Estimate 20.2 and later

Components Guide

InEight®
ESTIMATE

Changelog

This changelog contains only significant or other notable changes to the document revision. Editorial or minor changes that do not affect the context of the document are not included in the changelog.

Rev	Date	Description
1.0	01-DEC-2020	Initial publication

Contents

Setting up Primavera integration with Estimate

NOTE:	Primavera integration with Estimate is supported with Primavera v6.x, P6 v7, and P6 v8 - P6 v15.1. When installing and configuring Primavera, it is necessary that all Primavera applications installed on your environment are the same version. This includes the database server, client application, and Integration API.

Primavera integration with Estimate requires that you have an existing implementation of Primavera v6.x or P6 in your network environment. This includes but is not limited to the following:

- A Microsoft SQL Server or Oracle Database for Primavera (Primavera Database Server)

- A named user license for the Primavera Integration API. (Contact Primavera to obtain this license.)
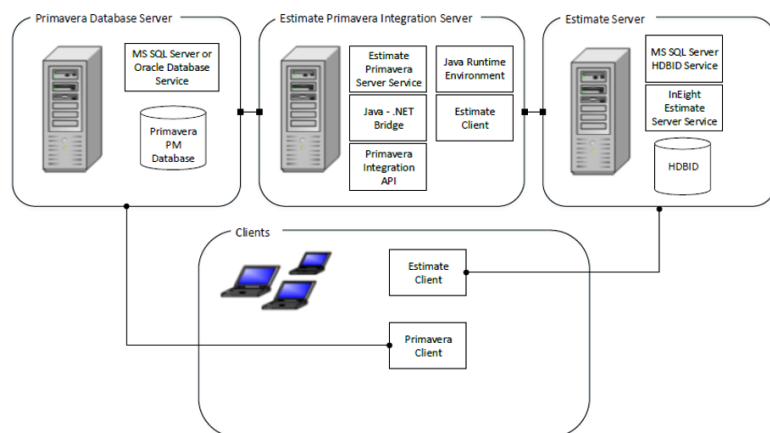
Prior to installing the Estimate Primavera Integration Server, you will be required to install additional applications and define configuration settings to complete the integration with Estimate.

Server Configuration and Setup

While all server components can be installed on the same physical server, they can also be installed on separate servers. There can be three different servers when setting up the Primavera integration with Estimate:

- **Primavera Database Server** – This server runs the Microsoft SQL Server or Oracle database service and holds the Primavera Project Management (PM) database.

- **Estimate Primavera Integration Server** – This server contains the Java Developer's Kit (JDK), the Java Runtime Environment (JRE), Primavera Integration API, InEight Estimate Primavera Integration Server service, Java - .NET Bridge components, and the JNBridge license file.

- **Estimate Server** – This server contains the Microsoft SQL Server database instance for Estimate (HDBID), and as a result, the Microsoft SQL Server HDBID service and the InEight Estimate Server service.

The diagram below illustrates how the Primavera Integration with Estimate would look if the deployment method chosen were to occur on three separate servers.

Determine the TCP/IP Port Number of the Primavera Database

The Estimate Primavera Integration connects to the Primavera database using a host name and port number. You will need to know what port number to use in a later setup step.

You can see the port number by viewing **Help > About** in a Primavera client:

1. From the main **Primavera** client menu, choose **Help > About**.
2. Click on the **System** tab.
3. Locate the **Bre Database** line.

NOTE:	Primavera v6.x and P6 v7 require Java Runtime Environment (JRE) version 1.4 or above. P6 v8 - P6 v8.4 require the i586 version of the Java Developer's Kit (JDK) version 1.6.0_23 or above. The Primavera integration with Estimate will not function correctly with older versions of Java.

4. The port number displays after the server (host) name and before the database instance name.

- In the following example, the port number for the Microsoft SQL Server Primavera Database Server is **49251**:

    o BRE Database: com.microsoft.sqlserver.jdbc.SQLServerDriver, jdbc:sqlserver://server1:**49251**;database=pmdb; 8.0, INTERNAL_PLUGINS)

- In this example, the port number for the Oracle Database Server is **1521**:

    o BRE Database: oracle.jdbc.driver.OracleDriver, jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=Server2) (PORT=**1521**))(CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=XE))) (, 7.0, INTERNAL_PLUGINS)

5. Document this port number, as you will need to know it in a later setup step. Click **Close** to exit the **About Primavera** dialog.

Install the Java Runtime Environment (JRE) or Java Developer's Kit (JDK)

The integration of **Primavera v6.x** or **P6 v7** with Estimate requires the **Java Runtime Environment (JRE)** to be installed on the Primavera Integration Server machine.
The integration of **P6 v8 - P6 v8.4** with Estimate requires the **Java Developer's Kit (JDK)** to be installed on the Primavera Integration Server machine.
If you are running 64-bit Windows, a 64-bit JDK is required.
You can download the installation files from http://java.sun.com.
At the server console where the Estimate Primavera Integration Server will be installed:

1. Download the Java Runtime Environment (JRE) or Java Developer's Kit (JDK) installation file.
2. Double click on the installation executable to begin the installation process.
3. Proceed through the installation screens, accepting default options until the installation is finished.

Install the Primavera Integration API

The version of the **Primavera Integration API** application that is required for Primavera to interact with Estimate will depend on the version of the Primavera database server that you have installed. The installation files for this application can be found on your Primavera installation media.

