Track IQ - A Division of Wabtec Control Systems Pty Ltd
17-19 King William Street
Kent Town SA 5067
Australia

PO Box 2419
Kent Town SA 5071
Australia

Telephone: +61 8 7099 4600
Email: tiqtrackiqinfo@wabtec.com

ABN 46 138 643 697
ACN 138 643 697
www.trackiq.com.au
www.wabtec.com

FleetONE Installation Procedure

Document No: 51R-07-0027-344162-8

20/05/2019

Fleet ONE Installation Procedure

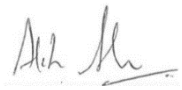
DOCUMENT NO:
51R-07-0027-344162-8

LIBRARY CODE:

PREPARED BY:
Trackside Intelligence
17-19 King William Street,
KENT TOWN SA 5067

Email: tiqtrackiqsupport@wabtec.com
☎ (+61 8) 7099 4600

PREPARED BY:



Akber Ali Date: 20/05/2019

REVIEWED BY:

Nick Aschberger Date: 20/05/2019

AUTHORISED BY:

Nick Aschberger Date: 20/05/2019

REVISION HISTORY

Revision No.	Date Issued	Reason/Comments
0	5th Feb 2014	Initial Version
1	7th May 2014	Updated for FleetONE 1.1.0
2	23rd Jul 2014	Updated for FleetONE 1.2.0
3	16th Sep 2014	Updated for FleetONE 1.3.0
4	17th Nov 2014	Updated for FleetONE 1.4.0
5	30th Mar 2015	Updated for FleetONE 1.5.0
6	20th May 2015	Updated for FleetONE 1.6.0
7	14th Sep 2015	Updated for FleetONE 1.6.2
8	18th Oct 2016	Updated for FleetONE 1.10.1
9	26th Oct 2018	Updated for FleetONE 1.23.0
10	5th Feb 2019	Updated for FleetONE 1.26.0
11	07th Mar 2019	Updated for FleetONE 1.27.0
12	20th May 2019	Updated for FleetONE 1.27.2

KEYWORDS: Fleet ONE Installation Procedure

Table of Contents

1 Install/Upgrade Process Overview

This document will guide you step-by-step for how to install/upgrade the FleetONE.

The process for install and upgrade is the same – run the installer.

Here is an overview of the workflow you should follow.

1 Preparation
   a. Ensures all pre-requisites are met for installation.
2 FleetONE SQL Database and Services Install Procedure
   a. Run the installer to generate the database scripts and install the services.
   b. Run the database scripts to upgrade/install the database.
3 Start the Fleet ONE Services & Validate
   a. Perform a sanity check - the results of the checklist should be kept.
   b. The installers/etc. used should be kept so a history of installations is maintained.
4 Configuration
   a. Configure FleetONE.

2 Introduction

FleetONE is comprised of the following elements:

- MS-SQL Databases.
- Application Services.
- Web Browser User Interface.

These components can all be installed on the same machine, or can be installed on different machines as required.

2.1 Single Tier Installation (Everything on one Machine)

A **Single Tier Installation** means that combines the User Interface, Services and the MS-SQL Database are all installed on a single machine. This is the simplest model. See Figure 1 below. When this structure is used all elements are installed and configured at once on the same server.

Important: This means the Application Server and the Database Server are the same physical machine.

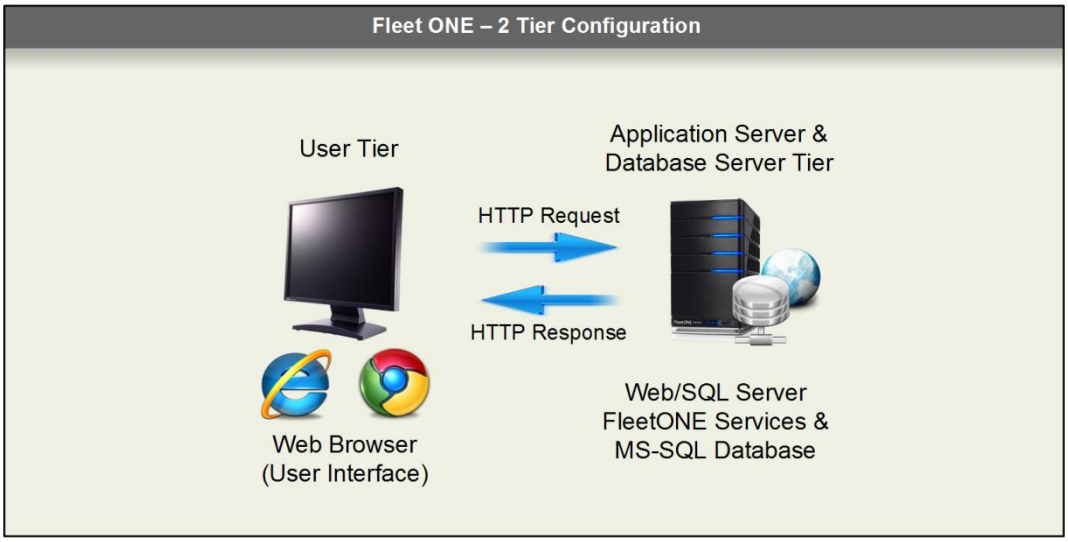


Figure 1: Single Tier Installation

2.2 Two Tier Installation

A Two Tier Installation is the most typical setup – the Web Server and Fleet One services are installed on an Application Server, and the MS-SQL Database server is provided separately. See Figure 2 below.

This mode is often used when a customer provides the SQL server infrastructure as part of their own IT infrastructure. In this configuration it is often the case that a DBA with appropriate database server permissions is required to perform the install/updates of the databases. Track IQ is usually responsible for the Application server.

The FleetONE installer facilitates this process by allowing:

- The DBA to run the installer to generate the database creation/update scripts ONLY.

- These scripts are then executed to create/update the databases on the database server.
- The installer can then be run again to install the rest of the FleetONE application services and website as a second step.

Important: This means the Application Server and the Database Server are two separate physical machines.

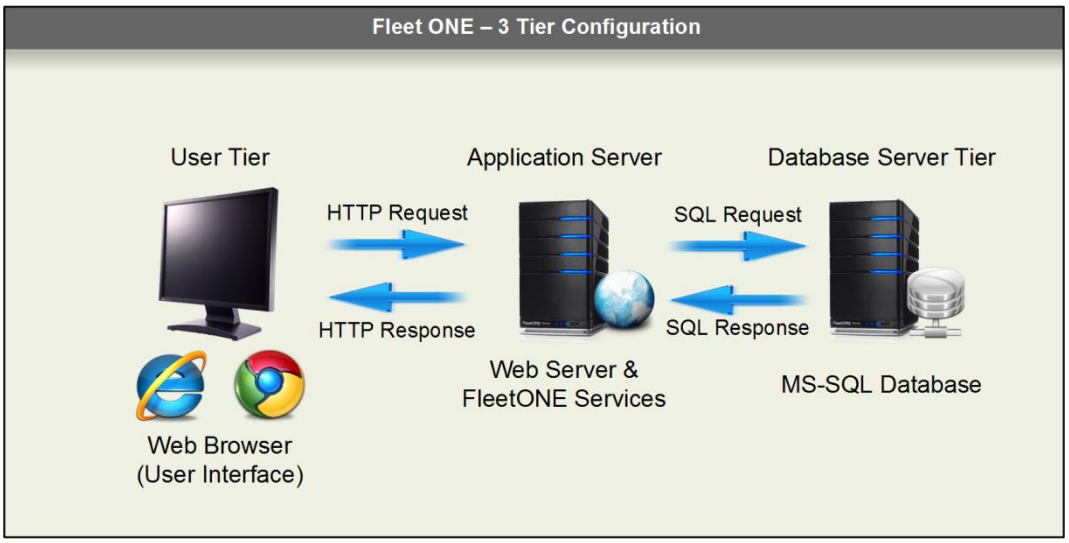


Figure 2: Two Tier Configuration

2.3 FleetONE Components

Fleet ONE web application is comprised of the following components:

1. MS_SQL Databases including:
   - FleetOne_Cache
   - FleetOne_Importer
   - FleetOne_Maintenance
   - FleetOne_Warehouse
2. Application Services including:
   - FleetONE Active Directory Authentication
   - FleetONE Importer
   - FleetONE Maintenance
   - FleetONE Search
   - FleetONE Transformer
   - FleetONE Monitor
3. Web Browser User Interface.
4. Custom plugins – installed only for specific customers.

3 System Requirements

This section discusses the software and hardware required for FleetONE.

3.1 Hardware/Server Requirements

Notes:

1. FleetONE is a database intensive application. The overwhelming factor in performance of the application is the performance and resources allocated to the SQL server used.
2. Please refer to Section [3.3 Planning for FleetONE database disk usage] to get an understanding of how much SQL server hard drive space is required, based on the expected volume of traffic.

3.1.1 Single Tier Server Hardware Requirements

This is for a single machine running both the applications and the SQL back-end.

Recommended:

- 32 GB of RAM
- Quad core processor
- Separate physical disk drives required for FleetONE:
  - App Drive (C:) - for Windows and FleetONE install (Can be small, 40GB).
  - Scratch drive (D:) - for raw data files and data file transfer (500GB).
  - SQL Database drive (E:) - for SQL database storage (1TB)
  - SQL Log drive (F:) - for SQL log storage (1TB)

Minimum:

- 16 GB of RAM
- Dual core processor
- Separate physical disk drives required for FleetONE:
  - App Drive (C:) - for Windows and FleetONE install + Data Files.
  - SQL drive (D:) - for SQL database + SQL log

3.1.2 Two Tier Application Server Hardware Requirements

If the application server and database server are separate machines, the **Application Server** requirements are:

Recommended:

- 32 GB of RAM
- Quad core processor
- Separate physical disk drives required for FleetONE:
  - App Drive (C:\) - for Windows and FleetONE install (Can be small, 40GB).
  - Scratch drive (D:\) - for raw data files and data file transfer (500GB).

Minimum:

- 16 GB of RAM
- Dual core processor
- Separate physical disk drives required for FleetONE:
  - App Drive (C:) - for Windows and FleetONE install + Data Files.

3.1.3 Two Tier Database Server Hardware Requirements

If the application server and database server are separate machines, the **Database Server** requirements are:

Recommended:

- 32 GB of RAM
- Quad core processor
- Separate physical disk drives required for FleetONE:
  - App Drive (C:) - for Windows Installation (Can be small, 40GB).
  - SQL Database drive (E:) - for SQL database storage (1TB)
  - SQL Log drive (F:) - for SQL log storage (1TB)

Minimum:

- 16 GB of RAM
- Dual core processor
- Separate physical disk drives required for FleetONE:
  - SQL drive (C:) - for Windows Installation + SQL database + SQL log

3.2 Server Configuration Requirements

Please ensure that the following are in place before doing the installation/upgrade.

3.2.1 Application Server Configuration Requirements

The following is required for the **Application server**:

- Windows Server (2016 or newer).
- Access to an SMTP server + account to send emails.
- Microsoft .Net Framework 4.7 or above on the Web Server tier(s).
  - *Download it here.*
- Microsoft Internet Information Services (IIS 7.5 or above) on the Web Server tier(s).

  Note: IIS is part of windows server but you might need to enable it the first time. If IIS is not currently enabled on the machine, see appendix to enable and configure IIS.
- Microsoft Native Client 2008 or later on the Web server tier – only if a 2-Tier installation is done. (Microsoft SQL Server is installed on a separate server).

  Note: This allows you to run SQL scripts that affect the database server from this machine.
  Note: This is installed with SQL management studio, or Download it here.

Permissions

- Administrator privileges are required on the Application server to perform the installation.

You also need the following configuration set up on the network:

- Firewalls has to allow the required ports and applications to communicate over the tiers
  - MS-SQL Server default port: 1433
  - IIS Default port: 80

Nice to have software (for debug/monitoring):

- SQL Server Management studio
  - For easy access to the database.
- LogExpert
  - For viewing log files easily

3.2.2 Database Server Configuration Requirements

The following software and configuration needs to be set up correctly on the **Database Server**:

- Microsoft SQL server (2016 SP1 or newer).
- SQL Server Management studio
  - For easy access to the database.

Permissions

- A SQL authenticated account must be available on the SQL server. This account must have permissions to create/update the FleetONE databases. It is the account that will be used to run the database scripts. This will then allow the following part of the install process to occur:
  - Be able to "TEST" the account access by entering the information into the installer.
  - Be able to generate the database creation scripts.
  - RUN the database creation scripts using this account.

Note: FleetONE does NOT use this account, or record the account information - it is just the account used to run the database scripts. Therefore, this account can be the personal account of a DBA with appropriate permissions to run the script. The account details do NOT need to be disclosed to Track IQ.

3.3 Planning for FleetONE database disk usage

You will need to have a ballpark understanding of how many axles your system will measure in a year, and how many years' worth of history you want to store.
The following information is based on Track IQ observation of client's databases and is a good starting point in planning how much space you need on the SQL database and log drives.

SQL compression feature is not used – database schema 1.1.0

Sensor class	Axles	File size (kB)	kB per axle
BAM	12,786,357	93,323,264	7.298659344
HBD	77,459,757	162,569,280	2.09875794
WILD	10,734,998	31,457,280	2.930348008
Wheel Profile	3,424,513	19,922,944	5.81774518
Importer	104,405,625	80,740,352	0.773333352

SQL compression feature in use – database schema 1.1.0

Sensor class	Axles	File size (kB)	kB per axle	% of uncompressed size
BAM	12,786,357	15,623,782	1.221910385	16.7
HBD	77,459,757	26,203,914	0.338290685	16.1
WILD	10,734,998	4,299,162	0.400480894	13.6
Wheel Profile	3,436,825	4,498,391	1.308879864	22.4

4 Installation/Upgrade Preparation

1. Ensure that you have appropriate database and application servers available and configured as discussed above.
2. IF you are doing an upgrade and you have MANUALLY modified any configuration files in the past, you will want to take a copy of those files. E.g.:
    a. Web.config file.
    b. Service.config files.

