



Installation Guide

Tracer® Ensemble™



⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.



Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury.

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in **NEC** and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING**Follow EHS Policies!**

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Factory Training

Factory training is available through Trane University™ to help you learn more about the operation and maintenance of your equipment. To learn about available training opportunities contact Trane University™.

Online: www.trane.com/traneuniversity

Phone: 855-803-3563

Email: traneuniversity@trane.com

Revision History

BAS-SVN024C-EN has been updated with the following changes:

- HTTPS and SSL Secure Communication (new section)



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System Requirements and Specifications

Server Requirements

Operating System:	Microsoft Windows Server 2012, 2012 R2, and 2016				
	.Net V4.72				
Database:	Microsoft SQL Server 2012, 2014, 2016, and 2017				
Network Interface:	TCP/IP Interface				
Minimum Requirements:	Configuration	Server Type	Processor	Memory	Hard Drive
	Application server	Virtual ^(a)	2 vCPU ^(a)	4 GB	NAS/SAN
	Application server	Tower or rack-mount	3.0 GHz - Dual Core	4 GB	73 GB Min
	Application server and database server	Tower or rack-mount	3.0 GHz - Quad Core	8 GB	

BACnet Network Requirements

Architecture:	TCP/IP
Utilization:	Low (see IT Fact Sheet BAS-SLB014-EN)
Protocols:	BACnet (ASHRAE Std 135-2004) http (port 80)

User Interface Network Requirements

Tracer Ensemble Web UI:	http (port 80) https (port 443) ^(b)
Server:	Remote Desktop Connection ^(c) (RDP) port 3389 VPN recommended
Utilization:	Load dependent on number of users and web page customizations

^(a) Virtual Server needs to be configured to allow the Processor Serial Number (Processor ID) to be persisted. This is used by Tracer Ensemble for licensing purposes.

^(b) Https requires additional configuration and installation of certificate.

^(c) Remote desktop connection is recommended for support; additional configuration is needed for RDP and VPN.



System Requirements and Specifications

SQL Database Size

The size of the SQL database Tracer Ensemble uses will depend directly upon on:

- How much equipment is being monitored.
- The number of points on each piece of equipment.
- The frequency of data logs being captured.
- The length of time data logs are kept.

The following tables approximates the size of the Tracer Ensemble SQL database to grow given 200, 500, and 1000 pieces of equipment over 1 and 3 years.

200 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	3.51 GB	10.53 GB
10 min	5.27 GB	15.8 GB
5 min	10.5 GB	31.6 GB

500 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	8.78 GB	26.3 GB
10 min	13.2 GB	39.5 GB
5 min	26.33 GB	79.0 GB

1000 Equipment 5 points each	1 Year of Data	3 Years of Data
15 min	17.56 GB	52.67 GB
10 min	26.33 GB	79 GB
5 min	52.67 GB	158 GB



Configure Microsoft Windows Server

Important: Beginning with Tracer Ensemble 5.1, the application will automatically configure these roles and settings during the installation process. Follow these instructions if installing an older version of Tracer Ensemble or to verify a setting.

Initial System Configuration

This subsection provides steps for setting up a new server running Windows Server 2008 on which you plan to run Tracer Ensemble software with a local SQL database. The instructions assume that the server operating system is a fresh out-of-box installation and is being powered up for the first time. Skip any steps that have already been completed for this server.

Information Needed

Important: Your Windows Server Operating System must not be configured as a domain controller. Applying the domain controller role prevents installing Tracer Ensemble on that server.

Before you begin the configuration, get answers to the following questions from your IT organization:

- What IP address, Subnet mask, and Default gateway will the server use?
- What is the network name and workgroup or domain name (if applicable) of the server?

Network and Regional Settings

To configure the server:

1. Power up the server with all of the peripherals connected.
2. Set the new Administrator password and record it in a safe location. The Initial Configuration Tasks window appears.
3. Click **Set time zone**, and then complete the time zone and date and time settings according to your region.
4. Click **OK**. You will return to the Initial Configuration Tasks window.
5. Click **Configure networking**, and then complete the following steps:
 - a. Double-click **Local Area Connection**.
 - b. In the Local Area Connection Status window, click **Properties**.
 - c. On the Networking tab, double-click **Internet Protocol Version 4 (TCP/IPv4)**.
 - d. In the Internet Protocol Version 4 (TCP/IPv4) Properties window, select **Use the following IP address**, and then type in each of the three

addresses provided by the IT organization. If you do not know the correct IP Address, you can temporarily use 172.16.1.82 or any other private address.

- e. Click **OK**. You will return to the Local Area Connection properties.
6. Click **OK**. You will return to the Initial Configuration Tasks window.
 7. Click **Provide computer name and domain**. The Computer Name tab on the System Properties window appears.
 8. Optionally, type a description in the **Computer description field**.
 9. Click **Change**. The Computer Name/Domain Changes window appears.
 10. Replace the text in the Computer name with the computer name provided by the IT organization.
 11. Click **OK**, and then reboot the server. Upon reboot, you return to the Initial Configuration Tasks window.
 12. Click **Provide computer name and domain**. The Computer Name tab on the System Properties window appears.
 13. Click **Change**. The Computer Name/Domain Changes window appears.
 14. Select **Domain** or **Workgroup** with the information provided by the IT organization.
 15. Click **OK**, and then reboot the server. Upon reboot, you return to the Initial Configuration Tasks window.
 16. Click **Close**.

Roles and Services

Tracer Ensemble requires features of the server operating system to be installed to operate correctly. Each server version is slightly different in the setup and configuration of these features. The summary of these features are:

Windows Server 2012 Server Roles

Application Server Role Services:

- .Net 4.72
- .Web Server (IIS) Support



Configure Microsoft Windows Server

Web Server (IIS) Role Services:

Common HTTP Features

- Default Document
- Directory Browsing
- HTTP Errors
- Static Content
- Health and Diagnostics
- HTTP Logging
- Logging Tools
- Request Monitor
- Performance (all)
- Security
- Request Filtering
- Performance
- Static Content Compression

Application Development

- .Net 4.72
- ISAPI Extensions
- ISAPI Filters
- Management Tools
- IIS Management Console
- IIS Management Scripts and Tools
- IIS Management Compatibility (all)

.Net Framework

Tracer Ensemble 5.7 requires .Net 4.7.2 to be installed on the server and will do this automatically during the installation process. If the server does not have an Internet connection, .Net will need to be downloaded manually and installed manually separately.

