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Deltek Cobra® 8.7

Installation Guide

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While Deltek has attempted to verify that the information in this document is accurate and complete, some typographical or technical errors may exist. The recipient of this document is solely responsible for all decisions relating to or use of the information provided herein.

The information contained in this publication is effective as of the publication date below and is subject to change without notice.

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Contents

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Overview

Welcome to Cobra, Deltek's Earned Value Management (EVM) solution. This installation guide will help you successfully install Cobra on your system and make it work efficiently according to your organization's business structure.

Adding Custom Notes to This Guide

If you would like to add custom notes to this guide that are specific to your company, Adobe® Reader® X provides this ability. If you do not already use Adobe Reader X, you can download it here free from Adobe.

To add a custom note using Adobe Reader X:

1. On the Reader toolbar, click **Comment** at the far right.
2. In the **Annotations** pane that displays, click  **Sticky Note**. The cursor changes to match the button.
3. Position the cursor at the location in the guide where you want the note to appear, and click. A note icon is inserted at the location and a text box pops up.
4. Enter your information in the text box.
5. Continue adding notes as needed.
6. Save the document.

> **Note:** Deltek recommends that you save the document to a slightly different filename so as to keep the original from being overwritten.

When reading the document, cursor over a note icon to see the information. Double-click a note icon to edit the information.

Downloading Deltek Products using Deltek Software Manager

You can use Deltek Software Manager (DSM) to download complete Deltek products, hot fixes, cumulative updates, and sub-releases. You can access DSM through the Deltek Support Center or use Deltek Software Manager Lite to download Deltek products.

Accessing DSM from within the Deltek Support Center

To access DSM from within the Deltek Support Center using Microsoft Edge:

1. In your Edge browser, go to https://deltek.custhelp.com.
2. Enter your Deltek Support Center **Username** and **Password**, and click **Login.**
3. When the Deltek Support Center page displays, click **Product Downloads**.
4. On the Deltek Software Manager screen, click **Launch Deltek Software Manager**.
5. Click **Settings** at the top right of the dialog box to use the Settings dialog box to specify the folder where you want to download Deltek products, and click **OK**.

> **Note:** When you log on for the first time, DSM asks you to select a default folder where Deltek products are to be downloaded.
>
> You can change this folder anytime in the Settings dialog box.

6. In the left pane, expand the Deltek product that you want to download, if it is not already expanded.
7. In the table, select the checkbox that corresponds to the Deltek product that you want to download.

   The zip file download will contain the latest Cumulative Update (CU) for the Cobra installation, along with installation documentation, release notes, and other important guides. Additionally, it will include a database sizing spreadsheet to help you estimate your database size requirements.

   The right pane displays a message stating that the product has been added to the download queue.

   > **Note:** To view the items in the download queue, click **View Download Queue** at the bottom of the left pane.

8. Click **Download** at the bottom of the left pane to download the product to the folder that you selected.
9. Once the download is complete, select the option to open the folder.

Accessing DSM Lite

If you do not have Edge installed, you can use the DSM Light version.

To access Deltek Software Manager Lite:

1. In your Web browser, go to https://dsm.deltek.com/DeltekSoftwareManagerLite.
2. Enter your Deltek Support Center **Username** and **Password**, and click **Logon.**
3. When the Deltek Software Manager Lite page displays, select a product from the drop-down list.
4. Click the product type that you want to download.

   > **Note:** The download behavior and download folder may differ depending on the browser and browser settings that you are using.

DSM Documentation and Troubleshooting

- To view the online help for Deltek Software Manager, click here.
- To view a tutorial on how to use Deltek Software Manager, click here.
- To view more information on troubleshooting Deltek Software Manager, click here.
- Make sure to use the Edge browser or DSM Lite.

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Note: When you click a link, you will be asked to log into DSM if you are not already logged in.

Extracting the Downloaded File

To extract the downloaded file, search your download folder for **DeltekCobra*.zip**. Before starting the installation, you must extract the .zip file. Since the downloaded file contains documentation and the installation, it is useful to extract the .zip file to a server for easy access to all the downloaded files.

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Getting Started

You should answer the following questions before installing Cobra:

- Are you upgrading from an earlier version of Cobra?

  > **Attention:** For more information on how to upgrade your Cobra installation, see "Upgrade Cobra from Cobra 8.x to the Latest Version" under Upgrading Cobra in this guide.

- How many concurrent users do you expect to use Cobra? If you have fewer than four Cobra users, you can use the free Express Edition of the Microsoft SQL Server version that Cobra supports. Install Cobra on your server and/or workstations.
- Which installation model should you use?

  > **Attention:** For more information on how to determine which installation model is appropriate for your firm, see "Installation Models" in this guide.

- Do your client workstations and servers meet hardware and software requirements?

  > **Attention:** For more information on how hardware and software requirements, see "Appendix A: System Requirements" in this guide.

- Are you using Oracle or Microsoft SQL as your database platform? Cobra can run on either platform. See Establish a Database.

  > **Attention:** For more information, see "Establish a Database" in this guide.

- Does your technical staff need additional training on Microsoft Windows Server, Microsoft SQL Server, or Oracle?

Before you begin deployment, it is important to understand the following:

- Logical Tiers
- Installation/Deployment Models
- Hardware and Software Requirements

Logical Tiers

Cobra uses multitier (n-tier) architecture. Various parts of the Cobra application are distributed to logical tiers for performance and scalability. The logical tiers are as follows:

- **Client Tier**: This is Cobra's user interface layer. It presents input data to the application tier and displays the returned result in a format that you can understand. The client tier can be a workstation or a Citrix/Terminal Server.
- **Application Tier**: This tier performs Cobra's functional process logic. After a request is presented by the client tier, this tier processes that request (such as retrieving stored data or performing a specific function) and then returns the result to the client tier. The application tier can be a

workstation (when running in stand-alone or client/server mode) or the n-tier server (when running in n-tier mode).

- **Database Tier**: This tier consists of database servers where the Cobra data is stored and retrieved.

Note: If you use Open Plan and/or PM Compass, you must install these products in the same database. Additionally, wInsight and Acumen should also be installed in the same database.

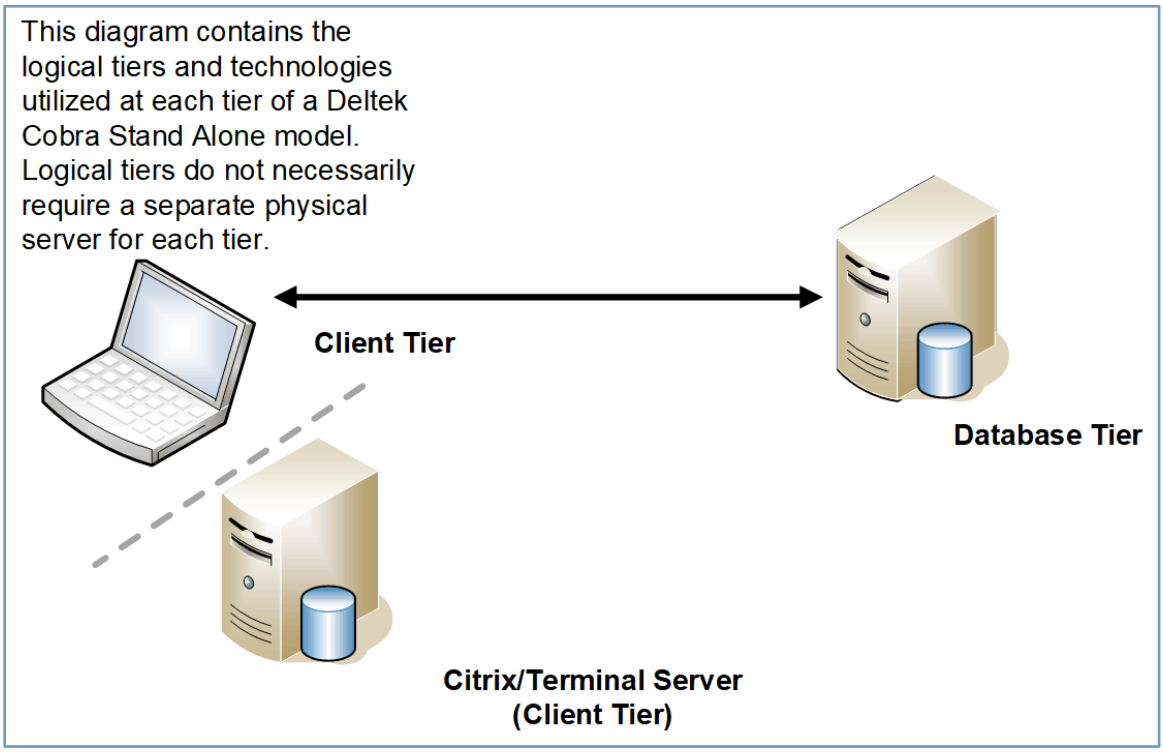
Installation Models

When you install Cobra, you are prompted to select an installation model. Each model is described in the following sections.

Stand-Alone

The stand-alone model is designed for a single-user setup. The client, application, and database tiers all reside on the same machine. There are instances where stand-alone setup is the appropriate installation method when installing Cobra on a Citrix environment.

Attention: For more information, see "Running Cobra from a Citrix/Terminal Server/Virtual Machine" in this guide.

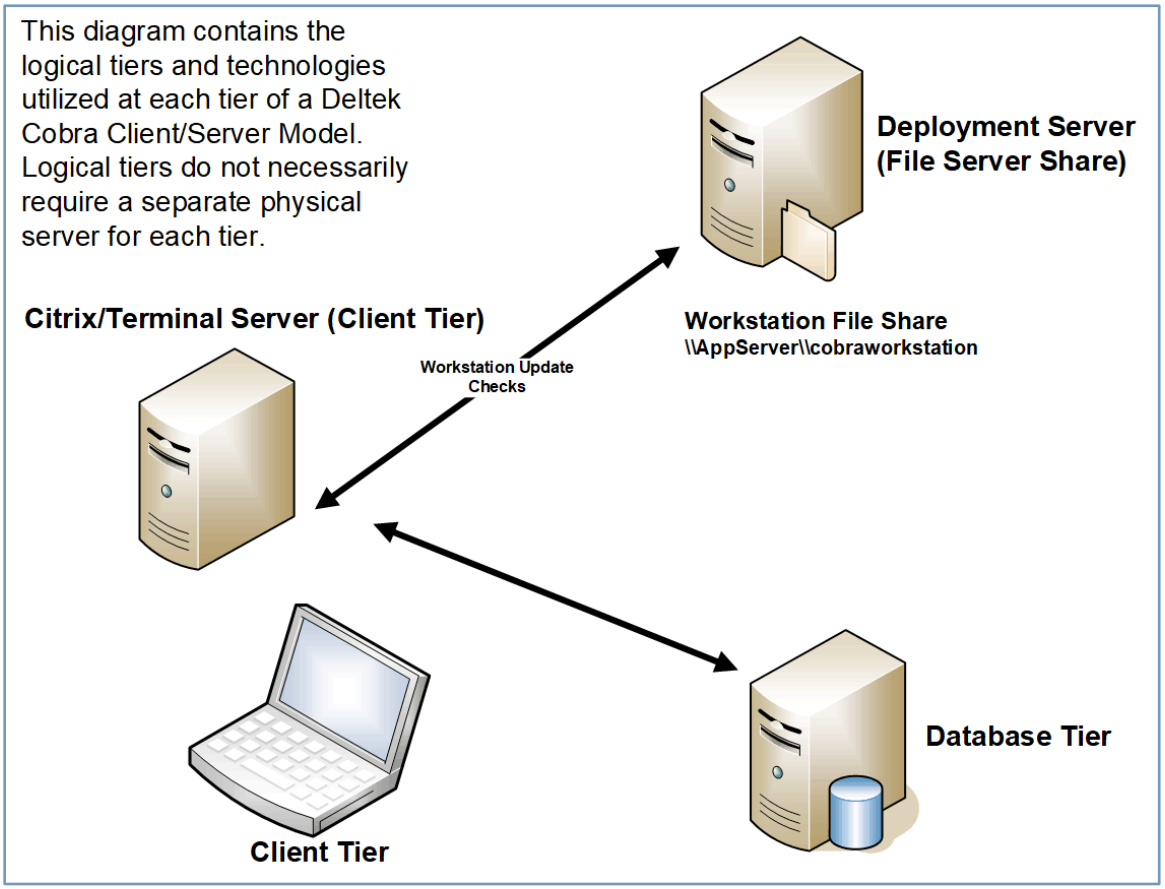


Stand-alone Deployment Diagram

Client/Server (Deployment Server)

In the client/server model, you install the client and application tiers on workstations that directly connect to a database server. However, when a client workstation that is connected to the database goes through a router or a firewall, this type of setup often yields inferior performance. This model is designed for a distributed system that does not have a dedicated server for the application tier, for installing the client and database in a "black box" or secure area, or for deploying Cobra on a Citrix environment.

> **Attention:** For more information, see "Running Cobra from a Citrix/Terminal Server/Virtual Machine" in this guide.



Client/Server (Deployment Server) Diagram

This diagram shows how a deployment server functions in a client/server tier model. The deployment server is appropriate if you have multiple users who use Cobra in client/server mode. The deployment server is the server where the first installation is performed. After you run the installation on this server, you can install Cobra on subsequent client workstations from this machine.

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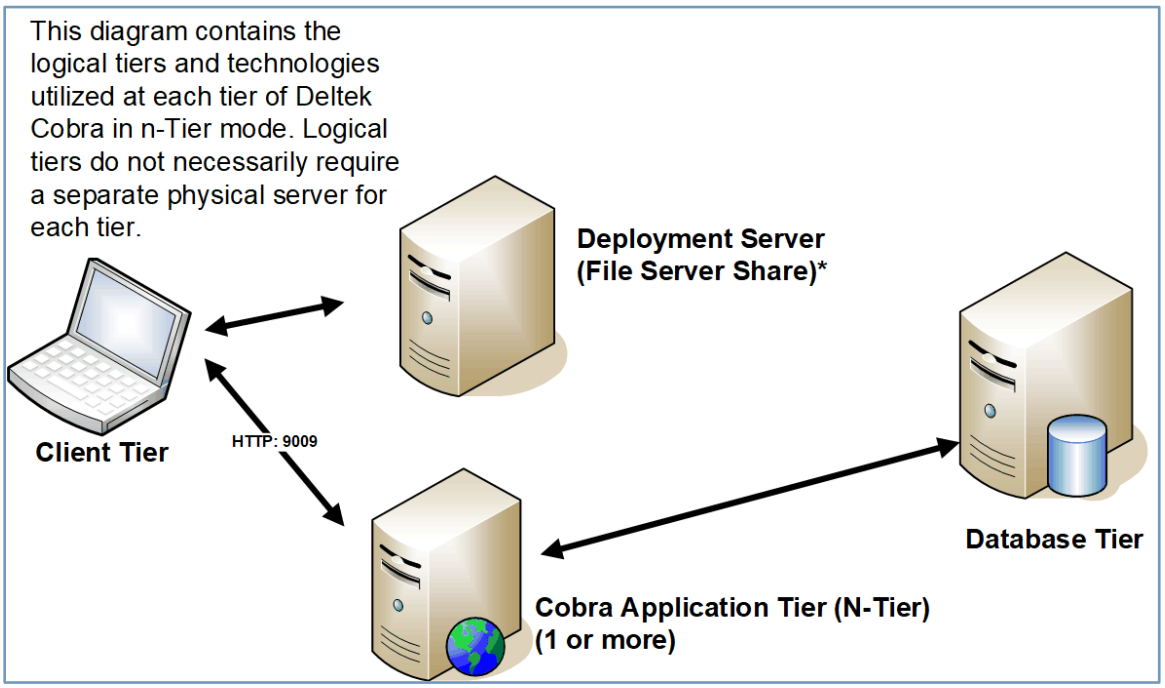
N-Tier Application Server

The n-tier application server model is designed for multi-user implementations. It provides quick access to Cobra via LAN or internal WAN. With this model, users can also remotely connect to Cobra across the Internet via VPN connection into the corporate network. Load balancing can also be implemented in this model for large-scale implementations.

> **Attention:** For more information, see "Load Balancing" under Installation Models in this guide.

You can also use this model when deploying Cobra in a Citrix environment.

> **Attention:** For more information, see "Benefits of Using N-Tier" under N-Tier Application Server and "Running Cobra from a Citrix/Terminal Server/Virtual Machine" in this guide.



N-Tier Application Server Model Diagram

Benefits of Using N-Tier

In an n-tier setup, the application server is the one that communicates with the database server. This makes the client a dedicated request input and result output device, which lightens its workload so that its processing power can be used for other system applications.

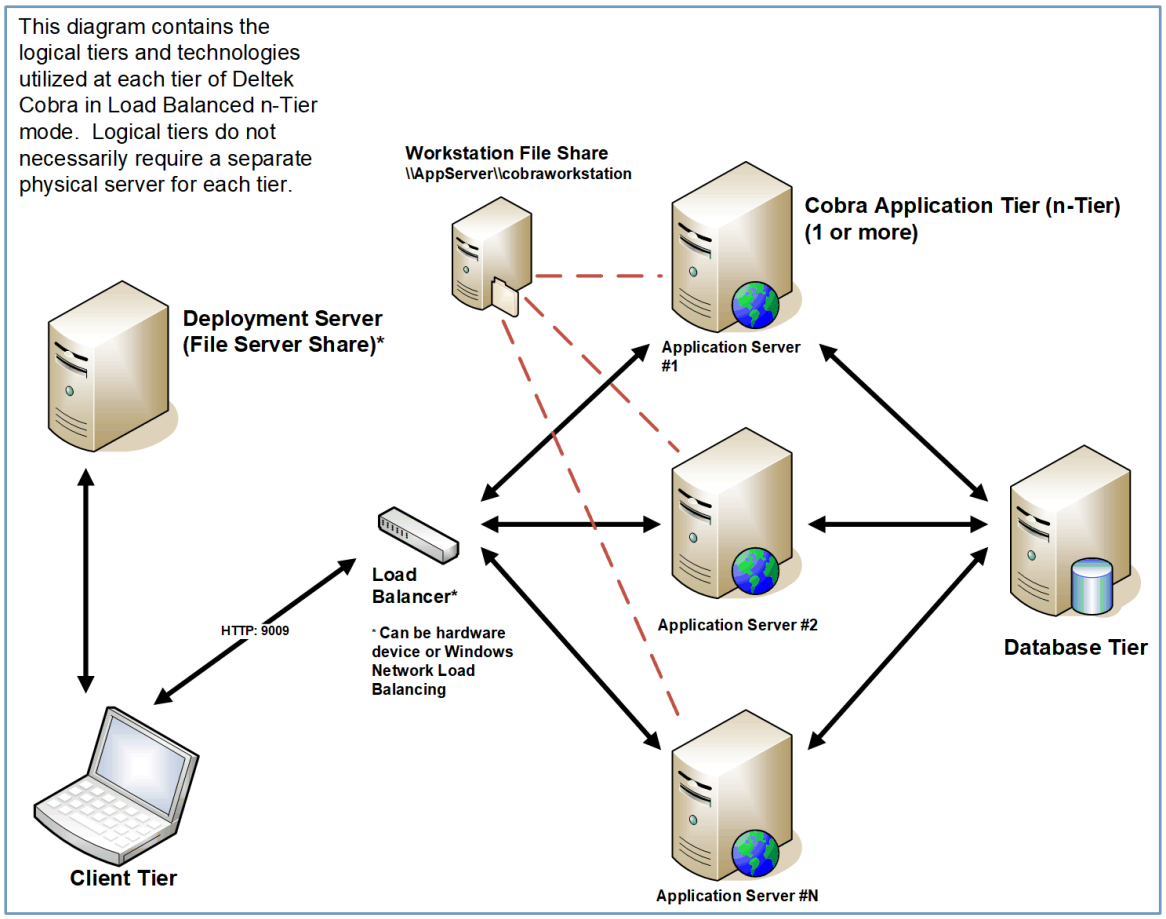
- **Enhanced performance and scalability**: An n-tier application distributes its tiers among three or more separate computers. In this setup, the client tier is installed on user workstations, the application tier resides on a more centralized computer, and the database tier is on a computer that manages data storage. Having each tier on a separate machine enhances performance and scalability because each tier runs on a dedicated machine.

- **Load balancing**: Load balancing distributes the processing workload between two or more application servers. This optimizes the use of your resources and minimizes the response time of requested tasks. See Load Balancing to learn how to configure Cobra for load balancing.
- **Automatic client updating**: When an update to Cobra is available, you update only the application server. When a client accesses an updated application server, the updates are automatically applied to the client.

Load Balancing

Before installing Cobra, configure load balancing according to your vendor's (for example, Microsoft Windows Server) recommendations. Make sure to set the affinity to Single or Sticky (terminology depends on the vendor). This ensures user sessions are maintained on the same server as long as a user remains logged on. The default port that needs to be load balanced is 9009.

> **Note:** To ensure that the client is already configured to point to the load balancer, you must configure the load balancer before performing the client installations.



Logical Tiers in Load Balanced n-Tier Mode

Unsupported Scenarios

The Cobra installation does not support installing any Cobra tiers on any of the following servers:

- Domain Controller
- Microsoft Exchange Server
- Proxy, Firewall, or ISA Server
- Microsoft SharePoint Portal Server
- Small Business/Essential Business Server

Using these services/servers can cause significant issues in the performance, reliability, and functionality of the Cobra application and other applications on your network.

Running Cobra from a Citrix/Terminal Server/Virtual Machine

You can install Cobra on a Citrix/Terminal Server under any of the three deployment models depending on how users access Cobra.