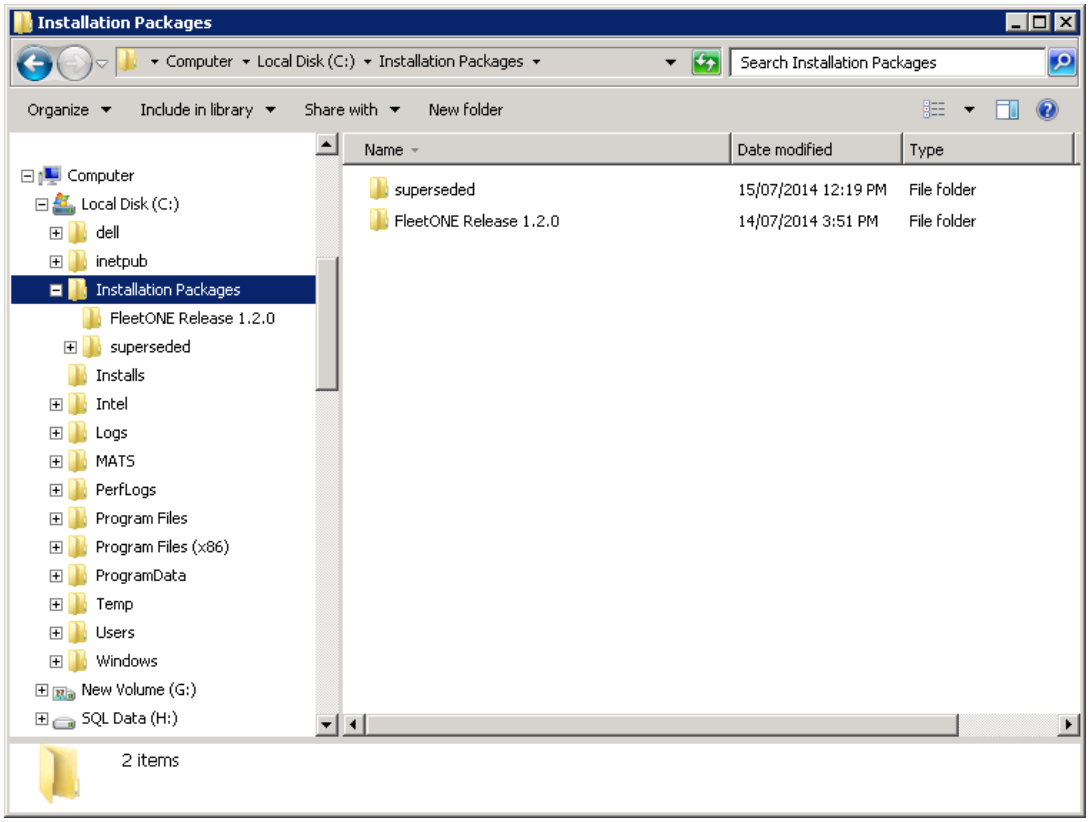
4.1 Installation packages

Important: Ensure the installation packages are available and recorded.
Copy the FleetONE installation package to the server. It is important for Track IQ to keep a history of all the installations that has been done on the machine. The current working version of FleetONE and the old versions are kept in the following directory: C:\Installation Packages\ This allows us to keep a history of upgrades that have been performed on the machine.

The **"Installation Packages"** folder contains two subfolders:

- **"Superseded"** – where the old FleetONE versions must be archived before the upgrade commencement.
- **"FleetONE Release <VERSION #>"** – where the new install package should be placed.

See the following example:



If the above mentioned directory and folders do not exist, then create them.
Furthermore, it's worth creating a "favourite" shortcut to easily access this folder.

4.2 Manual configuration settings and changes

When the installation/upgrade is performed, any manual changes including those to config files will be lost.
Ensure that these settings are kept by creating backup copies and saving them in the "Superseded" folder for further reference.
There is no need of keeping a record of the config settings that are applied automatically by the installer - they will be kept. The following config files should be backed up prior the installation commence:

- web.config – ensure to take a copy if any manual changes are done to this file
- service .xml config files – ensure to take a copy if any manual changes are done to these files

4.3 License key

Important: **Ensure the License key is provided before commencing the installation/upgrade. The license key is needed during installation of FleetONE.**

Each FleetONE installation is licensed. A ".reg" file will be provided by Track IQ.
This is a license key that should be installed on the application server.
The license key is installed (by double clicking it) in the windows registry of the server on which the FleetONE installation is performed.

4.4 Verify the application server directory configuration

As per the system requirements above, for a **single tier installation**, the recommended set of directories is as follows:

- Drive C:\ - Application drive (windows, FleetONE etc. are installed here).
- Drive E:\ - Contains the raw data files and the archived data files from field equipment.
- Drive F:\ - Contains the SQL database data files.
- Drive G:\ - Contains the SQL database log files.

In a **TWO TIER installation**, the SQL database is provided by a different server, so the "F" and "G" drives will not be present.

Note: Depending on the customer environment, Track IQ might not have control over this directory configuration. In this case, FleetONE will still operate correctly.
As the person performing this installation, you need to be aware of which directories and drives will be used for the purposes listed above. These will need to be entered during installation.

4.5 Confirm the drive and SQL configuration

In a **Single Tier** installation, it is important the SQL server is configured to place the database data and log files in the correct locations by performing the following steps:

1. Open SQL management Studio and connect to the database server
2. Right click Server --> Properties
3. In "Database Settings" you can see the default locations for the Data and Log files.
4. If they are NOT correct, AND you have the rights to modify this, then point them at the correct drive (e.g. F: and G: as discussed above).
5. Restart the "SQL Server (instance name)" service.

5 FleetONE Install/Update Procedure

NOTE: The Install and update procedures are the same – run the installer as per below. When doing an upgrade, items you entered into the installer during a previous installation on that machine will be remembered. Furthermore, the database upgrade scripts will only apply the changes required for the update.

During the installation process the user needs to provide the relevant information about the following system settings:

- License key – the type of FleetONE services, relevant databases and application features to be enabled/disabled depends on the license key
- SMTP server and email user account details
- Train data file structure – as per machine configuration
- SQL instance and database – authentication method, user account credentials and database directories

As was discussed in the preparation section above, you should have this information prepared to enter during installation.

5.1 Single vs Two Tier install/update

The install/update process in the two different configurations is similar – the installer is run. The difference is as follows:

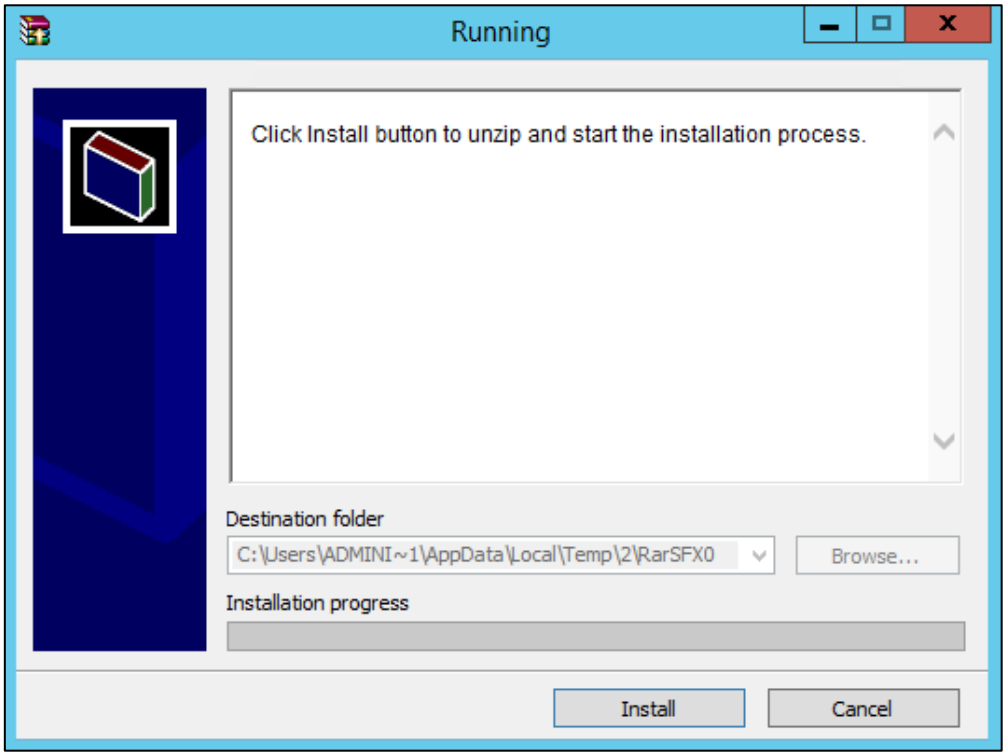
1. A single tier setup is done in a single step. The install package is run once.
2. A two tier installation is installed in two steps. The install package is run twice as follows:
    a. The DBA runs the installer and selects “Database Scripts” only to be installed during step 5 (Custom Setup) below.
        i. The DBA will be prompted to enter a SQL username/password that has permissions to create/modify the database on the SQL server.
        ii. The scripts are generated and can then be run by the DBA to create the database.
        iii. The DBA can then remove the scripts so the SQL server admin username and password are not disclosed to any other individuals.
    b. The installer is run again. This time everything EXCEPT the database scripts are selected in step 5 (Custom Setup) below.
        i. This installs the application services and website.

5.2 FleetONE installation Sequence

5.2.1 Step 1 – Launch installer

To start the installation double click the **"FleetONESetup.exe"** file. Typically it is located at C:\Installation Packages\FleetONE Release <VERSION #>" directory.

You will be presented with the following screen:



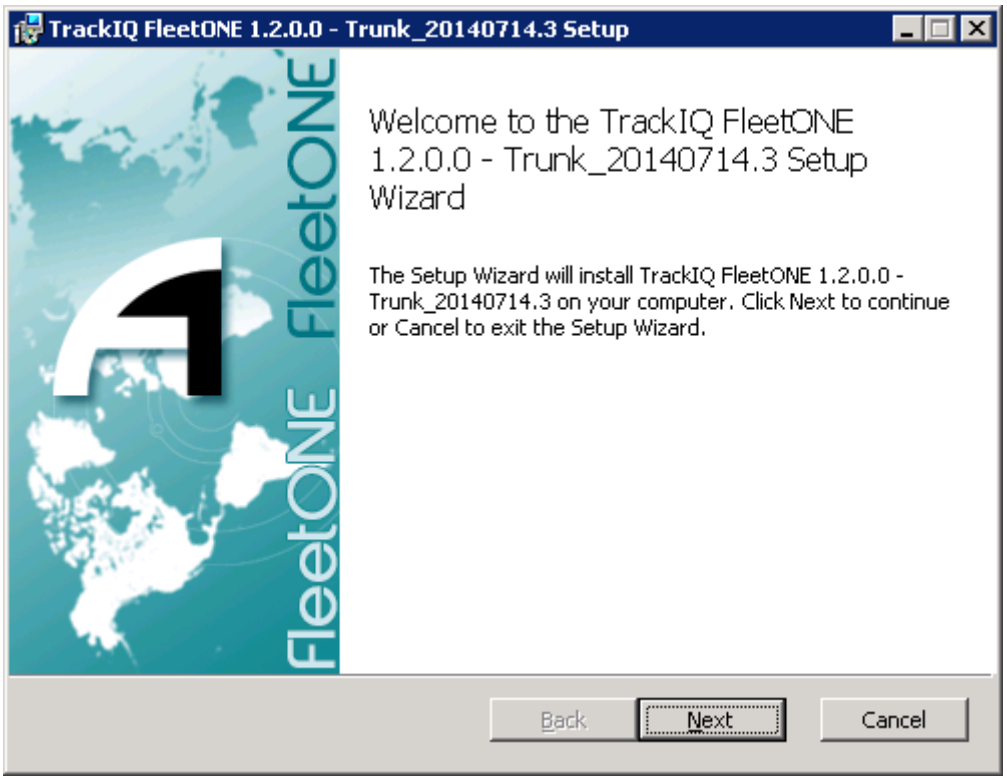
Click "Install" to decompress the installation package and run the installer.

The installer will:

- Indicate it is decompressing into a temporary folder.
- Verify space requirements.

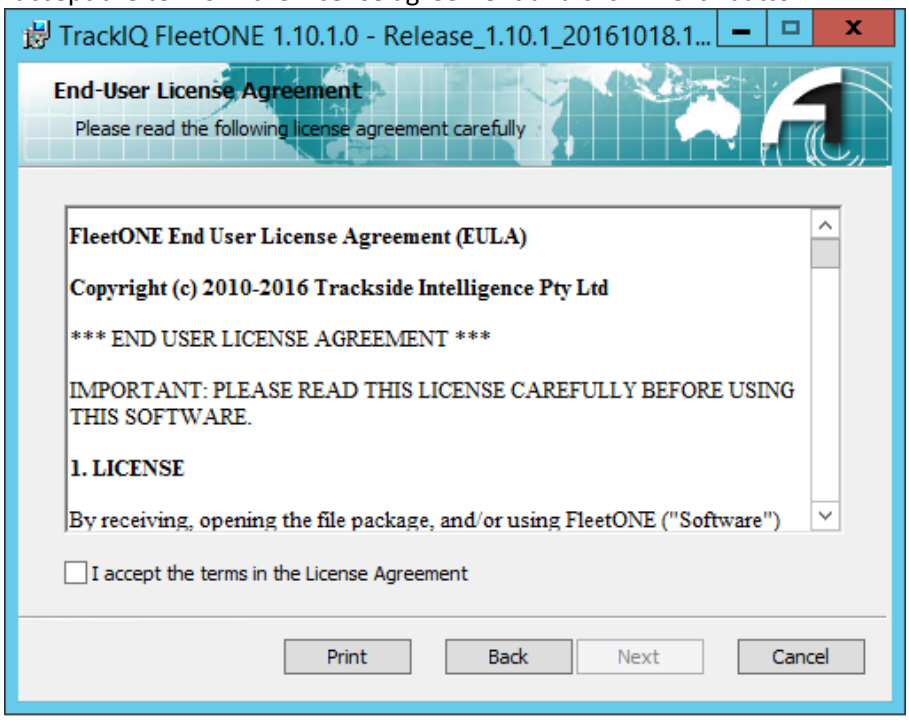
5.2.2 Step 2 – Welcome Screen

The “welcome” screen is shown next. Click “next” to begin installation.



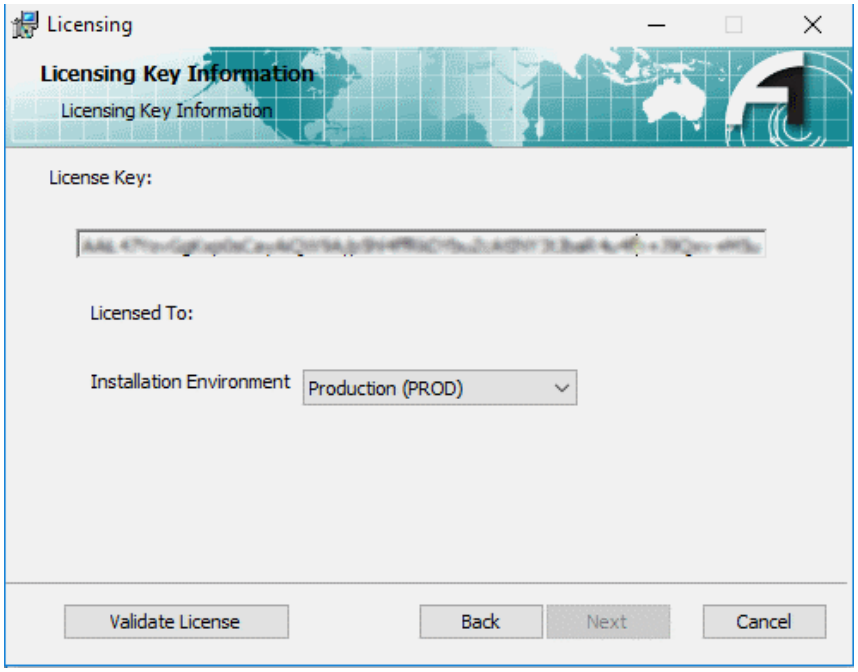
5.2.3 Step 3 – End User License Agreement

The Licensing agreement screen is now shown.
Confirm that you accept the terms in the License agreement and click “Next” button.



