

# TIE Installation Guide

<b>I. Technical Overview.....</b>	<b>2</b>
System Requirements.....	2
What is installed?.....	3
<b>II. Installation Notes.....</b>	<b>4</b>
1. What's in this package?.....	4
2. Known Issues with Data Execution Prevention.....	4
3. System Requirements.....	5
a. TIE Certificate.....	5
b. TIE Service.....	5
c. TIE Development Environment.....	5
d. Hardware Requirements.....	5
4. HL7 Software.....	6
5. Supported RDBMS platforms.....	6
6. Database Access & Permission Requirements.....	7
7. Web Browser Requirements.....	8
8. Microsoft Script Engine.....	8
9. Microsoft XML Core Services.....	8
10. Windows Cluster Support.....	9
a. Requirements.....	9
b. Installing TIE.....	9
c. Uninstalling TIE.....	10
d. Development Environment.....	10
e. Fail Over Notes.....	10
<b>III. FAQs.....</b>	<b>11</b>

# I. Technical Overview

The TIE install will create a new instance of TIE or upgrade an existing installation. It installs TIE in one of two modes: a production server, which runs as a windows service in the background, or in developer mode, where TIE runs as a desktop application. If you have a purchased certificate, this will dictate what kind of mode is installed. If you are evaluating TIE, then you can choose which mode to install.

TIE requires a database in order to operate. Two database servers are supported: Microsoft SQL Server (versions 2008 through 2016) and MySQL (versions 5.1+). If you have an existing installed database, then you can configure TIE to use that. Otherwise, choose to install the Dedicated TIE MySQL Service - this is a full MySQL server (v5.5.27) specially installed to support TIE (though you can choose to use it for other purposes if you want). Note that TIE is able to interact with data in almost any database, but requires either Microsoft SQL Server or MySQL for its own primary database.

TIE is cluster aware. For information about installing on a cluster, see [Cluster Installation](#).

## System Requirements

- Any supported version of Microsoft Windows (32 or 64 bit, though TIE is only 32 bit)
- Administrator Access to the System (only required for installation)
- A web browser (Microsoft Edge, IE, Firefox, Safari, or Chrome)
- A database server, as described above
- Microsoft Script Engine (usually installed)
- MSXML Core Services(usually installed, or see <https://docs.microsoft.com/en-us/dotnet/api/system.xml?redirectedfrom=MSDN&view=netframework-4.7.2>)
- Internet access is required for some functionality

The hardware requirements for TIE vary greatly depending on the transaction load and how scripts are used. Disk storage requirements depend how long TIE is configured to retain content. A standard hospital with information flow rates of around 1 message or document per second should be able to run TIE on a standard entry-level server.

Notes:

- Scripting has been known to behave bizarrely if a scripting version older than 5.6 is installed. It appears to be impossible to determine what version of Windows Script Host is installed. You may find the information here helpful: <https://docs.microsoft.com/en-us/dotnet/api/system.xml?redirectedfrom=MSDN&view=netframework-4.7.2>

- The TIE database can grow rapidly when storing CDA documents and HL7 messages. As the database size grows, performance can deteriorate quickly. System administrators should pay attention to messages archive and deletion policies, and carefully monitor the overall performance of the database using the RDBMS management facilities.
- For normal operation, TIE does not require dbo/sa/administrator/root access to it's database. There is facility to provide account details for an administrative account during install/upgrade. TIE will not apply any permission settings to the databases created. If permission control is sought, this should be reviewed after installation (consult the TIE documentation for assistance with this process).

## What is installed?

The following features may be installed depending on the options selected during the installation:

- TIE Service - The production service that can exchange contents with other systems.
- Developer - A set of HL7 and script development tools. If the TIE Service is not installed (Developer Mode), it also loads the core module that provides all the TIE functionality
- Manager - a tool to manage the database and terminology definitions
- COM Library - The COM interface to TIE. There is no run-time license requirement to use the COM library, and it can be used on PC's on which TIE is not installed.
- Mobile Clients - helps mobile phones to control TIE (or just use a browser)
- HL7 v2 schemas - for use in validation, and for reference (refer issues to HL7!)
- LOINC - LOINC codes and definitions in the knowledge base
- MySQL - MySQL Community Server 5.5.27 - on port 9557

Which parts are installed depends on the options selected when the installer runs.

## II. Installation Notes

### 1. What's in this package?

This package includes 2 main components:

- **The TIE Service Component** includes the actual TIE Service, along with supporting documentation and a Database and Service Management Utility. The TIE Service can be installed on a cluster - see note #10 below.
- **The TIE Development Environment** is a suite of tools to assist an interface developer or analyst. It allows you to collect, browse and validate HL7 messages and CDA documents, and to develop scripts for TIE.