Installation and Configuration on non-Latin Based Servers

This section covers known issues with installation and configuration on a non-Latin based server, including, but not limited to: Chinese, Japanese, Korean and other complex script languages.

Tracer Ensemble Installation

Installing Tracer Ensemble on a non-Latin based server requires special handling of the current SQL scripts

that are used for database creation and updates:

1. Create the database in Latin-based script language.
2. Change the language for non-Unicode programs complex script display language to English.
3. Run the appropriate SQL scripts that are needed.
4. Revert the language for non-Unicode programs from English to the complex script display language of choice.
5. Install the Tracer Ensemble application.

Install and Configure SQL Server

See Microsoft Developers Network (MSDN) article 143219 for complete installation instructions and configuration.

Database Setup

These procedures must be performed before you install Tracer Ensemble. Before you begin, verify the following:

- You have a supported version of Microsoft SQL Server installed on your system.
- You have a Tracer Ensemble installation media.
- You are not performing an upgrade of Tracer Ensemble. These instructions apply only to a new database.

Note: *These procedures and the screen captures used are based on Windows Server 2008 operating system and SQL Express 2008 database. There may be slight, undocumented differences between your installation and the installation shown if you are using a different database or operating system. See Appendix B: Advanced SQL Configuration for further details on advanced configuration.*

Create the Database

To create the database:

1. Click Start | All Programs | Microsoft SQL Server 200X, | **Microsoft SQL Management Studio**.
2. In the **Connect to Server** window, complete the following tasks.
 - a. In the Server type field, select **Database Engine**.
 - b. In the Server name field, select the name of the database server (typically the name of the server you are using).
 - c. In the Authentication field, select **Windows Authentication**.
 - d. Click **Connect**.
3. Under Object Explorer, right-click Databases and select **New Database**.
4. In the New Database window, complete the following tasks:
 - a. In the Database name field, enter **TracerEnsemble**.
*Note: You can choose any name you like for the database, but this procedure and the screen captures in this document will use **TracerEnsemble** as the database name. If you choose a different name, substitute your database name where appropriate.*
 - b. Click **OK** (not Add, which would begin to create another new database).
5. Navigate to the newly created database to verify that it has been added.

Upon completion of these steps, the database shell is created, but its structure and Tracer Ensemble initial values are not yet in place.

Create the Database Structure

The database structure is provided on the installation disk. Complete the following procedure to apply the structure to your database:

1. Select File | Open | **File...**
2. Locate and open the **TracerEnsemble.db.create.sql** file in the **DBScripts** directory at the top level of the Tracer Ensemble installation media. (Reconnect to the database engine, if prompted, to proceed.)
3. Select the **TracerEnsemble** database.
4. On the Query menu, click **Execute**.
5. In the Object Explorer sidebar, expand the TracerEnsemble database, and then expand **Tables**. There should be a list of tables starting with dbo.

Populate the Database with Initial Values

The initial values for the Tracer Ensemble database are

provided on the installation disk. Complete the following procedure to apply the initial values to your database:

1. On the File menu, select Open | **File...**
2. Locate and open the **TracerEnsemble.initial.data.sql** file in the **DBScripts** directory at the top level of the Tracer Ensemble installation media. (Reconnect to the database engine, if prompted, to proceed.)
3. Select the **Tracer Ensemble** database.
Note: Step 3 is easy to miss. Be sure that the newly created database appears in the pull-down menu.
4. On the Query menu, click **Execute**.
5. In the Object Explorer sidebar, expand the TracerES database, and then expand **Tables**. There should be a list of tables starting with dbo.
6. After executing the two database scripts, the database tables should appear as in Figure 22. To perform this check:
 - a. Expand **Tables**.
 - b. Right-click **LOV_TimeZone** table, and then select **Select Top 1000 Rows**. You will see time zone data in the lower right quadrant of the window as in. If the scripts were not executed properly, the table will either not be available or will not contain any data.

If the table is not available or does not contain any data, go back and re-execute the scripts.

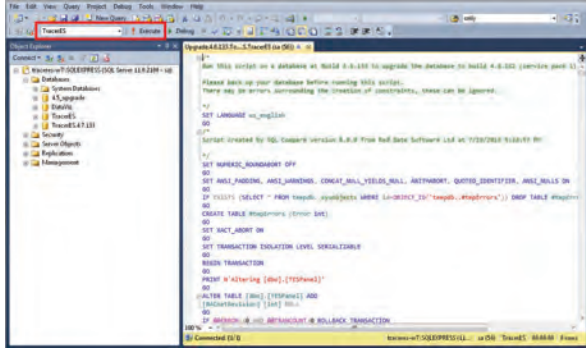
Manually Upgrading the Tracer Ensemble Database

1. Determine the current version of Tracer Ensemble. In Tracer Ensemble navigate to Actions and Settings | System | **System Status**. The build will be represented as X.X.XXX. This is required to update the database manually.
2. Open SQL Server Management Studio.
3. Log in with the appropriate user account.
4. Within the Object Explorer, expand **Databases** and locate the database that is currently being used by Tracer Ensemble. This can be determined by the Tracer Ensemble Smart Client.
5. Within the Tracer Ensemble installation media, open the **DBScripts** folder.
6. Using the current version of Tracer Ensemble located in the first step:
 - a. Locate the **Upgrade.X.X.XXXto.Y.Y.YYY.sql** or **Upgrade.X.X.XXXto.Y.Y.Current.sql** script, where **X.X.XXX** is the current version. **Y.Y.** indicates the next available version. Double click on this to open the script in SQL Server Management Studio.

Configure Microsoft Windows Server

- b. Select the database that you want to apply the script to. Click **Execute**.