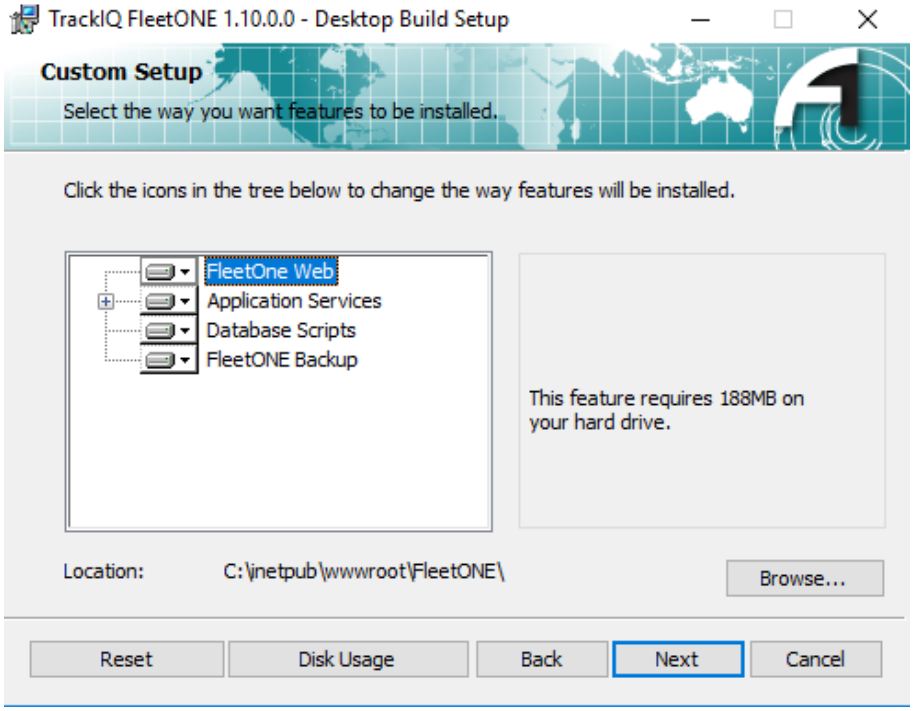
5.2.4 Step 4 – License Key

On the next screen, the “License Key” field will be populated automatically if you have registered the license key as described above. Click “Validate License” button. A green check mark appears to confirm the presence of valid License Key. Ensure you select the installation environment that best describes the usage of the server where you are installing FleetONE. Press “Next” button to continue.



5.2.5 Step 5 – Select components to install

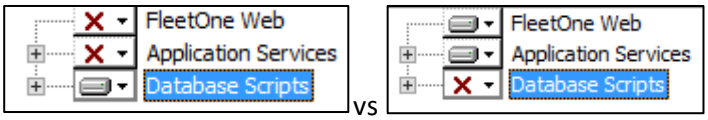
The **“Custom Setup”** form which appears next, lists the licensed components of the FleetONE system that are about to be installed.



Here you should select the components that are required to be installed.

As discussed above:

- If you are doing a single tier installation then all items should be installed.
- If you are doing a two-tier installation, then you should run the installer twice. One run will have selected the "database scripts". The other run will have selected everything else.

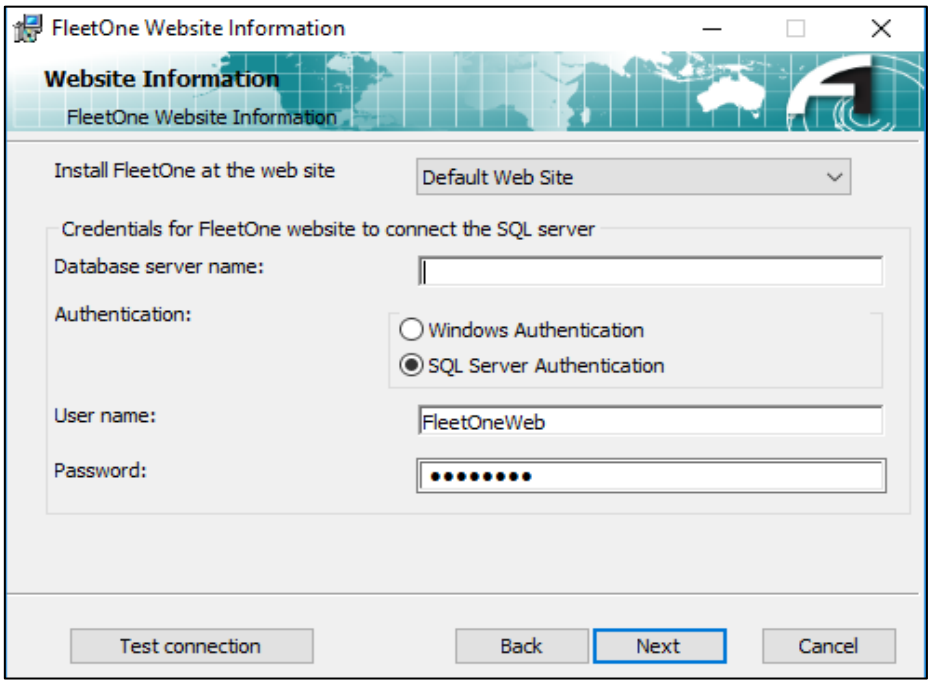


Important: ***The steps following this will only be shown if the appropriate component is selected for installation. E.g. If for this run, you are ONLY installing the database scripts, then the installer will skip to the script generation step.***

5.2.6 Step 6 – FleetONE Web configuration

If you are installing the webpage then the "**FleetONE Website Information"** screen is now shown. The options provided here allow you to modify:

- Location where the FleetONE web site is going to be installed on the Web Server. The website parameters are set in the IIS Manager. The default location is "Default Web Site."
- SQL server location and account used by the webpage for connecting to SQL server. The default is the "FleetONEWeb" account created by the database installation scripts.

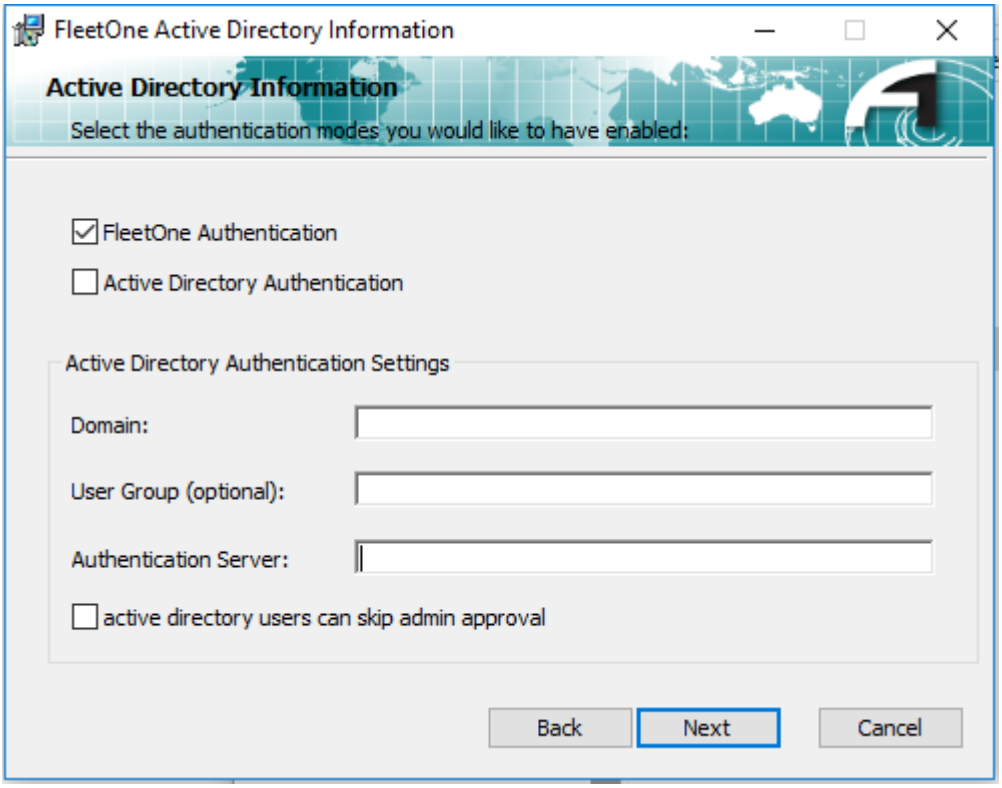


Important: ***Unless there is a reason to modify the FleetONE webpage path or the SQL account FleetONE uses to talk to the database, please leave these as default.***

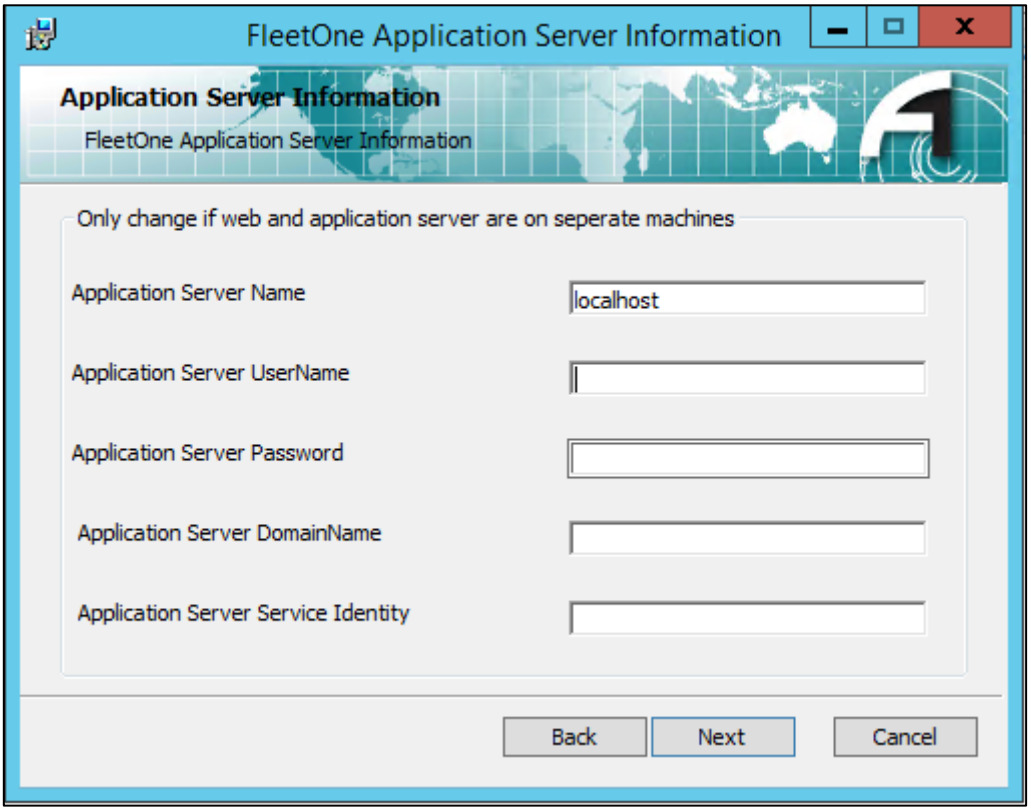
5.2.7 Step 7 – Active Directory Configuration

If your license key enables the Active Directory Authentication Feature, the next dialog shown is the "FleetONE Active Directory Information". If you would like to enable active directory authentication, check the corresponding box and fill in the details below.
FleetOne can be configured to provide only FleetOne authentication, only active directory authentication or both (mixed mode).

Domain: The name of the active directory domain that all the user accounts to be authenticated are stored in
User Group (optional): If a user group is specified here, for a user to be authenticated, they must also be a member of this user group in your company's domain.
Authentication Server: The machine name that is hosting the active directory authentication service. This can be the local machine if using a single tier installation.
Active directory users can skip admin approval: This will allow newly registered active directory users to start using FleetOne immediately without requiring an admin to approve the registration. This used in conjunction with a specified **User Group,** will allow the active directory administrator a similar level of approval by only allowing users placed into the user group to start using FleetOne immediately.



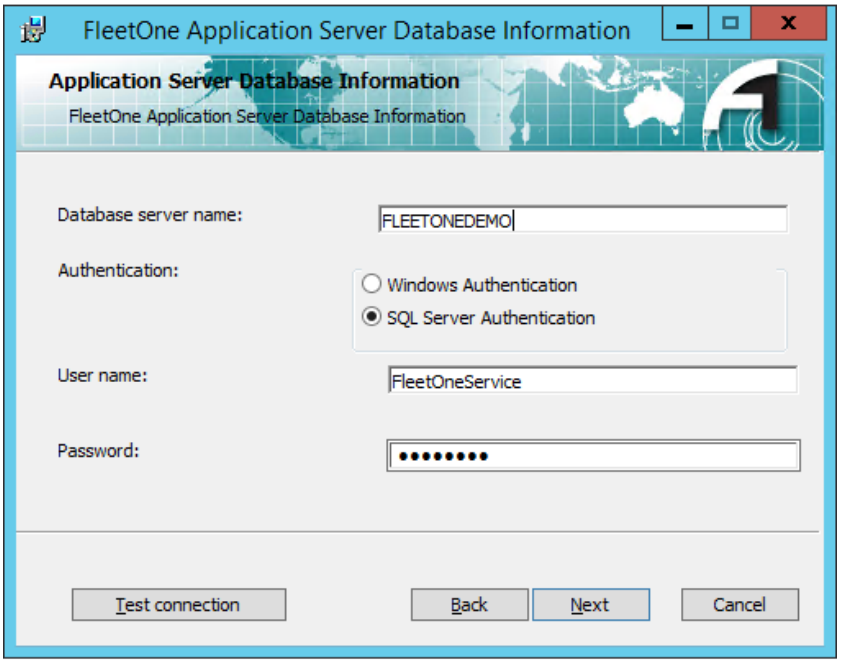
The next page shown is the "FleetONE Application server information". This information only needs to be modified if the webpage is installed on a server different to the application server. This is not the case in single or two tier installations.



5.2.8 Step 8 – Application Services Configuration

If you are installing the Application services, then the ”**FleetONE Application Server Database Information”** screen is now shown.
The options provided here allow you to modify:

- SQL server location and account used by the application services for connecting to SQL server. The default is the “FleetONEService” account created by the database installation scripts.