NOTE:	As mentioned above, you must install the same version of all Primavera components. For example, if you have installed version 8.1 of the P6 EPPM database server, you will be required to install version 8.1 of the P6 EPPM Integration API.

At the server console where the Estimate Primavera Integration Server will be installed:

1. Locate the **setup.exe** file on your installation media for the **Primavera Integration API**. (If you obtain the Media Pack from the Oracle e-delivery website, you will find the Integration API in the Web Services download.)
2. Double click on the **setup.exe** file to start the installation process.
3. On the Welcome to the Primavera Integration API Installer screen, click **Next >** to continue.
4. If prompted on the **Software License** screen, select **I Agree** and click **Next >** to continue.
5. On the **Installation Type** screen, select **Local Mode Packages Only** and click **Next >** to continue.
6. Specify the location where you want to install the **Primavera Integration API**.
7. On the **Select Components** screen, check both Demo Applications and Integration API Javadoc.
8. If prompted, specify the location of the **JRE** or **JDK** that you installed above and click **Next >** to continue.

   o Example **JRE Java.exe** file location: *C:\Program Files\Java\jre6\bin\java.exe*

   o Example **JDK** folder location: *C:\Program Files\Java\jdk1.6.0_23*

9. Click **Next >** and then **Install** to continue the installation.
10. On the **Database Configuration** screen, select either **Oracle** OR **Microsoft SQL** as appropriate, and click **Next >** to continue.
11. In the **User Name** field, enter the Primavera database username (e.g., pubuser).
12. In the **Password** field, enter the Primavera database password (e.g., pubuser).
13. In the **Database Name** field, enter the Primavera database name (e.g., pmdb or pmdb$primavera). For Oracle, enter the SID (e.g., XE).
14. In the **Database Host Address** field, enter the IP address or DNS name of the server where the Primavera database resides.
15. In the **Database Port** field, enter the port number you documented above.
16. Click **Next >** to continue.
17. If you have an existing Primavera database configuration, you can select the existing configuration or create a new one; then click **Next >** to continue.
18. Click **Exit** to complete the **Primavera Integration API** installation.

Define the Timeout Setting and Expiration Check Rate for the Primavera Integration API

At the server console where the **Estimate Primavera Integration Server** will be installed:

1. From your Windows desktop, choose **Start > All Programs > Primavera Integration API [version No.] > Primavera Administrator**.
2. Enter your privileged user name for the Primavera database (e.g., privuser).
3. Enter your password for the Primavera database (e.g., privuser) and click **OK**.
4. On the Primavera Administrator form, select the **Configuration** tab.
5. Expand the **Primavera P6 Configuration** folder (or your configuration name, if it is different) by clicking on the **+** icon located to the left of the folder.
6. Expand the **Services** folder by clicking on the **+** icon located to the left of the folder.
7. Expand the **License Service** or **Module Access Service**, whichever exists, by clicking on the **+** icon located to the left of the folder.
8. Triple click on the **Epirationcheckrate** node to edit it and change the value to **30s**.
9. Click on another folder in the tree list to exit the field.
10. Further down the tree list, expand the **Integration API Server** folder by clicking on the **+** icon located to the left of the folder. Then expand the RMI folder, also.
11. Triple click on the **Session Timeout** node to edit it and change the value to **24d**.
12. Click on another folder in the tree list to exit the field.
13. Click the **Save Changes** button located in the bottom right corner of the form.
14. Click **OK** on the dialog, indicating all changes were successfully submitted.
15. Click on the **X** in the upper right corner of the window to close the **Primavera Administrator**.

Set Up a Named User for the Primavera Integration API (Primavera v6.x or P6 v7)

At the server console where the Estimate Primavera Integration Server will be installed:

1. Launch **Primavera Project Management**. From the main Primavera menu, choose **Admin > Users** to open the **Users** dialog.
2. Highlight the **Admin** login name in the list of users. (Or, choose a special user designated for use by the Estimate Primavera integration. This is the user that will be specified in **Job Properties** for every job configured to send updates to Primavera. You can avoid permission problems by making this user an "**Admin Super User**". The special user does not need access to any module besides the Integration API.)
3. In the bottom portion of the dialog, click the **Licensing** tab.
4. Select the **Named User** checkbox in the **Integration API** row.
5. Click **Close** to exit the dialog.

Set Up a Named User for the Primavera Integration API (P6 v8 – P6 v15.1)

In a web browser:

1. Launch the Primavera P6 Web Application. At the top of the screen, choose Administer > User Access.
2. Highlight the **Admin** login name in the list of users. (Or, choose a special user designated for use by Estimate Primavera integration. This is the user that will be specified in **Job Properties** for every job configured to send updates to Primavera. You can avoid permission problems by making this user an "**Admin Super User**". The special user does not need access to any module besides the Integration API.)
3. In the bottom portion of the dialog, view the **Module Access** tab.
4. Double click the **Access** checkbox in the **Integration API** row to check the box.
5. Click the **Save** toolbar button.

Installing the Primavera Integration Server

The Primavera Integration Server network component is required to allow for the dynamic integration of Primavera with Estimate. The Primavera Integration Server can be installed on a dedicated server or on a server that contains other Estimate applications.

