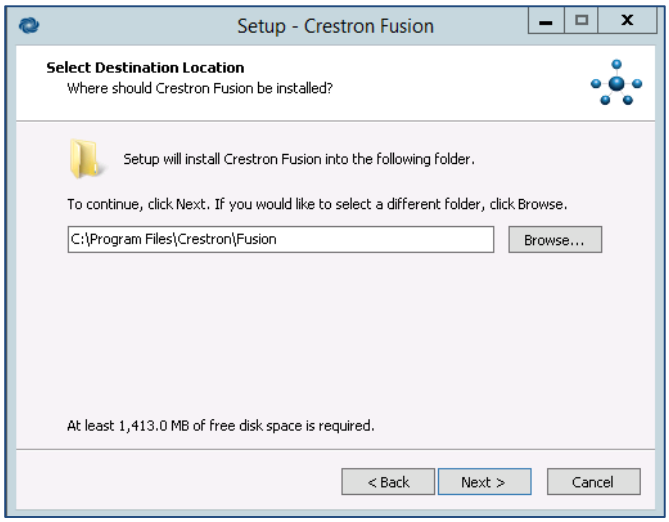


5. Review the end-user license agreement and then click **I accept the agreement**.

NOTE: The Crestron Software End-User License Agreement is also available at www.crestron.com/legal/software_license_agreement.

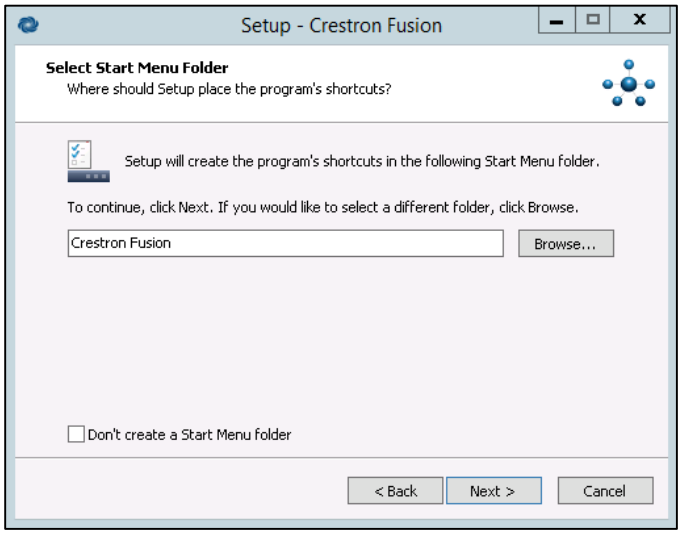
6. Click **Next** to open the **Select Destination Location** window.

Select Destination Location Window



7. To select an installation location that is different from what is displayed, click **Browse** and then select the desired installation location.
8. Click **Next** to open the **Select Start Menu Folder** window.

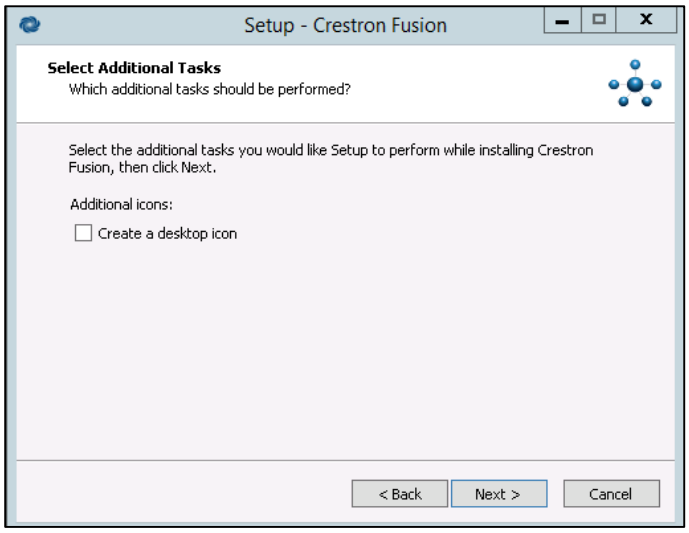
Select Start Menu Folder Window



9. To select a shortcut location that is different from what is displayed, click **Browse** and then select the desired location. To prevent the software from creating a shortcut, ensure the **Don't create a Start Menu folder** check box is not checked.

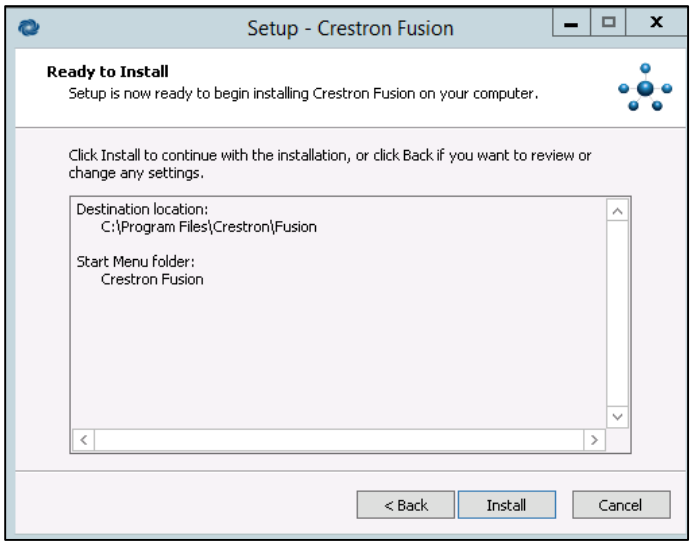
10. Click **Next** to open the **Select Additional Tasks** window.

Select Additional Tasks Window



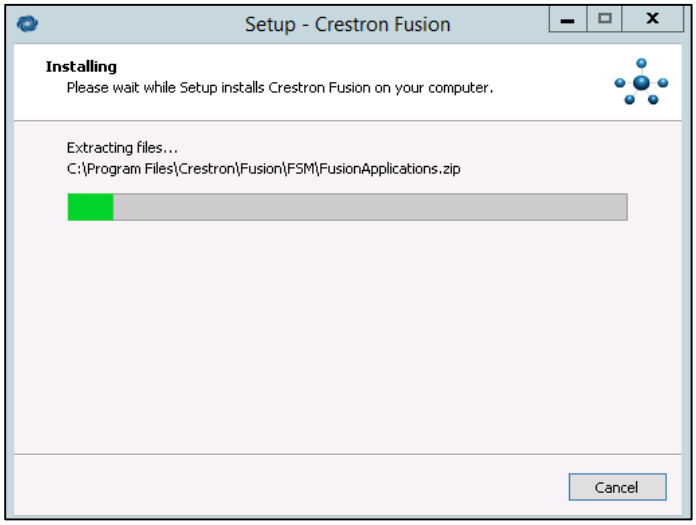
11. Click the **Create a desktop icon** check box to create a shortcut on the desktop.
12. Click **Next** to open the **Ready to Install** window.