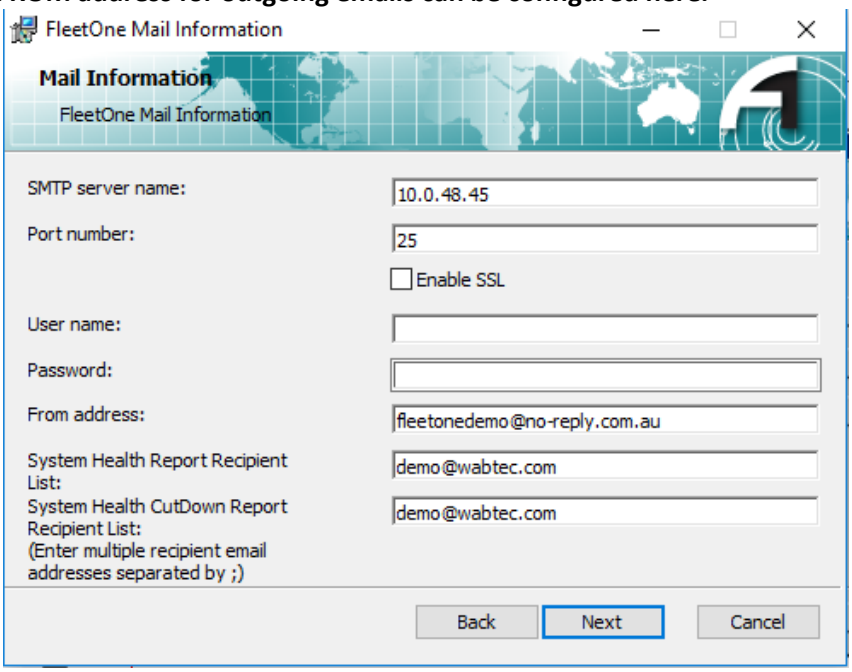


5.2.9 Step 9 – SMTP Email server configuration

If you are installing the Application services OR the Webpage, then the **"FleetONE Mail Information"** form is now shown. This allows configuration of the SMTP server that is used:

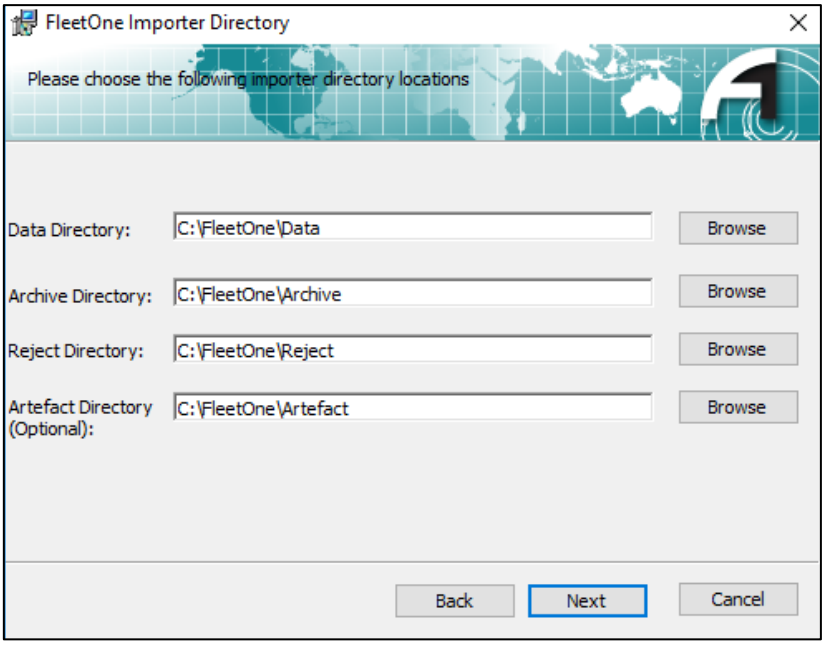
- By the webpage to field password reset requests.
- By the webpage to email account registration and account enabled notifications.
- By the report scheduler to email scheduled reports.
- By the application services to email system health messages.

Note that the FROM address for outgoing emails can be configured here.

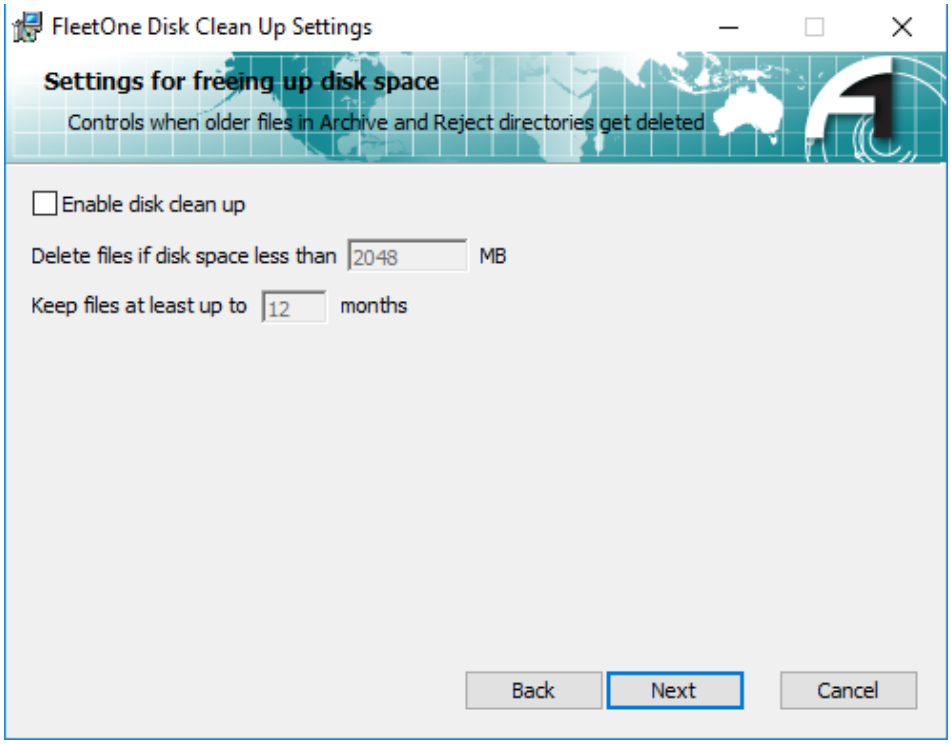


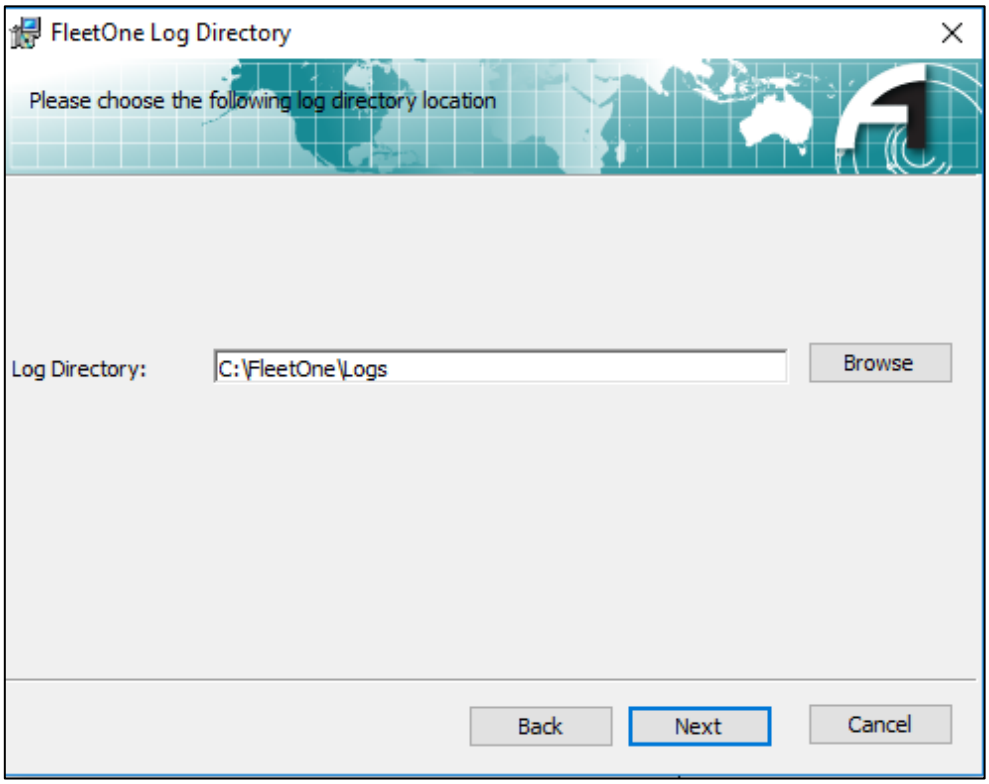
5.2.10 Step 10 – Importer and log data directories

If the application services are being installed, then the directories used for **Data, Archive, Reject** and **Log** folders are now entered.
If they don't exist – create them.



The Disk Clean Up Settings dialog allows you to specify whether to automatically delete old train pass files from disk that have already been imported or rejected. **Note that the imported train data available in FleetOne will never be removed without manual intervention.**



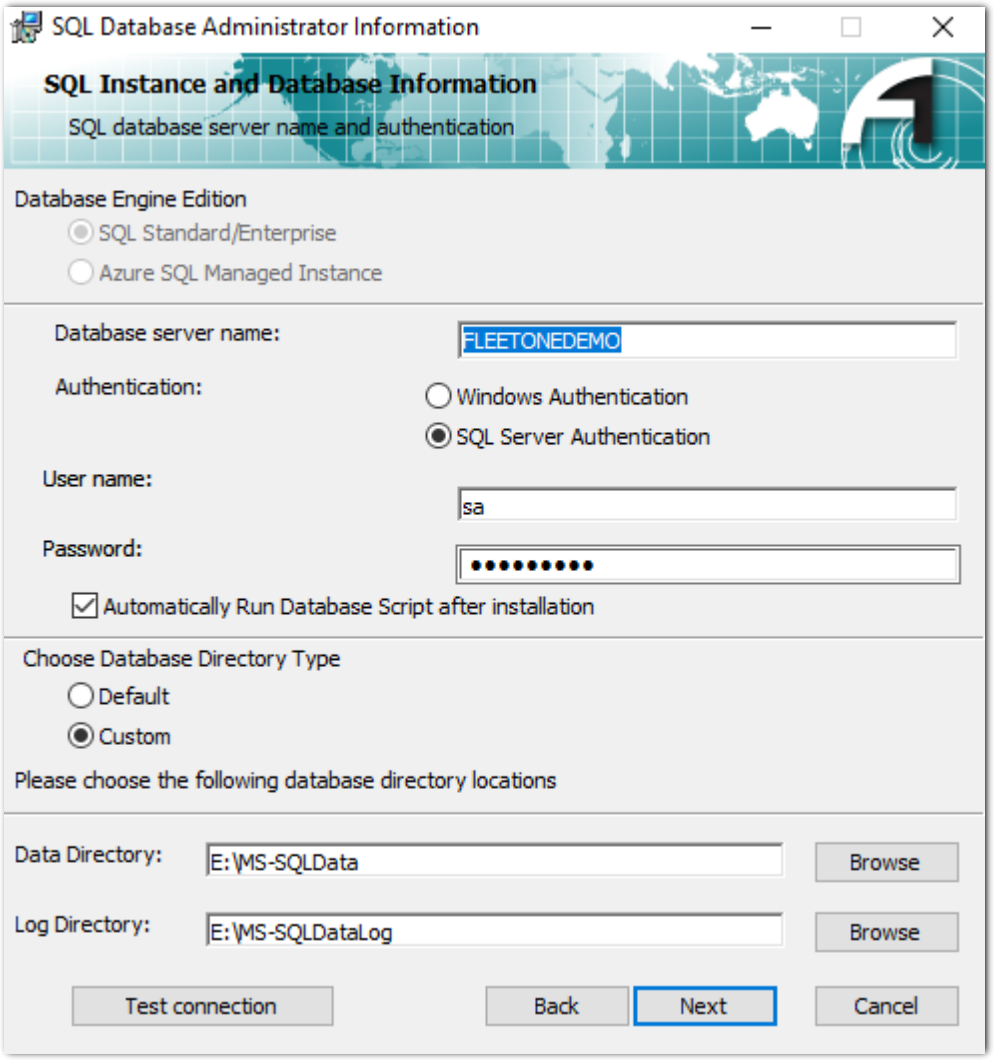


5.2.11 Step 11 – Database script generation

If the database scripts are being generated in this run, the **"SQL Instance and database Information"** form will now be seen.

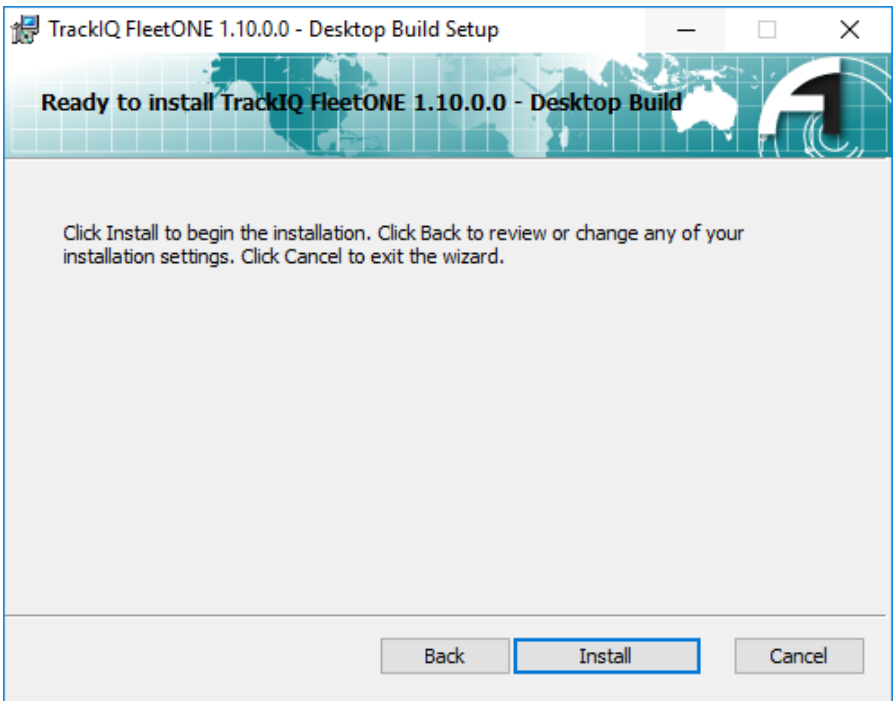
This form allows you to configure:

1. Database server name
2. Authentication – select the SQL database authentication type
3. User name/password – when SQL Server Authentication option is selected.
   NOTE: The account used here must have permissions to create/drop/modify the FleetONE database tables.
4. "**Automatically Run Database Script after installation**" check box – check this box if you want the scripts to automatically run.
5. Chose Database Directory Type:
   - Default – SQL server will choose where the SQL data and log files are placed.
   - Custom – press **Browse** button to select different location for SQL data and log files.
6. Press **"Test connection"** button to check that all settings are correct and the connection with the SQL server is established successfully.