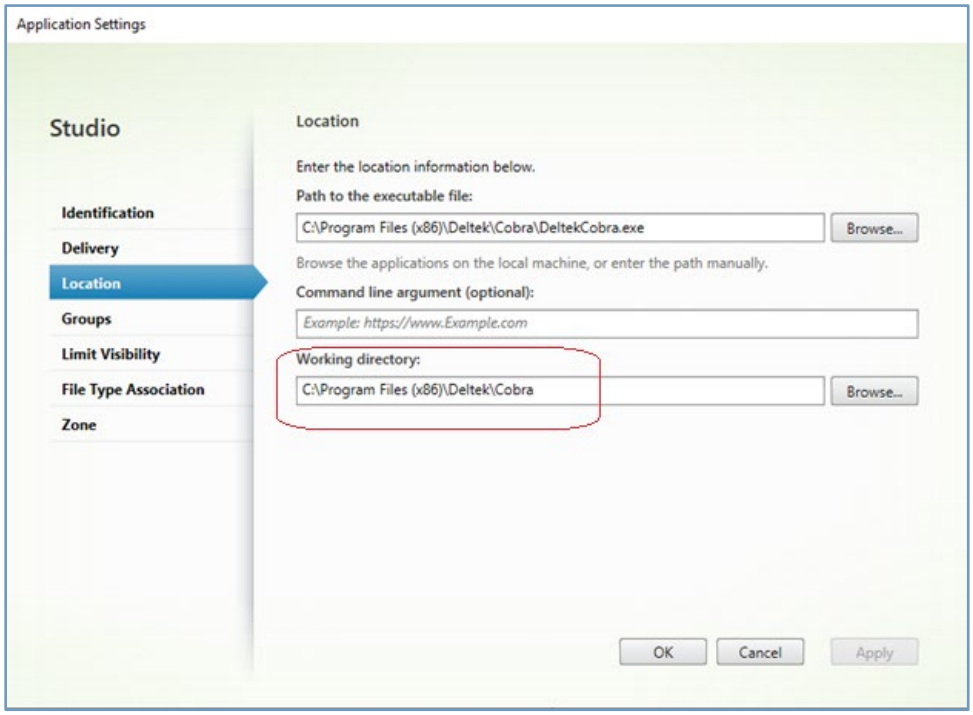
If users will run Cobra primarily via a Citrix/Terminal Server, it is more appropriate to install a stand-alone installation that will be distributed to all users. In this model, the client installation can be updated without much effort. In addition, the processing will occur on the client and Citrix will perform the load balancing.

If some users run Cobra via a Citrix/Terminal Server and others will access Cobra on their workstations, a client/server (deployment server) or n-tier application server installation is more appropriate to use because the client can be readily updated from the workstation share automatically when the server is updated. When using this type of setup, you treat the Citrix/Terminal Server as a client workstation, and install the Cobra client using the **DeltekCobraWorkstation.exe** file from the workstation share. After installing, update the client in the Citrix/Terminal Server immediately after the application server (deployment or n-tier application server) is updated. The load balancing decisions will be based on the number of users not using Citrix.

Citrix Settings

When using Citrix, ensure that the recommended settings are configured.

- Add the installation folder to the **Working directory** field when publishing the application.



Note: To find the installation path, right-click the Deltek Cobra application in the **Start** menu list of programs, and select **Properties**.

- When using multiple Citrix servers, it is recommended to redirect the User Profile variable (%USERPROFILE%) to a file server. This ensures that users have access to files stored in **My Documents\Deltek\Cobra**, regardless of which Citrix server they log into. Additionally, it reduces the size of the user profile in Citrix.

Cobra Architecture

Cobra's entire architecture is built on the Microsoft's® .NET Framework.

Microsoft® .NET Architecture

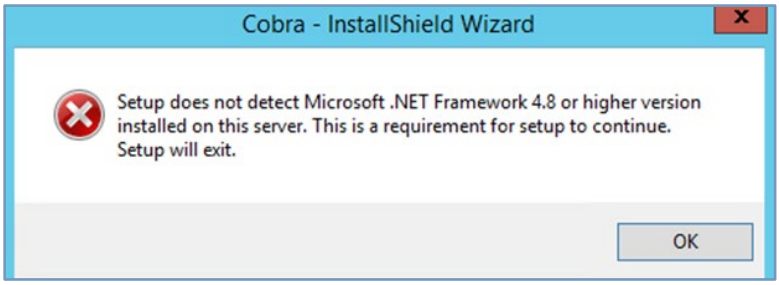
.NET Framework is Microsoft's name for a set of software technologies they have developed to connect information, people, systems, and devices.

Attention: For more information about Microsoft .NET Framework, visit https://www.microsoft.com/net/.

The .NET Framework allows Cobra to be an n-tier application and provide quick access for remote users without using Windows Terminal Server or Citrix®. This architecture allows some processing to occur on the client—such as the spreading of time-phased budgets—while another process—such as Recalculate—occurs on the application server at the same time. The .NET Framework provides both quick remote access to data like a Web application and the rich user interface of a Windows application.

.NET Framework-based applications are easier to build, deploy, and integrate with outside systems than those built using earlier technologies. The move to .NET Framework promises enhanced performance, reliability, and scalability. It also provides easier deployment and faster product development. Before proceeding with the installation, ensure that the .NET Framework is installed on the client and the application server.

Cobra requires Microsoft .NET Framework 4.8, at the minimum. During installation, if a lower version is detected, the following message displays:



Cobra automatically installs the Microsoft Visual C++ Redistributable Packages for Visual Studio 2015-2022 (x86).

Multiple Databases

The Cobra n-tier server installation is intended to connect to a single database. If you require two Cobra databases, you must install two Cobra servers (or clients). Stand-alone and client/server installations both support multiple databases in a single Cobra instance.

> **Attention:** For more information, see "KB Article 92142" in the Knowledge Center of the Deltek Support Center.

Cobra Integration and PM Compass

If you are integrating Cobra with PM Compass, review the *Deltek PM Compass Installation Guide*.

Cobra for PM Compass Integration File

If you are upgrading from one version of Cobra to another and are using PM Compass, ensure that you install the version of the Cobra Integration for PM Compass file that supports the Cobra and PM Compass versions you plan to use. The Cobra Integration for PM Compass file is usually released prior to or at the same time as the PM Compass Cumulative Update that you are using on your PM Compass server.

> **Attention:** For more information on the PM Compass Cumulative Updates and Integration Releases, download the related document from the Deltek Support Center site. If you have any questions, contact a Deltek Support Services analyst.

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Establish a Database

You can store your Cobra data in either a SQL Server database or an Oracle database. If you are not upgrading an existing installation or integrating with an existing installation of Open Plan, you must create a new blank database before performing the installation. The installation will provide database script options for applying the Cobra schema into the new database. During the installation, you will be prompted to provide the server and database name. If your database is not set to auto-expand, ensure that there is enough space to accommodate the objects and data that Cobra will introduce.

A Cobra database is Unicode and uses case-insensitive indexes. If you are upgrading an existing Open Plan database to PM Compass, ensure that the database is also Unicode enabled and using case-insensitive indexes.

If you use Open Plan and/or PM Compass, you must install these products in the same database. Additionally, wInsight and Acumen should also be installed in the same database.

Store Cobra Data in Microsoft SQL Server Database

If you intend to store your Cobra data in SQL Server database, take note of the following:

- If you have less than four Cobra users, you can use the free Express Edition of the Microsoft SQL Server version that is supported by Cobra.
- You must create a Microsoft SQL Server logon account for the Cobra database. It can either be an existing Windows account or a Microsoft SQL Server username.
- For the proper functioning of Cobra, specific permissions are essential. The account must be a member of the **db_owner** database role in the Login Properties and User Mapping dialog box for the Cobra database.
- You must create a database. Additionally, you will need the name of the database server and a user ID and password (with rights to create tables) for the database.
- During installation, the following components will be automatically installed:
  - Microsoft ODBC Driver 17.3 for SQL Server
  - Microsoft Command Line Utilities 15 for SQL Server

SQL Server Collation

Deltek strongly recommends that the SQL Server instances and the database use the same collation. This practice helps prevent collation conflict errors that may arise when querying across databases or when the temporary database is involved in queries.

Cobra has only been tested with the default English (EN) collation settings (SQL_Latin1_General_CP1_CI_AS).

Storing Cobra Data in an Oracle Database

If you intend to store your Cobra data in an Oracle database, take note of the following:

- To ensure proper installation, you need to install the 32-bit Administrator version of the Oracle client on the application tier. This applies to both the Stand-Alone and Client/Server installation modes.

- You must create a database. Additionally, you will need the Oracle server name/SID and a user ID and password (with rights to create tables) for the database/schema.
- The user ID must have the following grants:

```
GRANT CONNECT, RESOURCE TO <USER>;
GRANT CREATE TABLE TO <USER>;
GRANT CREATE VIEW TO <USER>;
GRANT CREATE TRIGGER TO <USER>;
GRANT CREATE ANY CONTEXT TO <USER>;
GRANT EXECUTE ON DBMS_RANDOM TO <USER>;
```

> **Note:** Although granting rights to the Resource Role includes the CREATE TABLE and CREATE TRIGGER grants, you must still explicitly run all of the grant statements above to ensure that all functions of Cobra (including database upgrade procedures) run correctly.
>
> The Cobra installation queries the session_privs and user_role_privs tables to validate that all of these grants have been applied.

- Ensure that the Oracle Server name/SID defined in **tnsnames.ora** remains consistent across all your Cobra application servers.

Oracle Character Set

The Cobra platform provides support for the WE8MSWIN1252 character set. When configuring your Oracle database using Oracle tools, ensure that you select the WE8MSWIN1252 character set during the creation of your initial Cobra database.

> **Note:** Cobra currently only supports the character set and collation mentioned in this guide. If you have any suggestions regarding character sets or collations, access Deltek Idea Portal to request the feature.

Required Database Permissions for Cobra

The following tables summarize the minimum required database roles and permissions for installing, upgrading, and operating Cobra on SQL Server and Oracle databases.

> **Note:**
>
> - **Install/Upgrade**: Permissions required only during the initial installation or when upgrading Cobra. These privileges are typically broader to allow setup and configuration tasks.
> - **Runtime**: Permissions needed for regular, day-to-day operation of Cobra after installation or upgrade is complete.

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MS SQL Server

Application	Install/Upgrade Permissions	Runtime Permissions
Cobra	▪ CREATE TABLE, INDEX, PROCEDURE on DATABASE ▪ DROP TABLE, INDEX, PROCEDURE on DATABASE ▪ ALTER, SELECT, INSERT, UPDATE, DELETE on SCHEMA	▪ SELECT, INSERT, UPDATE, DELETE on SCHEMA ▪ EXECUTE on UpdateResults, UpdateProcessLogMsg
Cobra Data Tool	▪ ALTER on TPHASE	
Suggested Role	▪ db_owner	▪ db_datareader + db_datawriter

Oracle Server

Application	Install/Upgrade Permissions	Runtime Permissions
Cobra	▪ CREATE TABLE, INDEX, PROCEDURE, VIEW, TRIGGER, ANY CONTEXT, SESSION on DATABASE ▪ DROP TABLE, PROCEDURE ▪ ALTER, SELECT, INSERT, UPDATE, DELETE on SCHEMA ▪ EXECUTE on DBMS_RANDOM	▪ SELECT, INSERT, UPDATE, DELETE on SCHEMA ▪ EXECUTE on UpdateResults, UpdateProcessLogMsg
Cobra Data Tool	▪ ALTER on TPHASE	
Suggested Role	▪ CONNECT + RESOURCE	▪ Use the permissions listed above.

Required Database Permissions for EPM Security Administrator

The following tables summarize the minimum required database roles and permissions for operating EPM Security Administrator on SQL Server and Oracle databases.

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Note:

- **Install/Upgrade**: Permissions required only during the initial installation or when upgrading EPM Security Administrator. These privileges are typically broader to allow setup and configuration tasks.
- **Runtime**: Permissions needed for regular, day-to-day operation of EPM Security Administrator after installation or upgrade is complete.

MS SQL Server

Application	Install/Upgrade Permissions	Runtime Permissions
EPM Security Administrator	▪ N/A	▪ VIEW DEFINITION
Suggested Role	▪ N/A	▪ db_datareader + db_datawriter

Oracle Server

Application	Install/Upgrade Permissions	Runtime Permissions
EPM Security Administrator	▪ N/A	▪ SELECT, INSERT, UPDATE, DELETE on all tables
Suggested Role	▪ N/A	▪ CONNECT

Required Database Permissions for Integration

Cobra will only read data from a product that is being integrated from such as actual costs from an accounting system, or from scheduling tools like Primavera or Microsoft Project. This means a user connecting to the database only needs Read access right.

The following table summarizes the minimum required permissions for a database management system (DBMS) account when integrating Cobra with another product.

Product	MS SQL Server	Oracle
Primavera	▪ SELECT permission	▪ READ ANY TABLE Privilege for Oracle 12c or later ▪ SELECT OBJECT Privilege for prior versions
MS Project	▪ READ permission	▪ READ ANY TABLE Privilege
Actual Costs	▪ READ permission	▪ READ ANY TABLE Privilege

Product	MS SQL Server	Oracle
wInsight	▪ READ permission	▪ READ ANY TABLE Privilege

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Permissions Required for Installing Cobra

When setting up the Cobra n-tier installation, specific permissions and privileges are necessary for the individual responsible for installing it across the different tiers.

Tier	Permission Required
Application Tier	The Domain Service Account used by the individual performing the installation must be a member of the Local Administrator group on the server and the System Administrator group.
Database Tier	During the application tier installation, you will be prompted to enter credentials and connection information for the database. These credentials must have the appropriate rights.
Client Tier in N-Tier	In an n-tier installation, there are no specific file system rights necessary for users to install the standard client tier.
Client Tier in Client/Server or Stand-alone	Administrative rights are needed to install the client components of Cobra and the database drivers.
Citrix	Administrative rights are needed to create the installation in the Citrix environment. End users need no access rights to use Citrix.

Multi-User Installation and a Domain Service Account versus a Default Local Account

When considering muti-user installation, you have two options for service accounts: Domain Service Account and the Default Local Account.

Utilizing a Domain Service Account offers the benefit of accessing network shares and enables you to manage the account using group policies. During each installation, it is recommended to log in as the Domain Service Account. Failure to do so will result in the Cobra Web Service running under the user's ID.

If you intend to integrate with Microsoft Project, it is essential to employ a Domain Service Account. This account should have the necessary access privileges to the network share containing the Microsoft Project files and the required access rights to the Microsoft Project Server.

> **Attention:** For more information, see "Appendix B: Configuring Microsoft Project Server for Integration" in this guide.

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Should you opt for a local account, you will need to execute the installer on all servers using the same account. This ensures consistent access across all servers, with the matching username and password that supports pass-through authentication.

File Share Requirements

When dealing with Cobra installations that are not standalone, it is essential for Cobra to access files on a server. If you have multiple application servers, consider establishing a central UNC path—for instance, **\\<servername>\DeltekCobra**—and then create subfolders for each of the distinct files. While it is technically feasible to employ the same folder for all these settings, it is more advantageous to create separate folders for the following purposes:

- **Simplifying content management**: By organizing files into distinct folders, you streamline the management process.
- **Locating necessary files**: Having separate folders makes it easier to locate the specific files required for various aspects of Cobra.

A well-structured folder hierarchy contributes to efficient administration and accessibility of your Cobra content.

For each of these file folders, the Domain Service Account User must have read/write access. The table below outlines the End User Access rights and provides a link to detailed information about each folder's usage and location.

Folder	End User Access	Notes and Related Topics
Report Templates	Read Access	Configure the Cobra Report Templates Folder Location
Process Logs	Read Access	Configure the Cobra Report Templates Folder Location
Sample Data	Read Access	Cobra Sample Data Location
Error Logs	Read Access	**N-tier only**: <Service Account User>\Documents\Deltek\Logs C:\Deltek\Cobra\Logs **Attention:** For more information, see "KB Article 73499" in the Knowledge Center of the Deltek Support Center.
Import Folder	Read/Write Access	A commonly used location for storing spreadsheets and/or Microsoft Project (MPP) files to facilitate integration is recommended.

Folder	End User Access	Notes and Related Topics
Concurrency Folder	Read/Write Access	Cobra maintains a repository for temporary files generated by the Process server during each job. Once a job concludes successfully, Cobra automatically removes these temporary files. In the case of failed jobs, Cobra deletes any temporary files that have been in existence for over 1 day.

During the server installation, a folder is generated to hold the workstation installation. As part of the installation process, you will be prompted to decide whether you want the installer to automatically create a file share. If you select **Yes**, the file share will be named: **\\ServerName\CobraWorkstation**. Alternatively, if you choose **No**, you will need to manually create the UNC network file share for the designated folder.

Attention: For more information, see "Workstation Installation" under Multi-User Installation in this guide.

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Pre-Installation Checklists

Prior to starting the installation process, it is beneficial to familiarize yourself with the Pre-installation Checklist.

Within this section, you will find distinct checklists tailored for each of the following tiers:

- Client Tier for Stand-Alone and Client/Server
- File Server Tier for Client/Server and N-Tier
- Application Tier for N-Tier
- Client Tier for N-Tier

Client Tier for Stand-Alone and Client/Server

	Step	Description	Refer to this Section in this Guide
	1	Ensure that your client satisfies the requirements for the client tier.	System Requirements
	2	If you are using an Oracle database, install the 32-bit Oracle client on the client workstation. If you are using a SQL Server database, install the necessary database drivers.	System Requirements
	3	Install the supported version of Microsoft .NET Framework. Download from here: Microsoft .NET Framework.	System Requirements
	4	Download the Cobra installer from the Deltek Support Center.	Downloading Deltek Products using Deltek Software Manager
	5	Set up a database for Cobra data.	Establish a Database

File Server Tier for Client/Server and N-Tier

	Step	Description	Refer to this Section in this Guide
	1	Ensure that your system satisfies the requirements for the application tier.	System Requirements
	2	Verify that the file shares have been successfully created	File Share Requirements
	3	Verify that the necessary permissions have been configured for the installation.	Permissions Required for Installing Cobra

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Application Tier for N-Tier

	Step	Description	Refer to this Section in this Guide
	1	Ensure that your system satisfies the requirements for the application tier.	System Requirements
	2	If you are using an Oracle database, install the 32-bit Oracle client on the client workstation. If you are using a SQL Server database, install the necessary database drivers.	System Requirements
	3	Install the supported version of Microsoft .NET Framework. Download from here: Microsoft .NET Framework.	System Requirements
	4	Download the Cobra installer from the Deltek Support Center.	Downloading Deltek Products using Deltek Software Manager
	5	If your firewall is enabled, create an inbound rule that permits connections to the default port 9009 on your application server.	N-Tier Firewall
	6	Verify that a Domain Service Account has been configured with the appropriate permissions.	Multi-User Installation and a Domain Service Account versus a Default Local Account

Client Tier for N-Tier

	Step	Description	Refer to this Section in this Guide
	1	Ensure that your client satisfies the requirements for the application tier.	System Requirements
	2	Install the supported version of Microsoft .NET Framework. Download from here: Microsoft .NET Framework.	System Requirements

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New Installation Procedures

There are different installation steps for the following installation models:

- Stand-Alone Installation
- Multi-User Installation
- Workstation Installation

Stand-Alone Installation

The stand-alone model is designed for a single-user setup. In this configuration, the client, application, and database tiers all reside on the same machine. There are scenarios where the stand-alone setup is the suitable installation method, especially when deploying on a Citrix environment.

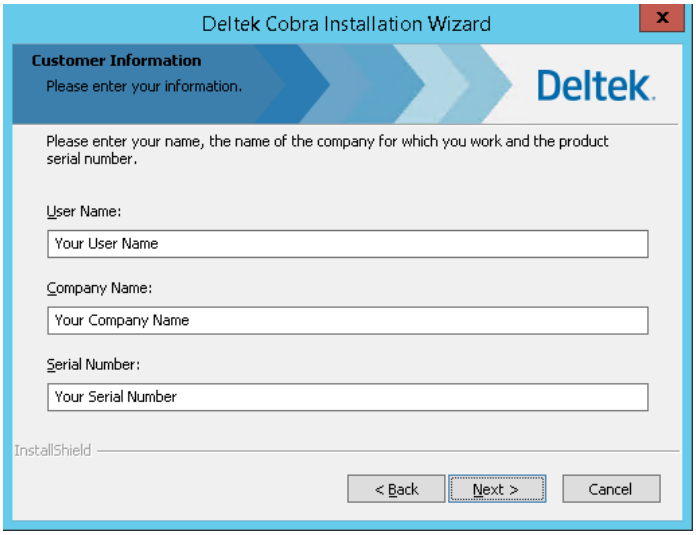
> **Attention:** For more information, see "Running Cobra from a Citrix/Terminal Server/Virtual Machine" in this guide.

Install Cobra in a Stand-Alone Mode

Follow this procedure to install Cobra in a stand-alone mode.

To install Cobra in a stand-alone mode:

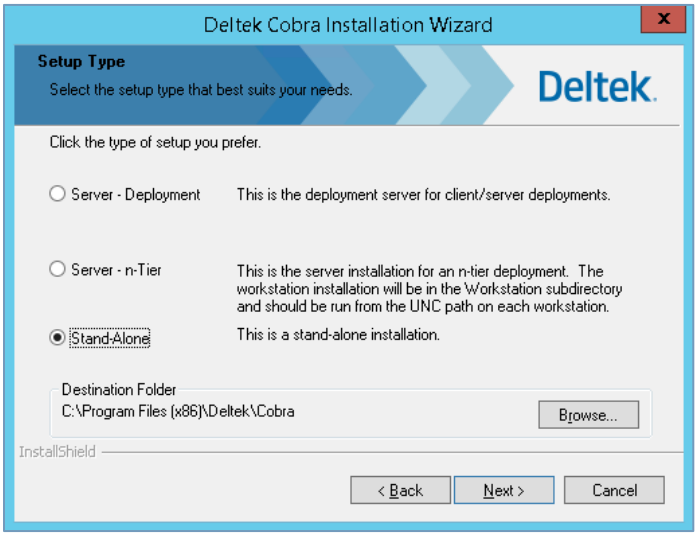
1. Log into the client to install Cobra.
2. Locate and double-click the **DeltekCobra87.exe** file to launch the Cobra Installation Wizard and click **Next** on the Welcome page.
3. On the Customer Information page, enter the User Name, Company Name, and Serial Number provided with the software in their respective fields and click **Next**.