Estimate supports manual configuration of the Primavera Integration API (using "admin.cmd") to connect to multiple Primavera databases. This advanced configuration allows a single Primavera Integration Server to sync with more than one Primavera database.

If your enterprise uses multiple Primavera databases in locations distant from each other, it is better to install multiple Primavera Integration Server services. Each must be installed on a different computer, and you must give them unique instance names.

Optimize performance by locating the service instances locally with the Primavera databases to which they connect. Do not connect more than one Primavera Integration Server instance to the same Primavera database.

NOTE:	Java and the Primavera Integration API applications must be installed on each Primavera Integration Server.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client or server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. At the **Components** screen under **Third Party Integration Components**, select the **Primavera Integration Server** checkbox, and click **Next >** to continue.
9. If you are installing the **Primavera Integration Server** on a server where no other Estimate applications are installed, at the **Select Destination Location** screen, define the installation folder where the **Primavera Integration Server** application will be installed. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder. Click **Next >** to continue.
10. At the **Ready to Install** dialog, click **Install** to continue.

NOTE:	If you are installing the Primavera Integration Server network component on a dedicated server, the Estimate Framework will also be installed.

11. On the **Estimate Configuration** dialog, select the **Primavera Integration** tab if it is not already selected.

12. In the **Paths** data block:

- If you are using 32-bit Windows: Click on the **Find Paths** button to define the paths to the **Java Virtual Machine DLL** file and the **Primavera Integration API Folder**. In the event that either of the paths is not defined after clicking on the **Find Paths** button, you can click on the browse button next to each path field to browse to the appropriate location.

- If you are using 64-bit Windows: Click on the **Find Paths** button to define the path to the **Primavera Integration API Folder**. Then define your path for the **Java Virtual Machine DLL** by browsing to the correct **jvm.dll**. Your path for the **Java Virtual Machine DLL** will be similar to *C:\Program Files\Java\jre6\bin\server\jvm.dll*. With the **Java JDK** installed, your path for the **Java Virtual Machine DLL** will be similar to *C:\Program Files\Java\jdk1.7.0_45\jre\bin\server\jvm.dll*.

13. In the **Java** data block, define the maximum memory setting from the **Predefined Value** drop down list or, click on the **Custom Value** radio button and define a maximum memory setting. The Java memory setting defines how much you want to allow Java to use for the Primavera integration with Estimate. The default value is 512.

NOTE:	If you have not yet installed Java and/or the Primavera Integration API, click OK to continue the installation of the Primavera Integration Server. Once you have completed the installation of Java and/or the Primavera Integration API, you can use the Estimate Configuration Tool to open this dialog again and define the paths and Java memory settings.

14. In the **Instance** data block, specify the **Instance Name** if more than one Primavera Integration Server connects to the same Estimate Server. If you have only one Primavera database, this field may be left blank.
15. Click **OK** to continue.
16. On the **Attention** dialog, click **OK** to continue.
17. At the **Update Registry and Finalize** screen, click **Next >** to continue.
18. Click **Finish** to complete the **Primavera Integration Server** installation and exit the setup program.

Using Microsoft Project as the Integrated Schedule

Using Microsoft Project as the integrated schedule in Estimate provides you with a powerful and flexible project management tool that you can use to control simple or complex projects. It helps you schedule and track all your cost items, so you can stay on top of their progress.

Define Microsoft Project as the Integrated Schedule

1. From the main Estimate menu, choose **Setup > Job Properties**.
2. Click on the **Schedule** tab.
3. In the **Integrated Schedule** field, click on the drop down list button and choose **Microsoft Project**.
4. If you always want to use Plug Days when updating Estimate from the schedule, select the **Always use Plug Days when updating Estimate from the schedule** checkbox.
5. Click **OK** to close the **Job Properties** form.

NOTE:	To make Microsoft Project the default integrated schedule for all projects, choose **File > Library > Setup > Job Properties**, select **Microsoft Project** in the **Integrated Schedule** field on the **Schedule** tab, and complete the additional associated fields as described above. This way, each time you create a new project in Estimate, Microsoft Project will automatically be defined as the integrated schedule.

Defining Cost Item Roll Up Rules

Your Estimate project may contain more cost items than you want to schedule. You may want to create a schedule for the project at a high level, rather than scheduling all the job's cost items. You determine that this can be accomplished by rolling up the cost breakdown structure to a certain level (e.g., level 3).

When you do this, you will only see the cost items at the rolled up level (e.g., level 3) from the **Cost Breakdown Structure** in the schedule, and you can then proceed to schedule these items using the tools in Microsoft Project.

Once all the rolled up level cost items have been scheduled and you update Estimate, the scheduled start and finish dates from Microsoft Project will be brought back into the **Cost Breakdown Structure**. As a result, all cost items lower than the rolled up level (e.g., level 3) in the **Cost Breakdown Structure** now inherit the start and finish dates of their superiors at the rolled up level (e.g., level 3).

If you decide that a specific leg in the **Cost Breakdown Structure** needs to be scheduled with more detail, you have the ability to schedule specific legs at a level lower that the rolled up level previously defined by navigating to that cost item in that leg and activating the **Scheduled** checkbox.

From the main Estimate menu:

1. Select **Setup > Job Properties**.

NOTE:	Superior cost items are always scheduled using Plug Days.