SQL Database Administrator Information
SQL Instance and Database Information
SQL database server name and authentication
Database Engine Edition
SQL Standard/Enterprise
Azure SQL Managed Instance
Database server name:
FLEETONEDEMO
Authentication:
Windows Authentication
SQL Server Authentication
User name:
sa
Password:
Automatically Run Database Script after installation
Choose Database Directory Type
Default
Custom
Please choose the following database directory locations
Data Directory:
E:\MS-SQLData
Browse
Log Directory:
E:\MS-SQLDataLog
Browse
Test connection
Back
Next
Cancel

5.2.12 Step 12 – Install

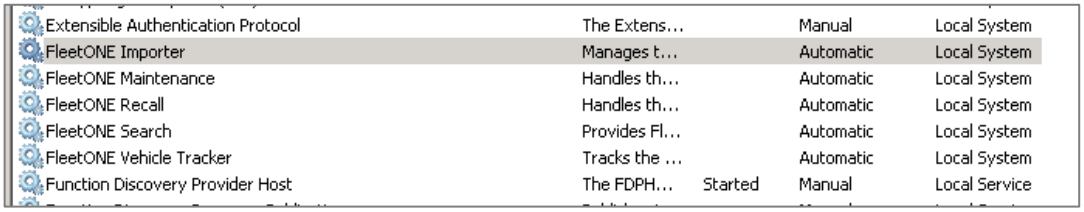
Press **"Install"** button to commence FleetONE services, databases and web application installation.



Press "Finish" button to complete the FleetONE installation.

6 Validation of correct installation

1. Open the Administrative Tools -> Server Manager -> Services
2. Start the FleetONE Services



Important: **Check the Log files each service is producing for errors and analyse them!**
The corresponding Log file of each service is located in E:\FleetONE\Log\ServiceName folder.

6.1 Perform a sanity check

Now that FleetONE is installed and enabled, you should perform a sanity check – quickly go through the sanity check document.

Important: **Record the results of this sanity check in the installer history directory.**

7 Required Configuration

After installing the Fleet ONE configuration is required.

7.1 First time Administrator Configuration

When Fleet ONE web application starts it presents the user with an option to either Register or Sign in. For a fresh installation there are no user accounts created yet.

Important: **An Administrator Role with full administrative rights inside the FleetONE system is assigned to the *first user* to register. All subsequently registered users receive basic "User" account that allows them to view data and run reports only.**

When Track IQ performs the Fleet ONE installation on the client's machine(s) the initial account must be created using the default TrackIQ user/password credentials.

When the client's IT personnel is performing the Fleet ONE installation on their machine(s) they also have to assign an Administrator role to TrackIQ account after it has been created.

7.2 Site/Sensor configuration

In order to import data from field equipment, the field equipment site/sensor information needs to be configured in FleetONE.

This is discussed in detail in the appendix.

7.3 Configure Maintenance Plan - Index optimisation

The "Index rebuild" is a stored procedure script that will selectively reorganize or rebuild only fragmented 'FleetOne_Warehouse' and "Importer" tables.

There are two major scenarios for executing the Index Rebuild.

1. Creating an "Index Rebuild" **standalone** job – the client's Database Administrator includes it as part of their scheduled maintenance plan or;
2. Track IQ sets up a maintenance plan to execute scheduled Index Rebuilding.

Important: The first time the **"Index rebuild" job/maintenance plan** is run, it is useful that it be started manually or scheduled to run **after** the Importer complete the importing of all train data into the database. The first run of the "Index rebuild" will be the longest. All subsequent runs will take considerably less time to execute.

Detailed steps to set this maintenance plan up are discussed in the appendix.

7.4 Maintenance plan configuration for HBD count by time calculation

For FleetONE systems that interface to hot box detector (HBD) data, a nightly calculation needs to be set up to go through the HBD data and summarize the information for reporting.

This is done on a schedule as the HBD data volume is typically very large – querying the data directly results in a long-running query/report.

To set this on a schedule:

1. Please follow the same procedure to set up a maintenance plan as per the appendix.
2. However, the TSQL statement that needs to be executed is different:

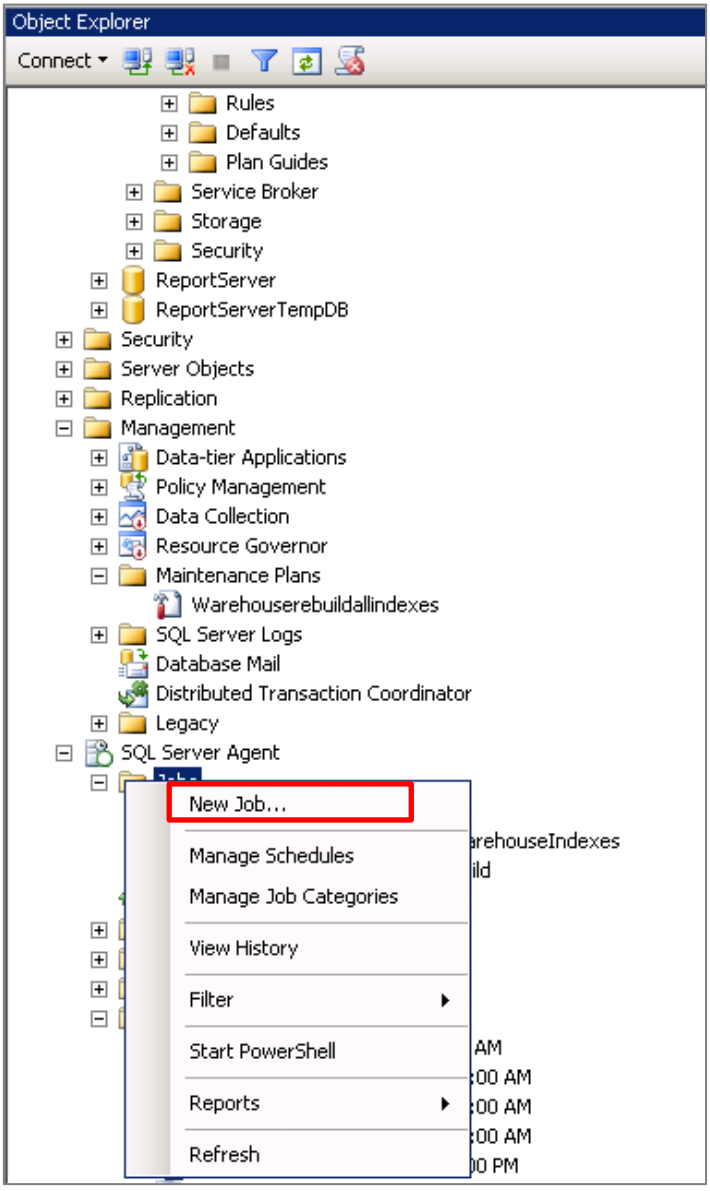
```
EXEC [Reports].[CalculateHBDAlarmsCountByTime]
```

Appendix – Configuring Maintenance plan

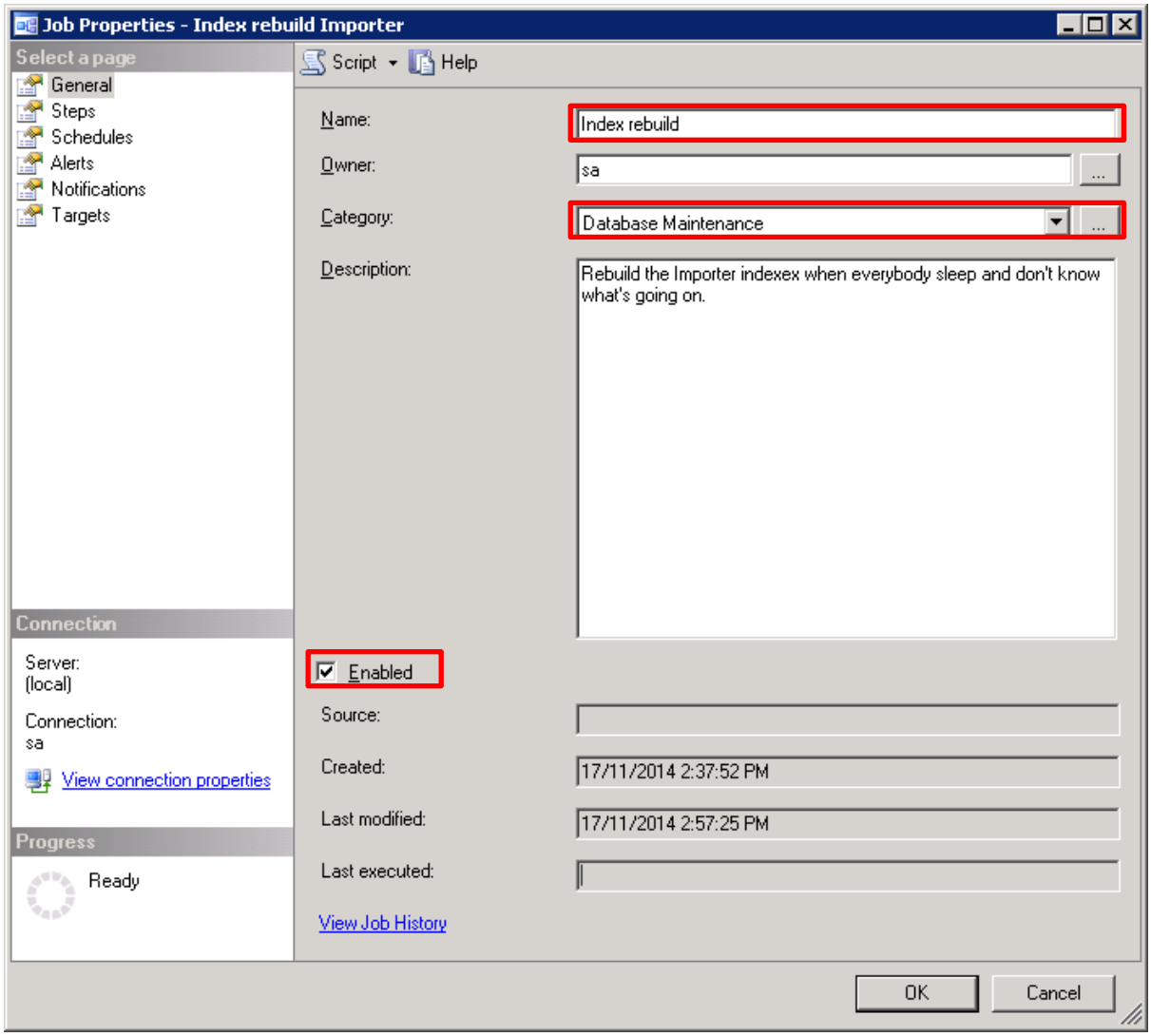
Steps to create an "Index Optimise" maintenance job

1.1. Open the Microsoft SQL Server Management Studio and connect to the Database server where the Fleet One databases are located. Make sure the SQL Server Agent is started and running.

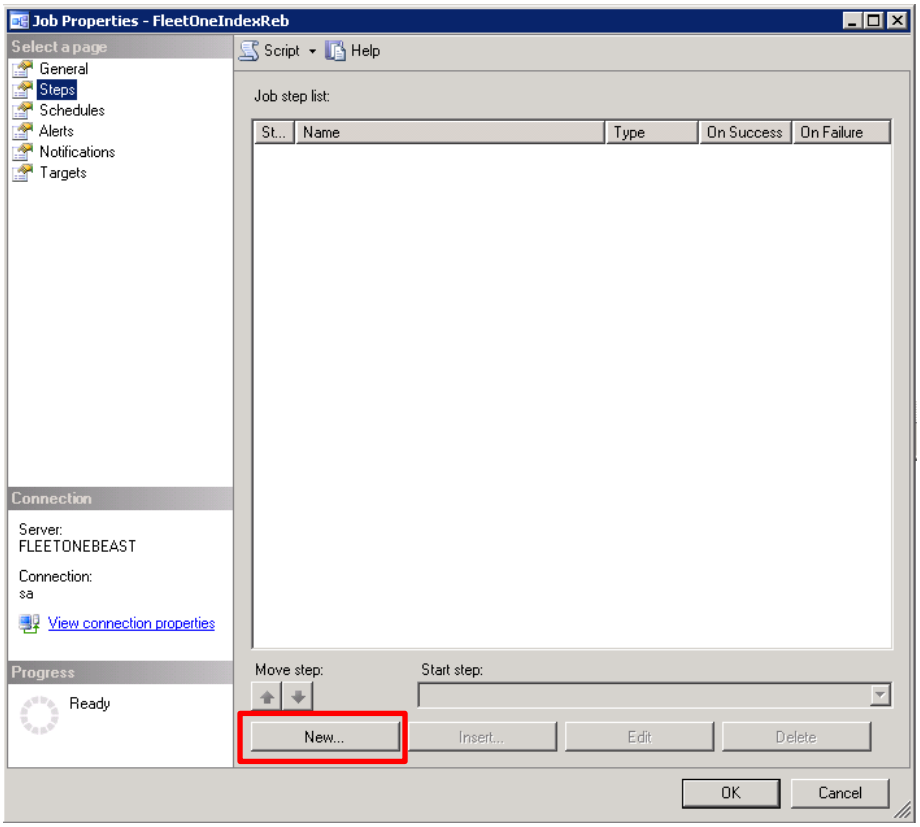
1.2. Expand the SQL **Server Agent** and right click the "**Jobs**" folder →**New Job**…

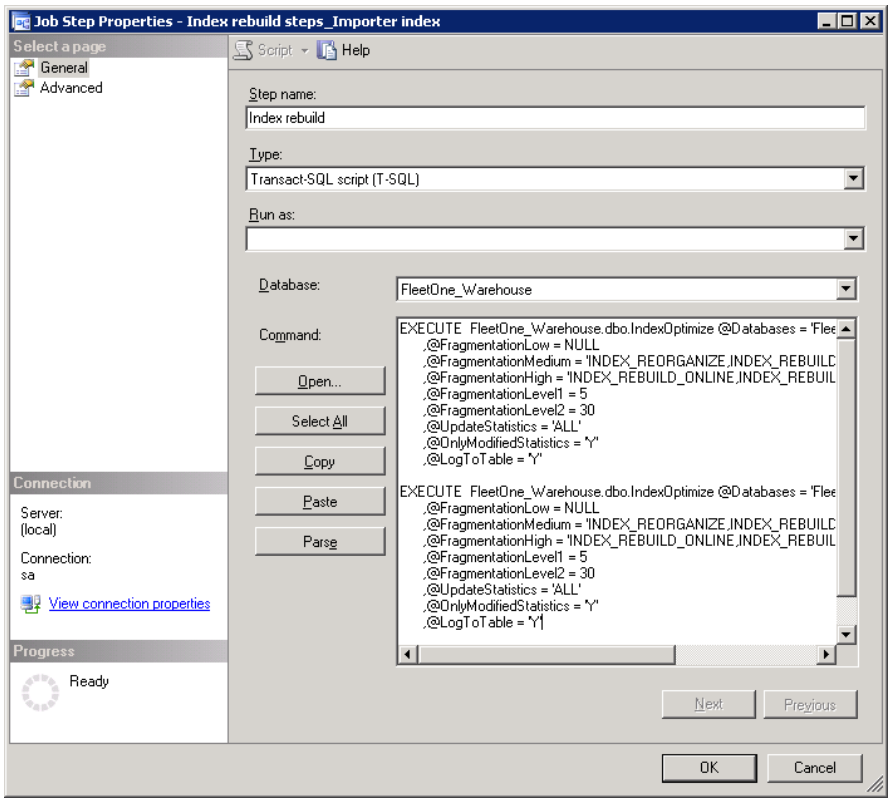


1.3. **General page:** Enter a name for the job i.e. “Index rebuild” and make sure “Enabled” checkbox is checked. Chose a Category i.e. “Database Maintenance”.