Figure 1. SQL Server

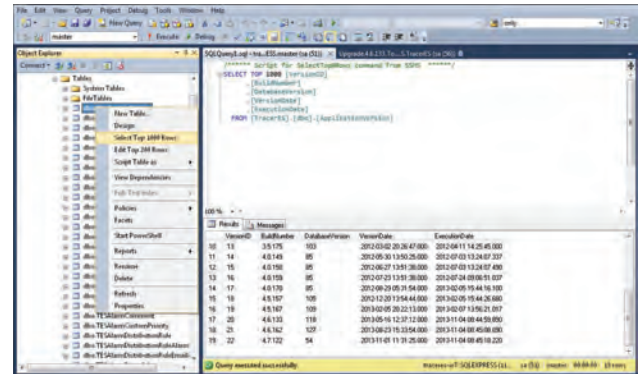


- c. Execute all scripts (starting with the script selected in step a) in order until the Upgrade.X.X.XX.to.Y.Y.Current.sql is run.

Example: Your current Tracer ES system is 4.6.133. To upgrade to 4.7 (current software), Upgrade.4.6.133.to.4.6.162.sql then Upgrade.4.6.162.to.4.7.Current.sql SQL scripts must be run.

7. If an error has occurred during the running of the script, no changes will be committed to the database. Contact Technical Support for assistance.
8. To verify the upgrade of the database, expand the **Tracer Ensemble Database**, expand **Tables**.
9. Right click on **dbo.ApplicationVersion** and select **Select Top 1000 Rows**. Scroll to the bottom of the results to verify the correct version has been entered into the table.

Figure 2. Database Version Table



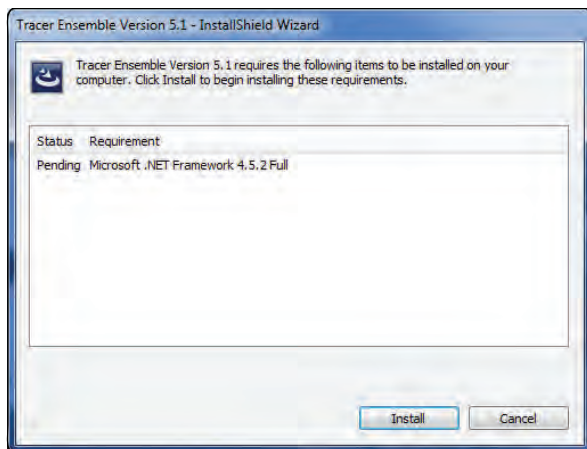
Install Tracer Ensemble Application

1. Load the Tracer Ensemble installation media and wait for the Autorun program. If Autorun does not being automatically, browse to **My Computer**, right click on the disk drive, and select **AutoPlay**.
2. The installer will determine if the correct .Net Framework is installed. If the correct version is not installed, the Tracer Ensemble installer will download and initiate the .Net Framework installer.

Note: *If Internet access is not available to the server, a manual download and installation of .Net Framework is required. Tracer Ensemble 4.7+ will not install if the correct framework is not in place.*

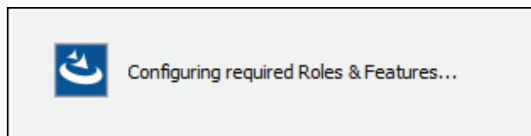
- a. When prompted, install the .Net Framework version.

Figure 3. Tracer Ensemble Installer .Net Update



- b. Upon installation of the .Net Framework, the Tracer Ensemble installer will proceed with installation.

Figure 4. Configuring Roles and Features



3. On the welcome screen, click **Next**.

Figure 5. Welcome

4. On the Installation Type screen, select your desired method for installing Tracer Ensemble:
 - Select **Install Tracer Ensemble and create database** if the SQL Server resides on the same

server or SQL Server administrative credentials are available. With this option, the installation program will create the database and install Tracer Ensemble.

- Select **Install Tracer Ensemble only** if the SQL Server is managed by a Database Administrator, or administrative credentials are not known. With this option the installation program will only install Tracer Ensemble; database creation and script execution have to be done manually.

Figure 6. Installation Type

5. On the Custom Setup screen, select the languages you want to install, and then click **Next**.

Figure 7. Language Setting

6. On the Customer Information screen, complete the fields according to your preferences, and then click **Next**.
 - **User Name** is usually the name of the customer who owns or administers the software.
 - **Organization** is usually the company, agency, or other organization that owns the software and the building network.

Figure 8. Customer Information

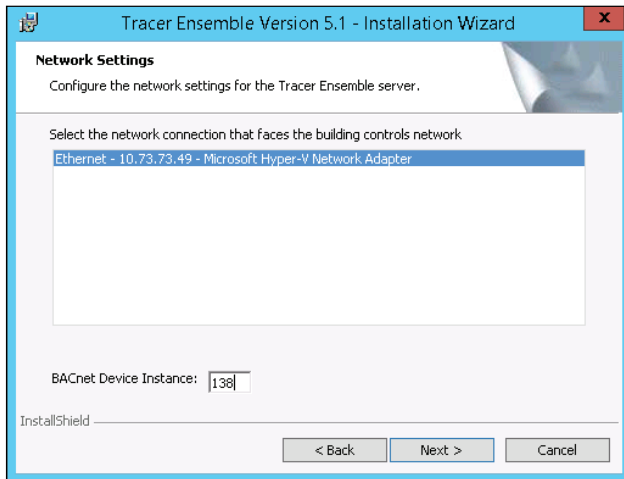
7. On the Destination Folder screen, accept the default destination folder (recommended) or select a different folder by clicking **Change** and specifying a different folder. Then click **Next**.

Figure 9. Destination Folder

8. On the Network Settings screen, select a network connection, specify the BACnet Device Instance, and then click **Next**. Here is some additional information:
 - The network connection is identified by its connection name, IP address, and the name of the network interface adapter installed.
 - The **BACnet Device Instance** is a unique number that the BACnet network uses for routing alarms from Tracer Summit to Tracer Ensemble. Device instance 125 is the default and should be used unless already used.