2. Click on the **Schedule** tab; then click on the **Cost Item Roll Up** tab.
3. Select the **Automatically calculate Plug Days when rolling up cost items for scheduling purposes** checkbox.
4. If you want the superior level cost item (the cost item to which subordinates are rolled up) to use the longest number of scheduled days from the subordinates as the duration, choose **Longest scheduled days among all rolled up cost items**.
5. If you want the superior level cost item (the cost item to which subordinates are rolled up) to use the total scheduled days of all subordinates as the duration, choose **Total scheduled days for all rolled up cost items**.

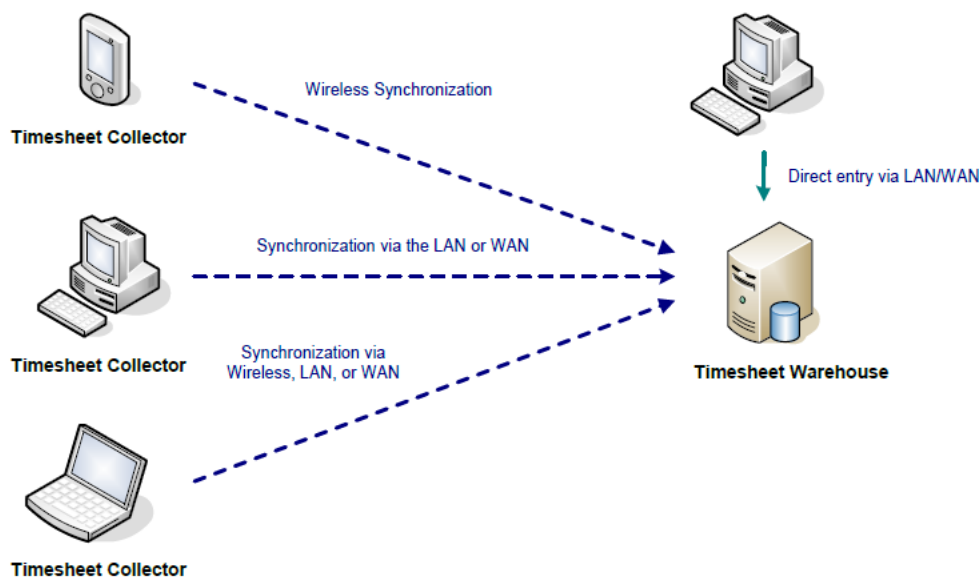| NOTE:	When rolling up cost items for scheduling purposes, the Plug Days of the superior cost item will be recalculated when a change is made to the scheduled days of a subordinate.

6. To force an immediate recalculation of Plug Days for superior cost items, click the **Recalculate Plug Days** button. Alternatively, you can use the **More Actions > Calculate Plug Days** command on the **Cost Breakdown (CBS) Register**.

Installing the Mobile Timesheets Module

The **Mobile Timesheets** module enables you to collect employee, machine and period quantity data on the spot at the jobsite and instantly transmit that information back to the home office.

The **Timesheet Collector Client** application can track employee and machine hours and charge them to specific job's cost items or cost accounts instantaneously.

The **Timesheet Collector** application includes synchronization capability that loads the master data from Estimate projects, such as standard codes for cost items, accounts, employees and machines (for example, employee codes, payroll types and resource rate codes) and tags. You never have to memorize the codes and can easily enter data from the display's lists.

The **Timesheet Collector** application allows you to enter timesheet data using a disconnected laptop, then synchronize the data to the home office once a connection to either the Internet or the company network is available. For example, a foreman can enter timesheet data while at the jobsite, and then synchronize with the home office at the end of the day – either by initiating a wireless Internet connection, connecting to the Internet from home, or returning to the office and connecting to the company network.

The **Timesheet Collector Client** allows timesheets to be recorded electronically, off-line, and requires only a minimal, temporary connection to the Internet or the company network to synchronize with the home office and transmit timesheet data. Once synchronized into the Timesheet Warehouse, the timesheet data is immediately available for approval and analysis by other Estimate users on the network.

The **Mobile Timesheets** module requires three additional components to an existing Estimate network environment:

- **Database:** On the database server, running the **Databases** installer creates an additional database named HDExecute. The HDExecute database must reside in the same SQL Server instance used by the main Estimate application to hold jobs and the library. Physical database files must reside in the same folder where jobs are stored.

- **Timesheet Integration Server:** On an application server, running the **Timesheet Integration Server** installer sets up the **Timesheet Integration Server**.

- **Timesheet Synch Handler:** On the Web server, running the **Timesheet Synch Handler** installer sets up a web application under your default website. By default, the application is named **HDTime,** but it can be renamed during installation if you choose. The **Timesheet Synch Handler** application is accessible only to authenticated network users. The site can be made accessible outside the firewall or can be limited to access by users with an internal network connection.

Preparing for Installation of Mobile Timesheets

Prerequisite Environment

The **Mobile Timesheets** module should be installed after the main Estimate Client-Server application has been installed. The installation and setup instructions that follow assume a functioning environment that includes:

- An installation of the **Estimate** server (running the InEight Estimate Server service)

- An installation of **SQL Server 2014 Express Edition** which can be installed when installing the **Estimate** server application or an Estimate Database Server running full SQL Server 2005 – 2014

NOTE:	If you will also be installing the Data Warehouse modules, you will be required to have a dedicated database server running full SQL Server 2005 – 2014. This database server will also be used for the Mobile Timesheets module.