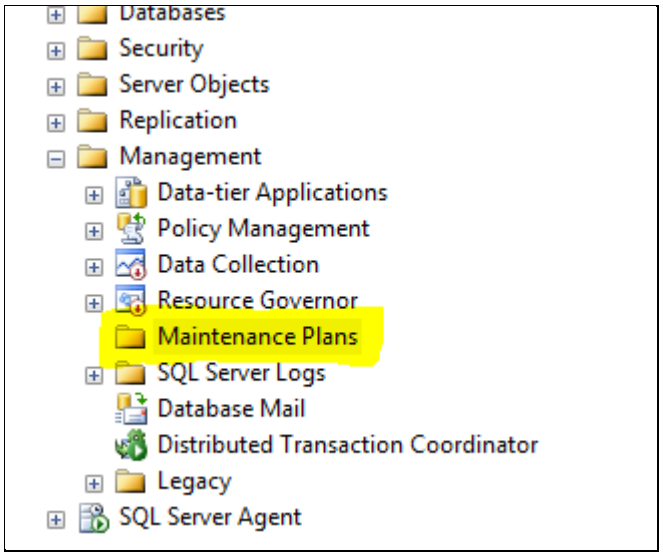
1.4. Page **"Steps":** Press "New" button. Enter a Step Name and paste the "FleetOne_Importer database" script in the Command input text box and press OK. Database should be "FleetOne_Warehouse".



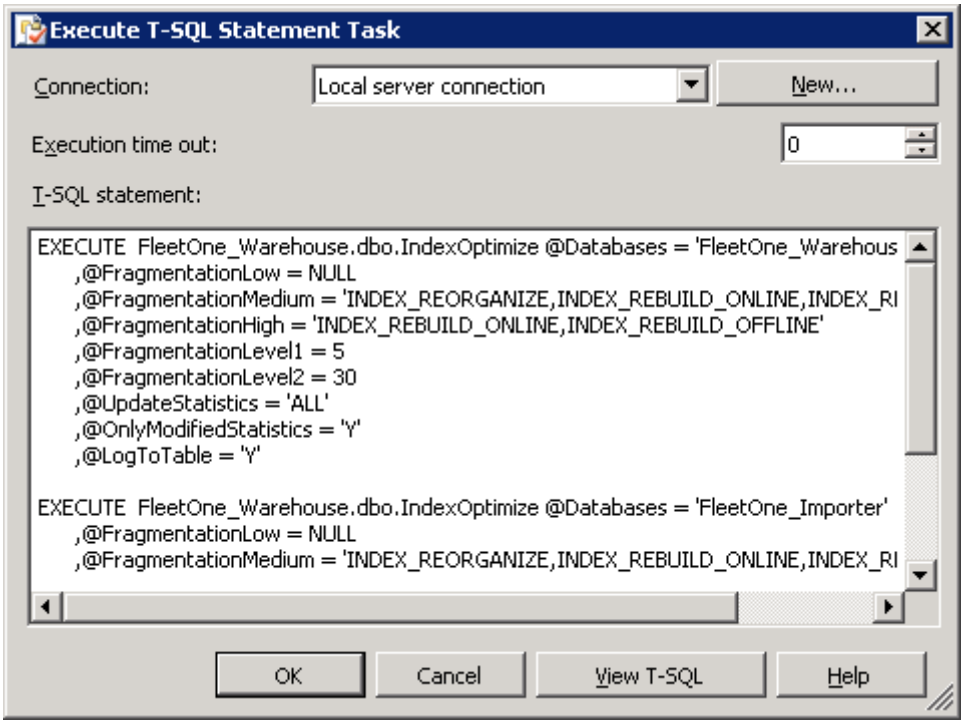


Creating a Maintenance Plan

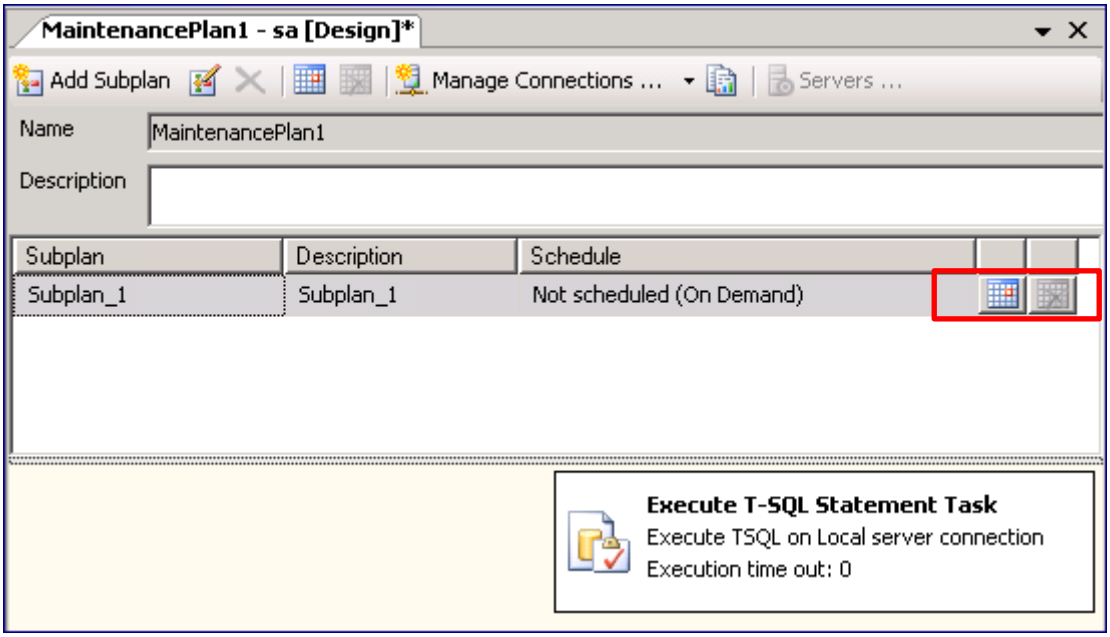
1. Within SQL management studio, connect to the FleetONE database server and expand the "**Management**" panel.
2. Right click on "**Maintenance Plan**" and select "**New maintenance plan**".



3. Drag "**Execute TSQL Statement Task**" from the "**Toolbox**" onto the panel.
4. Copy the "**Index Rebuild scripts**" from this document.
5. Double click the task - this opens the "**Execute T-SQL Statement Task**" form.
6. Paste the scripts in "**T-SQL Statement**" window (Scripts are in the next section).



7. Modify the schedule of the task to run daily - try to make it run at a different time than the monitor report – ideally an hour earlier.



8. Click on the "Reporting and Logging" icon (typically next to the "Manage Connections" button). In this window, you can specify the location for text file reports. Modify it so that the reports are sent to a text file in the standard FleetONE logging directory.
9. Save your changes.

Before we finish – manually run the maintenance plan once yourself. This will prove you have everything working such as:

- No errors in the SQL statement above.
- SQL Agent service is started so that the command can run.

Index Rebuild Scripts

```
EXECUTE  FleetOne_Warehouse.dbo.IndexOptimize @Databases =
'FleetOne_Warehouse'
      ,@FragmentationLow = NULL
      ,@FragmentationMedium =
'INDEX_REORGANIZE,INDEX_REBUILD_ONLINE,INDEX_REBUILD_OFFLINE'
      ,@FragmentationHigh =
'INDEX_REBUILD_ONLINE,INDEX_REBUILD_OFFLINE'
      ,@FragmentationLevel1 = 5
      ,@FragmentationLevel2 = 30
      ,@UpdateStatistics = 'ALL'
      ,@OnlyModifiedStatistics = 'Y'
      ,@LogToTable = 'Y'
EXECUTE  FleetOne_Warehouse.dbo.IndexOptimize @Databases =
'FleetOne_Importer'
      ,@FragmentationLow = NULL
      ,@FragmentationMedium =
'INDEX_REORGANIZE,INDEX_REBUILD_ONLINE,INDEX_REBUILD_OFFLINE'
      ,@FragmentationHigh =
'INDEX_REBUILD_ONLINE,INDEX_REBUILD_OFFLINE'
      ,@FragmentationLevel1 = 5
      ,@FragmentationLevel2 = 30
      ,@UpdateStatistics = 'ALL'
      ,@OnlyModifiedStatistics = 'Y'
      ,@LogToTable = 'Y'
```

Appendix – Site configuration

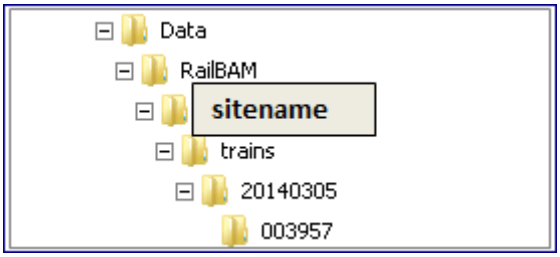
RailBAM

FleetONE is importing the following csv files into the SQL database:

- AXLTBL_YYYY-MM-DD_HH-MM.csv
- BRGTBL_ YYYY-MM-DD_HH-MM.csv
- TRNTBL_ YYYY-MM-DD_HH-MM.csv

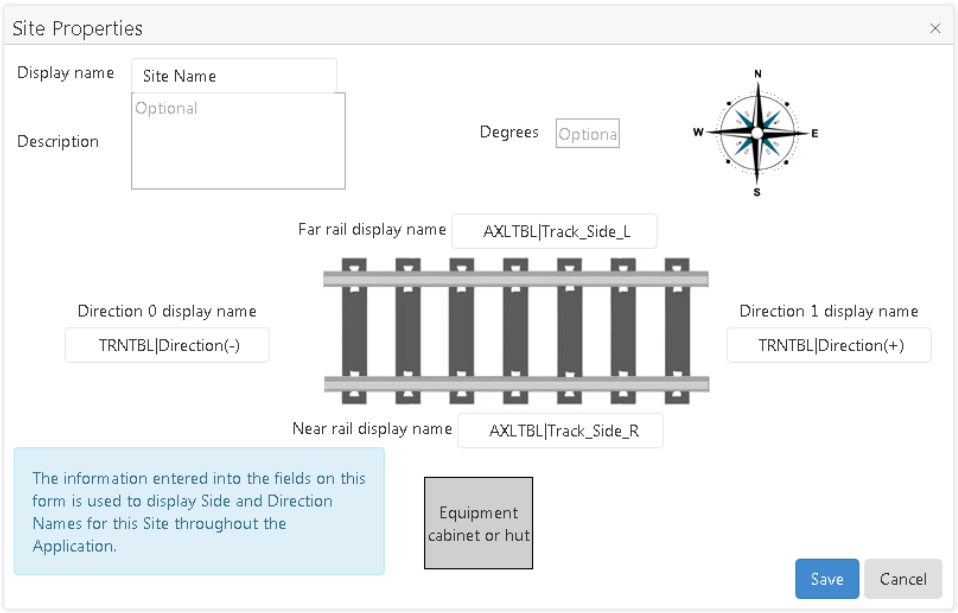
The folder hierarchy structure of the **Data** folder should be as follow:

1. Data – base folder
   1.1. RailBAM – Sensor type
   1.2. **sitename** – this could be an abbreviation or the site name.
   1.3. Trains – folder containing the actual Date/Time structured train data from the site
   1.4. YYYYMMDD folder – containing the train passes for the day
   1.5. HHMMSS folder – train data files in csv format



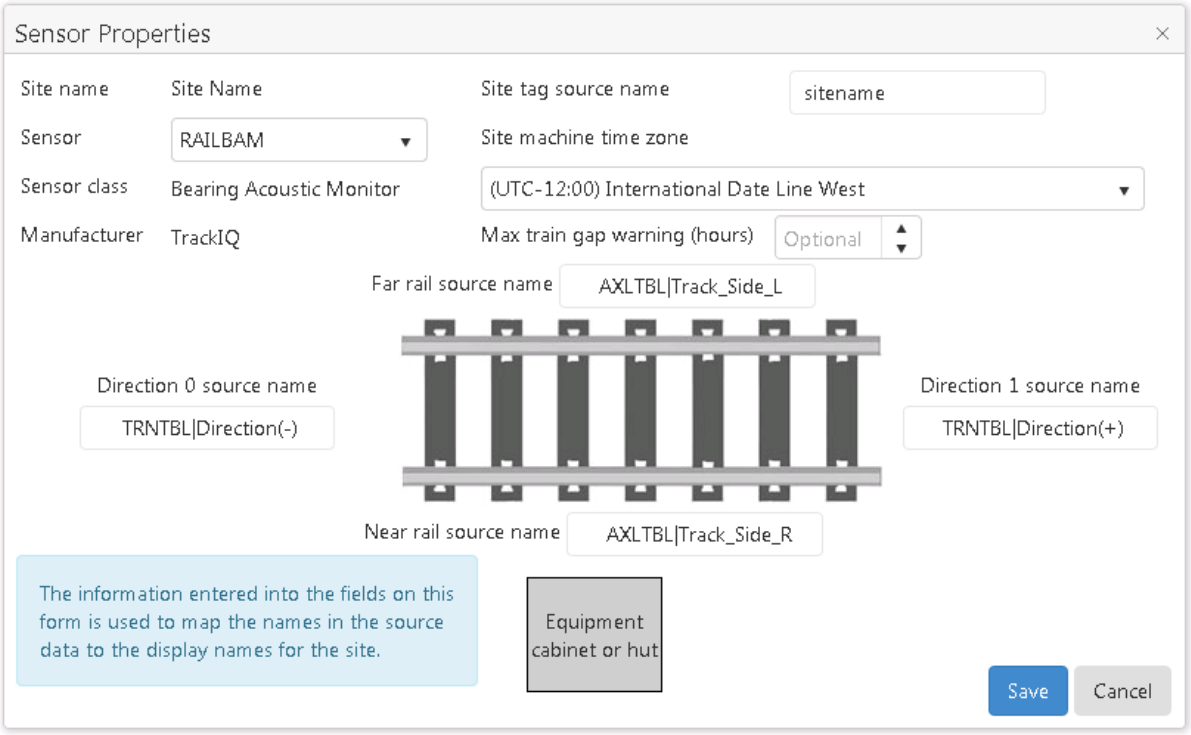
RailBAM Site Properties form

1. The name entered in **Display name** input box on Site Properties form is used as a site display name in the other FleetONE forms.
2. "**Far/Near rail source name**" is mapped to the value in "**Track_Side**" column from the **AXLTBL_yyyy-mm-dd_hh-mm.csv** file.
3. "**Direction 0/1 source name**" is mapped to the value in "**Direction**" column from the **TRNTBL_yyyy-mm-dd_hh-mm.csv** file.