Ready to Install Window



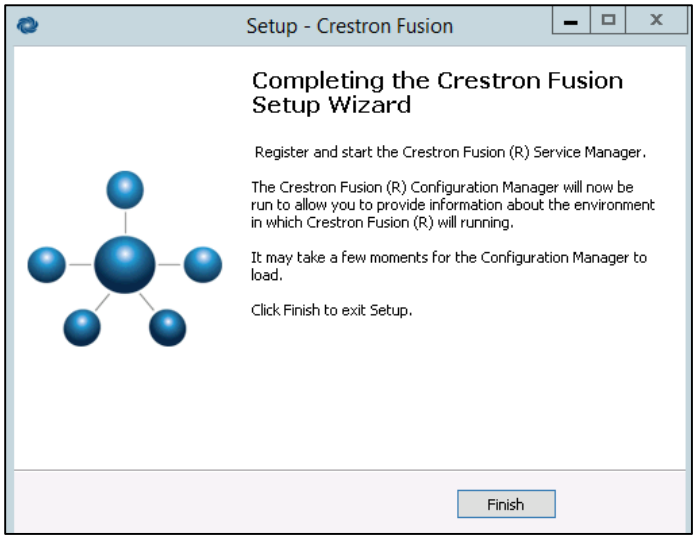
13. Click **Install** to continue the installation process and open the **Installing** window.

Installing Window



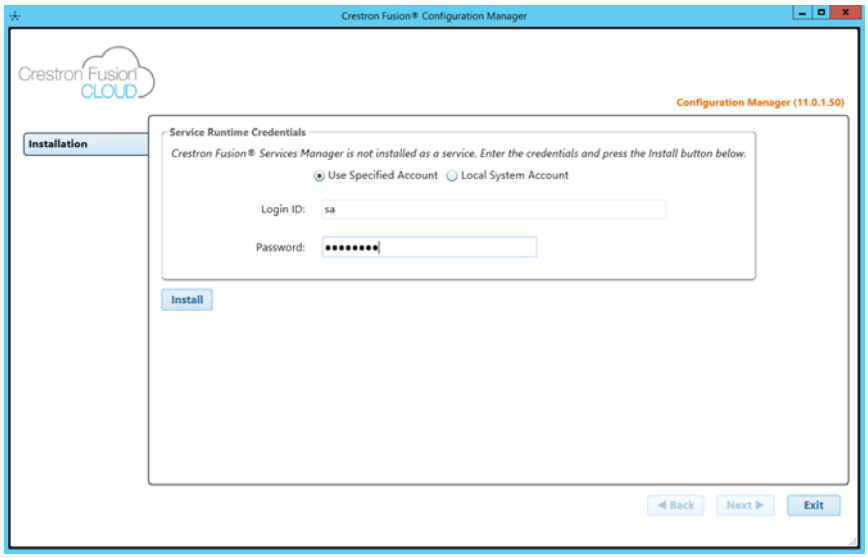
After the software is installed in the designated folder, the **Completing the Crestron Fusion Setup Wizard** window opens.

Completing the Crestron Fusion Setup Wizard Window



14. Click **Finish**. After a delay, the **Configuration Manager Installation** window opens.

Configuration Manager Installation Window



The next part of the process is to configure an instance. Proceed to the "Configuration Procedure" section on the following page for instructions.

Configuration Procedure

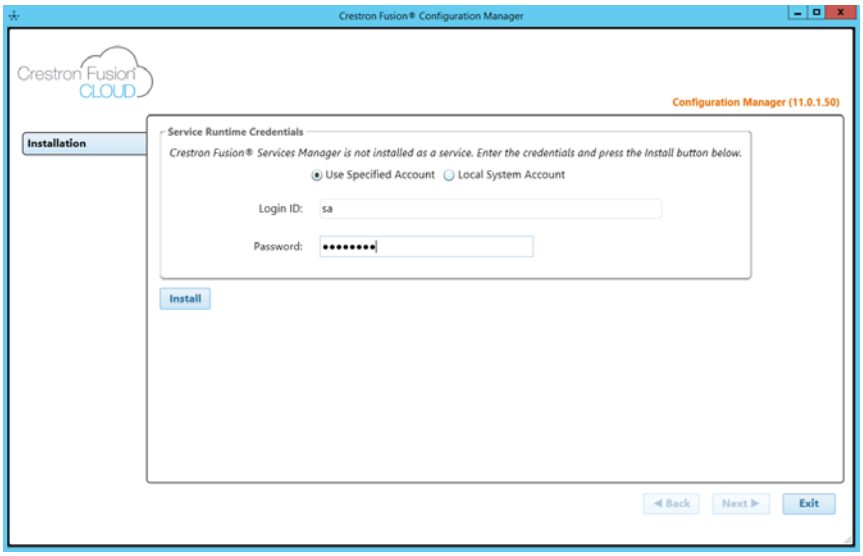
Crestron Fusion instance configuration is performed using a setup wizard. After configuration is complete, an instance needs to be configured using the FSM (the Crestron Fusion Services Manager).

The Configuration Manager provides an easy-to-use interface for defining or changing certain required settings that allow all installed software components to interact. The Configuration Manager completes the installation and manages the starting and stopping of the FSM. An instance is an environment (files, folders, processes, websites, and services) that represents Crestron Fusion.

NOTE: To change setup and configuration settings after the initial installation and configuration are complete, refer to the applicable sections of this document.

Follow the steps below to configure an instance using the FSM.

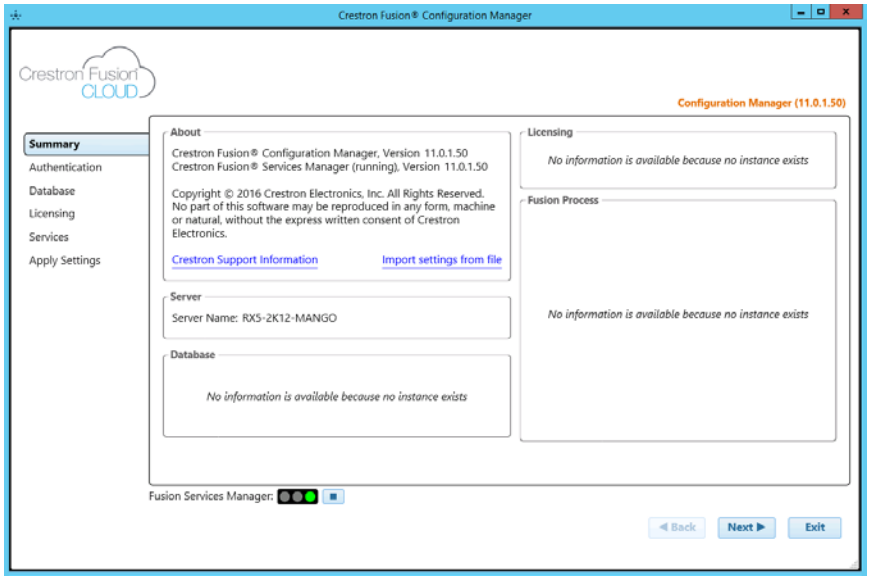
Installation Window



1. From the **Installation** window, set the service runtime credentials by clicking either **Use Specified Account** or **Local System Account**. Enter a **Login ID** and **Password**.