- An installation of the **License Server** (running the InEight Estimate License Server service)

If you are currently using a local Express Edition HDBID instance and will be moving to a full SQL Server instance on a dedicated database server, you will be required to migrate all job and library databases from the Express Edition instance to the full SQL Server instance on the dedicated database server.

Once you have migrated the jobs and library databases to the dedicated SQL Server database server, verify that you can still run the Estimate application on client computers, and work with jobs and library data now residing on the dedicated database server.

Pre-Configured Web Server

The **Mobile Timesheets** module requires a Web server running IIS. These instructions assume you have a Windows Server with IIS already installed. The server must have network connectivity with the Estimate Database Server (or the Estimate Server if you are using **SQL Server 2014 Express Edition**).

Backup Considerations

The Estimate Client-Server application has user initiated System Backup and Restore features. If you are using a full SQL Server instance and a dedicated database server for the **Mobile Timesheets** module rather than SQL Server Express Edition, these features are not appropriate when job and library databases reside on a separate SQL Server.

If you are using a full SQL Server instance and a dedicated database server for the **Mobile Timesheets** module rather than SQL Server Express Edition, after you install the Mobile Timesheets module, you will need to rely on external Backup/Restore software to back up Estimate database files.

Security Considerations

Overview of Authentication in Estimate

Estimate installations may span across multiple servers which must be able to communicate with one other. For example:

- Services and Web applications require read & write access to databases.
- Services that attach & detach database files require the SQL Server sysadmin role.
- Services that start & stop SQL Server require the SQL Server sysadmin role.
- Services and Web applications require read access to folders where application files reside.

Every service and Web application is assigned an "identity" under which it runs.

- **For a Service**: the identity is defined on the Log On tab in the service's Properties dialog.
- **For a Web Application**: the identity is defined by assigning the application to an application pool, and then defining the application pool's identity in the pool's Advanced Settings.

By default, services use identities that only have access to the local machine, such as the local System account. Local accounts cannot access resources on other computers. Since Estimate components must access resources (e.g., folders, files or service commands) on other computers, the default identities for all Estimate services must be changed.

Recommended: Create a single network account for Estimate in Active Directory, and use it for all Estimate services. Give the account "Log on as a service" rights. On the Estimate SQL Server, add this account as a SQL Login and grant it the sysadmin role.

Recommended: For Estimate Web applications, use the ASP.NET v4.0 application pool or create a new one just like it, and let that application pool use its own ApplicationPoolIdentity. Define credentials for accessing SQL Server in the application's web.config file.

Timesheet Synchronization Web User Authentication Method

The Timesheet Synchronization web application is designed to use **Integrated Windows Authentication** to allow user access. To access the site, a user who is not already logged on to the network (or the web server itself) will have to provide a user name and password.

Mobile Timesheets Planning Worksheet

Complete the following planning worksheet prior to installing the Mobile Timesheets Module.

Database Connections

DB. 1	What is the name of your Estimate database server computer?	
DB. 2	What is the SQL Server instance name?	
DB. 3	Where will your data be stored? Your database and log files must reside in the same folder where your Estimate jobs and library data reside. The default location is C:\Program Files\InEight\ InEight Estimate\Jobs on the database server.	
DB. 4	What SQL Server login will your Mobile Timesheets Web server use to connect to the SQL Server? Create this SQL Server login in advance. Make note of the user name and password.	

Mobile Timesheets Application Settings

W. 1	What is the name of your Estimate Web server computer?	
W. 2	Under what website will you create the Mobile Timesheets application? By default, the Default Web Site will be used, but you can specify a different site during installation.	
W. 3	What will you name the Mobile Timesheets application? (The default name is HDTime).	
W. 4	What application pool will the application be assigned to?	
W. 5	Where will you place the Mobile Timesheets home directory? (The default location is C:\inetpub\wwwroot\Hard Dollar\TimesheetSyncHandler.)	
W. 6	What is the name of the computer where the InEight Estimate License Server runs? By default, the License Server uses port 8010.	

Installing the Timesheet Integration Server

The **Timesheet Integration Server** is required for the **Mobile Timesheets** module. The **Timesheet Integration Server** can be installed on a dedicated server or on a server that contains other Estimate applications.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client or server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. At the **Components** screen under **Third Party Integration Components**, select the **Timesheet Integration Server** checkbox, and click **Next >** to continue.
9. If you are installing the **Timesheet Integration Server** on a server where no other Estimate applications are installed, at the **Select Destination Location** screen, define the installation folder for the **Timesheet Integration Server**. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder. Click **Next >** to continue. Click **Install** to start the installation.
10. At the **Ready to Install** dialog, click **Install** to continue.
11. At the **Update Registry and Finalize** screen, click **Next >** to continue.
12. Click **Finish** to complete the **Timesheet Integration Server** installation and exit the setup program.

Installing the HDExecute Database

Complete the following steps to install the **HDExecute** database. Where indicated, refer to your completed planning worksheet above.

NOTE:	The Estimate **HDLibrary** database must be attached in order for the new **HDExecute** database to install successfully. Normally, if the InEight Estimate Server service is started, **HDLibrary** will be attached. Use SQL Server Enterprise Manager or SQL Server Management Studio (depending on the version of SQL Server that you are using) to verify **HDLibrary** is attached.