Install Tracer Ensemble Application

Figure 10. Network Settings



9. On the Database Settings screen, complete the fields according to the TracerES database and click **Next**.
 - If **Install Tracer Ensemble and create database** has been selected:
 - **Database Server** is the server name of the SQL server computer. If you are not sure of the name, open the SQL Server Management Studio. The server name is shown on the Connect to Server window. If the SQL Server Management Studio is already running the server name is at the top level of the navigation tree, and on the title of the database when selected. The database server name may also contain the SQL instance name if the default instance is not used.
 - **Database Name** will be the name of the database to be created, TracerES should be used unless otherwise noted by Database Administrator or customer request.
 - If **Install Tracer Ensemble** has been selected:
 - **Database Server** is the server name of the SQL server computer. If you are not sure of the name, open the SQL Server Management Studio. The server name is shown on the Connect to Server window. If the SQL Server Management Studio is already running the server name is at the top level of the navigation tree, and on the title of the database when selected.
 - **Database Name** is the name of the Tracer Ensemble database. It should be TracerES unless the database creator chose a different name during the setup.
 - **Authenticate connection**
 - Select **Windows authentication...** to use your Windows login credentials to

authenticate your access to the Tracer Ensemble database. Choose this option if you are typically able to make changes to the database structure without needing to login using a different administrator account.

If **Install Tracer Ensemble and create database** was selected, the installation program will construct the database using the Windows credentials. The Tracer Ensemble system will access the database using the following SQL username and password:

Username: tranedbuser

Password: tes!2345

If **Install Tracer Ensemble** was selected, the Tracer Ensemble system will access the database using the Windows credentials of the current user.

- Select **Server authentication...**, and then specify the **Login ID** and **Password** to be used to log in to the database. Choose this option if you know that you need to use a different administrator account to and make changes to the database.

If **create database** was selected, the entered SQL user is required to have either DbOwner or SysAdmin role for the installation to execute successfully. The installation program will construct the database with the specified SQL user credentials. Tracer Ensemble will access the database using the following SQL username and password:

Username: tranedbuser

Password: tes!2345

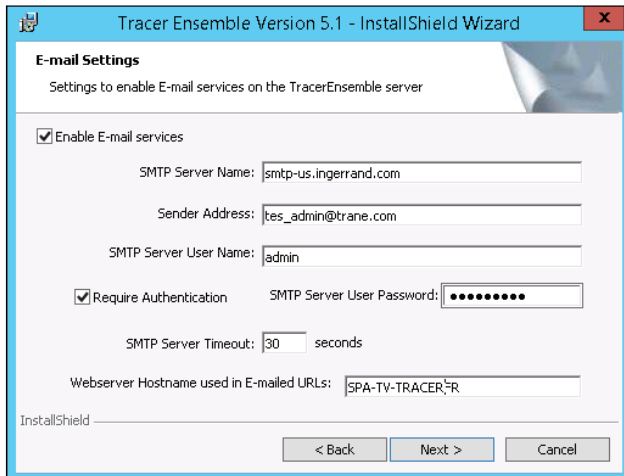
If **Install Tracer Ensemble** was selected, the Tracer Ensemble system will access the database using the specified SQL credentials.

Figure 11. Database Settings

10. On the E-mail Settings screen, complete the fields according to your e-mail system and click **Next**.
 - If you *do not* want to use e-mail notification from Tracer Ensemble, clear **Enable E-mail services**. The rest of the screen can be ignored.
 - If you *do* want to use e-mail notification, select **Enable E-mail services** and complete the rest of the screen with information about the e-mail account you will use. These settings are the same as you would find in setting up any local e-mail client. The e-mail service provider, whether internal or external, must have created the account and should be able to provide the

necessary information.

Figure 12. E-mail Settings



The screenshot shows the 'E-mail Settings' dialog box within the 'Tracer Ensemble Version 5.1 - InstallShield Wizard'. The dialog has a title bar with a close button (X) and a help icon. The main content area is titled 'E-mail Settings' and includes the subtitle 'Settings to enable E-mail services on the TracerEnsemble server'. There are several input fields and checkboxes:

- Enable E-mail services
- SMTP Server Name: smtp-us.ingerrand.com
- Sender Address: tes_admin@trane.com
- SMTP Server User Name: admin
- Require Authentication
- SMTP Server User Password: [masked with dots]
- SMTP Server Timeout: 30 seconds
- Webserver Hostname used in E-mailed URLs: SPA-TV-TRACER

 At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallShield' logo is visible in the bottom left corner of the dialog.

11. On the Ready to Install screen, select or clear an option as desired, and then click **Next**.

- Select **Start Application Server when complete** if you would like to run the Tracer Ensemble server as soon as installation is complete.
- Clear **Start Application Server when complete** if you prefer to start the server manually after installation.

Figure 13. Ready to Install

12. Wait for the installation to complete.

13. When the InstallShield Wizard Completed screen appears, click **Finish**.



Tracer Ensemble First Login

You can use the built-in administrative account to log in to Tracer Ensemble for the first time. This will permit you to confirm that the server is running as expected.

To log in to Tracer Ensemble:

1. Open one of the following web browsers:
 - Microsoft Internet Explorer
 - Mozilla Firefox
 - Apple Safari
2. In the browser **Address** field, type in the address of the Tracer Ensemble server. If you are logging in on the same computer where Tracer Ensemble is installed, use **http://localhost/Virtual Directory Name** (For example, most installations by default will be **http://localhost/TracerEnsemble**). The Tracer Ensemble login page appears.
3. Select an alternate language, if needed, by clicking the button for the desired language. There are some additional regional settings you can change if you edit your preferences.
4. Enter Trane for **User ID**; Tracer for **Password** and click **Login**.

Figure 14. Tracer Ensemble Login Page



5. Read the license agreement. You must scroll to the bottom of the agreement.
6. Click **Yes, I do accept** and **Continue** to indicate your acceptance of the agreement. The Tracer Ensemble Home page appears.



Licensing

1. Select Actions and Settings | **Tracer Ensemble Licensing**.
2. Enter the **Software Serial Number**.

Figure 15. Enter Software Serial Number

3. Click **Generate Server ID**.

Figure 16. Generate Server ID

4. Click **Copy to Clipboard** to copy the Server ID to your clipboard.
5. Click **Go To Website** to create a license file.
6. Once you have created a license file, click **Browse** and select the license file.
7. Click **Upload License File**.

Figure 17. Upload License File

Updating Tracer Ensemble

Complete this procedure if you are installing Tracer Ensemble software on a system that already has Tracer ES V2.5 or higher installed. If Tracer ES is older than V2.5, it must be upgraded to V2.5 before upgrading to the current version. The installation program will automatically make changes to a previous version of the Tracer Ensemble database to make it compatible with the latest version of the software

Note: Tracer ES v4.6+ uses a new license file format which requires a valid Software Maintenance Plan (SMP) license in order to upgrade. A valid license file is required before Tracer Ensemble installer will perform the upgrade.