You can install either component or both. Although there is no direct dependence between the packages, the Development Environment will require access to a TIE database when run and some functionality requires a TIE service to be available. The database, and the TIE Service Components that maintain it can be located on different systems.

In addition, this package includes a mobile device client component. This package includes programs that can be installed on your mobile phone to monitor and control TIE from anywhere as long as you have access to the TIE web interface. The following mobile phone clients are included:

- Dot Net (use on any phone with mobile dot net installed)
- iPhone (\*\*\*) not yet released (\*\*\*)

From the mobile phone client, you can do the following things:

- view the status of interfaces
- start and stop interfaces
- enable users and fix their passwords

### 2. Known Issues with Data Execution Prevention

The Scripting and Web services implementations used in TIE generate dynamic machine code. This technique causes "data" to be executed, which is disallowed by Windows Data Execution Prevention.

If DEP applies to TIE, then any use of web services will cause an access violation, and any use of scripting will fail with an unpredictable error.

Because of this, the installation program will register TIE in the DEP exception list. A restart will be required to make this addition to the list effective, but the installation program will not prompt a restart at the end of the installation.

The DEP exception list is ignored if the system DEP policy is "Always on". The installation program will not check or change the System DEP policy - the system administrator will need to change this manually

## 3. System Requirements

### a. TIE Certificate

During the installation, you will require a TIE Certificate. You can get a 30-day limited license (evaluation) Certificate or you can purchase a full license from <http://www.tie.com>. At the end of the 30 day, trial period TIE will cease to function until a Full Licence Certificate is purchased.

### b. TIE Service

Installing the TIE Service will require the following resources:

1. Windows 7/10/Server 2003/Server 2008 through 2016 (32 or 64 bit)
2. Administrator Access to the System
3. A database server. See below for further information
4. Microsoft Script Engine (see below)
5. MSXML v4+ is required for schema validation (see below)
6. Interacting with the TIE service requires a web browser. This browser does not need to be installed on the same computer as the service.

TIE generally acts as a TCP server. If your windows system has a firewall (most do), you will have to add exemptions for any active ports (including the web and/or telnet servers built into TIE) you wish to use across the network - or you can let the install For some features (i.e. OID lookup), the TIE service requires HTTP access to the internet. If this access is not available, the service will still run, but these specific operations will fail. This web access does not use wininet, does not cache files or run scripts, and offers no other features capable of creating security holes.

### c. TIE Development Environment

1. Microsoft Script Engine (see below)
2. MSXML v4+ is required for schema validation (see below)

The HL7Connect Development Environment will require read-only access to a TIE database when it runs.

### d. Hardware Requirements

The hardware requirements for TIE will vary greatly depending on the throughput of messages, and the interface configuration. Disk storage depends on how many messages are received, and how long messages are stored in the database.

The minimum requirements for a small installation of TIE, with few interfaces and low message traffic, would be 512MB of RAM. As the scale on which TIE is being used increases, correspondingly so do its hardware requirements. If TIE is being installed as an Enterprise HL7 Interface Engine, then the system should include the following specifications:

- 500MHz + CPU (at least two cpu's or dual core)
- at least 2 GB RAM

There are a variety of factors which may influence how much hardware you may require. For example:

- Expected message throughput? The busier TIE is, the more resources will be used
- Number of interfaces
- Will you be doing much scripting? If so, how complex are the scripts?
- Does the database backend reside on the same server as TIE or a separate server? If it's on the same server, then the database resources need to be considered in addition to TIE resources.

A standard hospital with information flow rates of around 1 message or document per second should be able to run TIE on a standard entry-level server.

## 4. HL7 Software

TIE requires a source of HL7 v2 message definitions ("The HL7 Dictionary" in order to function. By default, TIE is based on the definitions as found in the HL7 Access Database.

If you want to replace these definitions with your own definitions (for instance, to introduce support for specific country localizations of HL7), you must purchase a copy of the access database directly from HL7 Inc. (<http://www.hl7.org>), make your modifications, and then configure TIE to use that modified database. Note that since TIE automatically supports unexpected messages, segments, fields, repeats, etc, such a modified dictionary is only useful for validation, or if scripts need to refer to modified definitions.

This installation package also installs the HL7 v2 schemas for use in validation, and for reference. These are the schemas as published by HL7. Issues with the content of the schemas should be referred to HL7.

## 5. Supported RDBMS platforms

TIE requires a database of its own. Currently, the following RDBMS Systems are supported as:

- Microsoft SQL Server 2008r2 or better
- MySQL v5.1 or better

There are no plans to add other database support at this time. Most databases - including all that have ODBC support - can be used from scripts.

