



## **TimeTTracker MX2, Enterprise Edition Fundamentals Guide**

Note: this document is work-in-progress, and should be considered experimental, as well as subject to substantial change in subsequent revisions. Please contact us with suggestions for additions and clarifications.

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# Key Concepts

## Architecture

TimeTracker MX2, Enterprise Edition is a multi-user software package built around Microsoft SQL Server. A network-enabled, shared, Microsoft SQL Server database server acts as a central enterprise configuration store and enterprise data store, making its contents available to multiple enterprise participants.

In the Enterprise Edition client/server scenario, a Windows computer system containing a dedicated Microsoft SQL Server installation is defined as a "Server", and multiple computer systems containing parallel installations of TimeTracker MX2, Enterprise Edition are defined as "Clients", connecting to a Server over a network.

Communication links between Clients and a Server are managed by the Microsoft SQL Server product. A Server system is capable of servicing remote Client connections over multiple network protocols, such as a "named pipes" protocol, or a standard TCP/IP protocol. A successful implementation of the Enterprise Edition relies on the existence of some kind of a reliable network between a Server (a database) and all possible Client installations (users' workstations).

A particular Server installation on a particular networked Windows computer system is called "an Instance". A complete Instance designation (in other words, a locator) has to include a network computer name (say, "BIG-BOX-DOWNSTAIRS"), and a database installation name (say, "JOBTRACK"). The combination of the two ("BIG-BOX-DOWNSTAIRS\JOBTRACK") allows any Client on the network to locate the right Instance and connect to it. Thus, each Client has to know a complete Instance designation before it can work with it.



Default SQL Server Express installation configuration always uses "SQLEXPRESS" as the database name.

## Authentication and Security

A Windows type of network relies on Windows Authentication. Each user has to be assigned a Windows user account within a Windows domain. Once a user logs into a Windows installation for a particular Windows domain, he or she can be recognized by an SQL Server.

A generic, TCP/IP based type of network relies on direct authentication. Each user has to be assigned an SQL Server username and password. It does not matter whether he or she connects from a local LAN or perhaps connects over the Internet across the globe. Once a user connects to a particular SQL Server installation over TCP/IP and provides a valid username and password, he or she can be recognized by an SQL Server.

TimeTracker MX2, Enterprise Edition is capable of working with Windows Authentication as well as SQL Server Authentication, or both at the same time (so

called Mixed Mode Authentication). A choice of a particular network implementation will depend on your infrastructure and security capabilities required.

When a user connects through a Microsoft Windows user account (Windows Authentication), SQL Server validates the account name and password using information in the Windows operating system. SQL Server achieves login security integration with Windows by using the security attributes of a network user to control login access. A user's network security attributes are established at network login time and are validated by a Windows domain controller. When a network user tries to connect, SQL Server uses Windows-based facilities to determine the validated network user name. SQL Server then verifies that the person is who they say they are, and then permits or denies login access based on that network user name alone, without requiring a separate login name and password.

To summarize, then using Windows Authentication, a particular enterprise participant is identified by a particular Windows user, or a particular Windows group.

When a user connects through an SQL Server -specific account (SQL Server Authentication), SQL Server validates account username and password using information in that particular SQL Server Instance. When a user connects with specified login name and password from a non-trusted connection, SQL Server performs the authentication itself by checking to see if an SQL Server login account has been set up and if the specified password matches the one previously recorded. If an SQL Server does not have a login account set, authentication fails and the user receives an error message. When using SQL Server Authentication, there is no longer an association between a Windows network user and a particular SQL Server account, so the same Windows user can "assume" any SQL Server identity.

To summarize, when using SQL Server Authentication, a particular enterprise participant is identified by a username and a password defined within that SQL Server Instance. The paradigm has nothing to do with Windows accounts, Windows groups, Windows domains, or Windows networks.



When possible, use Windows Authentication. SQL Server Authentication is supported only for backward compatibility.

## ***Participants***

An enterprise participant (a "Participant") is anyone, who has anything to do with TimeTTracker MX2, Enterprise Edition setup, administration, or data maintenance. A Participant is defined primarily within the context of an SQL Server, since it is the SQL Server product that manages remote Client connections, as well as remote Client authentication. Thus, every Participant is really just a particular security context defined within the SQL Server security paradigm. Unless a Participant can successfully connect to a central SQL Server, he or she cannot really contribute to the overall configuration snapshot or the overall data snapshot, so the SQL Server security paradigm used is the primary means of identifying, managing, and organizing your Participants. It is all about who can connect to a database Server, and once connected, what access rights will be given to him or her.