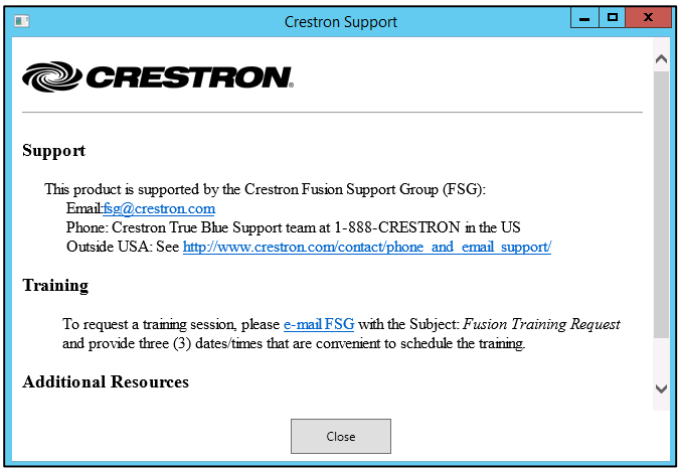
2. Click **Install**. After the FSM is installed as a service and automatically starts, the **Summary** window opens.

Summary Window



In the **About** section, the user can view information such as how to contact Crestron support and import configuration data. The configuration data is useful in a multiserver environment.

- Click the **Crestron Support Information** link to access support, training, and additional resources for Crestron Fusion.

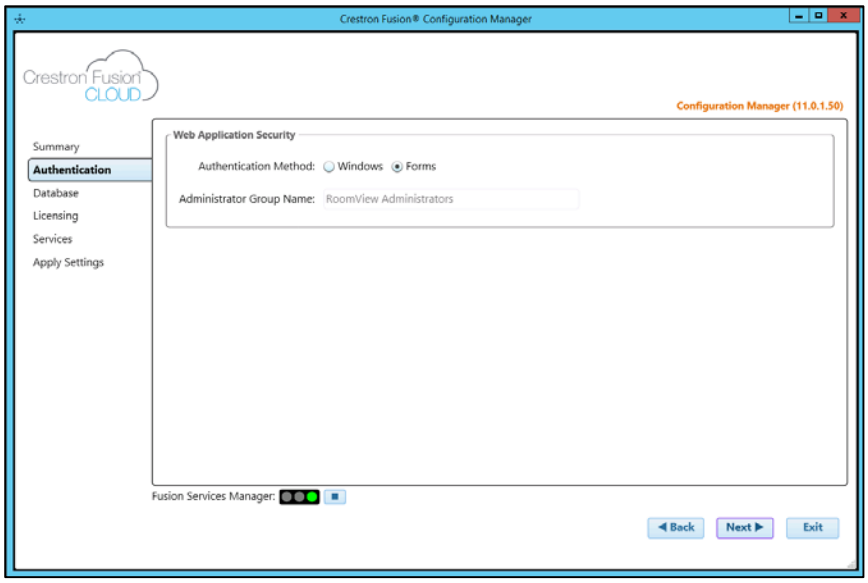


- Click the **Import settings from file** link to import all configuration data from a file.

  In the **Server**, **Database**, **Licensing**, and **Fusion Process** sections, the user can view the server name, database and licensing information, and application process details.

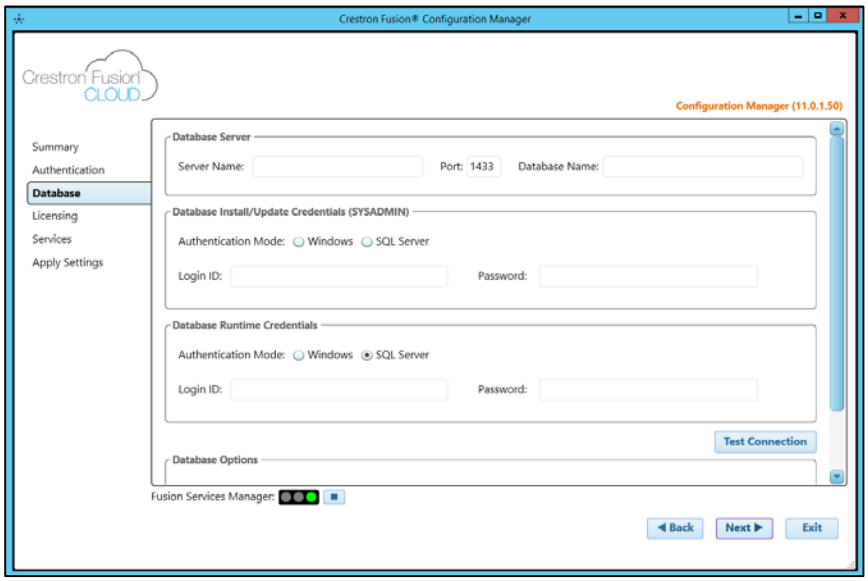
3. Click **Next** to open the **Authentication** window.

Authentication Window



4. Choose the **Authentication** method for client access, either **Windows** or **Forms**.
5. Enter an **Administrator Group Name**.
6. Click **Next** to open the **Database** window.

Database Window



7. In the **Database Server** section, do the following:
   a) Enter the **Server Name** to be used with the main Crestron Fusion database.
   b) Enter the **Port** (number) for the database server.
   c) Enter the **Database Name** that Crestron Fusion is to connect to or to create.

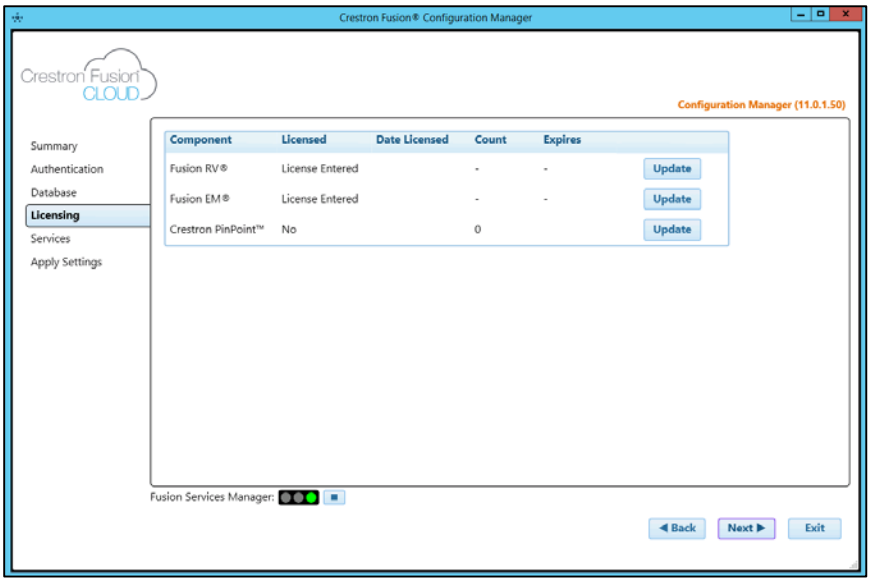
8. In the **Database Install/Update Credentials (SYSADMIN)** section, do the following:
   a) Choose the **Authentication Mode**, either a **Windows** or **SQL Server** for client access.
   b) Enter the **Login ID** and **Password**. These credentials are used for test connection.
      - If **Windows** is selected, use the format *user@domain* when entering the login ID. A login ID and password are required.
      - If **SQL Server** is selected, the SQL Server database defines the login ID and password to be authenticated. A login ID and password are required.
9. In the **Database Runtime Credentials** section, do the following:
   a) Choose the **Authentication Mode**, either **Windows** or **SQL Server** for client access.
   b) Enter a **Login ID** for the account that connects to the database at runtime.
   c) Enter the **Password** for the runtime database account.
10. Click **Test Connection** to test the connection to the specified database server using the administrative database credentials, and display the database options.
11. In the **Database Options** section, do the following:
    a) Click the **Force DB Update** check box to force a database update.
    b) Click the **Use SQL Disks** check box to create a database. The **Use SQL Disks** feature is used only when creating a new database.