1. Log on to the database server as the machine administrator.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click the **Install Databases** button.
6. At the **License Agreement** screen, select **"I Accept the Agreement"** and click **Next >** to continue.
7. At the **Install Databases** screen under the **Database Selections** section, select the **HDExecute** database checkbox.
8. Under the **Connection Information** section, enter the **SQL Server Host Name** (from worksheet line **DB.1**), and the **SQL Server Instance** (from worksheet line **DB.2**.).
9. At the **Jobs/Databases Folder Path** screen, enter the location for the **HDExecute** database files (from worksheet line **DB.3**). Click **Next >** to continue.
10. At the **Components** screen, verify that **Timesheet Collection Data** is enabled and selected. Click **Next >** to continue.
11. Click **Install**. Setup will install the **HDExecute** database, and run scripts to create stored procedures and initialize tables.
12. When the installation has completed successfully, click **Finish.** Then **Exit** to leave the setup program.

Installing the Mobile Timesheets Module

Installing the Timesheet Synch Handler

The **Timesheet Synch Handler** is required for the **Mobile Timesheets** module. The **Timesheet Synch Handler** should not be installed on any Estimate Server System. It can be installed on a dedicated Web server or on a Web server that contains other Estimate Web applications.

NOTE:	IIS must be installed/present on the client machines first for Estimate to allow you to install the Timesheet Synch Handler. To install IIS, go to your Windows Start Menu search bar, search for **Turn Windows Features On or Off**. Scroll down to the section **Internet Information Services**. Select the **+** sign to the left of the IIS section. Then select all items within the dropdown. Windows will then install IIS.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client or server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. At the **Components** screen under **Timesheet Collector Components**, select the **Timesheet Synch Handler** checkbox, and click **Next >** to continue.
9. At the **Select Destination Location** screen, define the installation folder where the **Timesheet Synch Handler** application will be installed. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder.
10. At the **Ready to Install** dialog, click **Install** to continue.
11. At the **Timesheet Sync Handler / IIS Preparation** screen, configure the Web Site, Protocol, Port, and Application settings.
12. Select **Next >** to continue with the install.
13. At the **Start Web Site?** Dialog, you can choose to either:

    o Confirm the configuration of the Default Web Site by overriding the recommendation and starting the site now by selecting **Yes** or

    o Launch the Internet Information Services Manager

14. Either answer will complete the Timesheet Synch Handler installer and Launch the IIS Management Console.
15. View **Advanced Settings** for the **HDTime** application. Set the **Application Pool** according to your planning worksheet line W.4.
16. Open the **Authentication** feature for the HDTime application. Verify that **Anonymous Authentication** is disabled and **Windows Authentication** is enabled.

17. In the menu on the right, under **Actions** click **Explore**. This opens the C:\inetpub\wwwroot\Hard Dollar\TimesheetSyncHandler folder.
18. Edit the web.config file. Near the bottom is a section that points to your HDExecute database:
19. <appSettings>
20. <add key="HDExecuteConnectionString" value="SERVER=(local)\HDBid;User ID=bidbuilduser; Password=bidbuilduser;DATABASE=HDExecute"/>
21. <add key="DeviceDataQueryTimeout" value="300"/>
22. <add key="TimesheetServiceHost" value="localhost"/>
23. <add key="TimesheetServicePort" value="8020"/>
24. </appSettings>
25. Change the HDExecuteConnectionString values to point to your SQL Server instance using your database login, as specified in DB.1, DB.2 and DB.4 in the table above.
26. Close the IIS Management Console.
27. Launch **Internet Explorer**. Enter http://<webserver name>/hdtime in the **Address** bar, and click **Go**. Verify that the HDTime landing page is displayed.

NOTE:	IIS performs Just-in-time (JIT) compiling of Web applications whenever they are initially launched, when IIS is restarted, or when IIS detects changes in the application path that trigger a re-compile. The first user that accesses the site when re-compiling will experience a delay.

NOTE:	Remote users can access the **http://<webserver name>/hdtime** page to download the Timesheet Collector installer. Instruct these users to enter **<webserver name>/hdtime** in the Server field (without the http://), when they synchronize with the Timesheet Warehouse.

Installing the Timesheet Collector Client (PC Running Microsoft Windows)

The Estimate **Timesheet Collector Client** is installed when the primary purpose of the user is to download master data from the main Estimate Server, create timesheets, and synchronize the timesheets up to the Timesheet Warehouse. A **Timesheet Collector Client** installation includes the installation of **SQL Server 2014 Express Edition**.

The Estimate **Timesheet Collector Client** application can be installed by accessing the Internet and downloading the Estimate software then selecting the **Timesheet Collector Client** installation files.

Prior to installing the Estimate Timesheet Collector, you must install the following applications to allow for synchronization with the main Estimate system

- Estimate Server
- Estimate License Server
- Timesheet Integration Server
- Timesheet Synchronization Server

Installing the Timesheet Collector Client from the Estimate Installation

At each client workstation where the Timesheet Collector Client will be installed:

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client or server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. At the **Components** screen under **User Workstation Components**, select the **Estimate Client** checkbox.
9. Scroll down to the **Timesheet Collector Components** and select the **Timesheet Collector** check box.
10. Click **Next >** to continue.
11. At the **Select Destination Location** screen, define the installation folder where the **Timesheet Collector Client** application will be installed. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder.
12. At the **Ready to Install** screen, click **Install** to continue.
13. Click **Next >** to continue.
14. At the **Select Additional Task** screen, click **Next >** to have the setup program automatically create a desktop and quick launch icon for the **Timesheet Collector Client**. If you do not want the setup program to install these shortcuts, uncheck the appropriate checkbox and click **Next >** to continue.
15. At the **Installation Summary** screen, click **Next >** to continue.
16. Click **Finish** to complete the installation and exit the setup program.