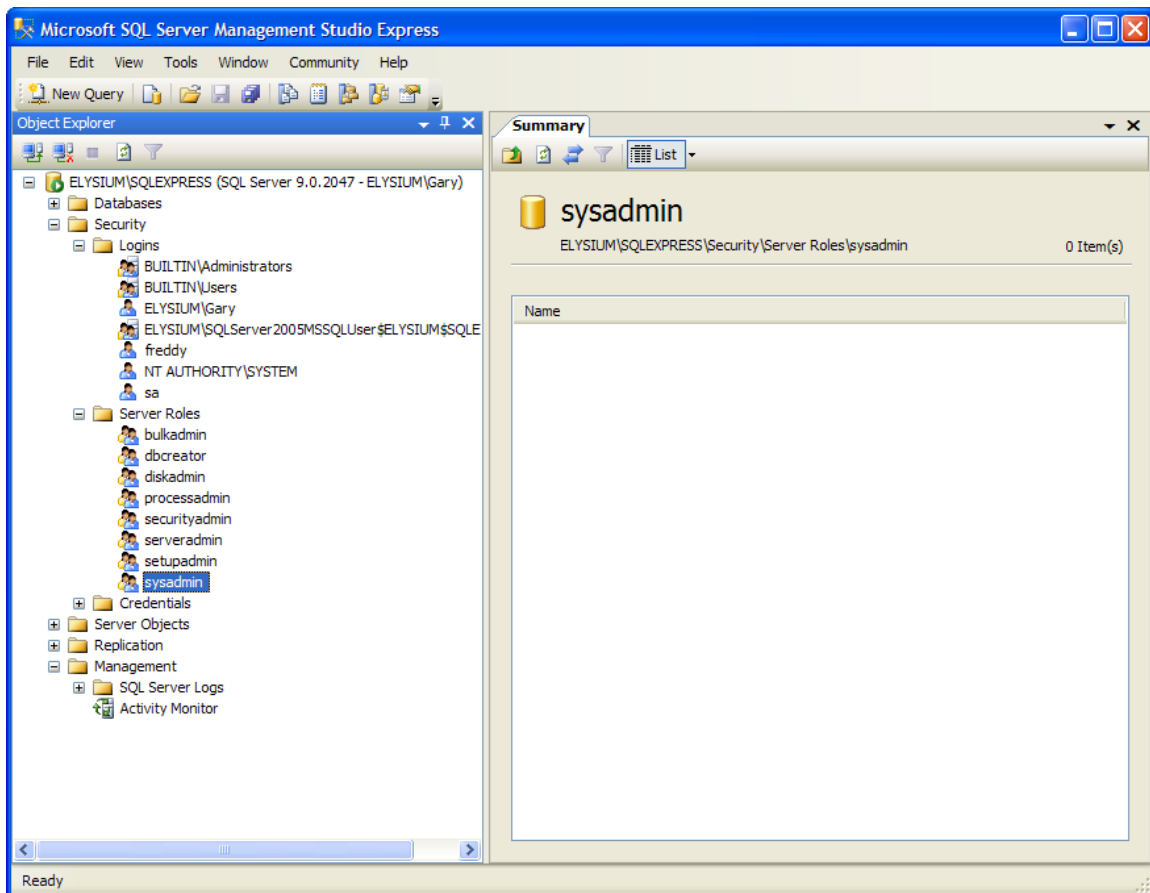
Participants can be divided into three major groups: enterprise administrators (“Administrators”), enterprise controllers (“Controllers”) and enterprise users (“Users”).

## Administrators

Administrators are Participants responsible for:

- Network setup and maintenance
- Windows workstation installation and maintenance
- SQL Server installation and maintenance

Administrators employ various network-aware SQL Server and Windows tools such as Windows Control Panel >> User Accounts interface or Microsoft SQL Server Management Studio Express, to manage their resources.



SQL Server Management Studio Express is an SQL Server administrative tool, provided free of charge by Microsoft. For more information, visit [Microsoft Download Center](#).

Administrators have access to every technological aspect of an enterprise, including all data. You might want to limit, as much as possible, the number of people who are given such broad access to enterprise resources, but still allow non-Administrators to

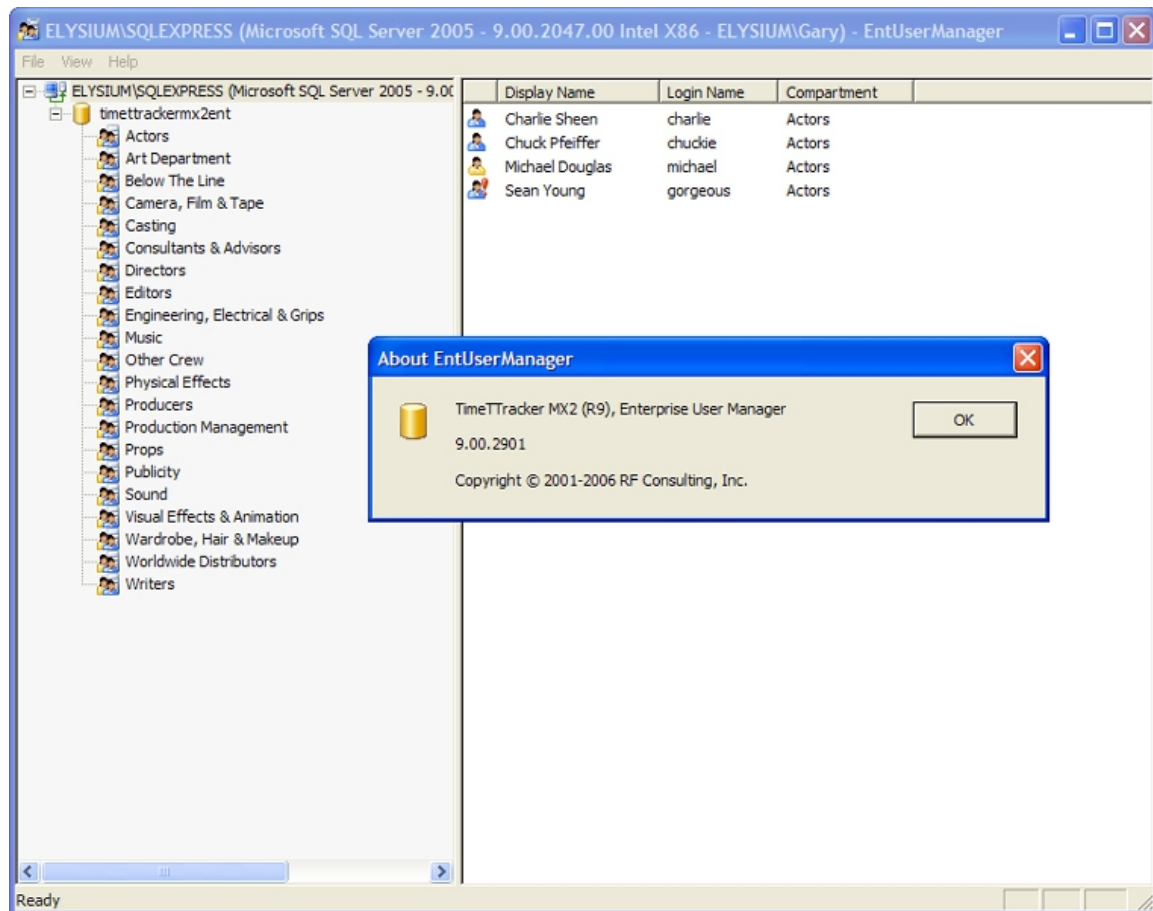
help Administrators with Server task management: Controllers are defined exactly for this purpose.