NOTE: For more information on the Force DB Update and Use SQL Disks features, refer to “Appendix A: Forcing a Database Update” on page 22 and “Appendix B: Specifying SQL Server Database Disks” on page 24.

NOTE: When entering credentials, refer to the “Prerequisites” section on page 1.

12. Click **Next** to open the **Licensing** window.

Licensing Window

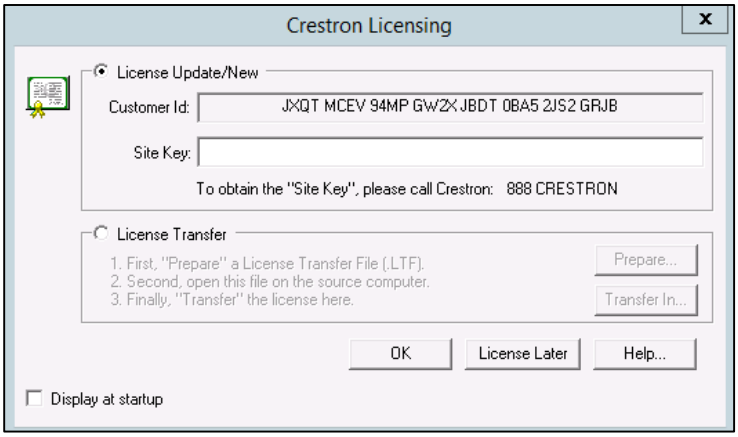


13. Click **Update** (located next to the product(s) to be licensed) to open the **Crestron Licensing** window.

NOTE: The Crestron Fusion and PinPoint™ software are individually licensed.

NOTE: For information on licensing a software product at a later date, refer to "Appendix C: Licensing Software" on page 27.

Crestron Licensing Window



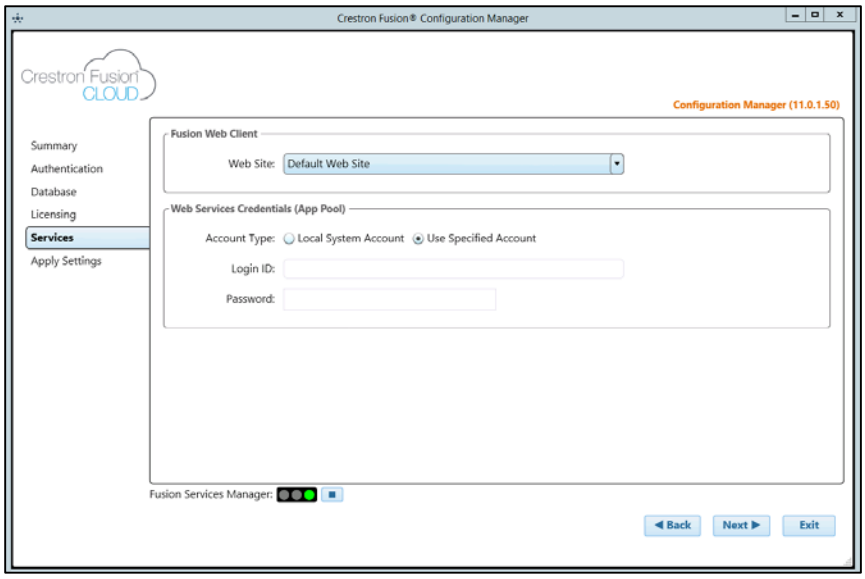
14. Enter a **Site Key** and then click **OK**.

NOTE: If applying for a new license, contact a Crestron representative to obtain a site key, or send the purchase order (PO) to license@crestron.com.

NOTE: For more information on licensing, refer to Crestron True Blue Online Help Answer ID 5429.

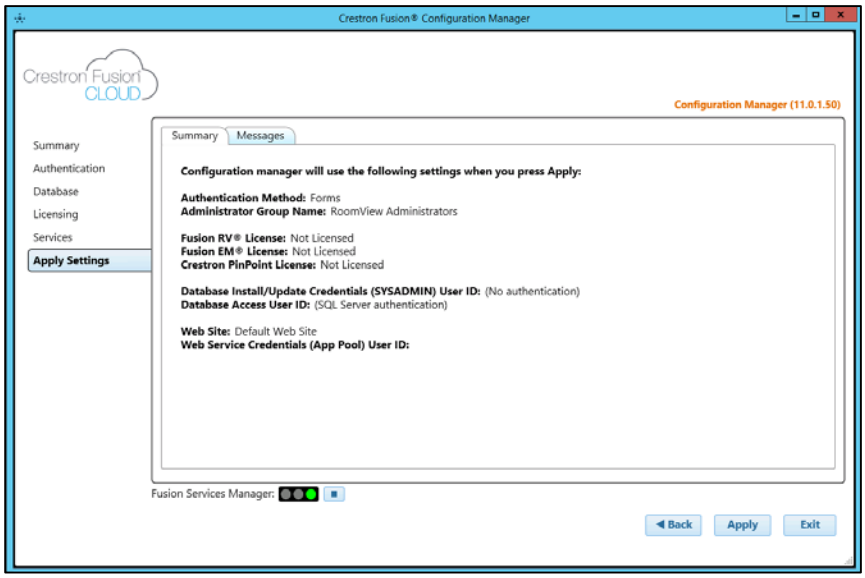
15. From the **Licensing** window, click **Next** to open the **Services** window.

Services Window

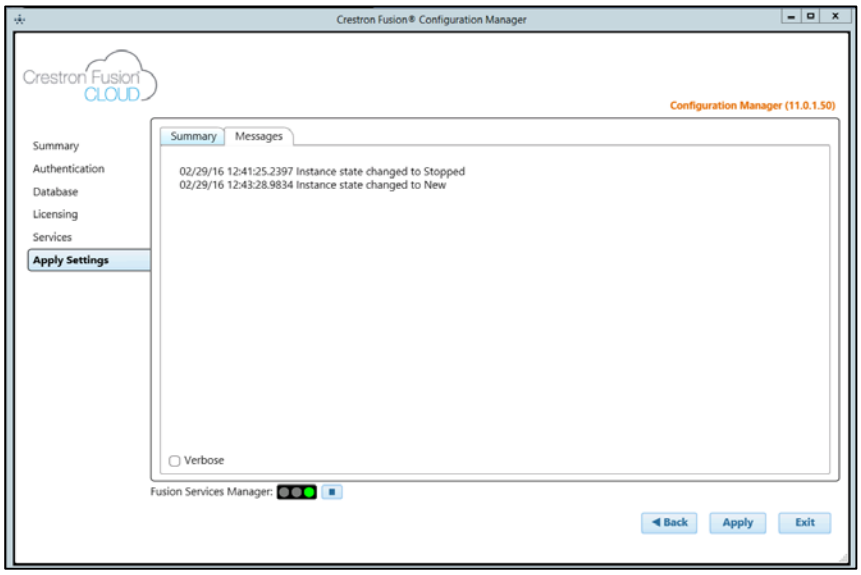


16. In the **Fusion Web Client** section, click the **Web Site** drop-down list to select the website where the Crestron Fusion Web Client and services are to be installed.
17. In the **Web Services Credentials (App Pool)** section, do the following:
    a) Choose the account type by clicking either **Local System Account** or **Use Specified Account**. For account information, refer to the "Domain Service Account Requirements" section on page 3.
    b) Enter the **Login ID** and **Password** to be used by the Crestron Fusion software.
18. Click **Next** to open the **Apply Settings** window.