Specific Platform Notes:

- **Microsoft SQLServer**

You must install SQL server drivers that correspond to your version of Microsoft SQL Server. TIE can be configured to use Windows Authentication with Microsoft SQL Server. You need to pay attention to what account the service runs under if you set it up like this, and ensure that this account has access to the appropriate database. The installation program will always configure the service to run under the system default service account; you can change this through the Windows Services Applet.

- **MySQL**

Only version 5.1 is supported at this time. You can use the Community or Enterprise Edition. We recommend the choice of "Multifunctional Database" mode and "Online Transaction Processing (OLTP)".

Note that the TIE database can grow rapidly when storing CDA documents and HL7 messages. When the messages store gets over 4 million records or so, performance starts to deteriorate quickly. This can be resolved by deleting or archiving messages. The impact of the total database size on backup and server load during backup also needs to be monitored. Note that archiving messages does not decrease the overall size of the database. System administrators should pay attention to messages archive and deletion policies, and carefully monitor the overall performance of the database using the RDBMS management facilities.

## 6. Database Access & Permission Requirements

TIE will require access to the database both during installation and whenever the software is running. All three software components (TIE, the TIE Manager, and the Development Environment) require database access. A database must be created by the administrator prior to installing TIE using the appropriate tools for either Microsoft SQL Server or MySQL.

When you connect to the database, you must provide a username and password that TIE will use during normal operation. This account must provide select/insert/update/delete access to the TIE database. dbo/sa/administrator type access is not required for this account. This password will be stored encrypted in the TIE Configuration files.

During the installation, TIE will connect to the specified database and create the required tables and indexes. During installation, a different username and password may be supplied. If none is supplied, the normal account described above will be used. The account used for installation must have administrator access, with DBO alias. The alternative account, if provided, is not stored by TIE.

Although the database should be entirely for the use of TIE, TIE can share databases with other applications. All TIE table names begin with the character sequence "gw.", "kk." or "lex." TIE will not apply any permission settings to the databases created. If permission control is sought, this should be reviewed after installation (consult the TIE documentation for assistance with this process).

## 7. Web Browser Requirements

Interacting with TIE requires a Web Browser with full HTML 4 & DOM support. The following browsers have been tested and are believed to work:

- Microsoft Internet Explorer and Microsoft Edge (all versions)
- Browsers based on Mozilla/5.0 with Gecko/20031007+ such as Firefox
- Browsers based on WebKit, including Chrome and Safari including on iPhone)

## 8. Microsoft Script Engine

The scripting engine used in TIE requires the Microsoft Scripting Engine to be installed. This is usually installed on most Windows systems.

If it is not installed, TIE will still run, but any attempt to run scripts will fail.

NOTE: Scripting has been known to behave bizarrely if a scripting version older than 5.6 is installed. It appears to be impossible to determine what version of Windows Script Host is installed. You may find the information here helpful:

<http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=c717d943-7e4b-4622-86eb-95a22b832caa>

## 9. Microsoft XML Core Services

TIE uses the Microsoft Core XML Services for XML Schema validation. If you use XML schema validation then you will require MSXML v4. If it is not installed, TIE will still run, but any attempt to use CDA documents, transforms, or schema validation will fail. You can download and install the Microsoft Core XML Services from <http://msdn.microsoft.com/xml>

Note: most computers have MSXML 4+ installed.



## 10. Windows Cluster Support

### a. Requirements

TIE can be installed on a Windows 2008 cluster. Before installing TIE, ensure that the cluster is fully installed and set up, and set up the database that TIE will use. TIE can use a database server either on the same cluster, or another server somewhere else that may also be (would usually be) a cluster.

In addition to the database, TIE requires a cluster storage. This storage is used for

- configuration information
- LOINC and Snomed-CT caches
- log files
- Temporary storage for file processing
- script storage

In TIE, the location of logs and scripts is configurable; on a cluster, you must choose to store these on the cluster storage assigned to TIE when you are configuring it.

The base storage requirement - excluding logs and file processing requirements - is around 150MB. The overall size depends on configuration, how many log files and what their sizes are, and how many file interfaces, and how much information flows through them. Given the cost of setting up a cluster, and the importance of keeping TIE running, we recommend allocating at least 1GB more than the highest expected requirement.

### b. Installing TIE

TIE must be installed on each node in the cluster. The first install is special: this "initial install" is responsible for creating or upgrading the TIE database and populating the TIE storage. All the following installs simply install the program files to each node and configure TIE to use the cluster storage. You must select the initial task in the installer ("Perform Initial Cluster Install" on the tasks page), or only an add-node install will be performed.

Note: if the task "Perform Initial Cluster Install" does not appear on the tasks page even though you are installing on a cluster, please consult TIE.com support.