## Controllers

Controllers are Participants responsible for:

- database and database schema (low-level database objects) setup and maintenance
- logical enterprise compartment setup and maintenance
- enterprise user setup and maintenance
- enterprise user authentication configuration (authentication mode, usernames, passwords)
- enterprise user compartment assignment
- enterprise user role assignment
- enterprise license management

Controllers employ a network-aware TimeTracker MX2, Enterprise User Manager software application (the "ENT") for configuration management.



Enterprise User Manager (ENT) is a part of the TimeTracker MX2, Enterprise Edition client package.

The main difference between Administrators and Controllers is that Administrators are primarily concerned with enterprise-wide technological infrastructure, such as SQL Server installation and Windows user and network management, while Controllers are primarily concerned with one, particular, ready-to-go Instance of SQL Server and its enterprise business functions.



All tasks performed by Controllers involve server-wide SQL Server security. Effectively, every Windows user or an SQL Server username to become a Controller has to be assigned the SQL Server **sysadmin** role by an Administrator. It is a good idea for an Administrator to use the ENT to create at least one User, and then grant the User the SQL Server **sysadmin** role membership, effectively “upgrading” the User to a Controller.



A default installation of SQL Server Express gives all members of Windows administrator group (within a computer system containing the SQL Server Express installation in question, or within the whole Windows domain) the membership of the SQL Server **sysadmin** role automatically.



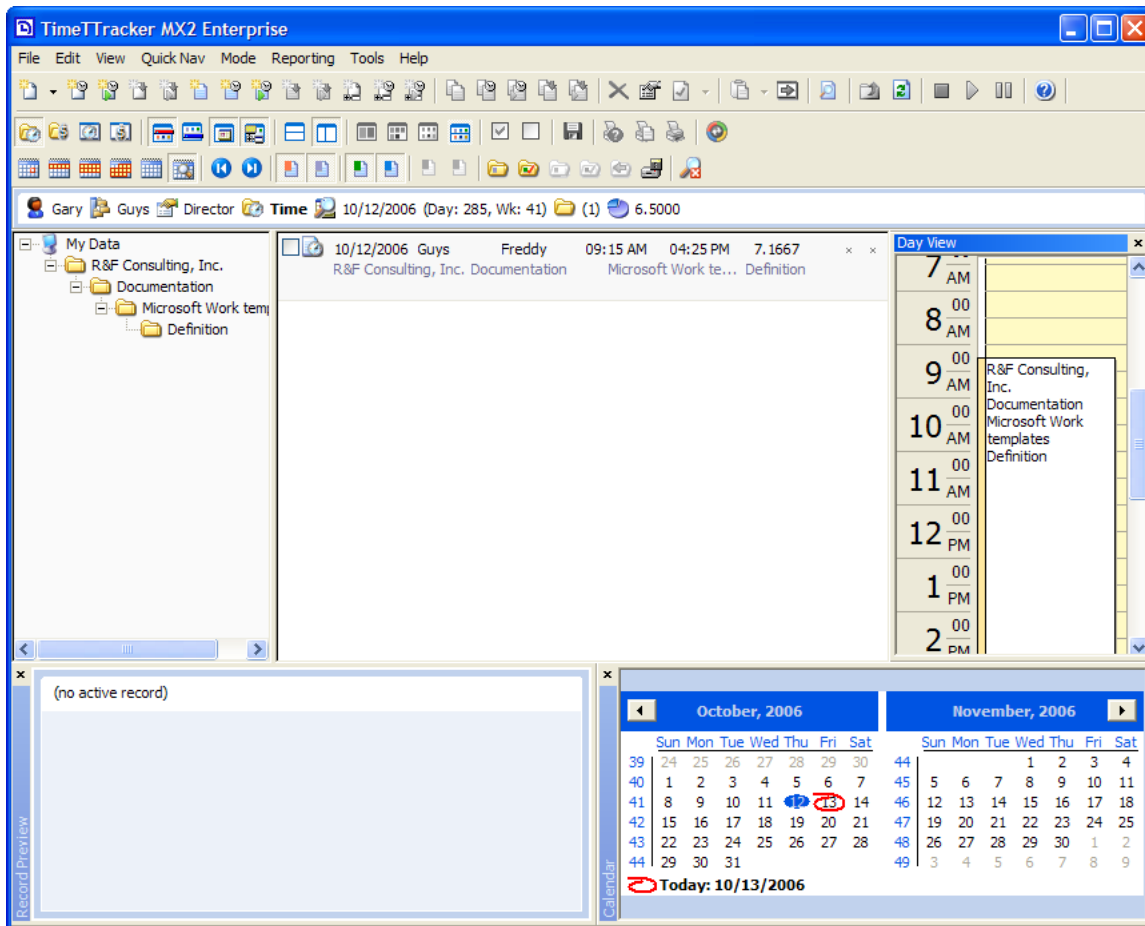
It is neither necessary, nor required by TimeTTracker MX2, Enterprise Edition to separate Administrators from Controllers. Every Administrator will always be able to serve as a Controller, but if you need to transfer a slice of the overall enterprise responsibility from Administrators to someone else (for example, to lighten the workload for your Administrators), the Controller role is here to help with that. It allows you to exercise a limited-security, limited-responsibility approach to enterprise management. If you prefer simplicity instead, have your Administrators manage TimeTTracker MX2, Enterprise Edition compartments, users, roles, etc. as well as all other Windows resources.