RailBAM Sensor Properties form

4. The **sitename** as its named in the folder structure is mapped to the "**Site tag source name**" in the Sensor Properties form.
5. "**Far/Near rail source name**" is mapped to the value in "**Track_Side**" column from the **AXLTBL_yyyy-mm-dd_hh-mm.csv** file.
6. "**Direction 0/1 source name**" is mapped to the value in "**Direction**" column from the **TRNTBL_yyyy-mm-dd_hh-mm.csv** file.



WCM/WCM2

FleetONE is importing TAB formatted files from WCM sites into the SQL database:

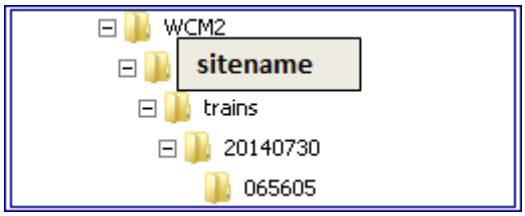
- WCM_ ### _YYYY-MM-DD_HH-MM.TAB

= "N_Site" - Site number, as defined in the system configuration.

Note: A three character text string defining the system that this data is allocated to. This uniquely identifies the data to a specific data system configuration and ensures that the data is dispatched to the correct database.

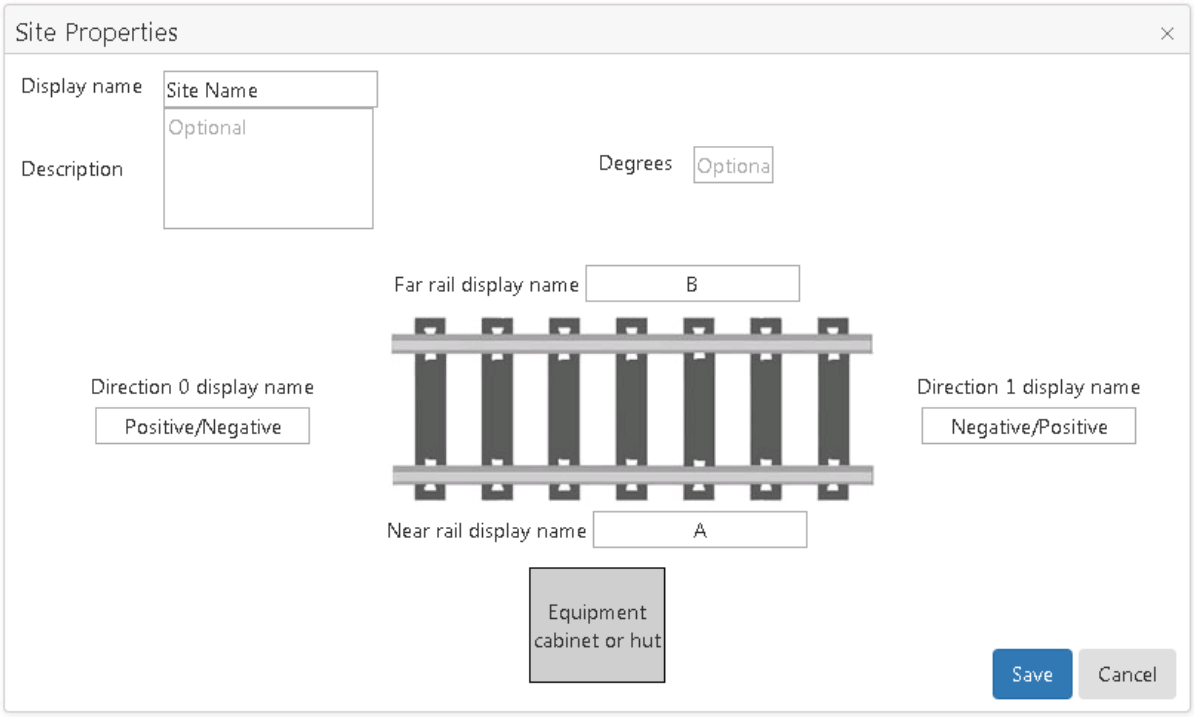
The folder hierarchy structure of the **Data** folder should be as follow:

1. Database folder
   1.1. **WCM2** – Sensor type
   1.2. **sitename** – this could be an abbreviation or the site name.
   1.3. **trains** – folder containing the actual Date/Time structured train data from the site
   1.4. **YYYYMMDD** folder – containing the train passes for the day
   1.5. **HHMMSS** folder – contains all the downloaded train data for the pass-by, including the TAB file



WCM2 Site Properties Form

1. The name entered in **Display name** input box on Site Properties form is used as a site display name in the other FleetONE forms.
2. "**Far/Near rail display name**" are named as they will appear in the Sensor Properties form.
3. "**Direction 0/1 display name**" are named as they will appear in the Sensor Properties form.



Note: The values entered in this form are not taken under account by the Importer. They are for display purposes only.

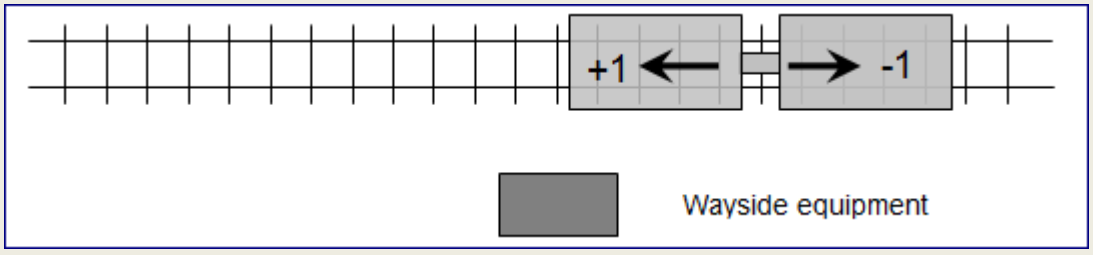
WCM2 Sensor Properties form

The following Information is added to clarify how to configure WCM2 sensor according to **51R-07-0023-TNT-740065-5 - WCM V2 Data Interface to WMS Specification.doc**

Conventions

Train direction

Train direction is defined relative to the wayside equipment at each site. It is defined as a positive and negative 1 (1 and -1).



The assignment of labels interpreting the direction to local conditions at each site is part of the database system.

Side

The axle data is reported in terms of the equipment location and it is not re-arranged according to vehicle orientation or train direction. Side is relative to the wayside equipment at each site.

NEAR side is also referred to as side A.

FAR side is also referred to as side B.

Version 1 (Stage 1)

Header line, then single record, with header line. Train summary data.
(TAB file)

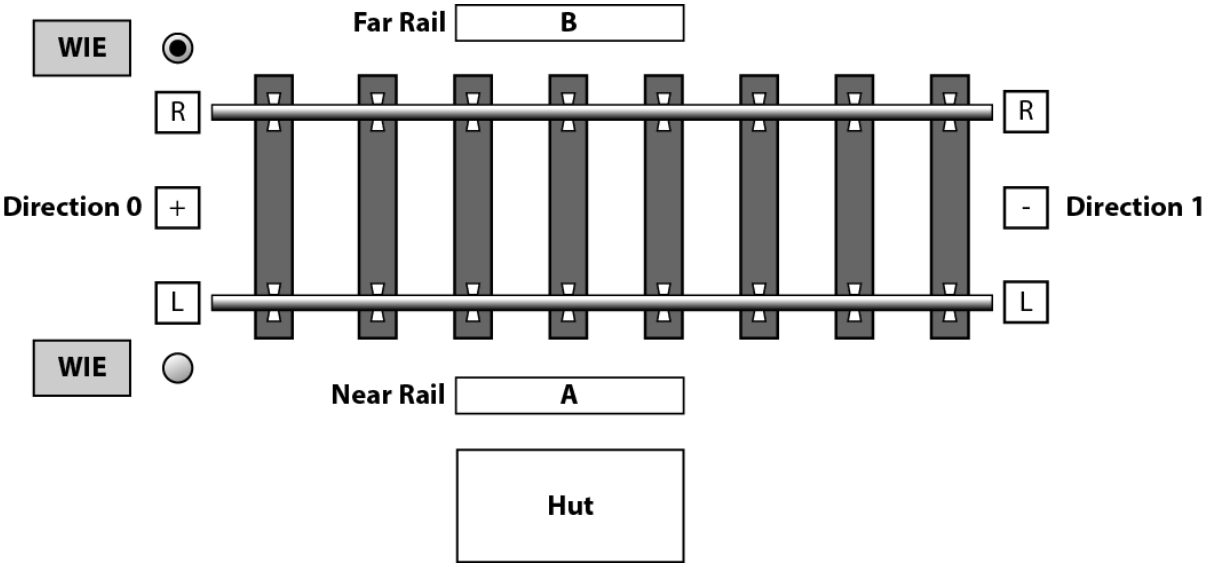
Header Name	Description	Example
Type	Initial denoting record type as "T"rain	T
TrainTime	Train time at first axle, as yyyy-mm-dd HH:nn:ss	2009-07-15 23:12:45
GMToffs	Offset [hours] between the local time when the train was detected and GMT. For example: GMToffs = 10.5 for Adelaide/Australia during the non-DLS period (in which case inDLS is false) GMToffs = -5.0 for US Central time during the DLS period (in which case inDLS is true	
inDLS	True if Daylight Saving was active for the local train time.	1
N_Axles	Number of axles in train. Maximum 2000.	272
System	A three character text string defining the system that this data is allocated to. This uniquely identifies the data to a specific data system configuration and ensures that the data is dispatched to the correct database.	RCM
N_Site	Site number, as defined in the system configuration (see "System")	2
N_Dir	Train direction as +/- 1 (refer conventions)	1
L_Dir	A text label describing train direction relative to local conditions. Used only for user readability and not to be used by the database system. Maximum 20 characters.	Timbucktu
L_Site	A text label describing measuring site. Used only for user readability and not to be used by the database system. Maximum 20 characters.	Beecroft
N_TempRA	Rail temperature, side A, degrees Celcius.	32.5
N_TempRB	Rail temperature, side B, degrees Celcius.	39.3
N_TempA	Ambient temperature, degrees Celcius.	25.1
N_TempE	Enclosure temperature, degrees Celcius.	29.4

- Site (N_Site)
- Time (TrainTime)
- Direction (N_Dir)
- Number of axles. (N_Axles)

How to determine Site's Positive and Negative direction

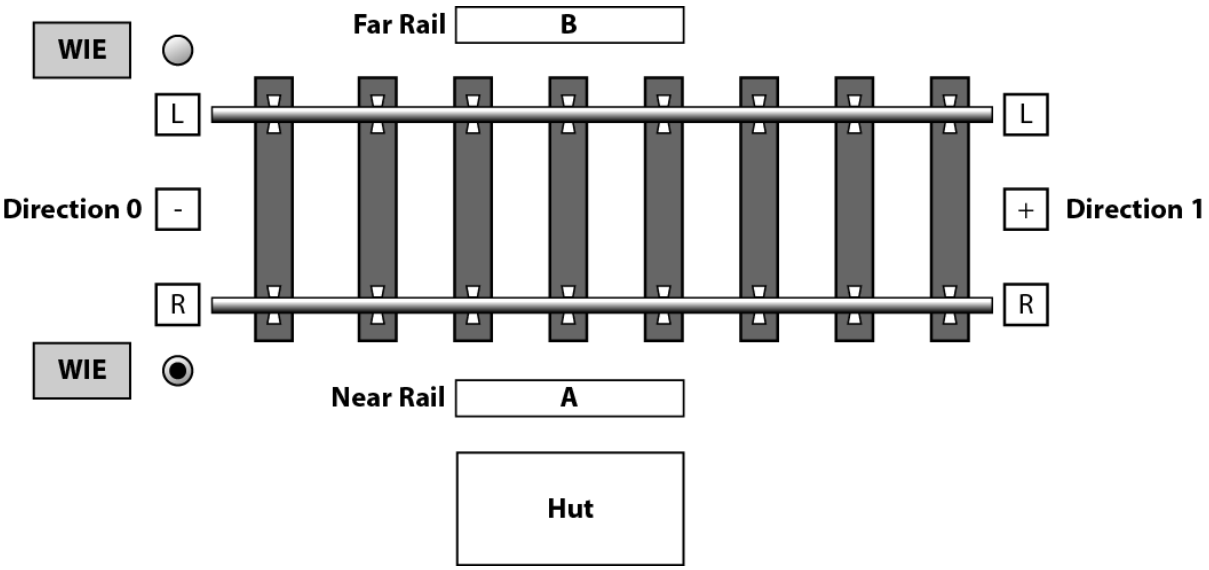
Examples:

"gen_paras.hut_on_left = true" as specified in "**hndltrn.txt**" file.



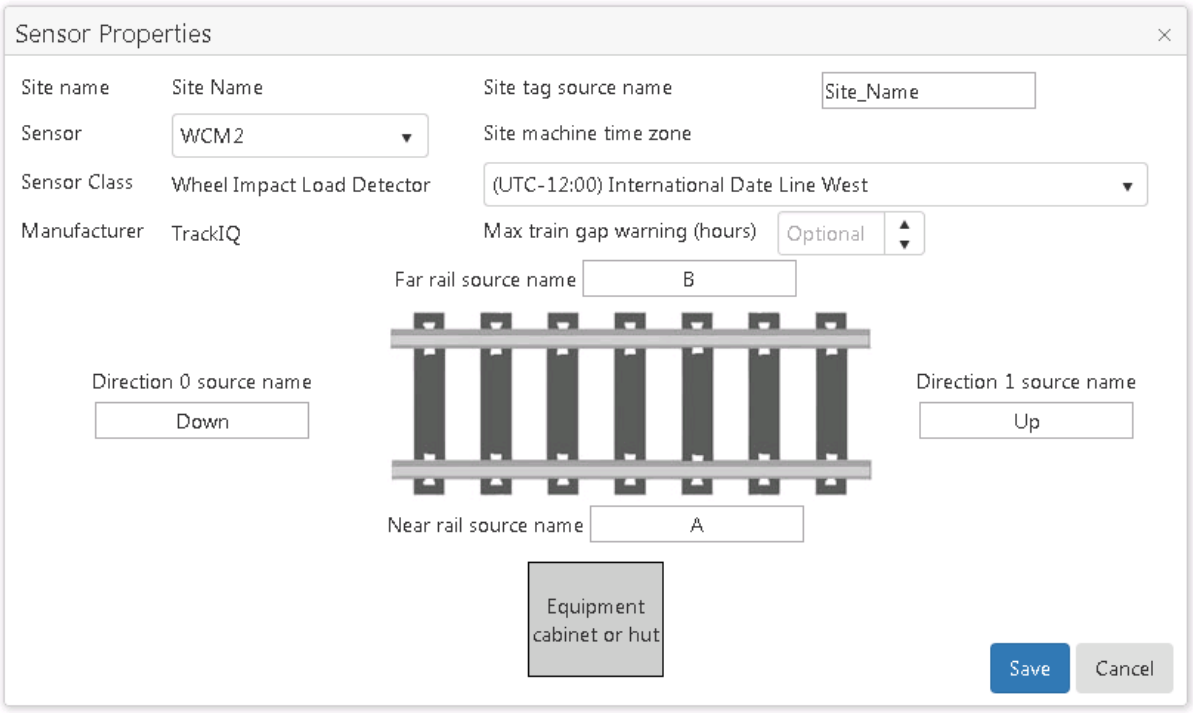
In this example the **WIE** is installed opposite of the **Hut**. To determine which direction is positive the viewer always stands with the **WIE** on the right-hand side. Therefore the Hut is on left-hand side. The viewer is always facing towards the positive direction. In this case "**Direction 0"** is the positive.