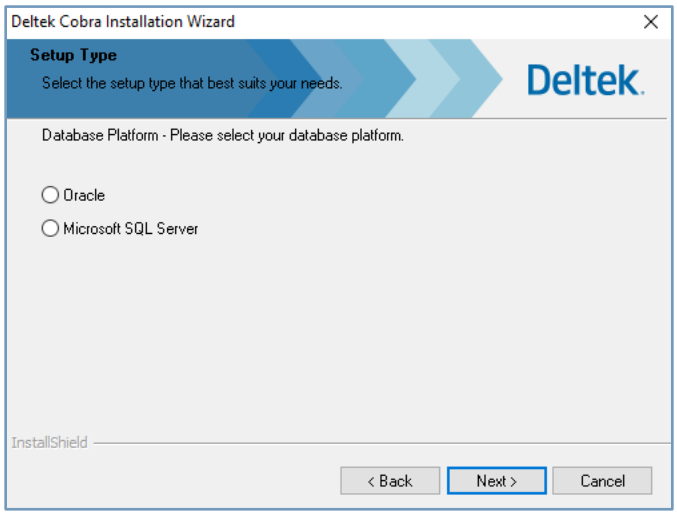
4. On the License Information page, enter the license key that was emailed to you when you downloaded the software and click **Next**.

5. On the Setup Type page, select the **Stand-Alone** option and click **Next**.

   To change the installation directory, click **Browse**.



6. On the Setup Type page, select your database type and click **Next**.

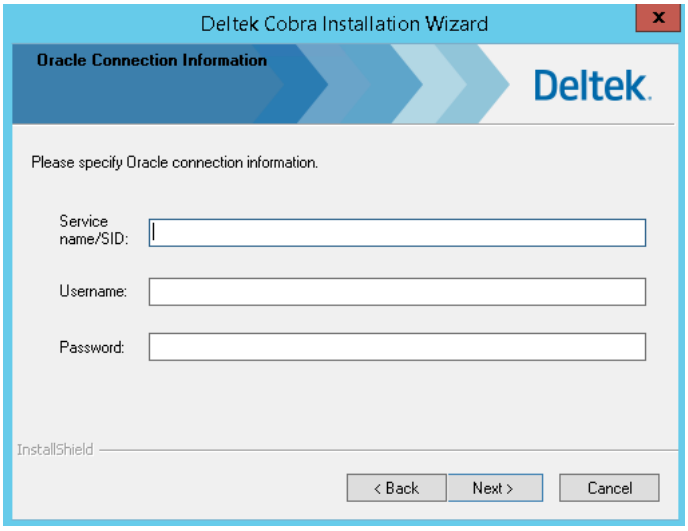


   The subsequent screen varies based on whether you select **Oracle** or **Microsoft SQL Server**. Refer to the relevant section below that corresponds to your selected database.

Oracle Database

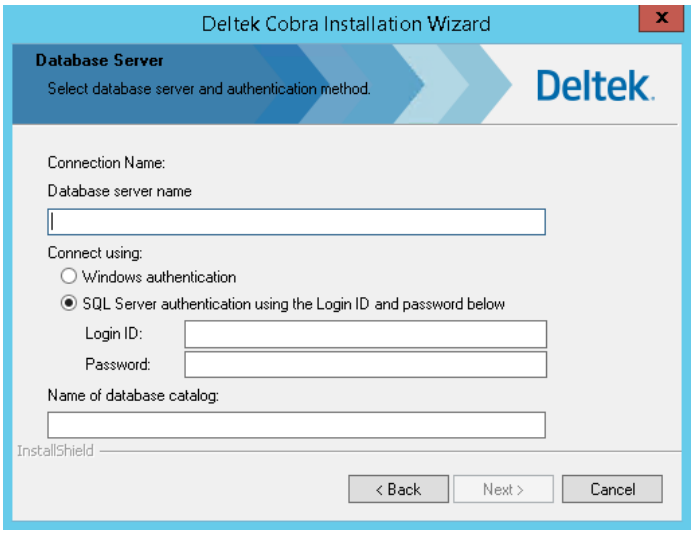
a. On the Oracle Connection Information page, enter the Service name/SID, Username, and Password in their respective fields and click **Next**.

> **Note:** If you are using an Oracle database with Oracle 12c R2 client and you encounter an error, see "KB Article #93397" in the Knowledge Center of the Deltek Support Center.



Microsoft SQL Server Database

a. On the Database Server (MSSQL) Setup Connection Information screen, enter the following information and click **Next**:



- **Database Server**: Use this field to enter the name of the database server and the instance.

b. Select **Windows authentication** or enter the appropriate values in the **Login ID** and **Password** fields:

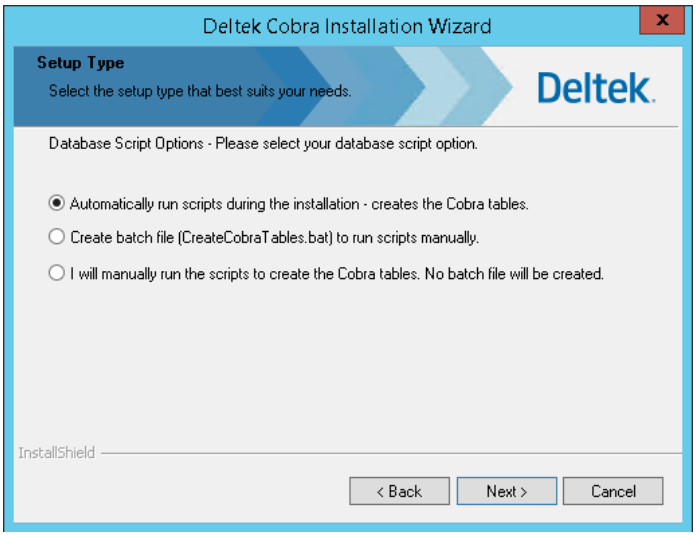
> **Note:** Windows Authentication in stand-alone mode uses the credentials from the Windows user ID of the workstation.

- **Login ID**: Use this field to enter a Microsoft SQL database server login that is mapped to the db_owner role in the database.

> **Note:** Following security best practices, it is recommended not to utilize the default SYSADMIN account (sa) for your SQL Server connection.

- **Password**: Use this field to enter the password associated with the SQL login ID.
- **Name of database catalog**: Use this field to enter the name of the new database you created to store your data.

7. On the Database Script Options page, select one of the following options and click **Next**:



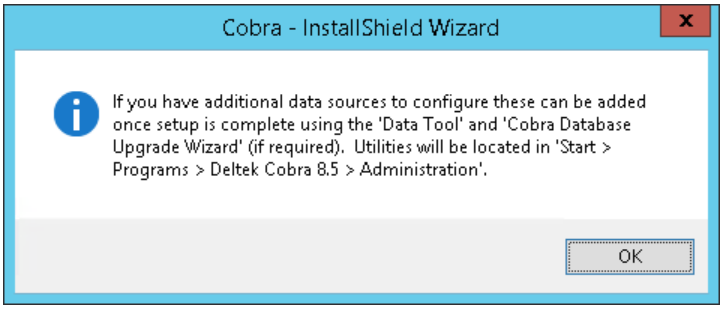
- **Automatically run scripts during the installation – creates the Cobra tables**: Select this option to automatically create the Cobra database tables during the installation process.
- **Create batch file (CreateCobraTables.bat) to run scripts manually**: Select this option to run a batch file to create the Cobra database tables. The batch file will contain the database connection information.

> **Note:** After installing Cobra, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.

- **I will manually run the upgrade scripts. No batch file will be created**: Select this option to manually create the Cobra database tables using the scripts.

> **Note:** After installing Cobra, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.

8. Click **OK** to dismiss the dialog box information so that you can create more than one database using the Data Tool.



9. On the Start Copying Files page, review the current settings information.

   Install workstation from indicates the workstation installation directory.

10. Click **Next** to start copying the files or **Back** to modify your settings.

    The Setup Status page displays the installation progress.

11. On the Complete page, click **Finish**.

> **Attention:** For more information on the remaining installation steps, see "Post Installation" in this guide.

Multi-User Installation

There are two multi-user setup types:

- **Server - Deployment**: This is the deployment server for the client/server model.
- **Server - n-Tier Application Server Deployment**: This is the deployment used for n-tier application setups.

Both of these setup types involve two installation steps:

- **Server Setup**: Execute this on your server. It creates a folder containing the workstation installation and saves the settings. As a result, the workstation installation will not prompt for database connection information.
- **Workstation Setup**: During the server setup, the workstation setup is copied to a UNC share. You will need to log in to each workstation that accesses the server and run the workstation setup. The installation steps remain the same for both client/server and n-tier installations.

Install Cobra in a Client/Server or n-Tier Application Server

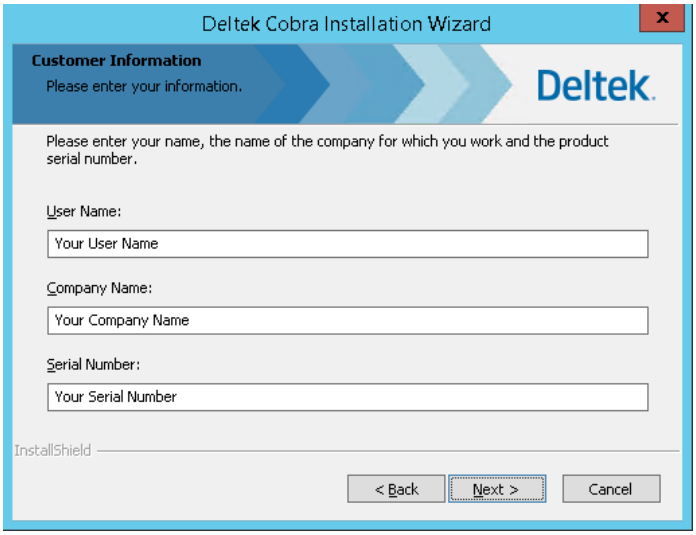
During the installation process, while different operations are being performed, the installation prompts remain consistent for both the client/server and n-tier application server setups.

To install Cobra in a client/server or n-tier application server:

1. Log into the server using a Domain Service Account or Local Account.

> **Attention:** For more information, see "Multi-User Installation and a Domain Service Account versus a Default Local Account" under Permissions Required for Installing Cobra in this guide.

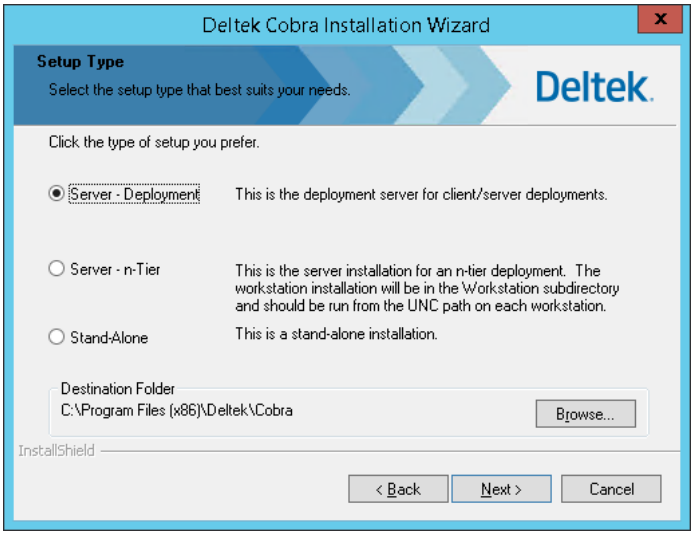
2. Locate and double-click the **DeltekCobra87.exe** file to launch the Cobra Installation Wizard and click **Next** on the Welcome page.
3. On the Customer Information page, enter the User Name, Company Name, and Serial Number provided with the software in their respective fields and click **Next**.



4. On the License Information page, enter the license key that was emailed to you when you downloaded the software and click **Next**.
5. On the Setup Type page, select your deployment model (either **Server - Deployment** or **Server - n-Tier**) and click **Next**.

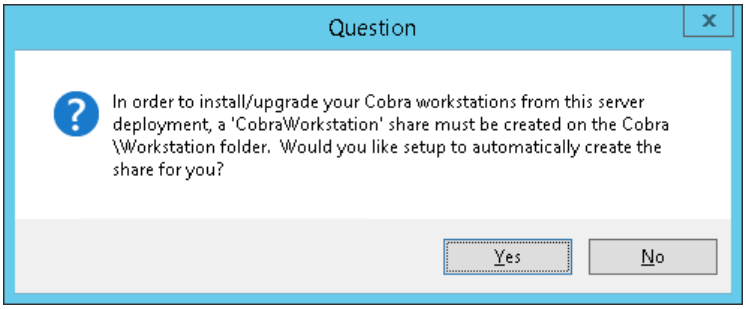
   To change the installation folder, click **Browse**.

> **Attention:** For more information, see "Installation Models" in this guide.



6. Click **Yes** to permit the setup to create the UNC share for you.

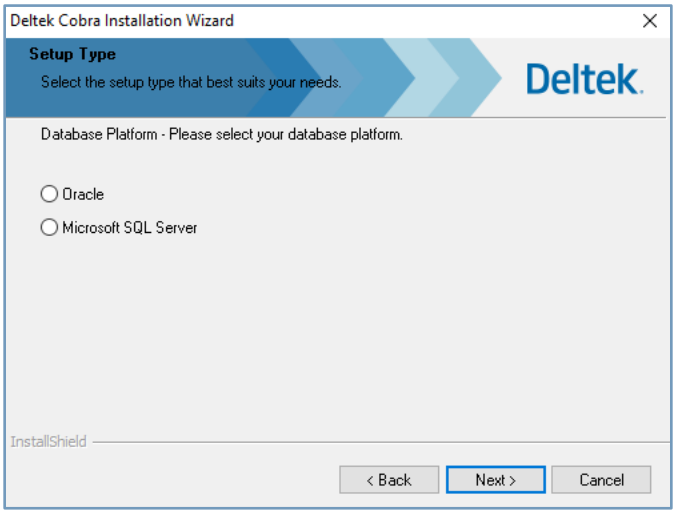
   Alternatively, click **No** if you prefer to create the UNC share manually later.



> **Note:** If you click **No**, you manually create the file share. For more information, see "Manually Create the Cobra Workstation Share" in this guide.

   The installation copies the workstation installation to a folder. Subsequently, you will log in to each workstation and execute the workstation setup.

7. On the Setup Type page, select your database type and click **Next**.

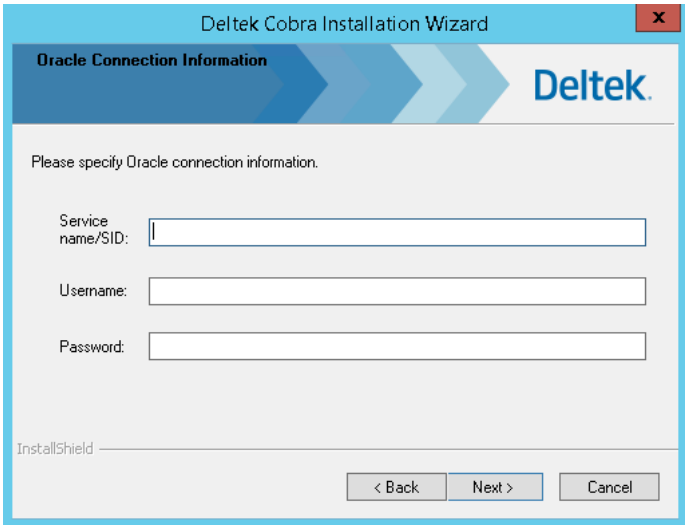


The subsequent screen varies based on whether you select **Oracle** or **Microsoft SQL Server**. Refer to the relevant section below that corresponds to your selected database.

Oracle Database

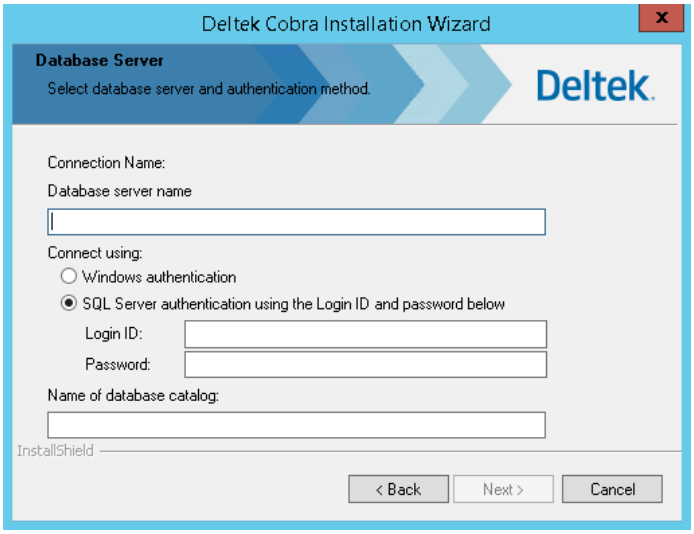
a. On the Oracle Connection Information page, enter the Service name/SID, Username, and Password in their respective fields and click **Next**.

> **Note:** If you are using an Oracle database with Oracle 12c R2 client and you encounter an error, see "KB Article #93397" in the Knowledge Center of the Deltek Support Center.



Microsoft SQL Server Database

a. On the Database Server (MSSQL) Setup Connection Information screen, enter the following information and click **Next**:



- **Database Server**: Use this field to enter the name of the database server and the instance.

b. Select **Windows authentication** or enter the appropriate values in the **Login ID** and **Password** fields:

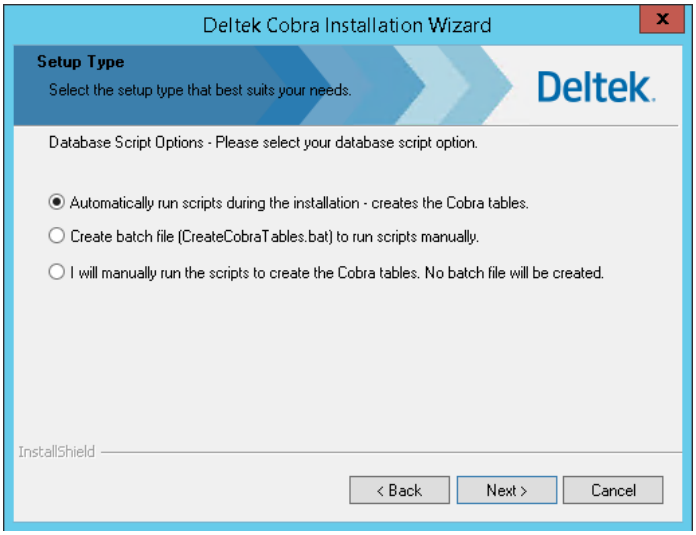
> **Note:** Windows Authentication in stand-alone mode uses the credentials from the Windows user ID of the workstation.

- **Login ID**: Use this field to enter a Microsoft SQL Database Server Login that is mapped to the db_owner role in the database.

> **Note:** Following security best practices, it is recommended not to utilize the default SYSADMIN account (sa) for your SQL Server connection.

- **Password**: Use this field to enter the password associated with the SQL Login ID.
- **Name of database catalog**: Use this field to enter the name of the new database you created to store your data.

8. On the Database Script Options page, select one of the following options and click **Next**:



- **Automatically run scripts during the installation – creates the Cobra tables**: Select this option to automatically create the Cobra database tables during the installation process.
- **Create batch file (CreateCobraTables.bat) to run scripts manually**: Select this option to run a batch file to create the Cobra database tables. The batch file will contain the database connection information.

> **Note:** After installing Cobra, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.

- **I will manually run the upgrade scripts. No batch file will be created**: Select this option to manually create the Cobra database tables using the scripts.

> **Note:** After installing Cobra, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.

9. On the Start Copying Files page, review the current settings information.

   Install workstation from indicates the workstation installation directory.

10. Click **Next** to start copying the files or **Back** to modify your settings.

    The Setup Status page displays the installation progress.

11. On the Complete page, click **Finish**.

Manually Create the Cobra Workstation Share

If you opted not to allow the installation to automatically create the file share during the installation process, you must manually create the file share.

To manually create a file share for the workstation installation:

1. Log into the file server where the server install was performed.
2. Using File Explorer, navigate to the installation folder.

For instance, C:\Program Files (x86)\Deltek\Cobra.

3. Locate the Workstation subfolder, right-click it, and select **Properties**.
4. Navigate to the Sharing folder and click **Share**.
5. Add the users or groups who will be performing the workstation installation.
6. If you opt for the Client/Server installation, proceed directly to installing the workstation with administration tools.

> **Attention:** For more information, see "Workstation with Administration Tools Installation" under Multi-User Installation in this guide.

N-Tier Load Balancing Configuration

If you have two or more application servers, you can set up the n-tier application server for load balancing. This will distribute the processing workload among your application servers, optimizing the use of your resources and minimizing the response time of requested tasks.

When you perform the same server installation on all application servers, the configuration files will only point to the server you installed it on. You will have to manually change these configuration files to point to the load balancer.

Configure N-Tier Load Balancing

Follow this procedure to configure n-tier load balancing.

To configure load balancing:

1. Set up a Virtual IP (VIP) address alongside the load balancing technology being deployed.
2. On one of the application servers, locate the **IdeaBlade.ibconfig** file in the **C:\Program Files (86x)\Deltek\Cobra\Workstation** folder.
3. Use a file editor to open the file and search for the tag **<remoteBaseURL>**.

   Determine the value of the tag. For example, if you named your server **CobraAppServer**, the tag would look like this:

   ```
   <remoteBaseURL>http://CobraAppServer1</remoteBaseURL>
   ```

4. Take note of the original server name in this file.
5. Change the value within the tags to the VIP address used when configuring load balancing.

   For example:

   ```
   <remoteBaseURL>http://CobraServer.com</remoteBaseURL>
   ```

6. Save the file.
7. Locate the **Cobra.WinUI.exe.config** file in the **C:\Program Files (86x)\Deltek\Cobra\Workstation** folder.

   Use a file editor to open the file, search for your server name, and replace it with the VIP address.