Apply Settings Window Showing Summary Tab



Apply Settings Window Showing Messages Tab



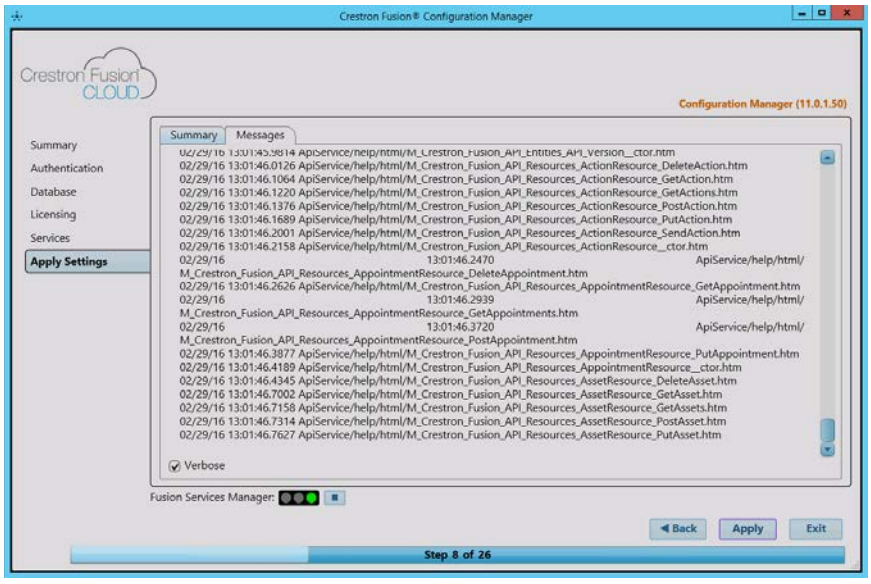
In the **Apply Settings** window, the user can access the following tabs:

- The **Summary** tab displays a summary of the configuration settings entered.
- The **Messages** tab displays date- and time-stamped messages regarding the software installation. Click the **Verbose** check box to display detailed information about messages.

NOTE: Be sure to review and verify the information shown in the **Summary** tab before clicking **Apply** to commit the changes to the FSM.

19. Click **Apply** to commit the changes to the FSM. It may take several minutes for the FSM to create the instance. The status of the instance creation is shown in the **Messages** tab.

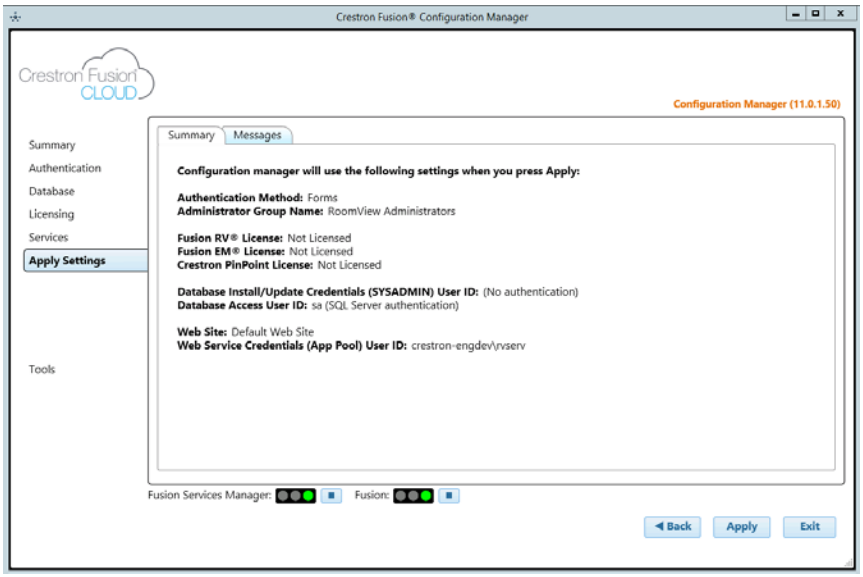
Messages Tab Showing Status



20. To start the instance, click play located next to the traffic light.

    After the instance has been created, a **Tools** option (which accesses additional features) is available on the left side of the screen.

    Summary Tab after Instance is Created



21. Click **Exit** to close the Configuration Manager.

    The next part of the process is to validate the installation. Proceed to the "Validating the Installation" section on the following page for instructions.

Validating the Installation

This procedure should be performed after the installation and configuration procedures have been successfully completed.

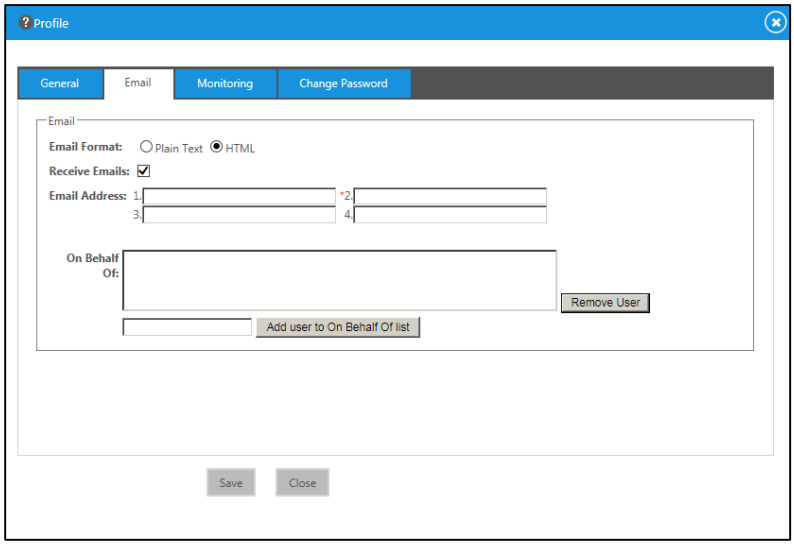
1. Enter the following URL into a browser to open the **Crestron Fusion Login** window: https://<*YourCrestronFusionServer*>/fusion/webclient

   NOTE: If the server is not on an internal network, consider setting up IIS for https only and install a certificate on the server.

   Crestron Fusion Login Window

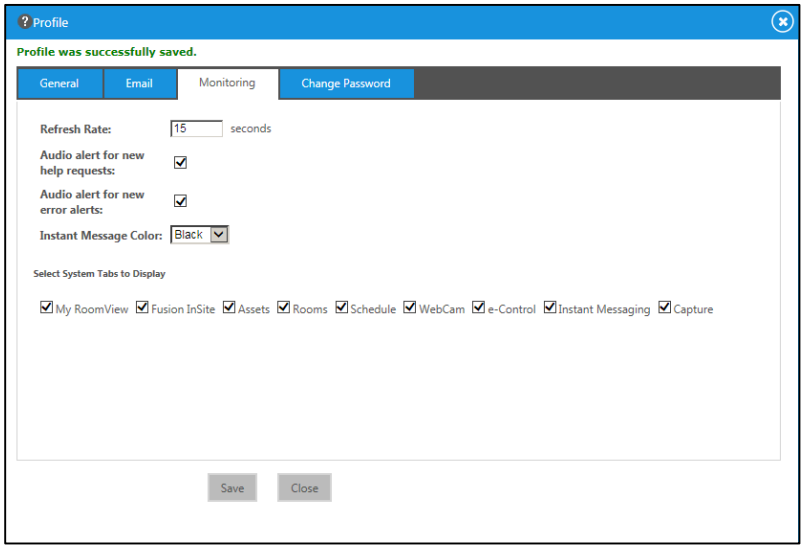
2. Enter the default username and password. In the **Username** field enter *admin* and in the **Password** field enter *admin*. Click **Login** to open the **Profile** window.