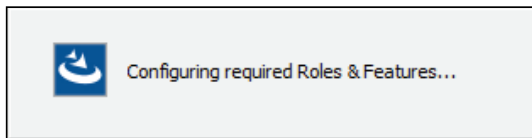
To upgrade Tracer Ensemble:

1. Copy the Tracer Ensemble installation media to a defined location on the workstation.
2. The installer will determine if the correct .Net Framework is installed. If the correct version is not installed, the Tracer Ensemble installer will download and initiate the .Net Framework installer.

Note: If Internet access is not available to the server, a manual download and installation of .Net Framework is required. Tracer ES 4.7+ will not install if the correct framework is not in place.

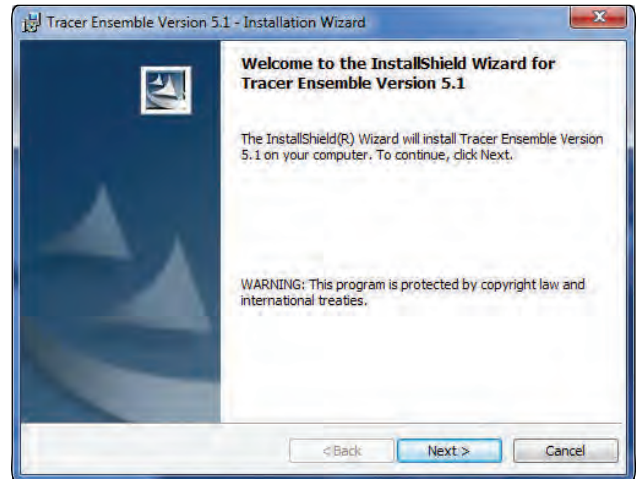
- a. When prompted, install the .Net Framework.
- b. Upon installation of the .Net Framework, the Tracer Ensemble installer will proceed with installation.

Figure 18. Configuring Roles and Features



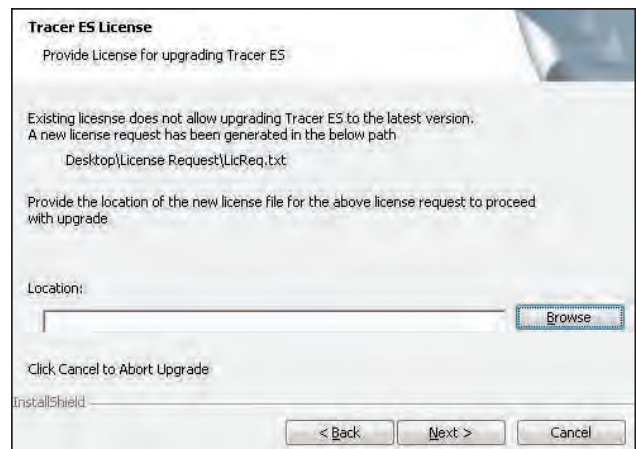
3. On the welcome screen, click **Next**.

Figure 19. Welcome



4. The installer will analyze the existing Tracer Ensemble version and license.

Figure 20. Tracer Ensemble License



Upgrading from Tracer ES v4.5 or below

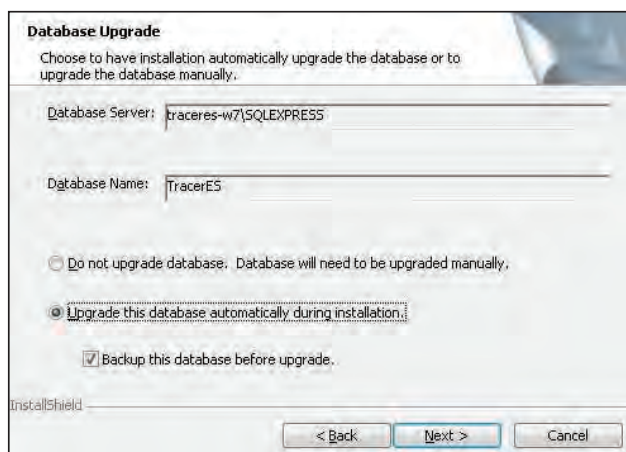
- a. The installer will determine that the current license is incompatible with Tracer ES v4.6+ and will create a new license request file and saved it the desktop. The installer will not install Tracer ES 4.6+ until a valid license is obtained.
- b. Using the newly created license request file and the Tracer Licensing page, update the existing license with the new Server ID using the Change Hardware path on the licensing server.
- c. Using the Tracer Licensing page, update the license with an appropriate Software Maintenance Plan.
- d. Save the update license.

- e. Re-run the installer if cancelled.
- f. When prompted, upload the new license file.

Upgrading from Tracer ES 4.6+

- a. The installer will determine if the current license has a valid SMP.
 - If a valid plan is detected the installer proceed to Step 6.
 - If an invalid SMP is detected a new license request file and saved it the desktop. The installer will not install Tracer ES 4.6+ until a license with a valid SMP is detected.
 - b. Using the Tracer Licensing page, update the license with an appropriate Software Maintenance Plan.
 - c. Save the update license.
 - d. Re-run the installer if cancelled.
 - e. When prompted, upload the new license file.
5. On the Database upgrade screen, verify the following:
 - Database server name
 - Database name. This is typically **Tracer Ensemble**, but may vary.
 6. Select the method for upgrading the database:
 - Select **Do not upgrade the database** if you are updating the database manually. This option is typically used if the database is managed by an SQL DBA or another user.
 - Select **Upgrade the database** if you want the installation program to automatically update the database to the current version.