   For example:

If you name your server **CobraAppServer1**, make the following changes:

Before

```
<client>
      <endpoint name="PersistenceService"
address="http://CobraAppServer1:9009/PersistenceService"
binding="customBinding" bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceService">
        <!--<identity><servicePrincipalName value="Local
Network"></servicePrincipalName></identity>-->
      </endpoint>
      <!-- One endpoint per data source extension -->
      <endpoint name="PersistenceServer"
address="http://CobraAppServer1:9009/PersistenceServer" binding="customBinding"
bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceServer">
        <!--<identity><servicePrincipalName value="Local
Network"></servicePrincipalName></identity>-->
      </endpoint>
    </client>
```

After

```
<client>
      <endpoint name="PersistenceService"
address="http://CobraServer.com:9009/PersistenceService"
binding="customBinding" bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceService">
        <!--<identity><servicePrincipalName value="Local
Network"></servicePrincipalName></identity>-->
      </endpoint>
      <!-- One endpoint per data source extension -->
      <endpoint name="PersistenceServer"
address="http://CobraServer.com:9009/PersistenceServer" binding="customBinding"
bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceServer">
        <!--<identity><servicePrincipalName value="Local
Network"></servicePrincipalName></identity>-->
      </endpoint>
    </client>
```

8. Repeat the process with the **Cobra.API.exe.config** file.

Before

```
<endpoint name="PersistenceService"
address="http://CobraAppServer1:9009/PersistenceService"
binding="customBinding" bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceService" />
      <!-- One endpoint per data source extension -->
```

```
      <endpoint name="PersistenceServer" address="http://
CobraAppServer1:9009/PersistenceServer" binding="customBinding"
bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceServer" />
```

After

```
<endpoint name="PersistenceService"
address="http://CobraServer.com:9009/PersistenceService"
binding="customBinding" bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceService" />

      <!-- One endpoint per data source extension -->

      <endpoint name="PersistenceServer" address="http://
CobraServer.com:9009/PersistenceServer" binding="customBinding"
bindingConfiguration="compressedBinaryBinding"
contract="IdeaBlade.Persistence.Wcf.IWcfPersistenceServer" />
```

9. Copy these configuration files to the following locations:
   - To the installation folder on each server. For instance, **C:\Program Files (86x)\Deltek\Cobra**.
   - To the Workstation folder on each server. For instance, **C:\Program Files (86x)\Deltek\Cobra\Workstation.**

N-Tier Firewall

Since Cobra is using the Windows Communication Foundation (WCF) service that runs through the network, it is required to allow the machine that hosts the Cobra server service to listen to the applications from remote machines. By default, the host listens to port 9009 using the Transmission Control Protocol (TCP). If your firewall is turned on, add an inbound rule that will allow connection to the default port 9009 in your application server.

> **Attention:** For more information on WCF, see "KB Article # 74127" in the Knowledge Center of the Deltek Support Center.

Workstation with Administration Tool Installation

Administration tools are not installed by default. At least one client needs the administrative tools.

During the Server installation, a subfolder containing **DeltekCobraWorkstation.exe**, the client install, was created. If you choose the installation to automatically create a file share, the folder will be named **\\<ServerName>\CobraWorkstation**.

Install Workstation with Administration Tools

Follow this procedure to install Cobra workstation with Administration tools.

To install Workstation with Administration Tools on a new Cobra workstation:

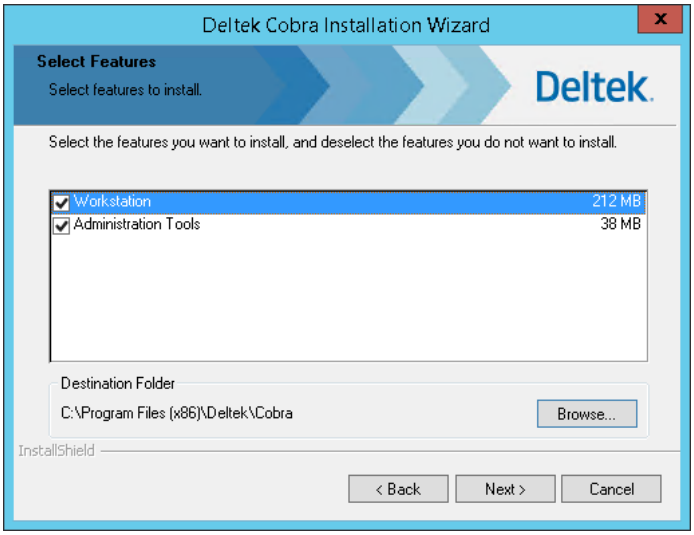
1. Log into the client as a user with administrative rights.
2. Click the **Start** menu and enter **cmd** or **Command Prompt** in the search bar.
3. Right-click **Command Prompt** and select **Run as administrator**.
4. On the Administrator Command Prompt window, enter the following:

```
\\<ServerName>\<FileShare>\DeltekCobraWorkstation.exe /Admin
```

where **<ServerName>** is the application server and **<FileShare>** is either **CobraWorkstatation** or the manually created file share.

The Deltek Cobra Workstation Installation Wizard displays.

5. On the Select Features page, select **Administration Tools**.



Selecting Administration Tools will install Data Tool, which enables you to create new database connections and add new results to your database. After installing Cobra, you must run this tool to install the system data. This tool allows you to add new results to your database.

6. On the Start Copying Files page, review the current settings information. Click **Next** to start copying the files.

   The Setup Status page displays the installation progress.

7. Click **Finish** to exit setup.

Workstation Installation

The workstation installations must be performed on each client that is not using the administrative tools.

Perform Client Installation on a Workstation

Follow this procedure to install Cobra on a workstation.

To perform client installation on a workstation:

1. Log into the client.
2. Using File Explorer, access the application server, locate the **CobraWorkstation** file share, and double-click the **DeltekCobraWorkstation.exe** file.
3. Click **Next** on the Welcome page.
4. On the Select Features page, select **Workstation**, and click **Next**.

   Click **Browse** to change the installation directory.

5. On the Start Copying Files page, review the current settings information.
6. Click **Nex**t to start copying the files.

   The Setup Status page displays the installation progress.
7. Click **Finish** to exit setup.

> **Attention:** For more information on the remaining installation steps, see "Post Installation" in this guide.

Deltek

Upgrading Cobra

If you have a previous version of Cobra installed, you can upgrade your existing installation. The Cobra installer supports in-place upgrades of your existing installation to the current version. Always remember to back up your database before starting the upgrade.

To install a test version of Cobra into a database that is not your production database, you have two options:

- **Option 1: Copy Production Database and Install Cobra**
  1. Copy your production database to a new database.
  2. Confirm that Cobra works correctly when connected to the new database.
  3. Install Cobra into the new database.

  This option retains all security settings, saved reports, projects, and so on from your production environment.
- **Option 2: Install Cobra into a New Database and Restore Projects**
  1. Install Cobra directly into a new database.
  2. Restore your Cobra projects into this new database.
  3. Start with a clean Cobra installation and integrate your existing projects seamlessly.

Upgrading from Cobra 8.x to the Latest Version

If you are upgrading your existing version of Cobra, take note of the following:

- If you are using the stand-alone model, run the Cobra installation from your workstation (where you initially installed Cobra).
- If you are using the client/server or n-tier application server model, run the installation from your deployment server.
- Client workstations will automatically update subsequent users' log into Cobra.

If you are upgrading your Cobra from version 5.1.4 to the latest version, the steps are summarized as follows:

1. Upgrade to Cobra 8.0.
2. Upgrade to the latest version.
3. Once the server is upgraded to the latest version, the workstation will automatically be upgraded too.

   If you are using a version lower than 5.1.4, start by upgrading to Cobra 5.1.4.

Upgrade Cobra from Cobra 8.x to the Latest Version

Follow this procedure to Cobra 8.x to the latest version.

To upgrade from Cobra 8.x to the latest version:

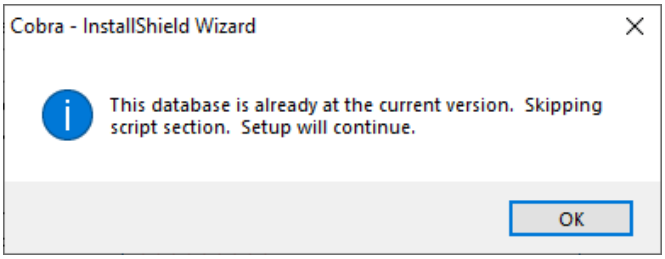
1. If you are upgrading to a multi-user version, log into the application server using the Domain Service Account.

Otherwise, log into the workstation.

2. Launch the **DeltekCobra87.exe** file that you downloaded from the Deltek Support site.
3. On the Welcome page of the Cobra Upgrade Installation Wizard, click **Next** to start the upgrading process.

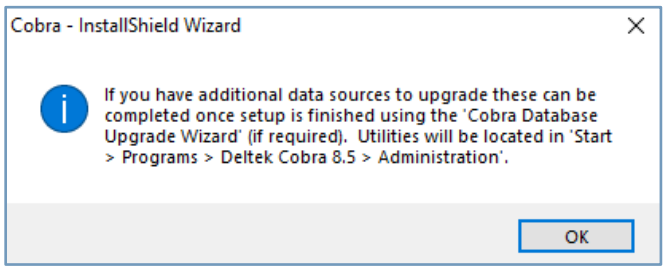
   Cobra displays a message if it detects that you have more than one configured data source. Click **Yes** to launch the Database Upgrade Wizard immediately after the update is complete.

   If Cobra detects that your database is already in the current version, the following message is displayed. Click **OK** to continue.

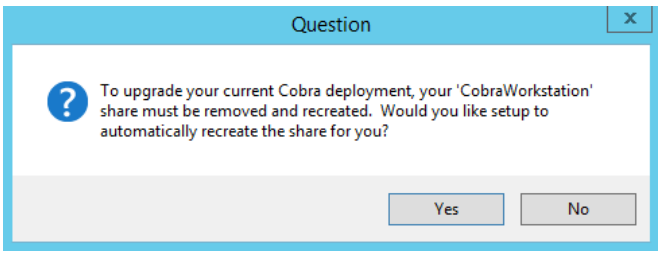


4. On the Setup Type page, select one of the following options:
   - **Automatically run upgrade scripts during the installation**: Select this option to automatically update the Cobra database tables during the installation process.
   - **Create batch file (CreateUpgradeScripts.bat) to run scripts manually**: Select this option to manually upgrade the Cobra database tables (after installation) using a batch file.
   - **I will manually run the upgrade scripts. No batch file will be created**: Select this option to manually upgrade the Cobra database tables (after installation) using the upgrade scripts.
5. Click **Next**.

   The following message displays. Click **OK** to continue.



   If you are upgrading Cobra 5.x to Cobra 8.x, the following message is displayed.



> **Attention:** For more information, see "Manually Create the Cobra Workstation Share" in this guide.

The Setup Status page displays the progress of the upgrading process.

6. On the Update Complete page, click **Finish**.

N-Tier Check Configuration Files

The Cobra workstation installation (both for new installations and upgrades) deploys the following configuration files from the Cobra n-tier server to the workstations:

- **Cobra.WinUI.exe.config**
- **Cobra.Api.exe.config**

This deployment supports administrators who are assigned to enable Cobra support for Microsoft Windows Communication Foundation (WCF) enhanced Windows Authentication security settings. To ensure successful connections to the server, security changes made to client configuration files must be applied to the Cobra server and then deployed to each Cobra n-tier client.

> **Attention:** For more information on how to update the configuration files, see "N-Tier Load Balancing Configuration" under Multi-User Installation in this guide.

Upgrade an Existing Workstation Installation

Follow this procedure to upgrade an existing workstation installation.

To upgrade an existing Cobra client installation on a workstation:

1. On the workstation, launch the Cobra client application.

   Cobra detects that the latest version is available and displays a message asking if you want to install the upgrade.

2. Click **Yes** to install the upgrade.

   Cobra copies the installation updates and automatically updates the local Cobra installation to the latest version. Once the update is completed, the setup terminates automatically. You can then launch Cobra from the shortcut to log into the application.

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Post Installation

This section contains post-installation topics for Cobra.

Running the Database Scripts

To enable Cobra to run, it is essential to create database tables that store system data. Additionally, during an upgrade, these tables frequently need adjustments or changes to accommodate system data updates.

During the installation you were prompted with options to update the database.

Option	Action	Refer to this Section in this Guide
Automatically run scripts during the installation	No further action is required. Proceed to launch Cobra.	Launching Cobra
Create batch file (CreateCobraTables.bat) to run scripts manually	A batch file was generated to simplify the execution of all the scripts. However, be aware that this option writes the parameters in plain text. After completing the installation, you must delete this batch file since it contains the database password. In addition, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.	Run the Create Batch File Set the License Key in the PPM Security Tool
I will manually run the scripts to create the Cobra tables. No batch file will be created.	To create the tables and/or populate them with the necessary data, you need to manually execute all the scripts. In addition, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.	Run the Scripts Manually Set the License Key in the PPM Security Tool

Script Location

The installation places batch files and scripts in the following folder:

```
<Cobra Installation Directory>\Scripts
```

For instance, **C:\Program Files(x86)\Deltek\Cobra\Scripts\Oracle\Create**.

Find the Script Location

Follow this procedure to find the script location.

To find the script location:

1. Open a Command Window in elevated/administrator mode.
2. Navigate to the installation folder.

   For instance: C:\Program Files(x86)\Deltek\Cobra.
3. If this is a new installation, navigate to the Create folder. If this is an upgrade, navigate to the Upgrade folder.

Run the Create Batch File

If you select the **Create batch file (CreateCobraTables.bat) to run scripts manually** option during the installation, there will be a file named **CreateCobraTables.bat**.

To run the batch file:

1. Open a Command Window and enter **CreateCobraTables.bat**.

   Messages will be displayed, and if an error occurs, ***.rpt** files will be generated.
2. Open the **Errors.txt** file and verify that **RESTORE.LOG** appears four times, with no other error messages.
3. Delete the **CreateCobraTables.bat** file.

Run the Scripts Manually

If you choose to manually run the scripts, consult the table below to determine which batch file to use.

Purpose	Location	Scripts
Create a database	<Cobra Installation Directory>\Scripts\<DatabaseType>\Create **Example** C:\Program Files (x86) \Deltek\Cobra\Scripts\Oracle\Create	**RunAllCreateScripts_Oracle.bat**: If you are using an Oracle database **RunAllCreateScripts_Sql.bat**: If you are using a Microsoft SQL database
Upgrade from Cobra 8.0 to the latest version	<Cobra Installation Directory>\Scripts\<DatabaseType>Upgrade **Example** C:\Program Files (x86)\Deltek\Cobra\Scripts\Oracle\Upgrade	**Run87UpgradeScripts_Oracle.bat**: If you are using an Oracle database **Run87UpgradeScripts_Sql.bat**: If you are using a Microsoft SQL database

Execute all the scripts listed in the batch file above against the database. You can utilize the batch file by supplying the connection information as parameters.

Database Type	Parameter Order
Oracle Server	1. Server/Instance Name 2. User ID 3. Password
Microsoft SQL Server	1. Database Name 2. Server\Instance Name 3. User ID 4. Password

Examples

- **To create a new Oracle database**: RunAllCreateScripts_Oracle.bat OracleServer/Cobra Cobra Password
- **To upgrade a SQL Server**: Run87UpgradeScripts_Sql.bat CobraDatabase SQLServer\Cobra Cobra Password

Note: If you do not pass the user ID and password to the batch file, it will default to **cobra/cobra**.

Upgrade Other Databases

If you have more than one database listed in the Cobra Data Tool, use the Deltek Cobra Database Upgrade Wizard to enable you to select one or more of your databases to upgrade.

Attention: For more information on how to upgrade all of your databases, see "Appendix D: Cobra Database Upgrade Wizard" in this guide.

Run the Microsoft Project Server Scripts

If you intend to integrate with Microsoft Project Server, you must run scripts against the Project Server database.

Attention: For more information, see "Appendix B: Configuring Microsoft Project Server for Integration" in this guide.

Set the License Key in the PPM Security Tool

During a new installation of Cobra (whether stand-alone or multi-user), if you select either the **Create batch file to run scripts manually** or **I will manually run the upgrade scripts** option on the Database Script Options page of the Cobra Installation Wizard, you must set the Cobra license key using either the Deltek EPM Security Administrator or the Deltek PPM Administrator.

Attention: For more information on how to set the license key using the security tools, refer to their respective Installation Guides and Help systems.

Configure Cobra to Run as an Administrator

When starting Cobra, if you prefer not to receive prompts for allowing the application to modify the system, follow this procedure.

To set Cobra to always run as an administrator:

1. Navigate to the **<Cobra Installation Directory>**.
2. Right-click **DeltekCobra.exe** and click **Properties**.
3. In the Deltek Cobra Properties dialog box, click **Compatibility**.
4. Select **Run this program as an administrator**.
5. Click **Apply** and then click **OK**.

Launching Cobra

Upon starting Cobra, you must enter a user ID and password. The default user ID is **SYSADMIN**, and the default password is **password**. For security reasons, you must change this password as soon as possible.

Change Your Password

Follow this procedure to change your Cobra password.

To change your password:

1. Click the **Start** menu and navigate to the Deltek Cobra 8.7 folder.
2. Click the Cobra icon to display the Cobra Login dialog box.
3. In the **User ID** field, enter **SYSADMIN** and in the **Password** field**,** enter **password**, and then click **Login**.
4. Click  **» Change Password** to display the Change Password dialog box.
5. In the **Old Password** field, enter the current password.
6. In the **New Password** field, enter a new password.
7. In the **Re-enter New Password** field, re-enter the new password.
8. Click **OK** to save the new password and close the Change Password dialog box.

Configuring the File Location

When using Cobra in an n-tier or Citrix environment, you should create a UNC share to hold the Cobra report templates. If you use PM Compass, you need to store the Cobra process logs in a shared location.

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Configure the Cobra Report Templates Folder Location

The Cobra report templates are installed into the following folder during the Cobra client installation: **C:\Program Files (x86)\Deltek\Cobra\ReportTemplates**.

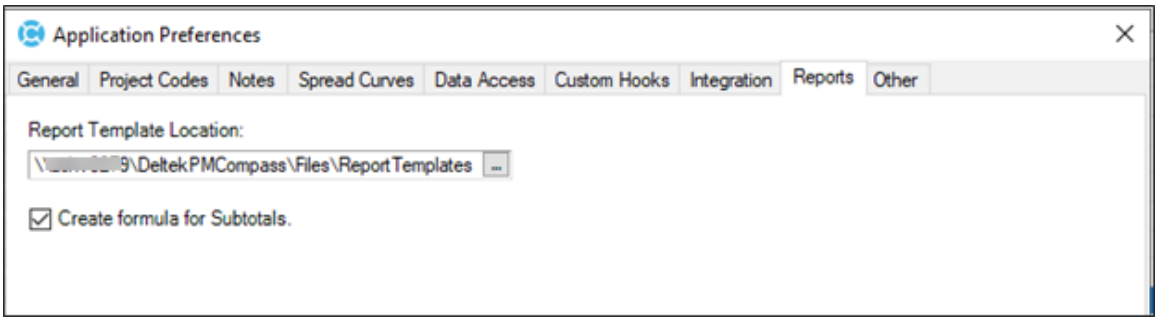
The templates can be modified for reporting. Copying the report templates to a single shared location ensures all users see the same report output.

To configure Cobra to use a central location for report templates:

1. On the server, create a folder and provide read and write access for the following:
   - The Windows account user running the Cobra Web Service.
   - Users with access to customize reports.
2. Copy the contents of **C:\Program Files (x86)\Deltek\Cobra\ReportTemplates** to the folder you created.
3. In Cobra, click  **» Preferences » Application**, and select the Reports tab.
4. In the **Report Template Location** field, enter the shared location path to the folder using a UNC format.

   For instance, \\servername\nameofsharedfolder.

   > **Note:** Type or paste the path. Do not use the ellipses as it will not allow you to browse to the shared network folder.

5. Click **OK** to apply the changes and close the dialog box.
6. Restart the Cobra Web Service.

Configure the Cobra Process Log Folder Location

Storing process logs in a designated folder enables you to remove older process logs. To enable PM Compass users to view the logs generated during process execution, configure Cobra to write these logs to a file.

To configure Cobra to write the process logs to a file:

1. On the server, create a folder and provide access rights for the following:
   - The Windows account user configured to run the Cobra Web services needs write access.

- A few users need delete rights to the folder to perform cleanup. Take note, however, that most users should not have delete rights.

2. In Cobra, click  **» Preferences » Application**, and select the Data Access tab.
3. In the Process Log group box, perform the following steps:
   - Select **Write process logs to a text file**. This option stores the process log information to a text file in a local folder instead of the database. All Cobra processes will store the process log files in the specified location. Selecting this checkbox enables the Location field.
   - In the **Location** field, enter the full path to the folder you created in Step 1 following the UNC format.

   For instance, \\servername\nameofsharedfolder.

   > **Note:** Type or paste the path. Do not use the ellipses as it will not allow you to browse to the shared network folder.

4. Click **OK** to apply the changes and close the dialog box.
5. Restart the Cobra Web Service.

Once configured and a process is executed, Cobra generates a file in this folder. The file name includes identifiers for the project, process, user ID, a unique ID, and the date/time when the process started.

For example, 060101_Reclass_SYSADMIN_}P303B{E@13TBSN0FX_D3__20131119_161347.log

Cobra Sample Data Location

The Cobra installation automatically copies several sample files into the following folder: **C:\Program Files (x86)\Deltek\Cobra\Samples**.

These sample files are helpful because a a Deltek Support Services analyst may inquire whether you can replicate an issue using the sample database. Consider relocating these files to a shared location in a multi-user environment so that all users can conveniently access the sample data.

Copy the Cobra Sample Data

Follow this procedure to copy the sample data to a shared location.

To copy the sample data to a shared location:

1. On the server, create a folder with read and write access.
2. Copy the contents **C:\Program Files (x86)\Deltek\Cobra\Samples** to the folder you created.

Verifying Proper Installation

To verify that Cora has been installed, check that the version number reflects the version that you installed by clicking  **» Help » About Deltek Cobra**.

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Data Tool and Data Source

Use the Cobra Data Tool to create or update data sources and connection information, load system data (such as reports, menu items, and required users and groups) during installation, and define result field names.