   Profile Window

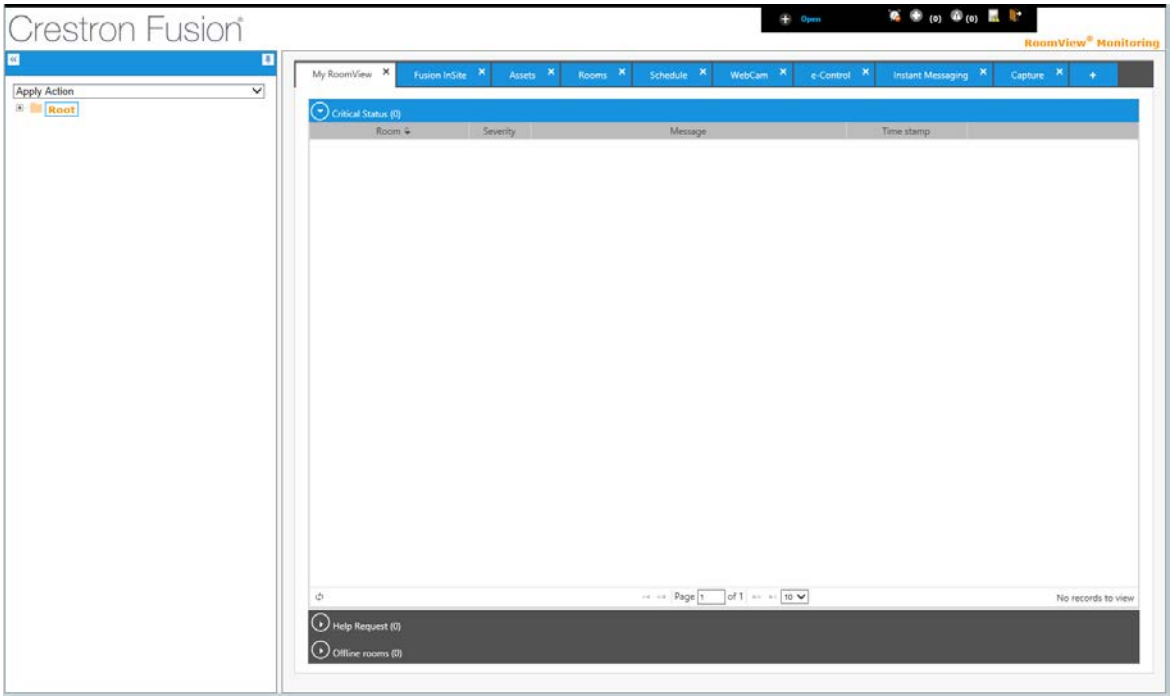


3. Enter your e-mail address and click **Save**. If the installation is successful, the **Monitoring** window opens.

NOTE: For information on adding a room or asset, refer to the Crestron Fusion On-Premises Software Getting Started (Doc. 7889) at www.crestron.com/manuals.



RoomView® Monitoring Window



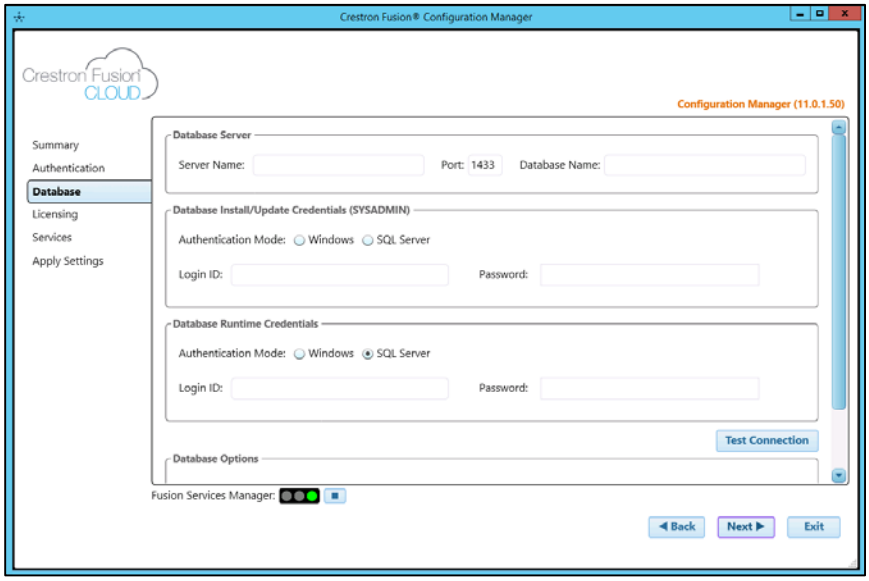
The Crestron Fusion software is ready to use.

Appendix A: Forcing a Database Update

If the schema version of an existing database matches the current version of Crestron Fusion, a database update does not occur. When a database update is forced, the database schema is refreshed. This procedure can be performed during or after the installation and configuration process.

1. Double-click the **Crestron Fusion** icon on the desktop to open the **Crestron Fusion Configuration Manager** window.
2. Click **Database** to open the **Database** window.

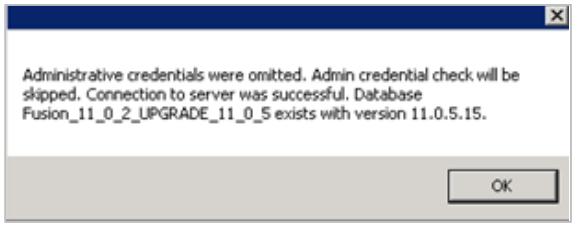
   Database Window



3. Click **Test Connection** to test the connection to the specified database server.

   A message box is displayed to let the user know if the connection was successful or unsuccessful. Click **OK**.