Figure 21. Database Upgrade

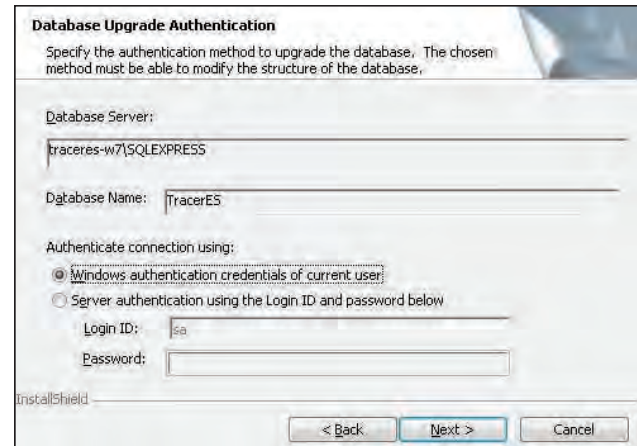


7. Select your SQL authentication method:
 - Select **Windows Authentication...** to use your Windows login credentials to authenticate your access to the Tracer Ensemble database. Choose this option if you are typically able to

make changes to the database structure without needing to login using a different administrator account.

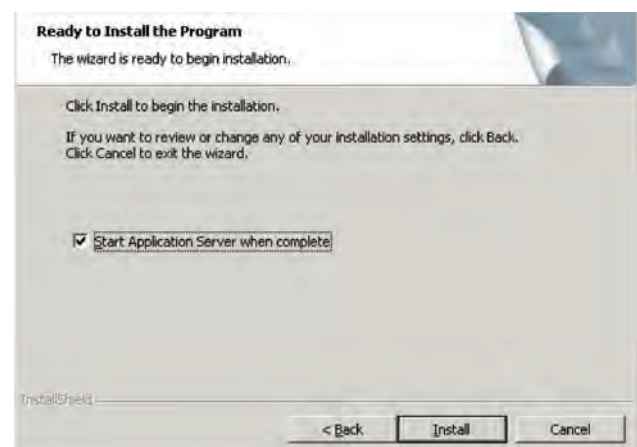
- Select **Server authentication...** and then specify the **Login ID** and **Password** to login in to the database. Choose this option if you need a different administrator account to make changes to the database.

Figure 22. Database Upgrade Authentication



8. On the Ready to Install screen, select the appropriate options:
 - Select **Start Application Server when complete** if you want Tracer Ensemble to run immediately after the installation is complete.
 - Clear **Start Application Server when complete** if you prefer to start the server manually after installation.

Figure 23. Ready to Install



9. When the InstallShield Wizard Complete screen displays, click **Finish**.



Updating Tracer Ensemble

Note: If the installation process fails for any reason, the Tracer Ensemble Installer will roll back any file system changes made. IIS will need to be

manually reconfigured to use the .NET 2.0 Framework if this happens.



Advanced Configurations and Functions

Windows Services

Windows provides functionality to start and stop services that are running on the server. Tracer Ensemble runs as a services and can be started, stopped, or restarted.

To start or stop the service:

1. Click **Start**, and then click **Control Panel**.
2. Double-click **Administrative Tools**.
3. Double-click **Services**.
4. Select **Trane TracerES Application Server** service.
5. Look in the Status column to determine whether or not the service is running.
 - Started means the service is running.
 - Stopped means the service is not running.
6. Choose an action:
 - To start the service, on the **Action** menu, click **Start**.
 - To stop the service, on the **Action** menu, click **Stop**.
 - The service may require several minutes to start or stop completely.

HTTPS and SSL – Secure Communications Configuration

The following procedure is necessary only if you require secure communications on the Tracer Ensemble website, specifically HTTPS. If you do not require secure communications, you should use the standard HTTP connection established by the installation program and IIS configuration on the Microsoft Server.

The following steps are involved when configuring HTTPS on the Microsoft Windows Sever:

1. Obtain a certificate.

Before proceeding, you must obtain a server certificate. There are two parts to this step. You must generate a certificate request, then obtain the actual certificate. Generating a certificate request is not a part of Tracer Ensemble, but rather a part of the Microsoft Server that Tracer Ensemble is installed on. The certificate request generation will differ slightly depending on the Microsoft Windows Server Platform on which you are installing it.

There are many certificate vendors and videos to

aid customers through this process:

- <https://www.youtube.com/watch?v=Olx5kg0YK7U>
- <https://www.godaddy.com/help/ssl-certificates-1000006>
- <https://www.digicert.com/csr-creation.htm>

After you have the Certificate Request, there are multiple ways to obtain a certificate. One method is to obtain a trusted certificate through a trusted certificate vendor.

Examples of Trusted Certificate Vendors are:

- www.verisign.com
- www.godaddy.com

You can also create a self-signed certificate; however, the process for this will depend on the Microsoft Windows Server Operating System Platform you are using and what version of IIS is running.

Microsoft Corporation provides documentation on how to do this for each version:

- <https://support.microsoft.com/en-us/help/228991>
- <https://msdn.microsoft.com/en-us/library/ff699202.aspx>

2. Install the certificate.

The installation method will vary depending on your web server and the type of certificate you purchase. Specific installation instructions, resources, and support are typically offered by your certificate provider or your web host.

Below are links to Trusted Certificate Vendors instructions on installing their certificates:

- <https://www.godaddy.com/help/ssl-certificates-1000006>
- <https://www.wikihow.com/Install-an-SSL-Certificate>

3. Disable/redirect HTTP.

After HTTPS is enabled on the Microsoft Windows Server Platform hosting Tracer Ensemble, it is possible to disable/redirect HTTP traffic through the Microsoft Windows Server Platform.

Below is a Microsoft link with instructions on this process for multiple Microsoft Server Platforms:

- <https://docs.microsoft.com/en-us/iis/configuration/system.webServer/httpRedirect/>



Appendix A: Virtual Machine Requirements

For Tracer Ensemble to be licensed correctly, the processor signature must be persisted within the server. This is CPUID EAX=1 instruction set.

HyperV Configuration

HyperV Virtual server must be configured with Processor Compatibility mode enabled. This obscures the CPUID instruction set allowing Tracer Ensemble

licensing to remain operational upon migration or restart.