In a client/server installation or an n-tier installation, the Data Tool is installed to the client using the Workstation installation with Administration tools.

> **Attention:** For more information, see "Workstation with Administration Tool Installation" under Multi-User Installation in this guide and the Cobra Data Tool Help System.

Supported Providers

The Cobra Data Tool supports the following .NET and OLE Database providers:

.NET Data Providers

- Oracle ODP.NET
- SQL Server .NET Framework

OLE DB Providers

- Oracle Provider for OLE DB [1]
- SQL Server Native Client

> **Note:** Deltek recommends using .NET data providers when setting up your data connection. For more information on how to configure Oracle ODP.NET, see "Appendix H: Configure Oracle ODP.NET in Cobra" in this guide.

> **Note:** [1] When using Oracle Provider for OLE DB, Deltek recommends using Oracle Client 19c or later.

> **Note:** When using PM Compass and configuring the Snapshot database in the Cobra Data Tool, the BCR Analysis report feature will not work on SQL Server Native Client 11.0 data provider.

Setting the Data Tool to Always Run as an Administrator

In a stand-alone or client/server installation, you must run the Cobra Data Tool in Administrative mode.

Set the Data Tool to Always Run as an Administrator

Follow this procedure to set the Data Tool to always run as an administrator.

To set the Data Tool to always run as an administrator:

1. Navigate to the <Cobra Installation Directory>.

2. Right-click **DataTool.exe** and click **Properties**.
3. In the Data Tool Properties dialog box, click **Compatibility**.
4. Select **Run this program as an administrator**.
5. Click **Apply** and click **OK**.

Add a New Data Source

Use the Cobra Data Tool to add a new data source.

To add a new data source:

1. Click the **Start** menu, locate the Deltek Cobra 8.x folder, and click **Deltek Cobra Data Tool**.
2. Enter your password and click **OK**.

   > **Note:** The default password is **password**.

3. Click **Add**.
4. In the Add Data Source dialog box, populate the following fields:
   - **Name**: Use this field to enter a name for the new data source. You can use up to 59 alphanumeric characters. However, special characters (+ = [ ] | " : < , > ? *) are not allowed.
   - **Database Owner**: Use this field to enter the name of the database owner. For SQL Server database, enter **dbo**. For an Oracle database, enter the user ID that is the owner of the database in all uppercase characters.
   - **Provider**: Use this field to select from the list of providers.
5. Click **Configure**.

   The subsequent dialog box that displays depends on the provider you select, which could be the Data Link Properties dialog box or the Connection Properties dialog box.
6. Follow the appropriate set of actions depending on your provider. To complete this step, click the driver you are using:
   - SQL Server .NET Framework
   - SQL Server
   - SQL Server Native Client
   - Oracle Server
7. Click **Test Connection** to confirm that the connection to your database works.
8. Click **OK** to return to the Add Data Source dialog box.
9. Click **OK** to return to the Data Sources dialog box.

   The data source you defined is displayed in the **Data Sources** field.
10. Click **Next**.
11. On the Options page, do one of the following, and click **Next**.

- Initialize Cobra system data.
- Define results.

12. On the Confirmation page, click **Finish** to run the data tool process.

    The Process Complete dialog box displays, providing information about whether the Data Tool has completed without errors. To view the relevant processing details, click **View Log**.

If You Are Using SQL.NET Framework

Follow this procedure to add a new data source if you are using SQL.NET Framework.

To add a new data source using a SQL.NET Framework:

1. In the .NET Framework Data Provider for SQL Server Connection Properties dialog box, click the General tab and provide the necessary information.
2. If you select the **Use the SQL Server Authentication** option, perform the following actions:
   - Enter your username and password in the appropriate fields.
   - Select **Save my password**.
3. Click **OK**.
4. Follow Step 7 onwards in "Add a New Data Source" in this guide to complete this procedure.

If You Are Using SQL Server

Follow this procedure to add a new data source if you are using SQL Server.

To add a new data source using SQL Server:

1. In the Data Link Properties dialog box, click the Connection tab.
2. In the **Select or enter a server name** field, select a server, or enter the location of the server where the database you want to access is located.
   - Select the **Use Windows NT Integrated security** option to access the database connection using the login information obtained from the Windows NT network security.
   - Select the **Use a specific user name and password** option and enter the user ID and password to use for authentication in the **User name** and **Password** fields.
   - Select the **Blank password** option to enable the specified provider to return a blank password in the connection string or select the **Allow saving password** option to allow the password to be saved with the connection string.
3. In the **Select the database on the server** field, enter or select the name of the database you want to access.
4. In the **Attach a database file as a database name** field, enter or select (using the **Browse** button) the database filename to attach.
5. In the **Using the filename** field, enter the database connection.
6. Follow Step 7 onwards in "Add a New Data Source" in this guide to complete this procedure.

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If You Are Using SQL Server Native Client

Follow this procedure to add a new data source if you are using SQL Server Native Client.

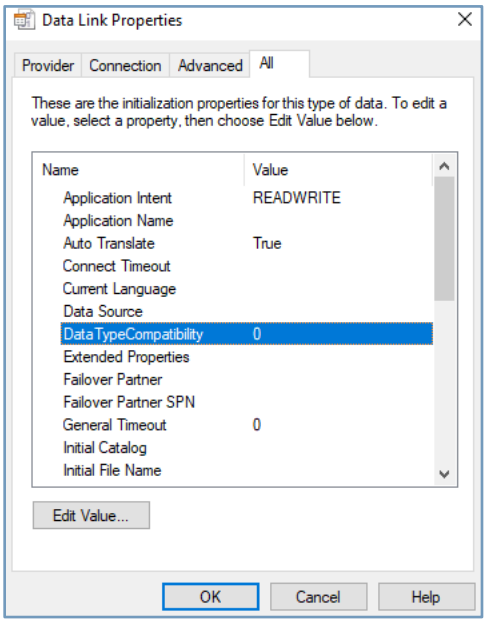
To add a new data source using SQL Server Native Client:

1. In the Data Link Properties dialog box, click the Connection tab, and populate the necessary fields.
   - If you select the **Use a specific user name and password** option, perform the following actions:
     - Clear the **Blank password** option and select the **Allow saving password** option.
     - Enter your password in the **Password** field.

   Warning: You may encounter error messages when you select the Use a specific user name and password option. For more information, see "Troubleshooting Data Link Properties Issues" under Appendix F: Secure Transport Layer (TLS) this guide.

   Note: When configuring the BCR Snapshot database in the Cobra Data Tool, the BCR Analysis report feature will not work on SQL Server Native Client 11.0 data provider.

2. Click the All tab, select the property specified below, click **Edit Value** and perform the required action in the Edit Property dialog box:
   - For **Data Type Compatibility**, click **Reset Value**.



Note: Data Type Compatibility must be set to **0** or blank.

- For Initial **File Name**, click **Reset Value**.
- For **Integrated Security**, click **Reset Value**.
- For **Persist Security Info**, select **True** in the **Property Value** field.
- For **Server SPN**, click **Reset Value**.

> **Note:** You must click **Reset Value** even if the **Property Value** field is blank

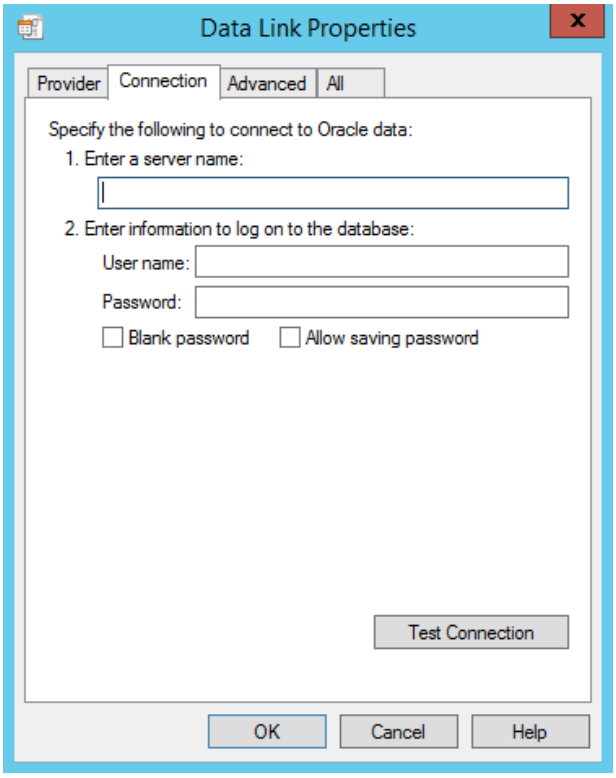
3. Click **OK**.
4. Follow Step 7 onwards in "Add a New Data Source" in this guide to complete this procedure.

If You Are Using an Oracle Server

Follow this procedure to add a new data source if you are using an Oracle Server.

To add a new data source using an Oracle Server:

1. In the Data Link Properties dialog box and click the Connection tab.
2. In the **Enter a server name** field, enter the location of the server where the database you want to access is located.
3. In the **User name** field and **Password** field, enter the user ID and password to use for authentication when you log onto the connection.
4. Select the **Blank password** option to enable the specified provider to return a blank password in the connection string or select the **Allow saving password** option to allow the password to be saved with the connection string.



5. Click **OK**.
6. Follow Step 7 onwards in "Add a New Data Source" in this guide to complete this procedure.

Edit an Existing Data Source

Use the Cobra Data Tool to edit an existing data source.

To edit an existing data source:

1. Launch the Cobra Data Tool.
2. Select an existing data source from the Data Sources field and click **Edit**.

   The Edit Data Source dialog box displays.

   Note:

   - If you are using .NET Data Provider, use the Cobra Data Tool to add or edit the data source connection information. For more information, see the Cobra Data Tool Help System.
   - When configuring the BCR Snapshot database in the Cobra Data Tool, the BCR Analysis report feature will not work on SQL Server Native Client 11.0 data provider.

3. Click **Configure**.

   The subsequent dialog box that displays depends on the provider you select, which could be the Data Link Properties dialog box or the Connection Properties dialog box.

4. Modify the appropriate fields and click **OK**.
5. Click **OK** to return to the Data Sources dialog box.

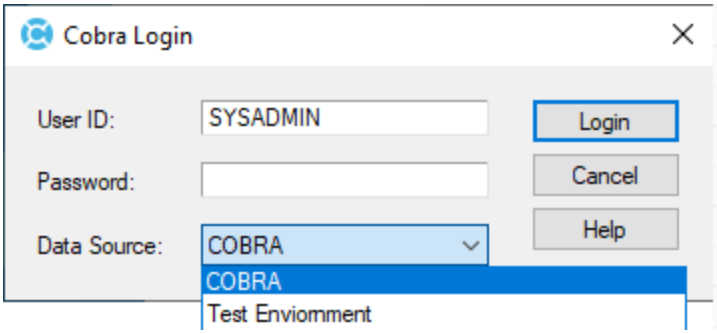
   The C**onnection Information pane displays updated connection information.**
6. **Click Next** or click **Finish** to run the data tool process.

Select a Data Source on Startup

When you have multiple defined data sources, you can select which one to use when logging into Cobra.

To select a data source:

1. Launch Cobra.
2. In the Cobra Login dialog box, click **Data Source** field and select the database you want access in Cobra.



3. Enter the user ID and password and click **Login**.

Make Data Sources Available to All Users

The connection information entered is saved in two files: **Datasources.dat** and **DataTool.sdf**.

To make the new data source(s) available to all users in a client/server installation:

1. Locate the newly edited **Datasources.dat** and **DataTool.sdf** files in the Cobra client installation folder.
2. Copy these two files to the installation server folder and each workstation folder.

Using the PPM Security Tools

PPM has security tools that are crucial for managing various aspects of the PPM solutions.

The Deltek EPM Security Administrator and Deltek PPM Administrator enable you to manage license keys, users, groups, roles, and access to various PPM applications.

> **Important:** Whether you plan to use EPM Security Administrator or PPM Administrator, you must download the selected application from Deltek Software Manager and install it separately.

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Attention: For more information on these security tools, see their respective Release Notes, Installation Guides, and Help Systems.

Deltek

Uninstalling Cobra

If the Cobra Web Service is deployed, it shares the same set of files with Cobra. Consequently, when uninstalling Cobra, you must also uninstall the Cobra Web Service.

To uninstall Cobra when the Cobra Web Service is also installed on the same machine, you can perform any of the following:

- Uninstall the Cobra Web Service manually before you uninstall Cobra.
- Allow the Cobra-InstallShield Wizard to automatically uninstall the Cobra Web Service.

These steps are discussed in this section.

> **Note:** If the PM Compass WebApp tier is installed on the same machine as Cobra, the Cobra-InstallShield Wizard will not prompt to uninstall the Cobra Web Service. This is because the PM Compass WebApp tier deploys its own Cobra Web Service, which does not share files with the Cobra deployment.

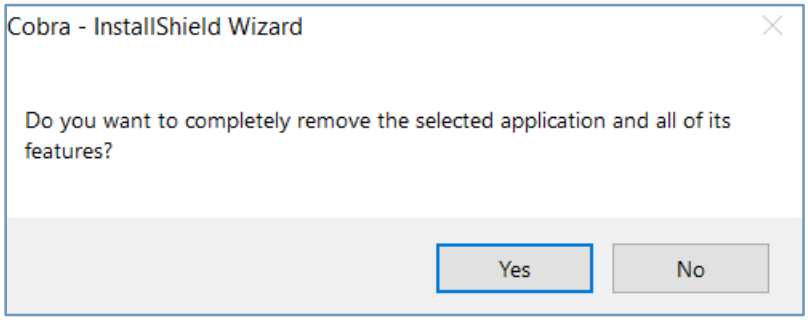
Uninstall Cobra

Follow this procedure to uninstall Cobra.

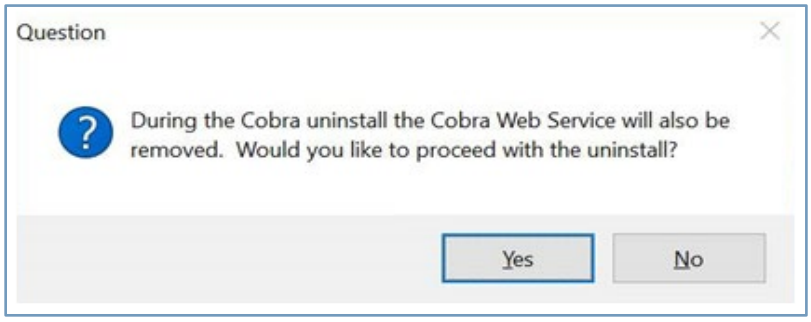
To uninstall Cobra:

1. Launch the Windows Control Panel and click **Programs and Features**.
2. On the program list, right-click **Deltek Cobra 8.7** and click **Uninstall**.

   The Cobra-InstallShield Wizard displays asking if you want to remove Cobra and its features.

   - If you select **Yes**, the Cobra-InstallShield Wizard checks if the Cobra Web Service is deployed on the same machine.
   - If you select **No**, the Cobra-InstallShield Wizard aborts.
3. If the Cobra-InstallShield Wizard detects that the Cobra Web Service is deployed on the same machine, it displays a message asking if you would also like to automatically uninstall the Cobra Web Service.



- If you select **Yes**, the Cobra-InstallShield Wizard uninstalls the Cobra Web Service first, and then uninstalls Cobra.
- If you select **No**, the Cobra-InstallShield Wizard aborts since Cobra and Cobra Web Service share the same set of files.

Deltek

Troubleshooting Cobra

This section provides information on how to contact Deltek if problems occur during installation. It also includes a list of errors that may occur during installation as well as viable solutions.

Contact Technical Services

While Deltek has worked hard to ensure an easy installation, in certain situations installation can be complex, and may require special consideration. The complexity can increase, for example, with multiple server installation, load balancing, database replication, or other complex deployments. In such cases, we recommend contacting Deltek Technical Services to schedule your Cobra installation.

Deltek's team of technical consultants can assist you with your installation in a timely manner. When you contact the Technical Services department, technical specialists schedule a phone and Microsoft Live Meeting appointment to walk your IT staff through your Cobra installation. Deltek's involvement ensures that all applications are installed properly, regardless of the complexity of the deployment scenario.

The Technical Services department's assistance is billed on a time and materials basis. While installation assistance is not required, it is recommended that you optimize your investment in Cobra from the time of installation. Many Deltek clients have benefited from the Deltek Technical Services department's experience and knowledge of the Cobra installation process.

Send Files to Deltek

If you encounter any problems while installing Cobra, contact Deltek Support Center for assistance. To help us resolve your installation issues as quickly as possible, send the installation logs to Deltek when requesting assistance with troubleshooting an installation.

Installation Logs

Cobra logs the installation information on the following directories:

- Complete new or upgrade installation: **<Cobra Installation Directory>\Logs**

  For instance, **C:\Program Files (x86)\Deltek\Cobra\Logs**
- Incomplete new or upgrade installation: **C:\Users\<username>\AppData\Local or C:\Users\<username>\AppData\Roaming**

ODBC and Data Tool Connection Issues

When application processes encounter errors, Cobra logs details about the generation of connection strings in either the **ClientDebugLog.xml** file or the **ServerDebugLog.xml** file for n-tier installations. This information includes the identified options, the driver determination process, and any options excluded from the connection string. Additionally, the generated connection string is displayed in the debug log file, with sensitive data appropriately masked.

Cobra follows the following format when generating the connection string.

If the **DSN=name** option is specified, the connection string format will be as follows:

```
DSN=name;uid=value;pwd=value;. If it is not specified, the connection string format
will be: Driver={name};uid=value;pwd=value;server=value;database=value;<additional
options using keyword=value format>;
```

When the **Debug Log** option is enabled on the Data Access tab of the Application Preferences dialog box, the **ProcessLog.xml** log file captures supplementary details. These include information generated during connection attempts and the connection string used to access the database (with sensitive data appropriately masked).

> **Attention:** For more information on logs and related procedures, see "Debug Logs" in the Cobra Help System under **Tools**.

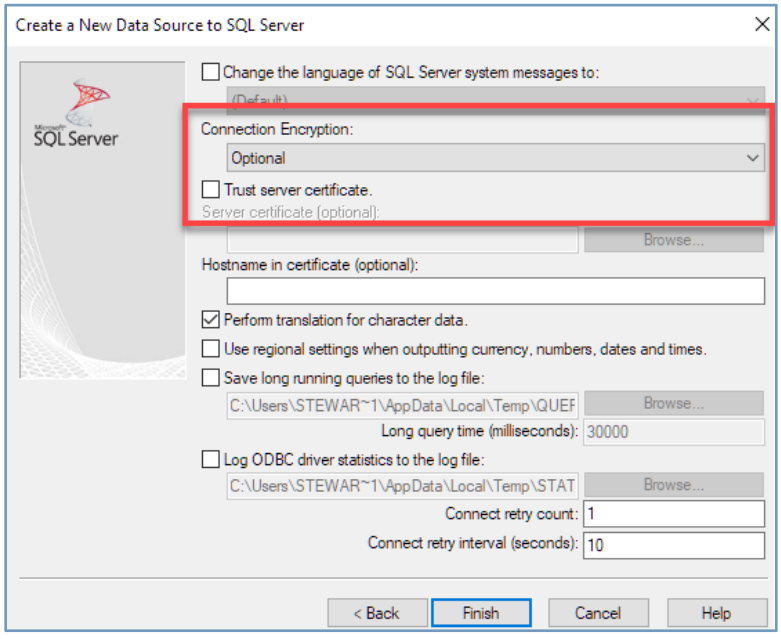
Error Encountered When Using ODBC Driver 18 for SQL Server

If you are using Cobra with a data source that utilizes ODBC Driver 18 for SQL Server and you run a process, Cobra may encounter the following error:

"[Error] Unable to connect to the database. (Connectivity error: [Microsoft][ODBC Driver 18 for SQL Server]SSL Provider: The certificate chain was issued by an authority that is not trusted."

To resolve this issue:

1. Using the ODBC Data Source Administrator (32-bit) tool, create a data source that uses ODBC Driver 18 for SQL Server.
2. On the next page, make the following selections:
   - Set the **Connection Encryption** field to **Optional**.
   - Clear the **Trust server certificate** checkbox.



3. Complete the pages of the ODBC Data Source Administrator tool and save your changes.
4. Navigate to the Cobra directory and locate the **Datasources.dat** file.
5. Add the following lines to the top of the **Datasources.dat** file.

```
[RdbKeyOptions]
```

```
SQLServer=DSN=<Data Source>
```

where **<Data Source>** is the name of the data source you created.

Error Encountered When Installing Cobra in a Database with a PPM Product Already Installed

If a PPM product is already installed in the database and you attempt a new installation of Cobra, you might encounter the following error:

```
"Oracle Database: ORA-20000: PROGRAM table exists and contains data, but Cobra is not installed.
Microsoft SQL Database: Msg 40001, Level 15, State 1"
```

To resolve the issue:

1. Navigate to the **Logs\ScriptLogs** folder of the Cobra installation directory.
2. Locate the **errors.txt** file and verify that it contained the error as stated above.
3. Run the **DELETE FROM PROGRAM** script to remove all data from the PROGRAM table.
4. Navigate to the **Scripts\Create** folder of the Cobra installation directory and run the required scripts.
   - If you are using a Microsoft SQL database:
     a. Navigate to **<Cobra Installation Directory>\Scripts\SQLServer\Create**.
     b. Using SQL Server Management Studio, run the scripts in the following sequence:
     - **Cobra_Tables_SQLServer.sql**
     - **Cobra_Procedures_SQLServer.sql**
     - **Cobra_Data_SqlServer.sql**
   - If you are using an Oracle database:
     a. Navigate to **<Cobra Installation Directory>\ Scripts\Oracle\Create**.
     b. Using Oracle SQL Developer, run the scripts in the following sequence:
     - **Cobra_Tables_Oracle.sql**
     - **Cobra_Procedures_Oracle.sql**
     - **Cobra_Data_Oracle.sql**
5. If you are running Cobra in an n-tier setup, you must restart the **IdeaBlade** service.