"gen_paras.hut_on_left = false" as specified in "**hndltrn.txt**" file.



In this example the **WIE** is installed on the same side with the **Hut**. To determine which direction is positive the viewer always stands with the **WIE** on the right-hand side. Therefore the Hut is on right-hand side. The viewer is always facing towards the positive direction. In this case "**Direction 1"** is the positive.

Sensor Properties



1. The "**Site tag source name**" is mapped to **L_Site** value from the TAB file.
2. The **"Sensor"** should be set to **WCM2.**
3. "**Near rail source name"** is always set to **"A".**
4. **"Far rail source name**" is always set to **"B".**

"**Direction 0/1 source name**" is mapped to the values in the comas of **rprt_paras.pos_vel_msg_shrt = '...'** and **rprt_paras.neg_vel_msg_shrt = '...**' parameters in "**hndltrn.txt**" file after determining the positive and negative directions explained in the examples above.

Appendix – First time configuration of IIS

Internet Information Services (IIS) is a web server that comes with Microsoft Windows. It serves the FleetONE website.
IIS is not turned on by default when Windows is installed. It needs to be enabled and configured for FleetONE to operate properly.
The IIS Manager is accessed through the Microsoft Management Console or Administrative Tools in the Control Panel.
Follow the steps below to configure IIS on the web application server.

Check if IIS is enabled

To ensure that IIS (Windows feature) is turned on:

Windows Server 2008 R2

1. Open Control Panel→Programs and Features
2. Choose “Turn Windows Features on or off” from the left panel – this opens the Server Manager window
3. Expand “Roles” →expand “Web Server (IIS)” and ensure “Internet Information Services (IIS) Manager” is present.

Windows 7

1. Open Control Panel →Programs and Features
2. Chose “Turn Windows Features on or off” from the left panel – this opens the Windows Features window.
3. Ensure that the “Internet Information Services” checkbox is checked

IIS Configuration

While within the “Turn Windows Features on or off” dialog:

1. Enable **ASP.NET**: Expand “Internet Information Services” → World Wide Web Services → Application Development Features →check ASP.NET checkbox
2. Enable **HTTP Redirect**: Expand “Internet Information Services” → World Wide Web Services → Common HTTP→ check HTTP redirect checkbox

Register IIS with .NET 4.0

IIS needs to be registered with .NET 4.7.

1. Restart and register IIS by running on the command line: "aspnet_regiis.exe -i".
2. aspnet_regiis.exe is located in the following directory: C:\Windows\Microsoft.NET\framework\4.0.xxxxx\

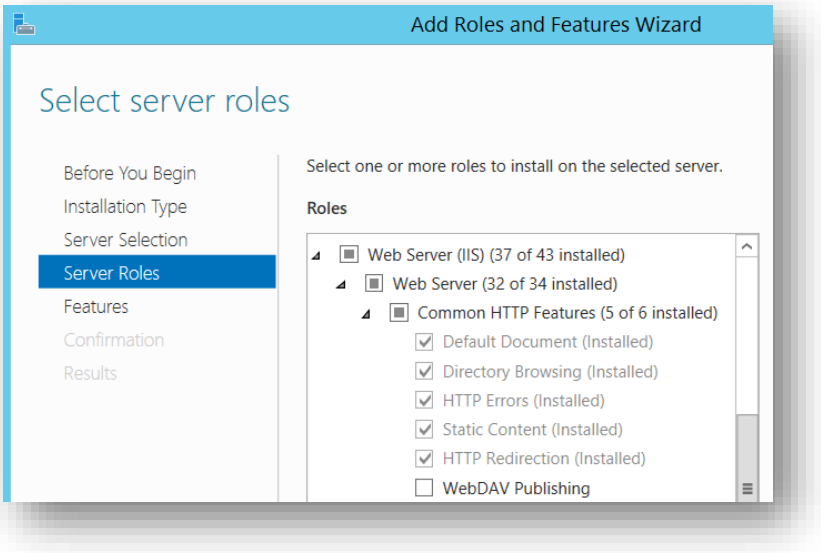
Note: This command line installation method is **not supported** in **Windows Server 2012**.
To install/uninstall ASP.NET 4.7 with IIS8 use the "Turn Windows Features On/Off" dialog in the Server Manager Management tool.

IIS configuration settings and the installed features.

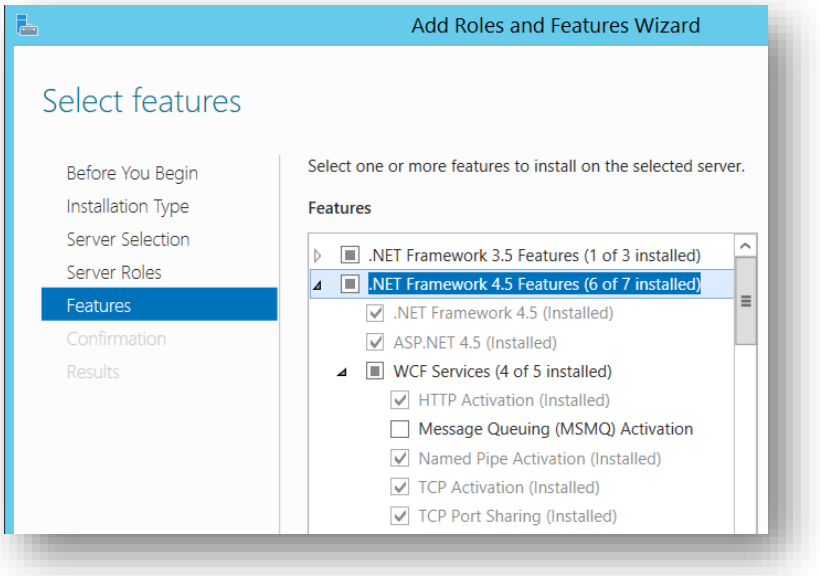
Web Server	Installed
Common HTTP Features	Installed
Static Content	Installed
Default Document	Installed
Directory Browsing	Installed
HTTP Errors	Installed
HTTP Redirection	Installed
WebDAV Publishing	Not installed
Application Development	Installed
ASP.NET	Installed
.NET Extensibility	Installed
ASP	Not installed
CGI	Not installed
ISAPI Extensions	Installed
ISAPI Filters	Installed
Server Side Includes	Not installed
Health and Diagnostics	Installed
HTTP Logging	Installed
Logging Tools	Not installed
Request Monitor	Installed
Tracing	Not installed
Custom Logging	Not installed
ODBC Logging	Not installed
Security	Installed
Basic Authentication	Installed
Windows Authentication	Installed
Digest Authentication	Not installed
Client Certificate Mapping Authentication	Installed
IIS Client Certificate Mapping Authentication	Installed
URL Authorization	Not installed
Request Filtering	Installed
IP and Domain Restrictions	Not installed
Performance	Installed
Static Content Compression	Installed
Dynamic Content Compression	Installed
Management Tools	Installed
IIS Management Console	Installed
IIS Management Scripts and Tools	Not installed
Management Service	Not installed
IIS 6 Management Compatibility	Installed
IIS 6 Metabase Compatibility	Installed
IIS 6 WMI Compatibility	Installed
IIS 6 Scripting Tools	Installed
IIS 6 Management Console	Installed
FTP Server	Not installed
FTP Service	Not installed
FTP Extensibility	Not installed
IIS Hostable Web Core	Not installed

Windows Server 2012 R2

1. Open Control Panel→**Programs**
2. Choose **"Turn Windows Features on or off"** – this opens the **"Add Roles and Features Wizard"** with **Installation Type** option highlighted on the left panel.
3. Select **"Role-based or feature-based installation"** radio button →**Next**
4. In **"Select destination server"** →Select a server from the server pool → **Next**
5. In **"Server Roles"** expand **"Web Server (IIS)"**

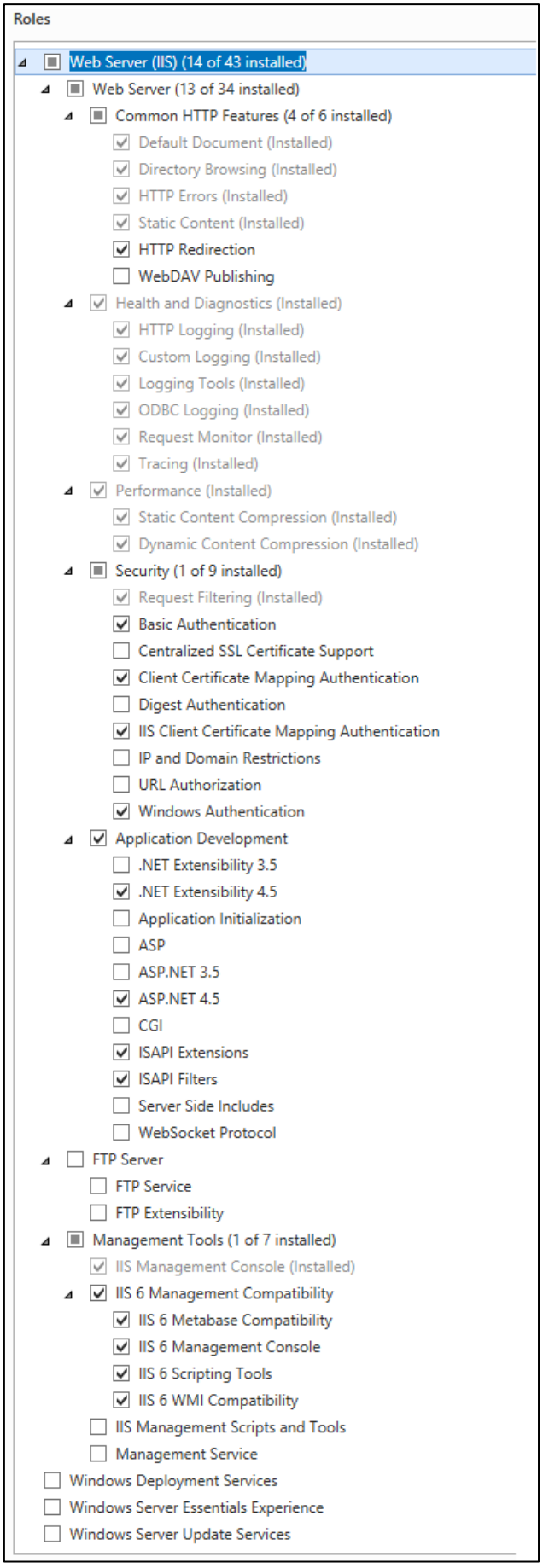


6. Set all features as shown in the screen capture below →Accept to install the additional features that needs to be installed prior some of the selections you have made → **Next**
7. In **"Features"** - ensure the following .NET Framework 4.6 settings are selected: →**Next**



8. In **"Confirmation"** tick **"Restart the destination server automatically if required"** tick box and click **"Yes"** on the warning message to allow the restart →**Install**

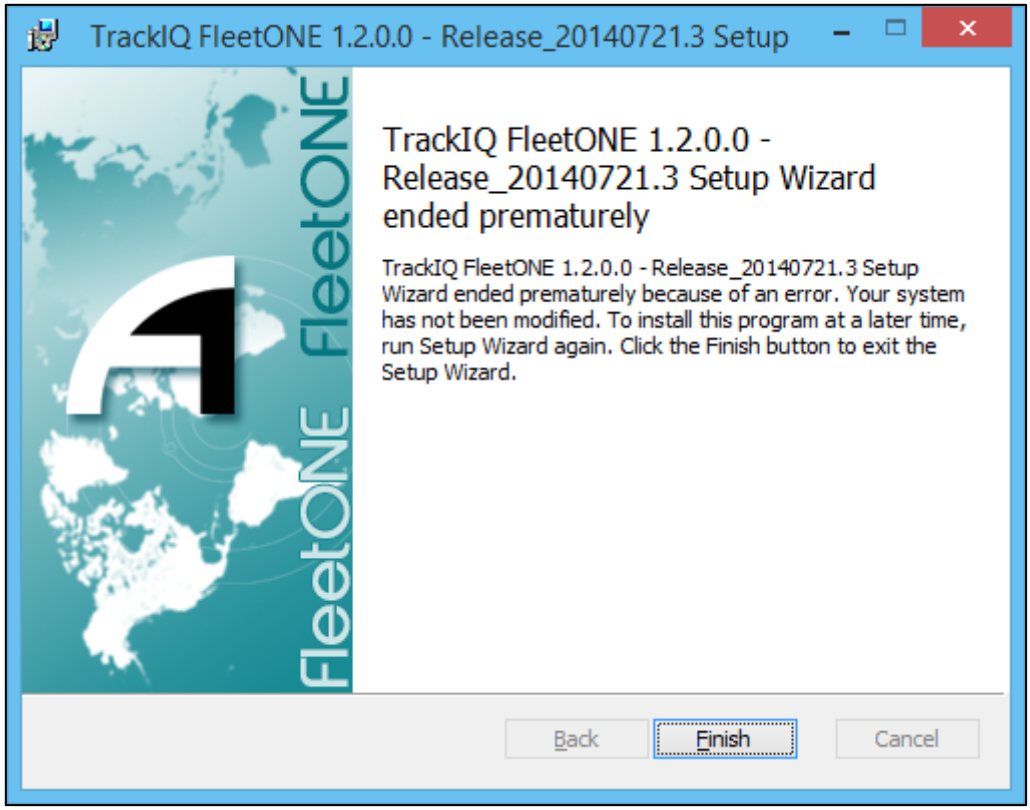
IIS configuration settings and the installed features



Appendix – Troubleshooting

Installer fails to run – check that it is run via an account with Admin rights

If an error such as the below is shown, check that you are running the installer via an account with appropriate administrator rights:



Investigate the error log

If the installer continues to have errors, you can find detailed error logs in the following location: %temp%\FleetOneSetup.log

This log can be sent to your TrackIQ support staff for assistance.

End of document