## Users

Users are Participants responsible for:

- time job data entry and data maintenance
- expense data entry and data maintenance
- vehicle mileage data entry and data maintenance
- list item maintenance (pre-defined clients, projects, subprojects, tasks, payment types, etc.)
- data dependencies maintenance (relevant projects for a particular client, relevant tasks for a particular subproject, etc.)
- reports, charts, summaries, etc.

Users employ a network-aware TimeTTracker MX2, Enterprise Edition application for data entry and maintenance.



Enterprise User time tracking with TimeTracker MX2, Enterprise Edition.

## Compartments

An enterprise compartment (a "Compartment") is a logical "container" for one or more enterprise users (a "logical group" of users). From the standpoint of TimeTracker MX2, Enterprise Edition, only one Compartment is necessary (it can be simply called "My Company", implying that it contains everyone belonging to the entire enterprise). However, depending on your organizational structure, you might want to divide your enterprise users into multiple Compartments, such as "Sales", "Marketing", "On-site Consultants", or "In-House Developers". Every Compartment is non-hierarchical in nature and "parallel" to all other Compartments. There is no limit to the number of Compartments that can be defined for the entire enterprise.

A Compartment has the following features:

- It can contain an unlimited number of Users.
- A User can belong to only one Compartment.
- Each Compartment has a different set of pre-defined clients, projects, subprojects, tasks, etc.

- Each Compartment has a different set of data dependencies, thus projects valid for a given client, subprojects valid for a given project, tasks valid for a given subproject, etc. to enforce data integrity.
- Each Compartment features – optionally - a different data entry nomenclature through a Terminology Manager, to include work information specific only to a sub-group of enterprise users, such as "Location" for a group usually performing on-site work, or "Department" for a group usually working in-house.



Since every Compartment has a different textual designation, the use of multiple Compartments makes it easy to run TimeTracker MX2, Enterprise Edition reports for different "logical groups" of users, belonging to the same Compartment.

## **Roles**

An enterprise role (a "Role") is a logical "capability" of an enterprise user. Each Role is hierarchical in nature, so a membership in a higher role also implies a membership in a lower role. Each enterprise user has to be assigned a Role. Each enterprise user can be a member of only one Role: a Member, a Manager, or a Director.

An infrastructure role (an Administrator, a Controller, or a User) should not be confused with a User sub-role (a Member, a Manager, a Director). Administrators, Controllers, and Users are roles within the context of technical resource management, such as Windows workstations, networks, database server installations, and so on. Members, Managers, and Directors are roles within the context of business and human resource management, such as partitioning your enterprise into groups, allowing certain Users to modify data entered by other Users, and so on. Members, Managers, and Directors make sense only within one, distinct, central data store Instance, and do not have to apply to other parts of the entire enterprise.

## **Members**

An enterprise member (a "Member") has the following capabilities:

- He or she can view, modify, and delete his or her own records in the central data store.
- He or she can generate reports for her data only.

## **Managers**

An enterprise manager (a "Manager") has the following capabilities:

- All capabilities of a Member.

- He or she can view, add, modify, and delete records belonging to all other Members in the same Compartment.
- He or she can archive records belonging to all other Members in the same Compartment (thus making those records invisible to anyone, but a Manager or a Director).
- He or she can view, add, modify and delete a set of pre-defined clients, projects, subprojects, tasks, etc. available to all Members of the same Compartment.
- He or she can view, add, modify and delete a set pre-defined data inter-dependencies (valid projects for a given client, valid subprojects for a given project, etc.) available to all Members of the same Compartment.
- He or she can view, add, modify and delete data entry structure through a Terminology Manager, to include job information specific only to all Members of the same Compartment.
- He or she can generate reports for all Members of the same Compartment.