   Attention: For more information, see "Restart the Service in an N-Tier Environment" under Performance Tips in this guide.

6. Launch Cobra.

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SSL Certificate Error Encountered When Connecting to a SQL Database

When using the SQL.NET Framework or MS OLE DB Driver as your database provider, you may encounter an SSL certificate validation error during login, similar to the following.

If you encounter this error, Deltek recommends that you consult your database administrator and ensure that your server instances are configured with the certificates required by Microsoft.

> **Attention:** For more information, refer to the following Microsoft article: "Encryption and Certificate Validation in Microsoft.Data.SqlClient."

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Performance Tips

Cobra data resides in either an Oracle database or a SQL Server. The performance of Cobra is significantly influenced by the database's efficiency and the quality of the connection to it. To enhance Cobra's performance, consider the following guidelines:

- Make sure that the database tier has adequate hardware.
- Make sure that the database is configured for optimum performance.
- Make sure that the connection between the database tier and the application tier has adequate bandwidth.
- Remove routers or firewalls that may hinder performance.
- Make sure that the latest ODBC DSN drivers are installed in the application tier.

Optimize Performance with Oracle

When Cobra stores a significant amount of project data in an Oracle database, it becomes crucial to monitor the database to ensure optimal performance.

For example:

- Statistics are turned on and working correctly.
- Indexes are used.
- The extent percentage is high.
- The rollback segments are large.

The time-phased table in Cobra can expand to millions or even billions of records in a large implementation. When a report is produced, all time-phased data for a particular project are retrieved from the database. Over time, the records for each project can be spread across the entire table. Deltek's performance lab and customers have provided the following performance tips:

- **Reorder the database**: Extracting the data in the primary index order, truncating the table, and reloading the records so that the database is ordered in the primary index improves performance.
- **Delete and recreate the indexes**: An index can become fragmented. Dropping and recreating the index resolves this problem.

Delete Temporary Report Data

When executing a report, the database tables are leveraged to optimize queries. However, if a user unexpectedly aborts a report, the temporary contents in these tables might not be cleared. Consequently, this situation can lead to sluggish performance when retrieving records for reporting purposes.

To clear the contents of the temporary report tables, utilize the SQL Command Utility to execute the **DeleteReportQueryTables.sql** script file. Keep in mind that any ongoing reports will fail during this operation.

To run the delete script:

1. Start Cobra.

2. Click **Tools » SQL Command Utility**.
3. In the SQL Command Utility dialog box, click **Open** and navigate to the **<Cobra Installation Directory>\Samples\Script** folder.
4. Select **DeleteReportQueryTables.sql** and click **Open**.
5. Click **Execute** to run the Delete script.

Log SQL Calls

To log SQL calls in the **ProcessLog.xml** file, which resides in the **\\My Documents\Deltek\Cobra\Logs** folder, you must enable the Debug Log group box options. It is important to note that leaving this option enabled can lead to the file growing larger and potentially impacting Cobra's performance.

To log SQL calls:

1. Start Cobra.
2. Click  **» Preferences » Application**.
3. In the Application Preferences dialog box, click the Data Access tab.
4. In the Debug Log group box, select the **Generate processlog.xml** checkbox, and optionally select either or both the **Include SQL Statements** and **Include Cobra data** checkboxes.

> **Attention:** For more information, see "Data Access Tab of the Application Preferences Dialog Box" in the Cobra Help System under **Getting Started » Explore Cobra » Cobra Explorer » Cobra Button » Preferences » Application Preferences**.

Restart the Service in an N-Tier Environment

If your Cobra installation operates in n-tier application server mode, consider periodically restarting the service to enhance performance. The optimal frequency for restarting the service depends on user activity. Keep in mind that restarting the service will terminate active Cobra sessions, so it is advisable to schedule this task during periods when users are not connected to the system.

To restart the service:

- Set up a scheduled task to run the following command lines:

```
net stop "Ideablade PersistenceServer Service"
net start "Ideablade PersistenceServer Service"
```

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Appendix A: System Requirements

Your organization has made a substantial commitment to ensure it has a fully integrated earned value management (EVM) solution. To support that commitment, Deltek recommends that you carefully consider the hardware requirements necessary to run Cobra properly.

Hardware Sizing Considerations

There are several factors that go into sizing an appropriate server infrastructure. The number of concurrent users accessing the system at any given time, the amount of data being analyzed, and growth expectations all have an impact on the initial sizing plans. The hardware profiles provided are intended as a starting point for deployment. It is expected that our clients will use the product in many different ways, such as planning for future release, and client customizations that will all impact the growth and scaling of the overall solution. Further in-depth discussion of the solution's business needs during application implementation will provide final guidance on hardware requirements.

Memory Requirements for a Typical/Average Use

Below are details on the memory footprint of the product. This can be helpful when sizing a client tier that runs in a virtual environment, Citrix, or Terminal Server.

Tier	Memory*
Client Tier	600 MB
Application Tier	Hardware requirements for n-tier deployment
Database Tier	Database instance memory should be 10%–15% of the database size. For example, if database size is expected to be 500 GB, then allocate 50 GB–75 GB memory. **Attention:** For information about the database size, see the **Cobra Database Size Estimator.xls** file that you downloaded with Cobra.

Definition of Typical/Average Use

A typical Cobra user consumed approximately 600 MB in one session where at least 20 processes (such as Advance Calendar, Recalc, Rolling Wave, and Reclass) were run against a medium-sized project.

Sample Project Details

Note: These sample project details serve as the basis for defining a typical average use (the 600 MB discussed above).

Project: Learn Cobra	
Number of Control Accounts	671
Number of Work of Packages	5,544
Number of COSTELEM Records	76,897
Number of Time-Phased Records	1,026,540
Number of Processes	20

Hardware Requirements

The number of people using Cobra, the Cobra processes they are using, and the database size all affect the hardware and software requirements for your servers.

These are the minimum requirements that Cobra requires. However, if the machine to be used also hosts other application software, the requirements for those should also be considered when sizing their hardware.

Note: Specific server hardware configurations may have an impact on your overall Deltek product licensing requirements. It is recommended you confirm with a Deltek Technical Sales Engineer if the server hardware you plan to deploy is in line with your Deltek license agreement and how overall server infrastructure expansion in the future may affect your Deltek licensing.

Stand-Alone Deployment

The table below outlines the recommended minimum hardware requirements for deploying Deltek Cobra in a stand-alone environment.

Tier	Hardware Required	Determining Factors
Client Tier	▪ 2.6 GHz or faster CPU ▪ 4 GB RAM ▪ 80 GB Hard Drive ▪ 100 MB Network Card	▪ Usage ▪ Integration Requirements

Client/Server Deployment

In the client/server model, you install the client and application tiers on workstations that directly connect to a database server. However, when a client workstation that is connected to the database goes through a router or a firewall, this type of setup often yields inferior performance. This model is designed for a distributed system that does not have a dedicated server for the application tier, for installing the client and database in a “black box” or secure area, or for deploying Cobra on a Citrix environment.

The table below outlines the recommended minimum hardware requirements for deploying Deltek Cobra in a client/server environment.

Tier	Hardware Required	Determining Factors
Database Tier	**Server Class Machine** ▪ 4 – 8 x Logical processors 2.6 GHz or faster CPU ▪ 8+ GB Physical memory ▪ High performance disk volume – SSD preferred	▪ Database Size ▪ Database Growth ▪ Usage
Deployment Server (File Server Share for client updating)	**Server Class Machine** ▪ 4 – 8 x Logical processors 2.6 GHz or faster CPU ▪ 8+ GB Physical memory ▪ RAID 1 Disk array – SSD preferred	▪ Total Users ▪ Power Users ▪ User Location ▪ Integration Requirements

N-Tier Deployment

The tables below outline the recommended sizing for the n-tier deployment.

N-Tier Installation for 1 to 25 Concurrent Users

Tier	Hardware Required	Determining Factors
Database Tier	**Server Class Machine** ▪ 4 x Logical processors 2.8 GHz or faster CPU ▪ 8+ GB Physical memory ▪ 100 GB Hard drive ▪ High performance disk volume – SSD preferred ▪ 100 MB Network card	▪ Database Size ▪ Database Growth
Application Tier	**Server Class Machine** ▪ 4 x Logical processors 2.6 GHz or faster CPU ▪ 8 GB Physical memory ▪ 200 GB Hard drive space	▪ Total Users ▪ Power Users ▪ User Location

Tier	Hardware Required	Determining Factors
Client Tier	**Desktop Class Machine** ▪ 2.6 GHz or faster CPU ▪ 4 GB Physical memory ▪ 250 MB Hard drive space ▪ 100 MB Network card ▪ Monitor resolution must be at least 1024×768	▪ Applications running in the client machine

N-Tier Installation for 25 to 50 Concurrent Users

Tier	Hardware Required	Determining Factors
Database Tier	**Server Class Machine** ▪ 8 x Logical processors 2.8 GHz or faster CPU ▪ 16+ GB Physical memory ▪ 100+ GB Hard drive ▪ High performance disk volume – SSD preferred ▪ 100 MB Network card	▪ Database Size ▪ Database Growth
Application Tier	**Server Class Machine** ▪ 8 x Logical processors 2.5 GHz or faster CPU ▪ 12 GB Physical memory ▪ 200 GB Hard drive space ▪ 100 MB Network card	▪ Total Users ▪ Power Users ▪ User Location
Client Tier	**Desktop Class Machine** ▪ 1.8 GHz or faster CPU ▪ 4 GB Physical memory ▪ 250 MB Hard drive space ▪ 100 MB Network card ▪ Monitor resolution must be at least 1024×768	▪ Applications running in client machine

N-Tier Installation for 50+ Concurrent Users

Tier	Hardware Required	Determining Factors
Database Tier	**Server Class Machine** ▪ 8 x Logical processors 2.8 GHz or faster CPU ▪ 16+ GB Physical memory ▪ 100+ GB Hard drive ▪ High performance disk volume – SSD preferred ▪ 100 MB Network card	▪ Database Size ▪ Database Growth
Application Tier	**Two Load-Balanced Server Class Machine** ▪ 8 x Logical processors 2.6 GHz or faster CPU ▪ 16 GB Physical memory ▪ 200 GB Hard drive space ▪ 100 MB Network card	▪ Total Users ▪ Power Users ▪ User Location
Client Tier	**Desktop Class Machine** ▪ 1.8 GHz or faster CPU ▪ 4 GB Physical memory ▪ 250 MB Hard drive space ▪ 100 MB Network card ▪ Monitor resolution must be at least 1024×768	▪ Applications running in client machine

Concurrency Feature System Requirements

If you have deployed Deltek PM Compass, you can increase efficiency and improve performance of Cobra processes by leveraging the PM Compass Process Server. The concurrency feature runs processes on batches of control accounts, with each job processing a different batch of control accounts concurrently.

Attention: For more information, see "Concurrency in Cobra" in the Cobra Help System under **Cobra Features for PM Compass Users**.

The table below provides the recommended system requirements to implement concurrency in your environment depending on your setup.

Cobra Process Server

Cobra Web Services Instance	Hardware Required
No Cobra Web Service	▪ 2.0 GHz or faster CPU ▪ 8 GB Physical memory
1 to 3 Instances	▪ 4 - 8 x Logical processors 2.6 GHz or faster CPU ▪ 8+ GB Physical memory
4 to 5 Instances	▪ 8 x Logical processors 2.6 GHz or faster CPU ▪ 12+ GB Physical memory

Cobra Web Service on Remote Machines

Dedicated Machine

Cobra Web Services Instance	Hardware Required
1 instance	▪ 4 - 8 x Logical processors 2.6 GHz or faster CPU ▪ 8+ GB Physical memory
1 to 3 Instances	▪ 4 - 8 Logical processors 2.6 GHz or faster CPU ▪ 8+ GB Physical memory
4 to 5 Instances	▪ 8 x Logical processors 2.6 GHz or faster CPU ▪ 12+ GB Physical memory

On Top of an Existing PM Compass Process Server

Cobra Web Services Instance	Hardware Required
1 to 2 Instances	▪ 8 x Logical processors 2.8 GHz or faster CPU ▪ 12+ GB Physical memory
3 to 4 Instances	▪ 8 x Logical processors 3.0 GHz or faster CPU ▪ 16+ GB Physical memory

Software Requirements

The table below outlines the supported and compatible technologies utilized for deploying Cobra.

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Note: Supported versions are the actively tested versions of technologies used to deploy Cobra. These technologies are neither embedded in nor directly supported by Deltek. Changes to these technologies are made at the discretion of the technology vendors.

Compatible versions are previously supported and tested technologies used to deploy Cobra. These are not actively tested but are believed to be compatible with Cobra. Deltek does not recommend these technologies for new deployments but will make its best effort to answer related questions. These technologies may not be available for troubleshooting by Deltek.

For a full explanation of compatible versus supported versions, see the *Deltek Product Support Compatibility Matrix* document that you can download from the Deltek Support Center.

Supported Deployment Technology

The table below outlines the supported deployment technologies.

Supported Deployment Technology	
Operating System	▪ Microsoft Windows 10 ▪ Microsoft Windows 11 ▪ Microsoft Windows Server® 2019 ▪ Microsoft Windows Server 2022 ▪ Microsoft Windows Server 2025 ▪ Microsoft Windows Server 2022 Azure Edition
Citrix	▪ Citrix Virtual Apps and Desktops 7.x (Windows Server 2019) ▪ Citrix Virtual Apps and Desktops 7.x (Windows Server 2022
VMWare Horizon	▪ VMWare Horizon 8
Database Platform	**Microsoft SQL Server** ▪ Microsoft SQL Server 2019[1] ▪ Microsoft SQL Server 2022[1] ▪ Microsoft Azure SQL ▪ Microsoft SQL Server Express 2019 ▪ Microsoft SQL Server Express 2022 **Note:** [1] Supported on Linux and Unix. **Warning:** If you have implemented TLS 1.2, see "Appendix F: Secure Transport Layer Security (TLS)" in this guide.

Supported Deployment Technology	
	Oracle ▪ Oracle 19.3 ▪ Oracle is also supported on Linux, Unix, and Exadata. **Note:** If you are using Oracle 19.3 or later, you may encounter the following Oracle error while running a Cobra process (for example, Calculate Apportionment): ORA-600 [kkqcscpcky:ficand] While Running Query with Parameter "_replace_virtual_columns=false". For more information, see "Troubleshoot Oracle Error ORA-600" in the Cobra Help System under **Advanced Topics**.
Database Driver	▪ Oracle Provider for OLE DB [1] ▪ Oracle Data Provider for .NET (ODP.NET) ▪ MS SQL Server Native Client 11.0 (SQL Server 2012 Native Client, version 11.4.7001.0 or later) ▪ MS OLE DB Driver for SQL Server (version 18.2.2.0 or later) **Note:** ▪ [1] When using Oracle Provider for OLE DB, Deltek recommends using Oracle Client 19c or later. ▪ If you use MS SQL Server Native Client 11.0 or MS OLE DB Driver for SQL Server, see "Add a New Data Source" under Data Tool and Data Source in this guide. You may also refer to the Microsoft article Support Policies for SQL Server Native Client for details on the support matrix for this driver. ▪ If you encounter errors or warnings related to supported drivers when performing the backup/restore or export/import features of Cobra, Deltek recommends that you install the latest Microsoft ODBC Driver for SQL Server on all machines that run Cobra. These Cobra features use an OLEDB driver that is part of Windows, and not the same driver selected in the Data Tool's data source connection. For more information, see Download ODBC Driver for SQL Server.
AI Model Provider	▪ Microsoft Azure Cloud - Model GPT-4o ▪ Microsoft Azure Government - Azure GPT-4o
Scheduling Tools	**Microsoft Project Standard** ▪ Microsoft Project Standard 2021 ▪ Microsoft Project Standard 2024

Supported Deployment Technology	
	Microsoft Project Professional ▪ Microsoft Project Professional 2021 ▪ Microsoft Project Professional 2024 **Microsoft Project Server** ▪ Microsoft Project Server 2016 ▪ Microsoft Project Server 2019
Microsoft Office	▪ Microsoft Excel® 2021 ▪ Microsoft Excel 2024 ▪ Microsoft Office 365
Primavera	▪ Primavera® P6 20.12 ▪ Primavera P6 21.12 ▪ Primavera P6 22.12 ▪ Primavera P6 23.12 ▪ Primavera P6 24.12
Embedded Technologies	▪ Microsoft OLE DB Provider for Visual FoxPro 9.0 ▪ Microsoft Visual C++ 2017 Redistributable Package (x86) ▪ Microsoft Visual C++ 2022 Redistributable Package (x86) ▪ Microsoft Visual C++ 2015-2022 Redistributable Package (x86)
.NET Framework	▪ Microsoft .NET Framework 4.8 ▪ Microsoft .NET Framework 4.8.1
Browsers	▪ Edge ▪ Chrome© ▪ Firefox©

Supported PPM Product Versions

The table below outlines the PPM product versions compatible with Cobra 8.7. The versions listed below are the minimum supported versions. Subsequent cumulative update (CU) releases within the listed major/minor release will be supported unless otherwise specified. Subsequent major/minor releases are not supported.

Supported PPM Product Versions	
Deltek wInsight ®	▪ 8.3.2 ▪ 8.3.3 ▪ 8.3.4 (Beginning with Cobra 8.7 Cumulative Update 04)
Deltek Open Plan ®	▪ 8.6 ▪ 8.7 ▪ 8.8 (Beginning with Cobra 8.7 Cumulative Update 04)
Deltek PM Compass ™	▪ 8.4 ▪ 8.5 **Attention:** Review the "Deltek Integrated Products" section in the *Deltek PM Compass Installation Guide* to see the supported Cobra versions. For more information on integrating Cobra with PM Compass, see "Cobra Integration and PM Compass" in this guide.
Deltek Acumen ®	▪ 8.10 ▪ 8.11
Deltek Costpoint ®	▪ 8.1 ▪ 8.2
Deltek PPM Administrator	▪ 1.0
Deltek EPM Security Administrator	▪ 8.6

Compatible Deployment Technology

The table below outlines the compatible deployment technologies.

Compatible Deployment Technology	
Operating System	▪ Microsoft Windows Server 2016
Citrix	▪ XenApp 7.* (Windows Server 2016)
Database	▪ Microsoft SQL Server 2016 ▪ Microsoft SQL Server 2017 [1]

Compatible Deployment Technology	
	▪ Microsoft SQL Server Express 2016 ▪ Microsoft SQL Server Express 2017 ▪ Oracle 12.2 **Note:** [1] Supported on Linux and Unix.
Scheduling Tools	**Microsoft Project Server** ▪ Microsoft Project Server 2013 SP1
Primavera	▪ Primavera P6 17.12 ▪ Primavera P6 18.8 ▪ Primavera P6 19.12

Open-Source Software Included with Cobra

The table below outlines the open-source software included in Cobra.

Software	Company
wwDotNetBridge 6	West Wind Technologies
Open XML SDK (2.0)	Microsoft
Microsoft Visual C++ Redistributable Packages for Visual Studio 2015-2022 (x86)	Microsoft
Oracle Data Provider for .Net	Oracle
CsvHelper	Josh Close
LumenWorks CSV Reader	Sébastien Lorion (with Paul Hatcher, Maxim Ivanov)
Nlog Advanced .NET Logging	Jarek Kowalski

Logical Tier Software Requirements

The table below provides brief technical descriptions and requirements for each logical tier.

Tier Name	Description
Client Tier for N-tier	▪ Windows 11 ▪ Windows 10

Tier Name	Description
Client Tier for Client/Server	▪ Windows 11 ▪ Windows 10 **If you use Oracle:** ▪ Administrator version of the 32-bit Oracle Client (same version as the database) ▪ Oracle Provider for OLE DB ▪ Oracle Data Provider for .NET (ODP.NET) **If you use SQL Server, install one of the following:** ▪ MS OLE DB Driver for SQL Server (version 18.2.2.0 or later) ▪ MS SQL Server Native Client 11.0 (SQL Server 2012 Native Client, version 11.4.7001.0 or later)
Client Tier for Citrix	**The Citrix Client needs:** ▪ Windows 11 ▪ Windows 10 ▪ Citrix Virtual Apps and Desktops 7.x (Windows Server 2019) ▪ Citrix Virtual Apps and Desktops 7.x (Windows Server 2022) **If you use Oracle:** ▪ Administrator version of the 32-bit Oracle Client (same version as the database) ▪ Oracle Provider for OLE DB ▪ Oracle Data Provider for .NET (ODP.NET) **If you use SQL Server, install one of the following:** ▪ MS OLE DB Driver for SQL Server (version 18.2.2.0 or later) ▪ MS SQL Server Native Client 11.0 (SQL Server 2012 Native Client, version 11.4.7001.0 or later)
Application Tier	**The application tier can be a workstation (when running in stand-alone or Client/Server mode) or the n-tier server (when running in n-tier mode).** ▪ Windows Server 2022 Azure Edition ▪ Windows Server 2025 ▪ Windows Server 2022 ▪ Windows Server 2019 **If you use Oracle:**

Tier Name	Description
	▪ Administrator version of the 32-bit Oracle Client (same version as the database) ▪ Oracle Provider for OLE DB ▪ Oracle Data Provider for .NET (ODP.NET) **If you use SQL Server, install one of the following:** ▪ MS OLE DB Driver for SQL Server (version 18.2.2.0 or later) ▪ MS SQL Server Native Client 11.0 (SQL Server 2012 Native Client, version 11.4.7001.0 or later)
Database Tier	**Oracle Database** ▪ Oracle 19.3 ▪ Oracle is supported on Windows, Linux, Unix, and Exadata **Microsoft SQL Server Database** ▪ Microsoft Azure SQL ▪ Microsoft SQL Server 2022[1] ▪ Microsoft SQL Server 2019[1] ▪ Microsoft SQL Server Express 2022 ▪ Microsoft SQL Server Express 2019 **Note:** [1] Supported on Linux and Unix.

Warning: If you have implemented TLS 1.2, see "Appendix F: Secure Transport Layer Security (TLS)" in this guide before you proceed with the installation.

Attention: For more information on the MS SQL Server Native Client drivers, see the Microsoft Support Matrix.