Installing the Data Warehouse

The Data Warehouse allows you to combine data from multiple, individual job databases into a single database for reporting purposes. You select which jobs to include and whether you want to update the Data Warehouse automatically when any of the selected jobs are saved, or manually at your discretion. With the data consolidated into the Data Warehouse, you can then use Crystal Reports, Microsoft Access, or any other SQL-compatible reporting tool to create user-defined reports that span across jobs.

The Data Warehouse requires two additional components to an existing Estimate network environment:

- **Database:** On the database server, an additional database named **HDWarehouse** is created. This database can become very large, and is a heavy consumer of system memory and disk I/O. For optimal performance, the HDWarehouse database should reside on a SQL Server computer separate from the SQL Server computer where Estimate jobs and the HDExecute database are stored.

- **Job Consolidation Server**: On an application server, running the Job Consolidation Server installer sets up the Job Consolidation Server.

- **Job Consolidation**: Runs as a service, connects as a client to the **InEight Estimate Server**, just as Estimate users do when they run the main application. You can use the Data Warehouse feature within the Estimate client application to select which jobs should be consolidated into the Data Warehouse. This can be located by navigating to **File** > **Jobs** > **Data Warehouse**.

For optimal performance, the Job Consolidation Server should be installed on a dedicated server. Optionally, it can be installed on the same application server where other Estimate services run (e.g. the License Server, the Timesheet Integration Server, or the InEight Estimate Server.)

Preparing for Installation of the Data Warehouse

Prerequisite Environment

The Data Warehouse database should be installed after the main Estimate client/server application has been installed. The installation and setup instructions that follow assume a functioning environment that includes:

- An installation of the **Estimate Server** (running the InEight Estimate Server service)
- An **Estimate Database Server** running full SQL Server 2005 – SQL Server 2017.
- An installation of the **License Server** (running InEight Estimate License Server service)

A full SQL Server instance on a dedicated database server is required for the Data Warehouse.

Backup Considerations

The Estimate client/server application has user initiated System Backup and Restore features. These features are not appropriate for Estimate Enterprise implementations, where job and library databases reside on a separate SQL Server, and additional databases exist for modules such as Mobile Timesheets and the Data Warehouse. After you install the Data Warehouse, you will need to rely on external Backup/Restore software to back up Estimate database files.

Security Considerations

Overview of Authentication in Estimate

Estimate installations may span across multiple servers which must be able to communicate with one other. For example:

- Services and Web applications require read & write access to databases.
- Services that attach & detach database files require the SQL Server sysadmin role.
- Services that start & stop SQL Server require the SQL Server sysadmin role.
- Services and Web applications require read access to folders where application files reside.

Every service and Web application is assigned an "identity" under which it runs.

For a Service: the identity is defined on the **Log On** tab in the service's **Properties** dialog.

For a Web Application: the identity is defined by assigning the application to an application pool, and then defining the application pool's identity in the pool's Advanced Settings.

By default, services use identities that only have access to the local machine, such as the local System account. Local accounts cannot access resources on other computers. Since Estimate components must access resources (e.g., folders, files or service commands) on other computers, the default identities for all Estimate services must be changed.

Recommended: Create a single network account for Estimate in Active Directory, and use it for all Estimate services. Give the account "Log on as a service" rights. On the Estimate SQL Server, add this account as a SQL Login and grant it the sysadmin role.

Recommended: For Estimate Web applications, use the ASP.NET v4.0 application pool or create a new one just like it, and let that application pool use its own ApplicationPoolIdentity. Define credentials for accessing SQL Server in the application's web.config file.

Data Warehouse Planning Worksheet

Complete the following planning worksheet prior to installing the Data Warehouse.

Job Consolidation Settings

RW. 1	What is the name of the Estimate application server where the Job Consolidation service will be installed?	
RW. 2	What is the name of the computer where the InEight Estimate Server service runs?	
RW. 3	What is the name of the database server computer where HDWarehouse will be stored? This database can become very large, and is a heavy consumer of system memory and disk I/O. For optimal performance, the HDWarehouse database should reside on a SQL Server computer separate from the SQL Server computer where Estimate jobs and the HDExecute database are stored.	
RW. 4	What is the SQL Server instance name?	