   Connection Message Box

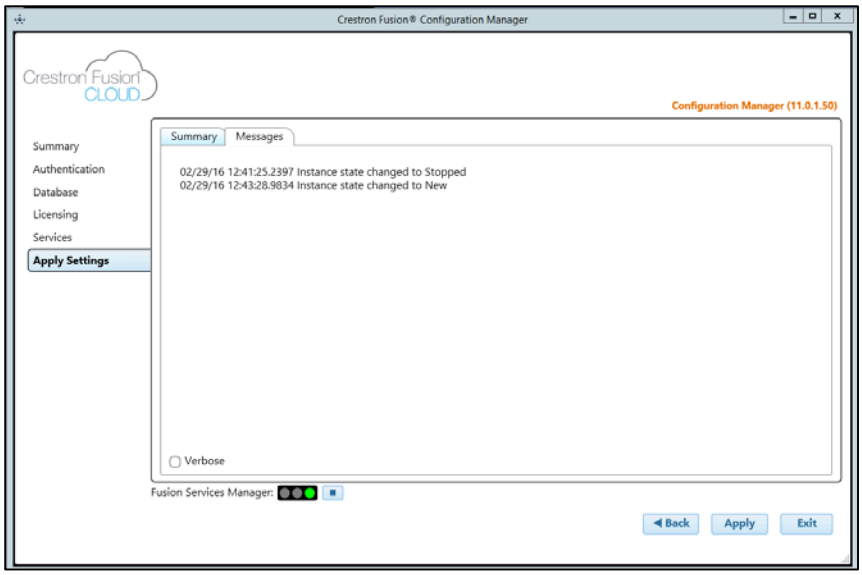


4. In the **Database Options** section, click the **Force DB Update** check box.

   Force DB Update Check Box

5. Click **Apply Settings** to open the **Apply Settings** window.

Apply Settings Window



6. Click **Apply**. After a few minutes, the database schema is updated.

IMPORTANT NOTE: If **Apply** is not clicked in the **Apply Settings** window, all changes are lost.

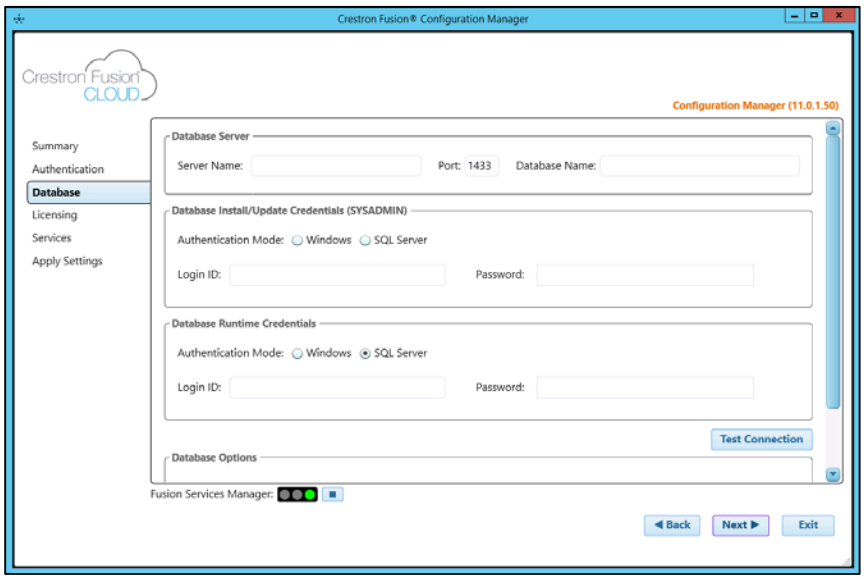
Appendix B: Specifying SQL Server Database Disks

The Crestron Fusion Installer typically uses the default SQL Server database settings for the location of the database, file groups, and log files. If the user or the Database Administrator (DBA) requires a different configuration than the default SQL Server database configuration calls for, use the following procedure to specify the locations of the database files.

NOTE: To test an SQL connection the user must have valid credentials, and the database name entered cannot already exist.

1. Double-click the **Crestron Fusion** icon on the desktop. The **Crestron Fusion Configuration Manager** window opens.
2. Click **Database** to open the **Database** window.

   Database Window



3. In the **Database Server** section, enter the **Server Name**, **Port**, and **Database Name**.
4. In the **Database Install/Update Credentials (SYSADMIN)** section, click **SQL Server**. Enter a **Login ID** and **Password**.
5. Click **Test Connection** to test the connection to the specified database server. A message box is displayed to let the user know if the connection was successful or unsuccessful. If the connection is successful and the database does not exist, the **Use SQL Disks** check box is displayed.

   Database Window Showing Use SQL Disks Check Box

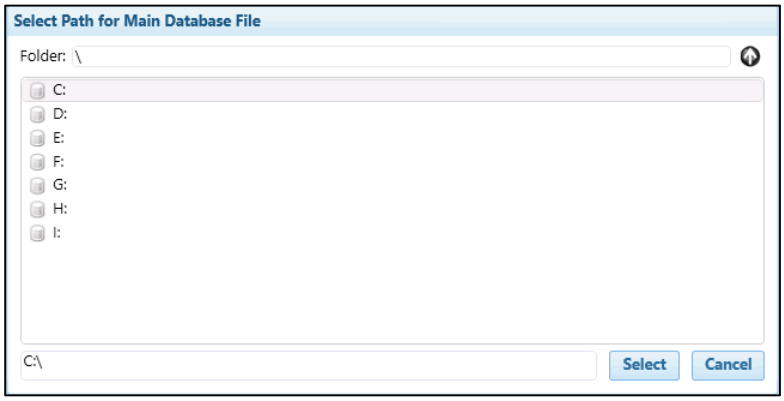
6. Click the **Use SQL Disks** check box.

7. Scroll down to access the **SQL Server Disk Selection for Fusion Database** section of the window. Select a **File Group** and then click the disk icon located to the right of the selected file group. To clear an entry, click the **X** icon.

SQL Server Disk Selection for Fusion Database

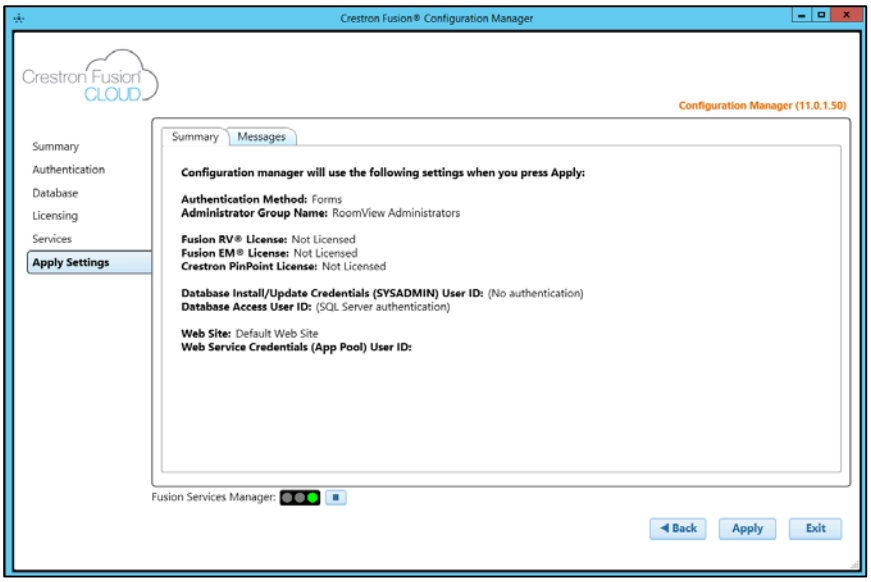
8. If the disk icon was clicked, select the location where the database file is to be stored and then click **Select**.

Select Path for Main Database File



9. In the **Database** window, click **Apply Settings** to open the **Apply Settings** window.

Apply Settings Window



10. Click **Apply**. After a few minutes, the database is created.

IMPORTANT NOTE: If **Apply** is not clicked in the **Apply Settings** window, all changes are lost.