VMware ESX(i)

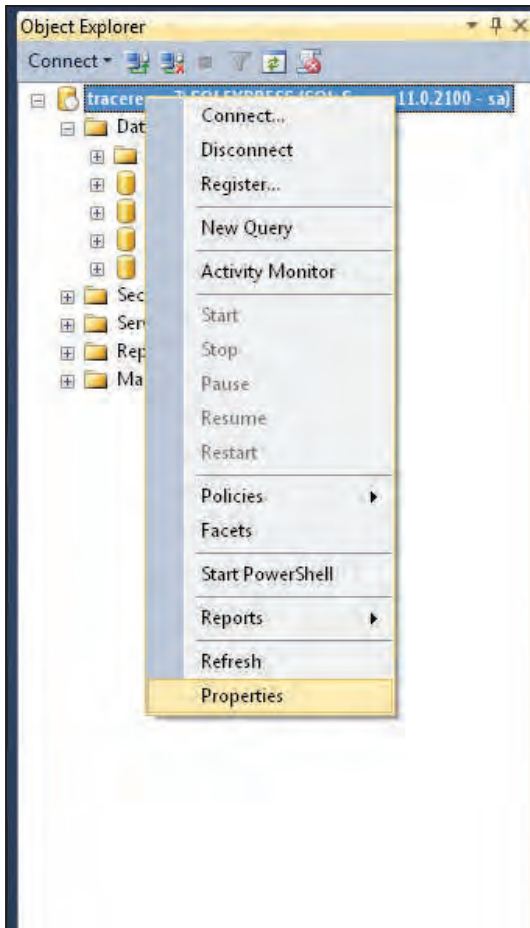
VMWare virtual machines must have the CPUID leaves configured to persist the EAX within the virtual machine configuration file.

Appendix B: Advanced SQL Configuration

If it is determined that the SQL server is consuming most or all of the memory of the server that SQL and Tracer Ensemble is installed on, follow these steps to limit the amount of memory that the SQL Server can use.

1. Open SQL Management Studio, right click on the SQL Server, and select **Properties**.

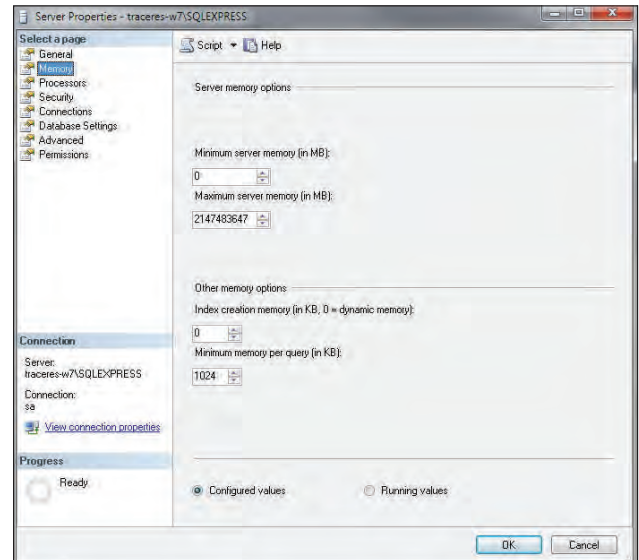
Figure 24. Select SQL Server Properties



2. Select **Memory** and set the Maximum server memory to XXXX MB to limit the SQL server memory consumption to your specified limit.

Note: Determining what to limit the SQL Servers memory consumption will need to be done on an installation by installation basis.

Figure 25. SQL Server Properties



3. Click **OK**.
4. Restart SQL for the changes to take affect.
5. Restart Tracer Ensemble to reinitialize the connection to the SQL database.



Appendix C: Backup and Restore

Backup

A disaster recovery solution for Tracer Ensemble systems server should be identified and executed on a customer agreed upon basis. Typically either an automated or manual backup of Tracer Ensemble files and database is required to accomplish this. There are numerous software solutions available at all cost points to accomplish an automated backup solution. Talk with an industry professional to select the best solution for your application.

The following files and databases are critical to Tracer Ensemble and need to be backed up:

SQL Database

- Tracer Ensemble database
- Master database (used in extreme disaster recovery circumstances)

Tracer Ensemble files

- <drive path>/Trane/TracerES/Server/bin/trane.OWS.server.exe.config
- <drive path>/Trane/TracerES/Server/metadata/administration/license/lic.dat
- <drive path>/Trane/TracerES/UI/Web.config
- <drive path>/Trane/TracerES/UI/Custom Applications
- <drive path>/Trane/TracerES/UI/Graphics

Restore

The backup files identified above are required to restore a Tracer Ensemble system to the previous state. Examples of when you need to restore Tracer Ensemble include when the operating system (OS) for your Tracer Ensemble server has been reinstalled, when the Tracer Ensemble server is moved to new hardware, or a Virtual Machine is created for Tracer Ensemble. The process to restore Tracer Ensemble is the same for each situation.

To restore Tracer Ensemble:

1. Using SQL management studio restore the Tracer Ensemble database.
2. Identify the Tracer Ensemble version to install on the new server.
 - a. After the Tracer Ensemble database has been restored, expand the database folder, Tracer Ensemble database and tables.
 - b. Locate the dbo.ApplicationVersion table, right

click, and select top 1000 rows.

- c. Note the application version (last row is the current version of software from backup).
3. Install the Tracer Ensemble version identified in step 2 for proper restore.
 - a. Select Install Tracer Ensemble only.
 - b. Populate the database information with the restored Tracer Ensemble database name and user credentials of the SQL server.
 - c. Do not start Application Server after installation is complete.

Note: If an upgrade is desired at this time we recommend restoring the Tracer Ensemble system, verify operation and then proceed with a software upgrade.

4. Copy the following files to the Tracer Ensemble installation location:
 - <drive path>/Trane/TracerES/Server/bin/trane.OWS.server.exe.config
 - <drive path>/Trane/TracerES/UI/Web.config
 - <drive path>/Trane/TracerES/UI/Custom Applications
 - <drive path>/Trane/TracerES /UI/Graphics
5. Start Tracer Ensemble.
6. Log in o Tracer Ensemble. Navigate to Actions and Settings | **Tracer Ensemble Licensing**.
7. Click **Register Site License**.
8. All information should be populated. Licensing information cannot be changed during this process. If it is not populated, populate the required fields and click **Next**.
9. Download a new license request file to update the Server ID within the Trane licensing system.
10. See Updating Tracer Ensemble for updating license server ID.
11. Download new license from Trane licensing system. Upload new license to Tracer Ensemble.
12. Navigate to Actions and Settings | **Tracer Ensemble Licensing**.
13. Click **View Panel Licensing**. Activate panels that were deactivated during the restore process.
14. Verify communications is restored to system panels.
15. Verify operation of Tracer Ensemble system.