An important rule to remember, when it comes to dealing with Managers, is that a Manager, after all, always belongs to a certain Compartment. As such, a Manager's records will be accessible not only to himself or herself, but also to any other Manager designated within the same Compartment, even though that Manager is not his or her "superior", hierarchically-speaking. To avoid this behavior, make sure to designate only one Manager for a given Compartment.

## Directors

An enterprise director (a "Director") has the following capabilities:

- All capabilities of a Manager.
- He or she can view, add, modify, and delete records belonging to all other Members, regardless of a Compartment.
- He or she can generate reports for all other Members, regardless of a Compartment.

There are two important rules to remember, when it comes to dealing with Directors:

The first rule is that a Director, after all, always belongs to a certain Compartment. As such, a Director's records will be accessible not only to himself or herself, but also to any Manager or any Director designated within the same Compartment, even though they are not his or her "superiors", hierarchically-speaking. To avoid this behavior, designate a separate Compartment for every Director or at least a separate Compartment exclusively for Directors.

The second rule is that even though a Director can access data and generate reports across the entire enterprise (thus, across multiple Compartments), a Director can act as a Manager to only one Compartment. Effectively, a Director can, say, archive records belonging to all other Members within the same Compartment, but a Director cannot dynamically "switch Compartment membership" and archive all enterprise data across all Compartments.



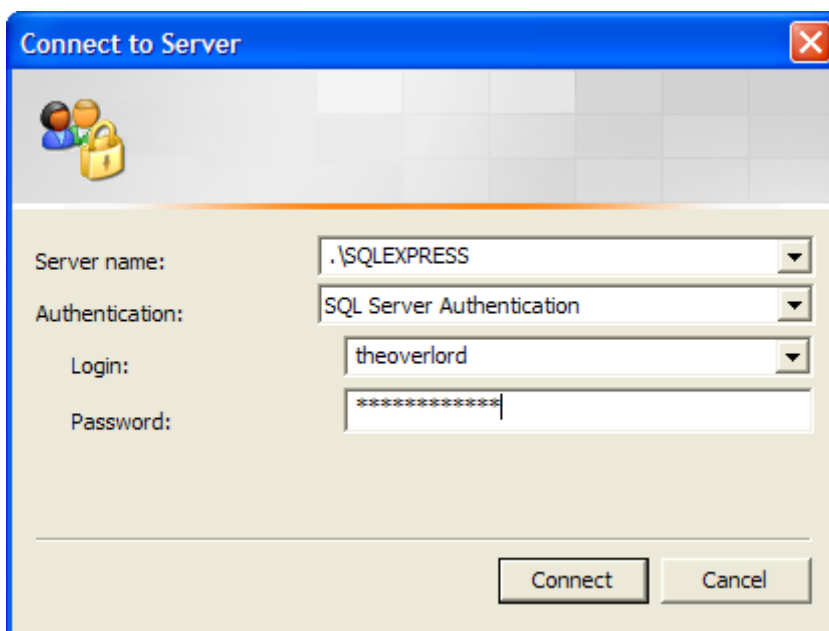
Since TimeTracker MX2, Enterprise Edition enterprise role model relies on SQL Server security environment for enforcement, all Participants who belong to the Administrator or Controller (infrastructure) roles are automatically promoted to the Director (enterprise) role. This behavior is by design. Since an Administrator or a Controller already has complete control over a TimeTracker MX2, Enterprise Edition database, there is nothing really stopping him or her from performing tasks reserved for Directors only, be it through the TimeTracker MX2, Enterprise Edition interface, or some third-party direct database access tool. It is not possible to grant a given Participant administrative SQL Server privileges (**sysadmin** server role), and, at the same time, enforce Manager or Member security restrictions.

## Enterprise User Manager (ENT)

TimeTracker MX2, Enterprise Edition software package includes a stand-alone enterprise management application, an Enterprise User Manager (the "ENT"). The ENT is a Graphical User Interface (GUI) administration tool, which allows Administrators or Controllers to connect to a chosen SQL Server Instance and perform all tasks necessary for configuring and maintaining a central TimeTracker MX2, Enterprise Edition data store.

### Connecting

In order to connect to an SQL Server instance intended as a central TimeTracker MX2, Enterprise Edition data store, select the "Enterprise User Manager" shortcut from the main Windows program TimeTracker MX2 shortcut group. Once launched, the ENT will present you with a server login dialog.



TimeTracker MX2, Enterprise Edition authentication dialog.

Enter the desired complete SQL Server Instance designation into the "Server name" field (for example, "BIG-BOX-DOWNSTAIRS\JOBTRACK").



Default SQL Server Express installation configuration always uses "SQLEXPRESS" as the database name. You can connect to a local, default instance of SQL Server Express using the ".\SQLEXPRESS" designation.

Choose the desired authentication type for your server connection: "Windows Authentication" to use your current Windows login credentials to authenticate, or "SQL Server Authentication" to use a username and a password separate from your current Windows login credentials.



Default SQL Server Express installation configuration always includes all local or domain Administrators as SQL Server administrators. Thus, if you are an administrator of a Windows system on which SQL Server is installed, you can use Windows Authentication to manage your enterprise. Otherwise, an Administrator will have to either (a.) grant your Windows login credentials administrative privileges, or (b.) grant your Windows login credentials the SQL Server **sysadmin** role, or (c.) create an SQL Server username and password for you and grant the new login the SQL Server **sysadmin** role.

If using SQL Server Authentication, enter the desired Login and Password.