RW. 5	Do you want to allow the Job Consolidation service to attach the HDWarehouse database if it becomes detached? (This requires sharing the data folder on the SQL Server, and giving access to the Job Consolidation login identity. It also requires granting the sysadmin role, in SQL Server, to this login identity.)	
RW. 5.1	If yes, share the data folder in advance, and document the share name. Permit the Estimate network login Full Control.	
RW. 5.2	If no, be aware that the Job Consolidation service will fail to start whenever HDWarehouse is not attached. An error will appear in the JobConsolidationServer.log file.	
RW. 6	Where will your Data Warehouse data be stored? Create a folder to contain database data and log files. You will most likely want to select a different location than the default application folder, because Estimate applications are not likely to be installed on the database server.	
RW. 6.1	What is the path to this data folder, from the database server's perspective? For example, if the files on the SQL Server are at C:\HD Data, then from the SQL Server's perspective, the path is exactly that: C:\HD Data.	
RW. 6.2	What is the path to this data folder, from the application server's perspective? For example, if the files on the SQL Server are at C:\Estimate Data, and that folder is shared as EstimateData, then from the application server's perspective the file path is \\<dbserver>\estimatedata.	
RW. 7	How many jobs should the Job Consolidation server be allowed to update in the Data Warehouse, at one time? By default, Job Consolidation will update 2 jobs at once. Other jobs wait in queue. Larger jobs require more memory, so this setting can be adjusted according to the typical size of your Estimate jobs, and according to how much memory is available on your Job Consolidation server. The default is 2 (minimum 1, maximum 10).	

Installing the Job Consolidation Server

The Job Consolidation Server is required for the Estimate Benchmarking feature and the Data Warehouse database. The Job Consolidation Server can be installed on a dedicated server or on a server that contains other Estimate applications.

When Job Consolidation is used to update the Data Warehouse, installing Job Consolidation on its own server computer is strongly recommended.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.

6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client/server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. At the **Components** screen under **Enterprise Server Components**, select the **Job Consolidation Server** checkbox, and click **Next >** to continue.
9. If you are installing the **Job Consolidation Server** on a server where no other Estimate applications are installed, at the **Select Destination Location** screen, define the installation folder for the **Job Consolidation Server**. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder. Click **Next >** to continue.
10. Click **Install** to start the installation.

> **NOTE:** If you are installing the Job Consolidation Server on a dedicated server, the Estimate Framework will also be installed.

11. On the **Configuration Tool** dialog, select the **Network** tab if it is not already selected.
12. In the **Server IP Address or DNS Name** field, enter the name of the computer where the InEight Estimate Server service runs (from worksheet line RW.2).
13. Select the **Job Consolidation** tab.
14. Select the **Enable Data Warehouse** checkbox.
15. In the **Maximum Concurrent Jobs** field, choose the number of jobs that can be updated concurrently in the Data Warehouse (from worksheet line RW.7).
16. If applicable, check the box to **Use Separate Database Server**.
17. If applicable, in the **Server Host Name** field, enter the name of the database server computer where the HDWarehouse database will be stored (from worksheet line RW.3).
18. If applicable, in the Instance name field, enter the SQL Server instance name (from worksheet line RW.4).
19. If preferable, in the **Database Security** data block, if you want the **Job Consolidation Server** service to connect to the database using its runtime identity (see worksheet line RW.5.1), select **Use Window Authentication**, or
20. If preferable, in the **Database Security** data block, if you want the **Job Consolidation Server** service to connect to the database using **SQL Server Authentication**, uncheck **Use Window Authentication** and enter the database **User Name** and database **User Password** (from worksheet line RW.5.2).
21. In the **Data Warehouse Paths** data block, enter the **Server Data File Path** (from Database Server perspective) from worksheet line RW.6.1.
22. In the **Data Warehouse Paths** data block, enter the **Local Data File Path** (from Job Consolidation Server perspective) from worksheet line RW.6.2.
23. Click **OK** to continue.
24. At the **Installation Summary** screen, click **Next >** to continue.
25. Click **Finish** to complete the installation and exit the setup program.

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Installing the Estimate OnCenter Integration Module

NOTE:	If you are installing the integration on a server, the InEight Estimate Server service will restart at the end of the installation process.

Complete the following steps to install the **Estimate OnCenter Integration** module.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. If other Estimate client/server applications have already been installed on the server, select **Install** on the **Upgrade or Install** dialog and click **Next >** to continue.
8. On the **Components** screen under **Third Party Integration Components,** select the **OnCenter** checkbox and click **Next >**.
9. At the **Select Destination Location** screen, define the installation folder for the **OnCenter** integration. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder. Click **Next >** to continue. Click **Install** to start the installation.
10. On the **Ready to Install** dialog, click **INSTALL** to continue.
11. At the **Installation Summary** screen, click **NEXT >** to continue.
12. Click **FINISH** to complete the installation and **EXIT** the setup program.

Installing the Estimate InfoMine Integration Module

Complete the following steps to install the **Estimate InfoMine Integration** module.

1. Start Windows as you normally would, then exit out of any programs that are currently running.
2. Launch the **Estimate** installer downloaded from the InEight website:
3. At the **User Account Control** screen, click **Yes** to allow the InEight Estimate application to make changes to your computer.
4. On the **Installation Package** screen, click the **Install** button to continue.
5. Click **Install Estimate** to continue.
6. At the **License Agreement** screen, select **"I Accept the Agreement".** Then click **Continue** to continue.
7. On the **Components** screen under **Third Party Integration Components,** select the **InfoMine** checkbox and click **Next >**.
8. At the **Select Destination Location** screen, define the installation folder for the **InfoMine** integration. To accept the default installation folder, you do not need to do anything. To define a different installation folder, click on the **Browse** button and navigate to the desired folder. Click **Next >** to continue. Click **Install** to start the installation.
9. On the **Ready to Install** dialog, click **Install** to continue.
10. At the **Installation Summary** screen, click **NEXT >** to continue.
11. Click **FINISH** to complete the installation and **EXIT** the setup program.