The TIE Storage must be on line on the node where the install is happening for the initial install. For the add-node installs, the storage does not need to be on line. As additional nodes are added to the cluster, TIE must be installed on the node.

During the install, TIE will create a cluster application definition for TIE. This may fail for reasons related to network configuration. If it does, creating the TIE application definition is very straightforward. It is a Generic Service with the following properties:

- The service "TIE"
- The storage selected during the install
- a virtual name and address.

The installation program will not bring TIE online at the end of the install. The cluster administrator will need to at least configure the details of the IP address assigned to TIE.

If you are installing TIE to run on the same Cluster as Microsoft SQL Server:

The installation configures the TIE service to run under the default account. On Windows Server, this is "Local System" or some equivalent. This local system account will be able to login to the SQL Server databases when both TIE and SQLServer are running on the same node, but not when they are on different nodes (assuming SQL Server is configured Active/Passive). If you want to be able to run TIE in a different node to SQLServer on the cluster, you will either need to configure SQL Server to used mixed-mode authentication, and give TIE a native SQL Server login when configuring the database connection, or configure the service to run under a different account using the Windows Services Applet.

### c. Uninstalling TIE

Because of the way the installation process works, the node from which the first install was done must be the last to be uninstalled, as it will remove the contents of the TIE storage. If you need to uninstall TIE from this node before removing it from the cluster, do the uninstall while the storage is off-line.

### d. Development Environment

The Development Environment is cluster aware - you can only use it on the node that is active for TIE. Be sure to store any files you work with on the TIE storage to avoid confusing the Development Environment as it moves between nodes.

### e. Fail Over Notes

TIE starts and stops fairly quickly - generally within a few seconds. SQL Server tends to be a lot slower. If a node fails, and both SQL Server and TIE are transferred to a backup node, TIE must wait for the database. The standard approach to handling this - with service dependencies - isn't applicable. And cluster dependencies have additional side effects that mean that these might not be an appropriate solution to this problem. As a consequence, when the TIE service is starting on a cluster, it will wait up to 90 seconds for a database to be available, instead of 30 seconds like normal. Consult the TIE log to see why start up is slow.

## III. FAQs

### **What happens if I experience problems when downloading TIE from the website?**

Our trial software is fully-featured, and often the downloads are large. If your download fails, try again when the network is less busy. If you have repeated problems, consult your system administrator for help.

### **Can I install TIE on more than one computer?**

Yes, you can install TIE on multiple computers, but for each installation you perform, you must obtain a separate certificate.

### **When does the evaluation period expire?**

The Evaluation License Certificate is valid for 30 days from the date of installation. TIE has a countdown function, which displays the days remaining until the license expires, on the status (main) page of TIE.

### **Does the trial version have all the features of a fully licensed version of TIE?**

The trial version of TIE has all the functions and features of a fully licensed version of TIE, however, it will only function for the period of the Evaluation Licence.

### **What happens when my Evaluation Licence Certificate expires?**

When your Evaluation License Certificate expires, TIE will cease to function, unless a Full License Certificate is purchased. Full License Certificates can be purchased by emailing [info@DynamicHealthIT.com](mailto:info@DynamicHealthIT.com).

### **Will I lose my trial version settings when I install a Full License Certificate?**

When the Full License Certificate has been installed, your TIE implementation will retain the interfaces and settings configured during the evaluation period.

### **Do I have to have an Evaluation License Certificate before I get a Full License Certificate?**

No. A Full License Certificate can be purchased directly, without having an Evaluation Certificate.

### **How can I upgrade from an Evaluation License Certificate to a Full License Certificate?**

Once you have decided to purchase a Full Licence Certificate, you can obtain the certificate by emailing [info@DynamicHealthIT.com](mailto:info@DynamicHealthIT.com). Instructions for installing the certificate upgrade are provided, and you will not need to upgrade either the TIE service or the database. NOTE: You do not need to wait for the evaluation period to expire before upgrading to a Full License Certificate.

### **Can I uninstall TIE?**

Yes, you can uninstall TIE, by using the Add/Remove Programs icon, in the Control Panel of the computer, on which you have installed TIE. The Remove-TIE wizard is launched, which will remove TIE.

### **Where can I get help, once I have downloaded and installed the trial version of TIE?**

Extensive Help is provided, and installed with the evaluation package. However, if you cannot find

the information you require in the Help, you can contact the pre-sales support team at [info@dynamichealthit.com](mailto:info@dynamichealthit.com).

**What if I have a question that is not listed in the FAQ's?**

Please email the pre-sales support team at [info@dynamichealthit.com](mailto:info@dynamichealthit.com) and we will attend to your question as soon as possible.