SQL Server login credentials are CASE SENSITIVE, when it comes to not only SQL Server Authentication, but also Windows Authentication. So, if your domain name is "MYDOMAIN" and your Windows user name is "John", only "MYDOMAIN\John" is guaranteed to work. Any other combination, such as "MyDomain\John", or "mydomain\john" might fail authentication.

## ***Creating and Maintaining a Database***

Once connected successfully to an SQL Server instance, the ENT will query the Server for any already existing databases and enterprise management objects (such as Compartments, Users, assigned Roles, etc.), displaying all relevant objects in the left-hand tree view pane (a Server, a database, and Compartments), and the right-hand list view pane (Users, and Roles).

The topmost tree-view node indicates the current server information the ENT has successfully connected to, for example, "BIG-BOX-DOWNSTAIRS\JOBTRACK (Microsoft SQL Server 2005 – 9.00.2047.00 Intel X86).

If a database, already serving as a central TimeTracker MX2, Enterprise Edition, is present on the server, it will be listed in the tree view pane under a pre-defined name of "**timetrackermx2ent**".

The "**timetrackermx2ent**" database name is hard-coded within the TimeTracker MX2, Enterprise Edition system for security and connectivity reasons. If you would

like to pre-create a database with custom, environment-specific settings, use any SQL Server tool such as SQL Server Management Studio Express to create the **"timetrackermx2ent"** database before manipulating it with the ENT. Alternatively, allow the ENT to create the database, and use any SQL Server tool to further customize it. Do not change the database name, however.

To create a new database, right-click on the topmost left-hand tree-view server node, and select the "New Database..." command from the pop-up menu. The ENT will create its database and all relevant low-level database objects, such as tables, views, and stored procedures.

To repair a damaged database, upgrade a database from a previous schema version, or initialize a database created by a third-party SQL Server tool, right-click on the left-hand tree-view database node (**"timetrackermx2ent"**), and select the "Repair..." command from the pop-up menu. The ENT will create its database and all relevant low-level database objects, such as tables, views, and stored procedures.

To delete a database, right-click on the left-hand tree-view database node (**"timetrackermx2ent"**), and select the "Delete" command from the pop-up menu. Note that all data, including users and roles will be dropped as a part of the process.

## ***Licensing a Database***

Once connected successfully to an SQL Server **"timetrackermx2ent"** database, the ENT allows you to define an enterprise-wide user license for TimeTTracker MX2, Enterprise Edition.

To create a new license, right-click on the left-hand tree-view database node (**"timetrackermx2ent"**), and select the "License..." command from the pop-up menu. In the following "License" dialog, enter the Name and the License exactly as specified by an R&F Consulting, Inc. registration e-mail, and click Ok. The license will be immediately verified, and the ENT will store the license in the database.

To update an existing license, right-click on the left-hand tree-view database node (**"timetrackermx2ent"**), and select the "License..." command from the pop-up menu. In the following "License" dialog, enter the Name and the License exactly as specified by an R&F Consulting, Inc. registration e-mail, and click Ok. The license will be immediately re-verified, and the ENT will update the license information in the database.

Once you add or modify a license, although the change will be reflected immediately in the shared database, your other Controllers and Users will not see the change until they use the View >> Refresh command in their installations of the ENT, or TimeTTracker MX2. Mobile Users will not see the change until they connect their Personal Digital Assistant (PDA) devices to the server, and allow Microsoft Sync Center to mirror license information to their mobile devices.

## ***Creating and Maintaining Compartments***

Once connected successfully to an SQL Server "**timetrackermx2ent**" database, the ENT allows you to define any number of Compartments.

To create a new Compartment, right-click on the left-hand tree-view database node ("**timetrackermx2ent**"), and select the "New Compartment..." command from the pop-up menu. In the following "Compartment" dialog, enter the desired Display Name for the new Compartment, and click Ok. The new Compartment will be created and cross-referenced in the database automatically, and added to the left-hand tree-view.

To modify an existing Compartment, right-click on its left-hand tree-view Compartment node, and select the "Properties" command from the pop-up menu. In the following "Compartment" dialog, enter the new Display Name for the chosen Compartment, and click Ok. The chosen Compartment will be modified and cross-referenced in the database automatically, and re-added to the left-hand tree-view.

To delete an existing Compartment, right-click on its left-hand tree-view Compartment node, and select the "Delete" command from the pop-up menu. The chosen Compartment will be deleted from the database automatically, and removed from the left-hand tree-view.

Once you add, modify, or delete a Compartment, although the change will be reflected immediately in the shared database, your other Controllers and Users will not see the change until they use the View >> Refresh command in their installations of the ENT, or TimeTracker MX2. Mobile Users will not see the change until they connect their Personal Digital Assistant (PDA) devices to the server, and allow Microsoft Sync Center to mirror your change to their mobile devices.

## ***Creating and Maintaining Users***

Once connected successfully to an SQL Server "**timetrackermx2ent**" database, the ENT allows you to define any number of Users. Users are Participants responsible for data-centric tasks, such as data entry, data maintenance, persistent list item maintenance, reporting, and so on.

To create a new User, right-click on a chosen Compartment node in the left-hand tree-view, and select the "New User..." command from the pop-up menu. A new User is always created within a context of a chosen Compartment, since every User has to belong to at least some part of the entire enterprise. In the following "User" dialog, enter the new Display Name for the new User, chosen Authentication mode, Login Name, Password, and Role, and click Ok.