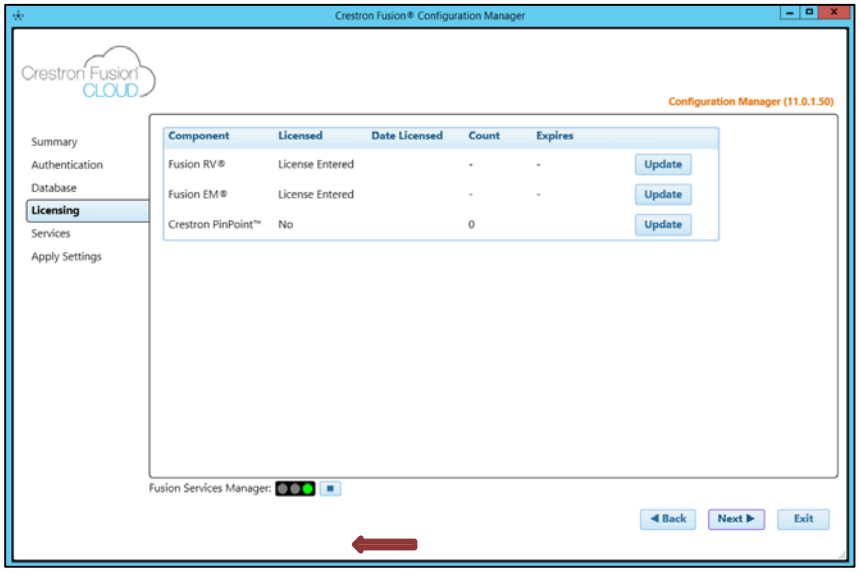
Appendix C: Licensing Software

This appendix contains the procedure to follow when licensing a product at a later date.

NOTE: The Fusion RV®, Fusion EM®, and Crestron PinPoint software are licensed separately. Be sure to reference the key code from the correct product license when obtaining a site key.

1. Double-click the **Crestron Fusion** icon on the desktop. The **Crestron Fusion Configuration Manager** window opens.
2. Click **Licensing** to open the **Licensing** window.

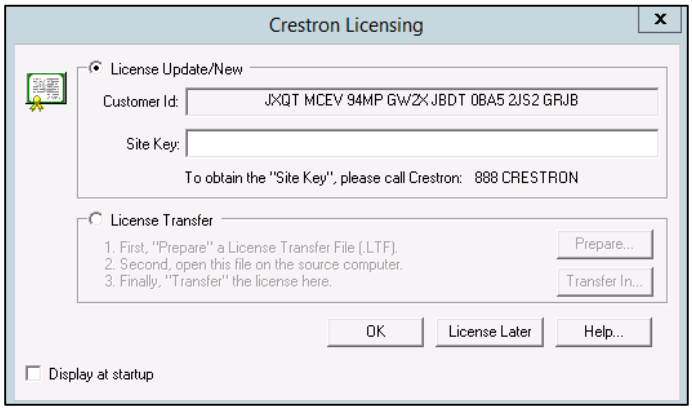
   Licensing Window



NOTE: Crestron Fusion services need to be stopped before entering license keys. Click the ■ button to stop the services.

3. Click **Update** (next to the product(s) to be licensed) to open the **Crestron Licensing** window.

   Crestron Licensing Window



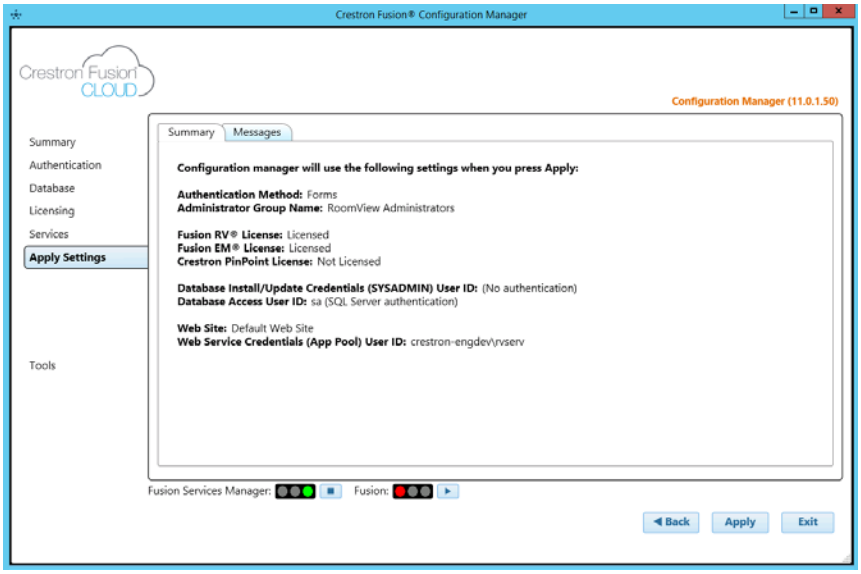
4. Enter the **Site Key** and click **OK**.

If applying for a new license, contact a Crestron representative to obtain a license key, or send the purchase order (PO) to license@crestron.com. When the site key is received, copy the key into the **Site Key** field.

NOTE: For more information on licensing, refer to the Crestron True Blue Online Help Answer ID 5429.

5. In the **Database** window (**Database Install/Update Credentials (SYSADMIN)** section), reenter the **Login ID** and **Password**, if they are not displayed.
6. Click **Apply Settings** to open the **Apply Settings** window.

Apply Settings Window



7. Click **Apply**. After a few minutes, the server is licensed for the selected software(s).

IMPORTANT NOTE: If **Apply** is not clicked in the **Apply Settings** window, all changes are lost.

Appendix D: Common Log File Errors

LOG FILE ERROR	PROBABLE CAUSE	SOLUTION
SqlException in SP CRVSP_GetAllServers: code 18456, Login failed for user '{user id}'.	The Main or Log database SQL runtime credentials are not valid.	Verify that the SQL Server database user IDs and passwords were entered correctly.
SqlException in SP CRVSP_GetAllServers: code 18456, Login failed for user 'CRESTRON-ENGDEV\{server name}$'.	The user is attempting to access a database using Windows Authentication from FSM installed as LOCALSYSTEM.	Update the FSM to use the service account if the database server is not the Crestron Fusion application server using Windows Authentication method.
SqlException: A network-related or instance-specific error occurred while establishing a connection to the SQL Server.	The Crestron Fusion application server cannot connect to the database server. This may be caused by a network problem or a problem with the database server.	Ping the database server to verify it can be accessed on the network. Check that the SQL Server database is running and accessible.
I/O error ... There is not enough space on the disk.	There is not enough disk space on the application server to install the Crestron Fusion software.	Use Windows Explorer to determine the amount of disk space available on the file system where Crestron Fusion is to be installed. If necessary, free up disk space or install Crestron Fusion on a different file system or server.
Database credentials provided are not of a sysadmin type. Database operations failed.	The user does not have administrator access for the database server.	Verify (on the SQL Server database) that the user has the role of sysadmin.
SqlException: MODIFY FILE encountered operating system error 112 while attempting to expand the physical file.	The database server file system does not have enough free space to create or update the Crestron Fusion database.	Free up some space by deleting files, or use a different disk on the database server.
SqlException: Cannot alter the table 'aspnet_Applications' because it is being published for replication.	The SQL Server database has replication turned on.	Verify that replication is turned off before upgrading. The Crestron Fusion version 9 software allows replication; version 10 or higher does not allow replication.

NOTE: The FSM and configuration manager log files can be found at C:\Program Files\Crestron\Fusion\Logs.

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change without notice.