Integrating Cobra with Other PPM Products

Before integrating Cobra with any PPM products, including PM Compass, Open Plan, wInsight, or Acumen, Deltek recommends that you consider the following:

- Verify that you are installing the supported version of each PPM product.

  Attention: For more information, see "Supported PPM Product Versions" in this guide.

- For a new installation on a shared database, where Cobra 8.7 is installed first, older versions of other PPM products that do not support the new encryption protocol will not function or integrate with Cobra 8.7.
- If you are setting up a new database that will include Open Plan 8.7 (Cumulative 05 or earlier) or 8.6 (Cumulative Update 10 or earlier), you must run the Open Plan scripts prior to running scripts for other PPM products.
- You should consider installing or upgrading all products in the Deltek PPM suite to versions that support the new encryption model.

  Attention: For more information on the encryption model, see "Appendix K: PPM Encryption Conversion Utility" in this guide.

  This table lists the versions that support the new encryption model:

Product	Version
Acumen	8.9 or later
Acumen Touchstone	8.2 or later
Cobra	8.5 or later
Open Plan	8.6 Cumulative Update 05 or later
PM Compass	8.4 Cumulative Update 02 or later
wInsight Analytics	8.3.2 or later

- If you are installing Cobra on a database that already contains another Deltek PPM application that is not configured to use Unicode, you must first update the existing database tables to use Unicode structures before installing Cobra.

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Appendix B: Configuring Microsoft Project Server for Integration

Cobra supports direct integration with Microsoft Project Server. The procedure below requires access to SQL Server Studio and the Project Server database. When you complete the steps, the Integration Wizard displays the necessary pages where you can define the connection information for easy and direct integration with the Project Server.

> **Attention:** For more information on the supported versions of Microsoft Project Server, see "Appendix A: System Requirements" in this guide.

Follow the procedures in this section to configure Microsoft Project Server integration.

Identify the Name of the Microsoft Project Server Database

Follow this procedure to identify the Microsoft Project Server database name.

To identify the database name:

1. Open Microsoft SQL Server Management Studio.
2. Establish a connection to the SQL server configured for the MSP server.
3. Navigate to the Databases folder.
4. Identify the PWA database.

   While the default name is **ProjectWebApp**, it is essential to verify if any modifications have been made. If so, note the actual database name.

Edit the Script

Follow this procedure to edit the required script.

To edit the script:

1. Navigate to the **<Cobra Installation Directory>** and locate **MSP_Server_SQLServer.sql.**

   > **Note:** The script is located in the following folder: **C:\Program Files (x86)\Deltek\Cobra\Scripts\SQLServer\Create**.
   >
   > In a stand-alone deployment, the script is located on the workstation. In a multi-user deployment, the script is located on the file server.

2. Use a file editor to edit the script.
   - Replace all occurrences of **[PWA_Reporting]** with **[<Project Web App Database Name>]** (4 occurrences).
   - Replace all occurrences of **[PWA_Published].[dbo]** with **[pjpub]** (103 occurrences).

- Replace all occurrences of **[PWA_Published]** with **[<Project Web App Database Name>]** (5 occurrences).
- Replace all occurrences of **[dbo]** with **[pjrep]** (48 occurrences).

> **Note:** Make sure you also replace the square brackets around the database names in the script.

Run the Script on the Project Server Database

After editing the script, run it on the Project Server database.

Once the scripts are completed successfully, the MSP server databases are ready to run the Cobra integration using the MSP server. To define the connection information to the MSP server, use the New Connection dialog box of the Integration Wizard.

> **Attention:** For more information, see "New Connection Dialog Box of the Integration Wizard-MS Project" in the Cobra Help System under **Integration » Integration Wizard » Data Import Using Scheduling Tools and Files » Connection Selection Page of the Integration Wizard » New Connection Dialog Box of the Integration Wizard**.

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Appendix C: Cobra Web Service

The Cobra Web Service allows you to create applications that can programmatically execute Cobra functionalities over the network.

The Cobra Web Service consists of two parts:

- **Cobra Web Service Host**: This is a Simple Object Access Protocol (SOAP) based Windows Communication Foundation (WCF) service which exposes the Cobra functionalities over the network.
- **Cobra Web Service Client API**: This is a .NET dynamic link library which consumes the WCF service. Deltek recommends that the application developers use this library in their applications.

Deltek Products that Utilize Cobra Web Service

The following products use the Cobra Web Service:

- **Costpoint**: The Costpoint to Cobra Integration automates the loading of actual costs from Costpoint to Cobra.

  Note: Costpoint introduces updates to the Cobra integration which utilizes the Cobra Web Service beginning with version 7.1.1.

  For more information, see the *Deltek Costpoint to Cobra Integration Technical Guide*.

- **PM Compass:** The PM Compass Change Management process integrates with Cobra using the Cobra Web Services (Cobra Engine) on the PM Compass Server to execute Cobra processes. During the change management process, workflow step actions run Cobra processes such as the Integration Wizard, Reclass, Recalc, Advance Calendar, and Rolling Wave.

  Attention: For more information, see "Integrating with Cobra" in the *Deltek PM Compass Installation Guide*.

Cobra Web Service Help System

The Web Service Client API Help System offers a .NET dynamic link library.

Attention: To access the Cobra Web Service Help System, see "Cobra Web Service" in the Cobra Help System.

You can also access the Help system by navigating to the **Help » WebServiceClientAPI** sub-folder of your Cobra installation folder.

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Appendix D: Cobra Database Upgrade Wizard

In some cases, an Administrator may want to perform upgrade testing of sample and test databases when upgrading an existing Cobra installation. During installation of Cobra (new installation and upgrades), setup only allows you to upgrade one database, which is the default Cobra database. If you have more than one database listed in the Cobra Data Tool, use the Deltek Cobra Database Upgrade Wizard to upgrade multiple databases.

The Database Upgrade Wizard reads the list of databases in the **Datasources.dat** file, which is configured using the Cobra Data Tool, and allows you to select one or more to upgrade since each database can be at different versions. At the end of the steps, depending on the option you select, a log of the steps (and conversion, if automatic) is saved. To review the log, navigate to the Cobra installation directory and drill down to the Logs folder. You can identify the logs for the database that was converted by the Date/Time stamp of the folder.

Deltek recommends you backup your database before running the Database Upgrade Wizard.

Upgrade Multiple Databases Using the Database Upgrade Wizard

Use the Database Upgrade Wizard to upgrade multiple databases.

To upgrade multiple databases:

1. Click the **Start** menu and navigate to **Deltek Cobra 8.x » Deltek Cobra Database Upgrade Wizard**.

   > **Note:** If the Cobra Database Upgrade Wizard is not available on the **Start** menu, log onto your web server, navigate to the Cobra installation directory, drill down to the **Support\Utilities** folder, and double-click **DeltekCobra87DatabaseUpgradeWizard.exe**.

2. On the Welcome page, click **Next**.

   The wizard detects the database sources in the **Datasources.dat** file.

3. On the Data Sources to Upgrade page, select the data sources to upgrade and click **Next**.
4. On the Script Options page, select your database upgrade script option.
   - **Automatically run upgrade scripts during the installation**: Select this option to automatically update the Cobra database tables during the installation process.
   - **Create batch file (CreateUpgradeScripts.bat) to run scripts manually**: Select this option to create a batch file to upgrade the Cobra database tables (after installation) using a batch file.
   - **I will manually run the upgrade scripts**. No batch file will be created: Select this option to manually upgrade the Cobra database tables (after installation) using the upgrade scripts.

   > **Attention:** For steps to run the scripts, see "Run the Scripts Manually" under Post Installation in this guide.

5. On the Ready to Upgrade page, click **Next**.
6. On the Deltek Cobra Database Upgrade Wizard Complete page, click **Finish**.

Using the /configfolder Parameter

You can use the **/configfolder** parameter to launch the Cobra Database Upgrade Wizard and specify the location of the **Config.dat** and **IdeaBlade.Ibconfig** files if Cobra is not installed in the default installation directory.

Attention:

- For more information, see "Running Cobra with Command Line Parameters" in the Cobra Help System under **Getting Started » Launching Cobra**.
- For more information on the **Config.dat** and **IdeaBlade.Ibconfig** files, see the Cobra Data Tool Help System.

Log Files

Check the database conversion and installation logs after running the Database Upgrade Wizard.

Database Conversion Logs

The database conversion log files contain the output of the command processed against your database. You must send these files to Deltek if you encounter any errors during the database conversion. The batch file for each **.sql** script that is executed against the database when you select either of the first two options to apply the database changes generates these log files. If you are upgrading multiple databases using the Database Upgrade Wizard, make sure to check the log files after upgrading each database. This is important because subsequent database upgrade scripts will overwrite the previous log files.

Note: The Cobra Database Upgrade Wizard does not automatically back up your database before applying any scripts.

Installation Log

Review the installation log to check for errors in the installation. While the Database Upgrade Wizard is running, it stores the installation log in the **%localappdata%** location (**C:\Users\%username%\AppData\Local\)**, and a shortcut to the log file is added to the desktop of the user performing the installation. The log file name is like the name of the executable file but with a **.txt** file extension.

When the installation is complete, the installation log is moved to the Logs subfolder of the Cobra installation directory.

If you update any databases after the installation using the Database Upgrade Wizard, verify there are no errors in the conversion logs created when the scripts are applied for that database.

Search for each of the words **msg**, **timeout**, **error**, and **ORA-** the log files. If errors are found, contact Deltek Support Services and provide the contents of the log file.

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Appendix E: Configuring Cobra to Support Additional User Fields

Cobra enables you to use additional user character, numeric, or date fields within the application.

Configure Cobra to Use Additional User Fields

When you complete this procedure, you can insert **User Character Fields [6-10]**, **User Numeric Fields [6-10]**, or **User Date Fields [6-10]** as additional columns in the Spreadsheet pane of the Project view or select them on the pages of the Integration Wizard during integration.

To configure Cobra to use additional user fields:

1. Navigate to the Cobra installation directory and drill down to the **Scripts\Create** folder.

   For instance:

   - If you are using a Microsoft SQL database, navigate to **C:\Program Files (x86)\Deltek\Cobra\Scripts\SQLServer\Creat**e.
   - If you are using an Oracle database, **C:\Program Files (x86)\Deltek\Cobra\Scripts\Oracle\Create**.

   > **Note:** For client/server and n-tier deployments, you can locate the script in the Cobra folder on the server.

2. Run the required script manually.

   - If you are using a SQL Server database, locate **Cobra_Enable_AdditionalUserFields_SqlServer.sql** and run it using SQL Server Management Studio.
   - If you are using an Oracle database, locate **Cobra_Enable_AdditionalUserFields_Oracle.sql** and run it using the Oracle SQL Developer.

3. Modify the length of the user fields.

   > **Note:** This step is optional.

   If you are using a SQL Server database:

   ```
   BEGIN

   DECLARE @USERCHR_LENGTH INT = 100
   DECLARE @TYPE VARCHAR(100)

   SET @TYPE = 'NVARCHAR(' + CAST(@USERCHR_LENGTH as varchar) + ') NULL'
   ```

   If you are using an Oracle database:

```
DECLARE

unicode BOOLEAN := TRUE;
DEBUG   BOOLEAN := FALSE;
USERCHR_LENGTH  NUMBER  := 100;
--
```

4. If you are running Cobra in an n-tier setup, restart the **IdeaBlade** service.

   Attention: For more information, see "Restart the Service in an N-Tier Environment" under Performance Tips in this guide.

5. Launch Cobra.

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Appendix F: Secure Transport Layer Security (TLS)

Transport Layer Security (TLS), and its predecessor, Secure Sockets Layer (SSL), are protocols that use cryptographic algorithms to provide secure communication between machines. Although there are several versions of TLS and SSL, only TLS 1.2 and TLS 1.3 are considered secure. Since TLS 1.3 is still relatively new and not fully implemented throughout the industry, the best practices recommend using TLS 1.2 for secure communication between machines. Using the older protocols is considered a security risk. The industry standard is to enable TLS 1.2 and disable TLS 1.1, 1.0, and disable SSL 3.0, 2.0, 1.0.

For the Deltek application to communicate correctly between all tiers, the Operating System (OS) on all machines in the deployment must share the same TLS configuration. In addition, any components used by the application (the .NET Framework and database client drivers) must support the TLS version implemented on the OS.

If your company implements the secure TLS by enabling TLS 1.2 and disabling the older protocols on the machines in your environment, ensure the following are performed:

- The TLS configuration on all machines (servers and clients) must be the same.
- The Operating System must support TLS 1.2.

Attention: For more information, see https://learn.microsoft.com/en-us/security/engineering/solving-tls1-problem#ensuring-support-for-tls-12-across-deployed-operating-systems.

- The version of Microsoft .NET Framework in use must support TLS 1.2.
- If you are using load balancing, ensure that it is configured to support the hardened TLS settings.
- If you use Oracle, TLS 1.2 is supported with Oracle client versions 12.0.1 or later.
- The following Microsoft drivers support TLS 1.2:
  - SQL Server Native Client 11.0
  - Microsoft OLE DB Driver (not Provider)

Attention: For more information on TLS 1.2 on Windows Operating Systems and the Microsoft .NET Framework, see https://docs.microsoft.com/en-us/dotnet/framework/network-programming/tls#support-for-tls-12.

Note: For steps to configure Cobra n-tier to use SSL, see "Configuring Cobra N-Tier to Use Secure Socket Layers" in the Cobra Help System under **Advanced Topics**.

Troubleshooting Data Link Properties Issues

The following table outlines potential issues you might encounter when selecting the **Use a specific username and password** option, along with corresponding steps for resolution.

Issue	Troubleshooting Steps
Login failed for user '<Cobra DB User Name>'	**To fix this issue:** 1. In the Edit Data Source dialog box, click **Configure**. 2. In the Data Link Properties dialog box, click the Connection tab 3. Clear the **Blank password** option. 4. Select the **Allow saving password** option and enter your password. 5. Click the All tab. 6. Select **Persist Security Info**, click **Edit Value**, and select **True** in the **Property Value** field. 7. Click **OK**.
Keyword not supported: 'server spn'	**To fix this issue:** 1. In the Edit Data Source dialog box, click **Configure**. 2. In the Data Link Properties dialog box, click the All tab. 3. Select **Server SPN** and click **Edit Value**. 4. In the Edit Property Value dialog box, click **Reset Value**. 5. Click **OK**.
Invalid value for key 'integrated security'	**To fix this issue:** 1. In the Edit Data Source dialog box, click **Configure**. 2. In the Data Link Properties dialog box, click the All tab. 3. Select **Integrated Security** and click **Edit Value**. 4. In the Edit Property Value dialog box, click **Reset Value**. 5. Click **OK**.
Error encountered after initializing SQL Native Client: "[Error] Illegal characters in path"	**To fix this issue:**

Issue	Troubleshooting Steps
Error encountered when running .NET processes	1. In the Edit Data Source dialog box, click **Configure**. 2. In the Data Link Properties dialog box, click the All tab. 3. Select a property, click **Edit Value**, and perform the required action in the Edit Property dialog box: ▪ For **Integrated Security**, click **Reset Value**. ▪ For **Initial File Name**, click **Reset Value**. ▪ For **Server SPN**, click **Reset Value**. ▪ For **Persist Security Info**, select True in the **Property Value** field. ▪ For **Data Type Compatibility**, set it to **0** or blank. 4. Click OK.

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Appendix G: Configuring Oracle Primavera P6 for Integration

There are two methods for integration with Oracle Primavera.

- **Primavera P6 Enterprise Project Portfolio Management (P6 EPPM):** To utilize web services, you need to install the P6 EPPM system (Primavera P6 Enterprise Project Portfolio Management).
- **Primavera P6 Professional Project Management (P6 PPM):** P6 PPM integrates using the API.

If you are currently using P6 PPM and intend to integrate it with Cobra, note that your database must be converted or migrated to the Enterprise edition. You cannot directly attach your Professional database to the Enterprise Server.

> **Note:** For guidance, contact Oracle Primavera Customer Care.

Integrate Cobra with Primavera Web Services (P6 EPPM)

Consult the Primavera documentation for detailed instructions on installing and configuring the web services.

> **Note:** Primavera P6 LDAP (Lightweight Directory Access Protocol) is not supported.

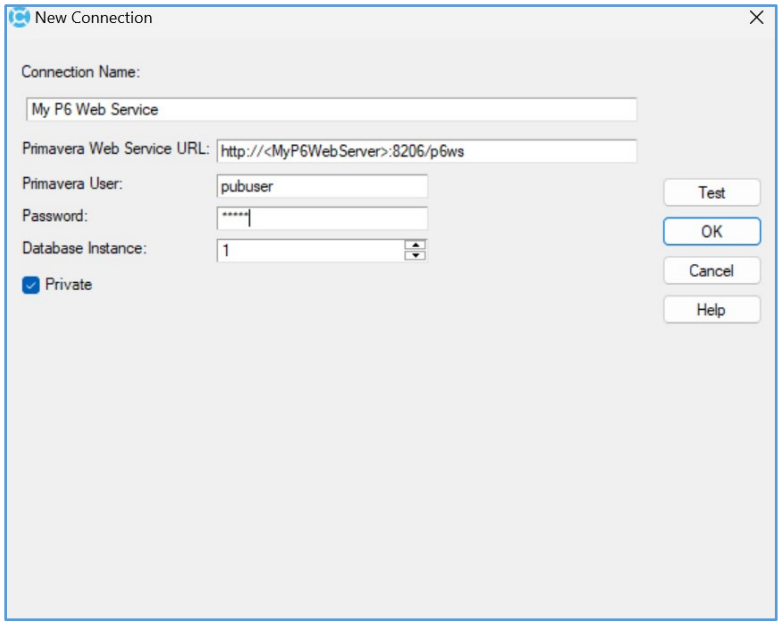
> **Attention:** For more information, refer to the P6 EPPM Web Services Programming Guide.

Test the Connection in Cobra

After installing the web services, you can verify the connection in Cobra.

To test the connection:

1. In Cobra, click the Integration tab, and then click **Primavera**.
2. On the Integration Configuration page, select **Primavera Web Service** and click **Next**.
3. On the Connection Selection page, click **New**.
4. In the New Connection dialog box, enter the Primavera Web Service connection information.



- **Web Service URL**: Use this field to enter or edit the web service URL for the Primavera P6 connection.

  For instance, http://<MyP6WebServer>:8206/p6ws. If you require a secure connection to the P6 server, an https connection is required.

- **Username**: Use this field to enter the Primavera P6 application username related to the selected database. Ensure that the login has access to all projects. This login will be utilized by Cobra to access Primavera P6 web services when retrieving information from the Primavera P6 projects.

  The user accessing Primavera P6 web services in Cobra is not necessarily the same as the logged-in Cobra user. While the Cobra user can view all Primavera P6 projects within Cobra, they do not require any access rights to Primavera P6 in order to see the scheduled projects.

- **Password**: Use this field to enter the Primavera P6 application password related to the selected database.

- **Database**: Use this field to select the Primavera P6 database to which you want to connect.

- **Private**: Select this checkbox to mark the connection as private. By default, this checkbox is selected.

5. Click **Test** to verify that the username and password are valid for the selected database.

Authentication Mode

Your authentication mode configuration depends on the protocol you are using.

- If you are only using HTTP (not SSL) to connect to your P6 Server, you must configure the Primavera P6 Web Services with Cookies authentication mode.
- If you are using SSL (HTTPS) to connect to your P6 Server, you must configure the Primavera P6 Web Service with a Username Token Profile authentication mode.

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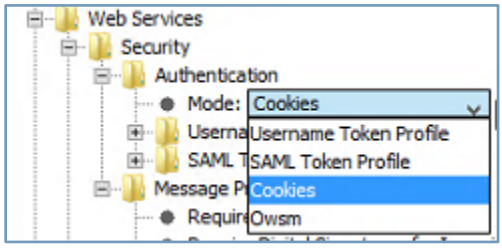
Modify the Authentication Mode

Use this procedure to select the appropriate authentication method.

To modify the authentication mode:

1. Access the Primavera P6 Administrator Tool.
2. On the Configurations tab, select your Primavera P6 configuration.
3. Navigate to **Web Services » Security » Authentication**.
4. In the Authentication settings, select the appropriate method for authentication.



Message Protection Settings

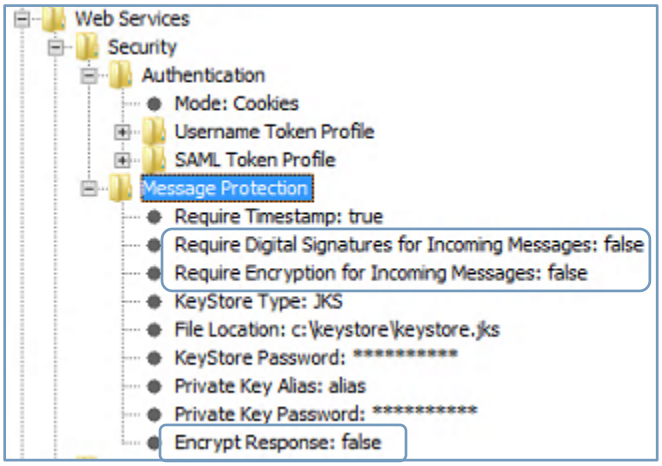
Message protection settings are crucial for ensuring secure communication between systems.

Configure the Message Protection Settings

To ensure successful integration and connection, configure the Message Protection settings accordingly.

To configure Message Protection settings:

1. Access the Primavera P6 Administrator Tool.
2. On the Configurations tab, select your Primavera P6 configuration.
3. Navigate to **Web Services » Security » Message Protection**.
4. Set the following settings:
   - **Require Digital Signatures for Incoming Messages** = **False**
   - **Require Encryption for Incoming Messages** = **False**
   - **Encrypt Response** = **False**



Database Connection Pool Settings

The P6 integration system allows for up to 5 concurrent jobs to run simultaneously. However, when submitting a large batch of jobs, it is important to consider that a considerable number of P6 database connections may be utilized in a brief period.

Deltek recommends adjusting the default values for the connection pools associated with each of the P6 databases used for integration. These connection pools come in three types: PMR, PML, and PMT.