When using Windows Authentication, use the "Windows Login" Authentication type. When using SQL Server Authentication, use the "SQL Server Login" Authentication type.

When using Windows Authentication, the Login Name consists of a Windows machine name or a Windows domain name, followed by a back-slash, followed by a Windows login credentials name. For example, if you want to add a User with a Windows account called "Freddy" on a Windows system called "WORK", a complete Login Name would be "WORK\Freddy".

When using SQL Server Authentication, the Login Name consists of an arbitrary username, such as "freddy". There is no need to specify any other machine or domain –specific information.

The Password field is available for the "SQL Server Login" Authentication type only.

The new User will be created and cross-referenced in the database automatically, and added to the right-hand list-view.

To modify an existing User, right-click on his or her left-hand list-view User line, and select the "Properties" command from the pop-up menu. In the following "User" dialog, enter any updated information for the chosen User, and click Ok. The chosen User will be modified and cross-referenced in the database automatically, and re-added to the right-hand list-view.

To delete an existing User, right-click on its right-hand list-view User line, and select the "Delete" command from the pop-up menu. The chosen User will be deleted from the database automatically, and removed from the right-hand list-view.

Once you add, modify, or delete a User, although the change will be reflected immediately in the shared database, your other Controllers will not see the change until they use the View >> Refresh command in their installations of the ENT. When it comes to TimeTTracker MX2 User installations, User authentication credentials will be effective immediately. Mobile Users will not be able to connect their Personal Digital Assistant (PDA) devices to the server any longer.



SQL Server login credentials are CASE SENSITIVE, when it comes to not only SQL Server Authentication, but also Windows Authentication. So, if your domain name is "MYDOMAIN" and your Windows user name is "John", only "MYDOMAIN\John" is guaranteed to work. Any other combination, such as "MyDomain\John", or "mydomain\john" might fail authentication.

## Installation Guide

### *Server Installation*

#### **Overview**

A TimeTTracker MX2, Enterprise Edition server installation is primarily concerned with a correct setup of an SQL Server–based central data store.

Please note that the TimeTTracker MX2, Enterprise Edition installer does NOT include any particular edition of Microsoft SQL Server. That major component has been intentionally left out from the integrated installer to allow you not only to use any edition of Microsoft SQL Server of choice, but also to customize your SQL Server installation as you see fit.



Only Microsoft SQL Server 2005 or later is officially supported to serve as a TimeTracker MX2, Enterprise Edition data store. Earlier versions of Microsoft SQL Server are not recommended.



If you are not already a licensed Microsoft SQL Server 2005 (any edition) user, you can take advantage of a completely free version of the server offered by Microsoft. SQL Server 2005 Express Edition, as well as an optional, free database management Graphical User Interface (GUI) tool, SQL Server Management Studio Express, can be downloaded free of charge from Microsoft Download Center (<http://download.microsoft.com>). SQL Server 2005 Express Edition has been fully tested, functionality-wise, for use with TimeTracker MX2, Enterprise Edition. However, if you anticipate large enterprise user base, you might want to investigate other, commercial, SQL Server 2005 editions, for improved database server performance.

A server-side computer system chosen for Microsoft SQL Server will be effectively responsible for the entire enterprise configuration, data aggregation, connection management, and security enforcement. Thus, as hardware-capable computer system as possible should be chosen for this purpose. Although beyond the scope of this document, Administrators should also pay very close attention to the chosen computer system's overall Windows and SQL Server security environment.

## Step by Step

1. Visit Microsoft Download Center (<http://www.rfcons.com>) and download and install Windows Installer 3.1.
2. Visit Microsoft Download Center and download and install .NET Framework 2.0.





As of SQL Server 2005 Service Pack 1, a known... imperfection in the SQL Server installer might cause an entire server to fail, if SQL Server Native Client is already installed on a computer system. SQL Server Native Client, a database connectivity layer, might have been installed by a third-party application, or TimeTracker MX2, Enterprise Edition client. Make sure to uninstall SQL Server Native Client before running the SQL Server 2005 installer, and allow it to re-install it back in.

3. Acquire a copy of SQL Server 2005, or visit Microsoft Download Center and download and install the latest free SQL Server 2005 Express Edition.



When presented with the "Registration Information" page of the SQL Server 2005 installation wizard, make sure to CLEAR the "Hide advanced configuration options" checkmark at the bottom of the page.

 In the subsequent "Instance Name" page of the SQL Server 2005 installation wizard, it is a good idea to change the default "SQLExpress" (generic) Named Instance name to something more meaningful to your enterprise, for example "JOBTRACK". This name will have to be distributed to all your users.

 In the subsequent "Authentication Mode" page of the SQL Server 2005 installation wizard, make sure to change the "Windows Authentication Mode" to "Mixed Mode", IF you are planning to allow users from generic, non-Windows TCP/IP networks (such as the Internet) to connect to your server.