Appendix D: Direct Link with Tracer SC

Direct link allows Tracer Ensemble users to access the Tracer SC user interface from links within Tracer Ensemble without requiring an additional log on to Tracer SC. These links are created and displayed for buildings with Tracer SC V3.1+. Both Tracer Ensemble and Tracer SC must be configured for direct link access.

Direct Link Requires:

- Tracer ES V3.5+
- Tracer SC V3.5+ (high performance user interface)

Single Sign On for Direct Link Requires:

- Tracer ES V4.0+
- Tracer SC V3.5+ (high performance user interface)

Configuring Tracer SC for Direct Link

1. Log in to the Tracer SC user interface via the Tracer SC application or Tracer Ensemble direct link.

Figure 26. Tracer SC Login Page



Figure 27. Access Tracer SC via Tracer Ensemble Direct Link



2. Click on **Tools**.

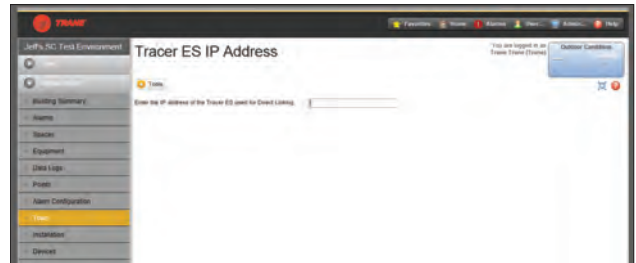
3. Double click on **Tracer Ensemble IP Address**.

Figure 28. Tracer Ensemble IP Address



4. Enter the IP address of the Tracer Ensemble server.

Figure 29. Tracer Ensemble Server IP Address



5. Click **Save**.

Note: This process must be repeated for every Tracer SC that you want to access from Tracer ES for single sign on to work. This is not required for direct links from Tracer Ensemble to function properly, but users will need to log on to Tracer SC when accessing it from Tracer Ensemble if not set up correctly.

Configuring Tracer Ensemble for Direct Link

1. In Tracer Ensemble, click the **Actions and Settings** icon.
2. Click **User Profiles**.
3. Click the appropriate user name.
4. Click **Edit Profile**.
5. In the **SC User ID** field, enter the Tracer SC user name.

Figure 30. Edit User Profile

Edit User Profile ?

Complete this page and click next. (*required fields)

User ID*	TESAdmin		
First Name*	Tracer Ensemble		
Last Name*	User Administrator		
E-mail Address	<input type="text"/>		
Template for E-mail Alarms	<input type="text"/>		
Phone Number 1	<input type="text"/>		
Phone Number 2	<input type="text"/>		
SMS Text Message Address	<input type="text"/>	@message.alltel.com	<input type="text"/>
Template for SMS Text Message Alarms	<input type="text"/>		
User Role*	Administrator		
SC User ID	Trane		

Enable Auto-Logout for this user
 Give this user access to all custom pages

Building and Subgroup Access

Give this user Full access to all buildings
 Define user access to buildings and subgroups

6. Click **Next** and then **Finish** to save your changes.
- Note: If you edited your own user profile, you will be prompted to log in again, as your security settings have changed.*

User Access to Direct Links

You can optionally allow or deny users access to direct links to Tracer SC based on their user role.

1. In Tracer Ensemble, click the **Actions and Settings** icon.
2. Click **User Roles**.
3. Select the role that you want to edit.
4. Click the **Edit** button.
5. Click **Next** through the wizard until you reach the **Application Permissions** page.
6. Set the access level direct links to Tracer SC in the **Direct Link to Panel** section. **Yes** will display Tracer SC links for users with this role and **No** will hide the links.

Figure 31. Edit User Role

Edit User Role ?

Complete this page and click Next.

Role Information

Name	Administrator
Description	Tracer Ensemble System Administrator
May reset personal password	Yes
May change personal preferences	Yes

Application Permissions
 Click Yes to allow or No to prohibit this role to perform the function.

Alarms	Access	Schedules	Access
View	<input checked="" type="radio"/> Yes <input type="radio"/> No	View	<input checked="" type="radio"/> Yes <input type="radio"/> No
Delete	<input checked="" type="radio"/> Yes <input type="radio"/> No	Edit	<input checked="" type="radio"/> Yes <input type="radio"/> No
Acknowledge	<input checked="" type="radio"/> Yes <input type="radio"/> No	Create/Delete	<input checked="" type="radio"/> Yes <input type="radio"/> No
Insert Comments	<input checked="" type="radio"/> Yes <input type="radio"/> No	Apply/Cancel Exceptions	<input checked="" type="radio"/> Yes <input type="radio"/> No
Edit Alarm Routing	<input checked="" type="radio"/> Yes <input type="radio"/> No	Create/Edit Exceptions	<input checked="" type="radio"/> Yes <input type="radio"/> No
Configure Alarm Recipients	<input checked="" type="radio"/> Yes <input type="radio"/> No	Apply/Cancel Emergency Schedule	<input checked="" type="radio"/> Yes <input type="radio"/> No
Ignore	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Data Logs	Access	All Data Logs	Access
View	<input checked="" type="radio"/> Yes <input type="radio"/> No	View	<input checked="" type="radio"/> Yes <input type="radio"/> No
Edit	<input checked="" type="radio"/> Yes <input type="radio"/> No	Edit	<input checked="" type="radio"/> Yes <input type="radio"/> No
Create	<input checked="" type="radio"/> Yes <input type="radio"/> No	Delete	<input checked="" type="radio"/> Yes <input type="radio"/> No
Delete	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Overrides	Access	Global Change	Access
Advanced Overrides	<input checked="" type="radio"/> Yes <input type="radio"/> No	Edit	<input checked="" type="radio"/> Yes <input type="radio"/> No
Point Service	<input checked="" type="radio"/> Yes <input type="radio"/> No	Direct Link To Panel	Access
Top Override Priority	<input type="text" value="1 - User - Emergency"/>	Tracer SC	<input checked="" type="radio"/> Yes <input type="radio"/> No

7. Save your changes.



Notes

Trane - by Trane Technologies (NYSE: TT), a global innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

Trane has a policy of continuous product and product data improvements and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.

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