4. Once SQL Server 2005 installation completes, select the "Start >> Programs >> Microsoft SQL Server 2005 >> Configuration Tools >> SQL Server Surface Area Configuration" shortcut, "Surface Area Configuration for Services and Connections" link, "Remote Connections" left-hand tree-view node, and change the "Local connections only" setting to "Local and remote connections" setting with appropriate TCP/IP and/or named pipes support.
5. Select the "Service" left-hand tree-view node, and click on the "Stop" and "Start" buttons to restart the server for the changes to take effect. Close "SQL Server Surface Area Configuration".
6. Optionally, visit Microsoft Download Center and download and install SQL Server Management Studio Express.
7. By default, only members of the Windows administrator group or the SQL Server Authentication "sa" account are capable of logging into the newly installed SQL Server with the **sysadmin** role. The **sysadmin** role is necessary for TimeTracker MX2, Enterprise User Manager ("ENT") to work properly. If you plan to allow non-Administrators (so called Controllers) to use the ENT, use SQL Server Management Studio Express or command-line sqlcmd.exe to grant database server -wide **sysadmin** role to relevant users.
8. Perform TimeTracker MX2, Enterprise Edition client installation on at least one machine on your network to gain access to TimeTracker MX2, Enterprise User Manager ("ENT").
9. Once TimeTracker MX2, Enterprise Edition client installation completes, select the "Start >> Programs >> TimeTracker MX2, Enterprise Edition >> Enterprise User Manager" shortcut to start the ENT.
10. Use the ENT to enter a license TimeTracker MX2, Enterprise Edition for your installation (see instructions in other parts of this document).
11. Use the ENT to create at least one Compartment (see instructions in other parts of this document).
12. Use the ENT to create and authorize Users (see instructions in other parts of this document).
13. Finally, distribute the following information to your Users: (a.) SQL Server computer system name (either a Windows network name, or an Internet domain name, or an IP address), (b.) SQL Server instance name, (c.) if using SQL Server Authentication, appropriate usernames and passwords.

## ***Client Installation***

## Overview

A TimeTracker MX2, Enterprise Edition client installation is primarily concerned with a correct setup of TimeTracker MX2 itself, as well as TimeTracker MX2, Enterprise User Manager ("ENT").

A completely automated, integrated client-side setup.exe installer is provided to make the process as straightforward as possible not only for Administrators, but also for Users who might have to perform the setup on their own. The installer will check the target system for the presence of Microsoft Windows Installer 3.1, Microsoft .NET Framework 2.0, and Microsoft SQL Server Native Client (connectivity layer), download missing system components (if any) directly from Microsoft, and upgrade the system accordingly. Once the system has been upgraded, TimeTracker MX2, Enterprise Edition product installation will proceed.

Once the installation completes, Participants can immediately connect to a particular SQL Server instance as Controllers or Users and take advantage of the system.

## Step by Step

1. Visit R&F Cons, Inc. Download Center (<http://www.rfcons.com>) and acquire TimeTracker MX2, Enterprise Edition installer.
2. Execute the setup.exe installer locally, while logged in as an Administrator of your Windows computer system.
3. Log out from an Administrator's account, and login from your usual Windows account (if different).
4. Acquire TimeTracker MX2, Enterprise Edition authentication information from your enterprise Administrator.

Sample credentials (Windows Authentication with a Windows network):

**Server name:** BIG-BOX-DOWNSTAIRS\JOBTRACK

**Authentication:** Windows Authentication

**Login:** (unused, leave empty)

**Password:** (unused, leave empty)

Sample credentials (SQL Server Authentication with a generic TCP/IP network):

**Server name:** 207.46.18.30\JOBTRACK

**Authentication:** SQL Server Authentication

**Login:** johnbrown

**Password:** password98765

5. Select the "Start >> Programs >> TimeTracker MX2, Enterprise Edition >> TimeTracker MX2, Enterprise Edition" shortcut to start the main application.
6. Login to the server to confirm your credentials and start working with the system.

If you plan to use a Windows Mobile, Personal Digital Assistant (PDA) device, perform the following additional steps to "bootstrap" your mobile installation:

7. Connect your PDA device to your desktop and allow the Microsoft Sync Center product to establish a new synchronization partnership (if not already established).
8. Allow TimeTracker MX2, Enterprise Edition installer to install its mobile version on your PDA device. If the installer does not launch automatically upon PDA connection, use the "Start >> Programs >> TimeTracker MX2, Enterprise Edition >> TimeTracker MX2 Windows Mobile Setup" shortcut to start it.
9. Keep your TimeTracker MX2, Enterprise Edition desktop application open in the background and logged in as a desired enterprise user to make authentication information available to Sync Center. If TimeTracker MX2, Enterprise Edition desktop application is closed, Sync Center might not be able to access the database and perform a synchronization cycle.
10. Once the mobile installation completes, open Microsoft Sync Center, and use the "Tools >> Options" command to put a checkmark next to the "TimeTracker MX2, Ent" entry in the synchronization conduit list.



Microsoft Sync Center always expects TimeTracker MX2, Enterprise Edition desktop application to be running in the background, providing database authentication information sharing. Sync Center will never ask you separately for database authentication information. If TimeTracker MX2, Enterprise Edition desktop application is closed, Sync Center might not be able to access the database and perform a synchronization cycle.



Unless instructed otherwise by your Administrator, ALWAYS use the same, unchanged Windows account (Windows Authentication) or the same username and password (SQL Server Authentication) for TimeTracker MX2, Enterprise Edition, and thus – effectively – Microsoft Sync Center, so that your desktop security and data context matches your mobile data and security context. Switching across multiple TimeTracker MX2, Enterprise Edition users with the same mobile device might lead to data synchronization problems.

11. Allow Microsoft Sync Center to synchronize your server User information, active clients, projects, etc. and license information to your PDA device.