Attention: For more information, see the following documents on the Oracle Support Site (search for the document ID):

- How Database Connection Pools Are Managed in P6 Web Access And Integration API (Doc ID 909861.1)
- How To Change the Connection Pool Settings for P6 Web Access (Doc ID 1484704.1)

This Oracle help topic provides an explanation of the various values and their meanings: https://docs.oracle.com/cd/E25030_01/English/Install_and_Config/Manual_Install_and_Config/helpmain.htm?toc.htm?51557.htm

Java Memory

Increasing the Java memory allocation for the P6 Server and P6 Web Services on the managed server to at least 4GB will enhance performance and ensure smoother operations.

Increase Java Memory

Follow this procedure to increase the P6 Server and P6 Web Services memory to 4GB.

To increase Java memory:

1. Log into the Weblogic Console.
2. Navigate to **Environment » Servers**, and select **P6**.
    a. On the Server Start tab, select **Lock & Edit**.
    b. In **Arguments**, change **Xms512m -Xmx1024m** to **-Xms4096m -Xmx4096m**.

c. Click **Save** and then click **Activate Changes**.

3. Navigate to Select Environment » Servers, and select P6WebServices.
   a. On the Server Start tab, select Lock & Edit.
   b. In **Arguments**, change **Xms512m -Xmx1024m** to **-Xms4096m -Xmx4096m**.
   c. Click **Save** and then click **Activate Changes**.
4. Restart the P6 managed server.

Integrate Cobra with Primavera (P6 PPM) API

Prior to integrating Cobra with the Primavera P6 PPM API, ensure that you have the following prerequisites in place:

- **Java Runtime Environment**: Install the Java™ Platform, Standard Edition Development Kit (JDK) installer. JDK 1.8 or later is required.

  Note: To download the installer, go to the Oracle site.

- **Supported Operating Systems**: The P6 Integration API is compatible with Windows, Linux, and the following Unix operating systems: Solaris, HP, AIX.
- **Database**: Ensure that you have the necessary connection information for the database setup.
- **Primavera P6 Integration API Installer for Microsoft Windows x64**: This installer facilitates the integration of Primavera P6 with other systems and services.

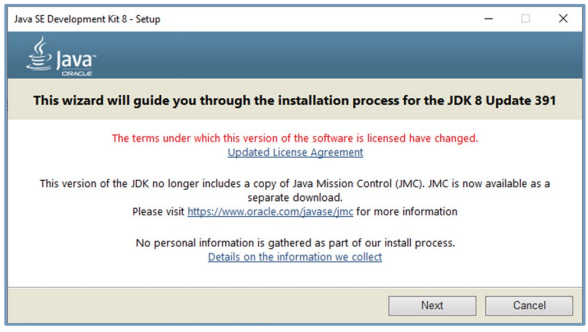
Note: Oracle recommends that the Primavera API directory and its subdirectories have read, write, and execute permissions for users.

Install JDK

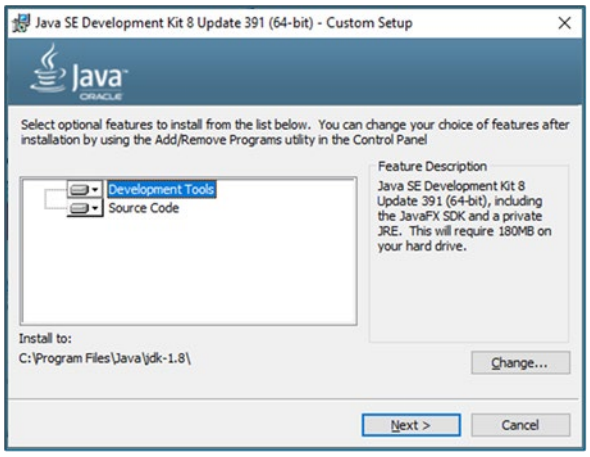
During the installation of Primavera P6, it is essential to specify the JDK Home Directory. Failure to install the Java Development Kit (JDK) may result in encountering an error.

To install JDK:

1. Double-click the JDK installer to launch the installer wizard and click **Next**.



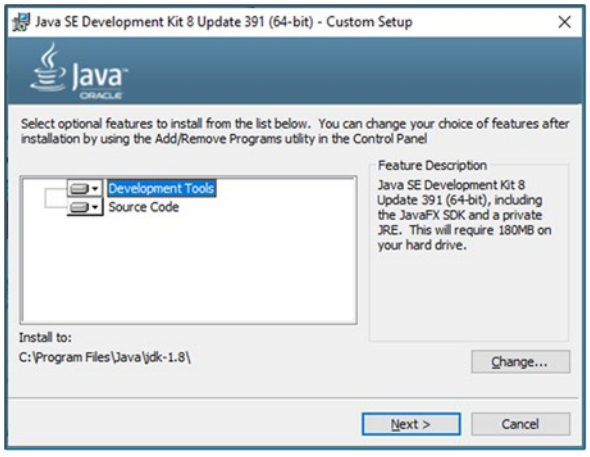
2. On the Custom Setup page, select the features that you want to install and click **Next**.



3. On the Destination Folder page, specify a custom folder where you want to install the JDK or accept the default location provided by the installer and click **Next**.

> **Important:** Take note of the JDK installation path. You will need this information later when specifying the JDK Home Directory.

4. Once the installation is complete, click **Close**.



Set Java Home to the JDK Installation Path

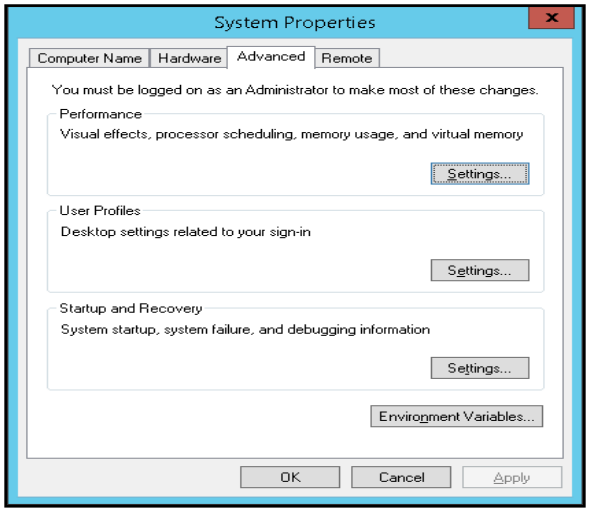
Follow this process to configure the Java Home to point to the JDK installation path. You will utilize this JDK installation path when configuring Java Home Directory later.

To set Java Home to JDK installation path:

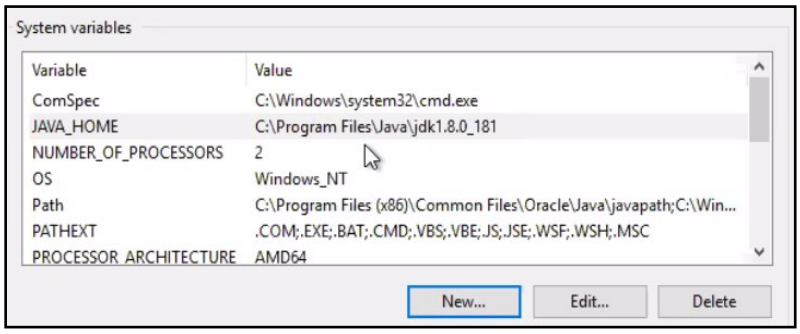
1. In Windows, right-click **My Computer**, click **Properties**, and then click **Advanced System Settings**.

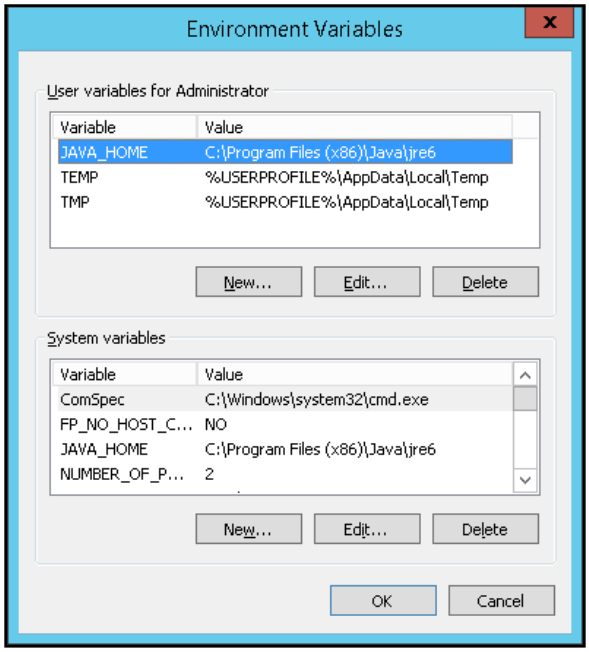
> **Note:** Alternatively, click **Start » Run** and enter **sysdm.cpl**.

2. In the System Properties dialog box, click **Environment Variables**.



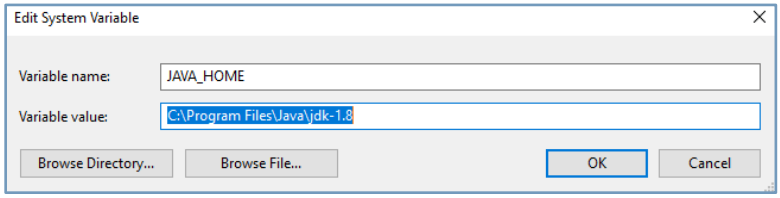
3. In the Environment Variables dialog box, click **JAVA_HOME** and then click **Edit**.





4. In the Edit User Variable dialog box, enter the JDK installation path in the **Variable value** field and click **OK**.

> **Note:** This is the JDK installation path specified in "Step 3" in Install JDK.

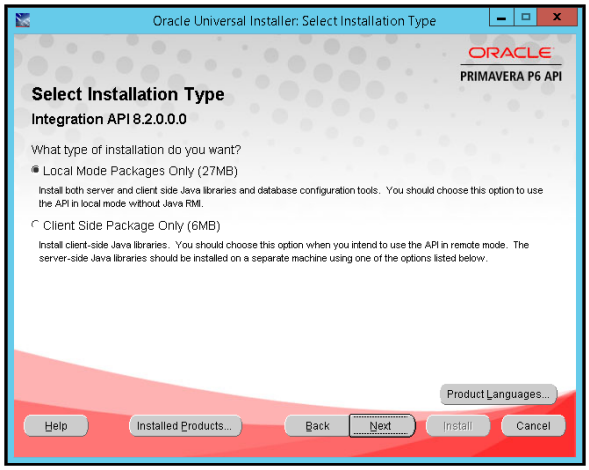


Run the Primavera P6 Integration API Installer

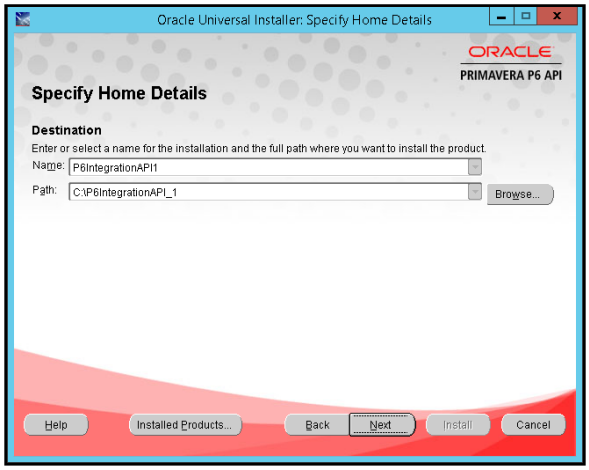
Follow this procedure to run the Primavera P6 installer.

To run the Primavera P6 API installer:

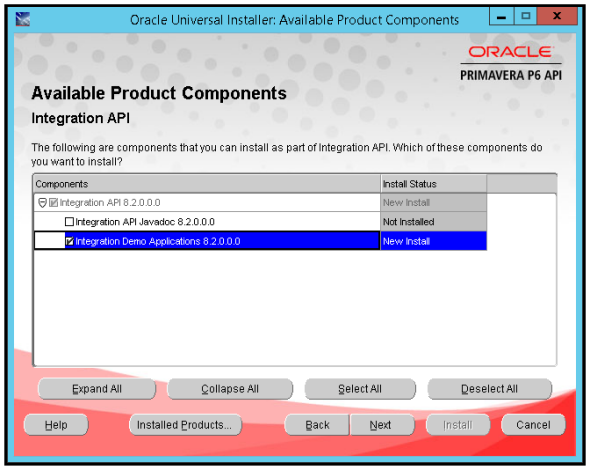
1. Navigate to the location of the Primavera P6 installer and run it as an Administrator.
2. On the Select the Installation Type page, click **Local Mode Packages** and click **Next**.



3. On the Specify Home Details page, enter or specify the installation name and full path.

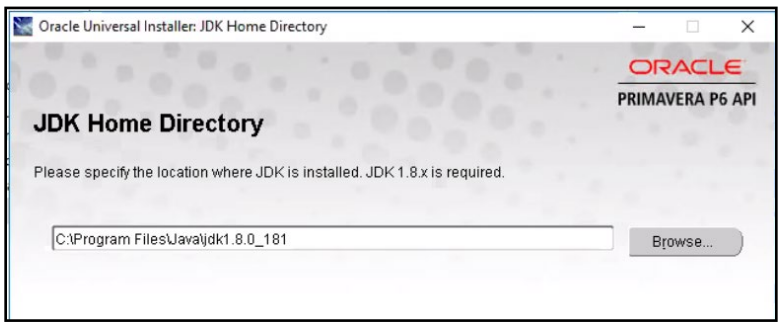


4. On the Available Product Components page, click **Integration Demo Application**.

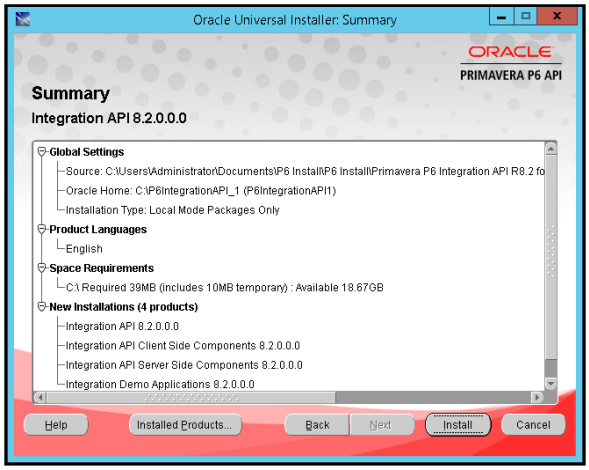


5. On the JDK Home Directory page, specify the path where JDK is installed and click **Next**.

> **Note:** This is the JDK installation path that you specified in "Step 4" in Set Java Home to the JDK Installation Path.



6. On the Summary page, click **Install**.



7. Minimize the Primavera P6 installer and proceed to the next procedure.

Copy Bootstrap and Keystore from the Server

Follow this procedure to copy Bootstrap and Keystore from the server.

To copy Bootstrap and Keystore from the server:

1. From the EEPM Server, share the Primavera installation directory with read access to the Primavera API directory on the API client.

   > **Note:** If Primavera P6 is not secured, you may not have the **.jks** files.

2. From the EPPM Server, copy the following files to the Primavera API directory on the API client.
   - **BREBootStrap.xml**: Located in **C:\ <Primavera installation directory> \api**
   - **p6keystore.jks**: Located in **C:\<Primavera installation directory> \database)**

   > **Note:** These files were created after running the Primavera P6 API integration installer.

3. On the API client, open the Administrator Command Prompt.
4. Change the directory to the Primavera API directory.

   For instance, **cd C:\P6IntegrationAPI_1**.

5. Execute the following command to generate a new keystore password file (**p6kspass.pwf**) in the Primavera API directory on the API client.

   ```
   \\<eppm-server>\<Primavera installation
   directory>\database\installp6keystore.bat -genpassfile
   ```

Note:

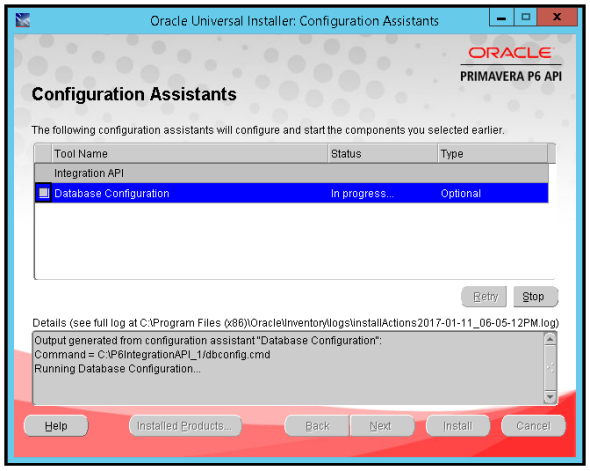
- Replace **<eppm server>** with the server where the Primavera database is installed.
- Replace **<Primavera installation directory>** with the shared Primavera installation directory.

Run the Database Configuration Utility

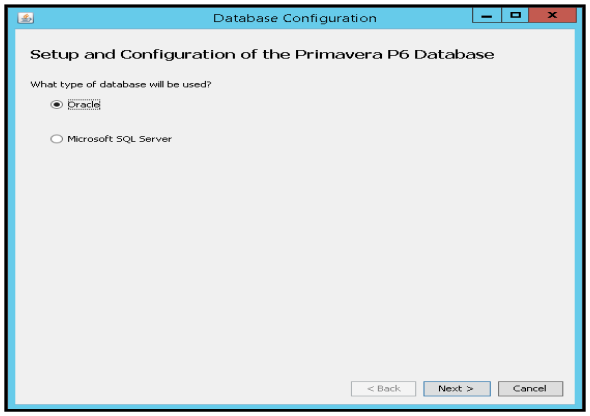
Follow this procedure to set up and configure the Primavera P6 database.

To run the Database Configuration Utility:

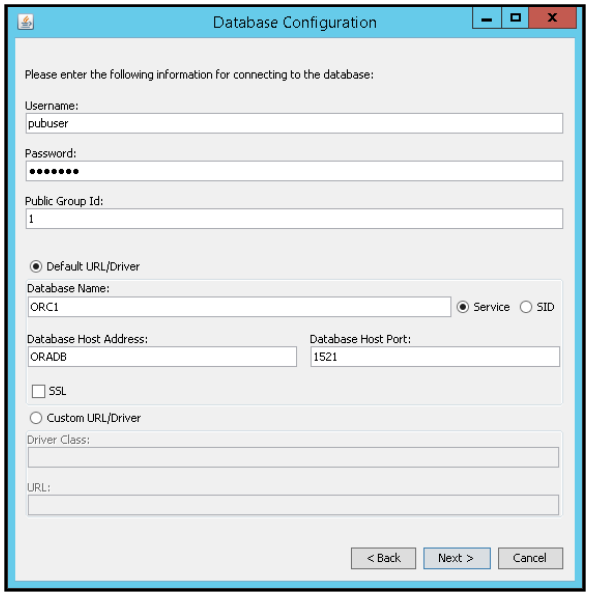
1. Maximize the Primavera P6 installer.
2. On the Configuration Assistants page, click **Database Configuration**.



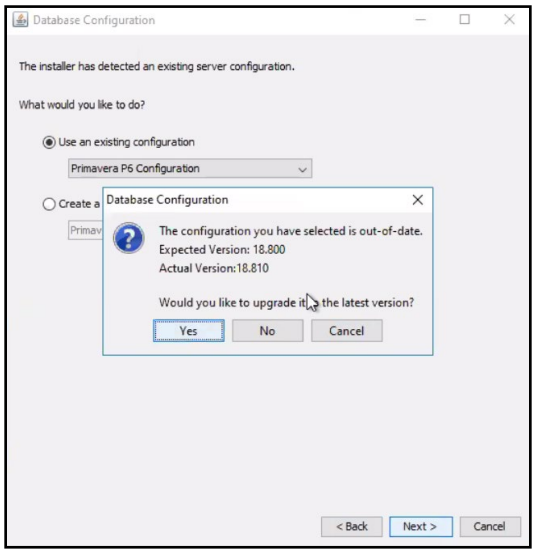
3. On the Database Configuration page, click **Oracle** and click **Next**.



4. Enter or specify the required information to connect to the database and click **Next**.



5. Click **Yes** if the wizard prompts you to upgrade to the latest version.



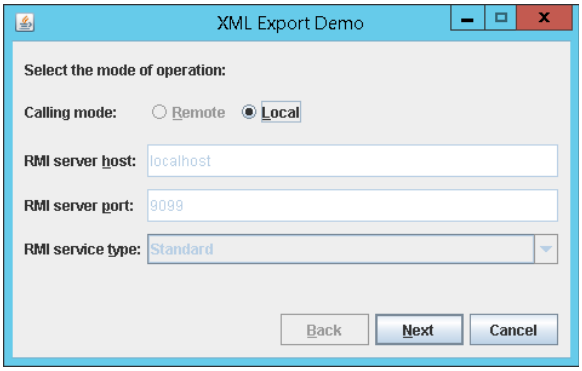
6. Click **Exit** when installation is complete.

Run the Demo Export Command

Follow this procedure to test the API by running the Demo Export command.

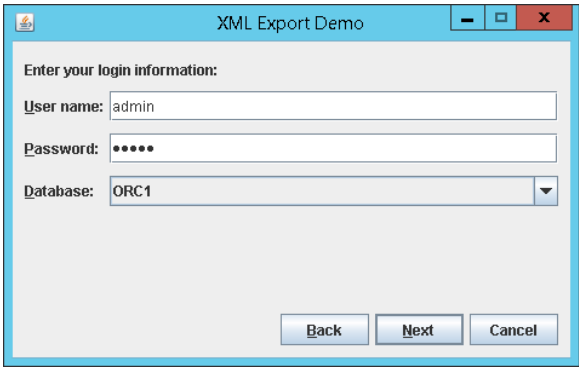
To run the Demo Export command:

1. Navigate to the Primavera P6 installation folder, locate **demoexport.cmd**, and run it.
2. In the XML Export Demo dialog box, click **Local**, and click **Next**.

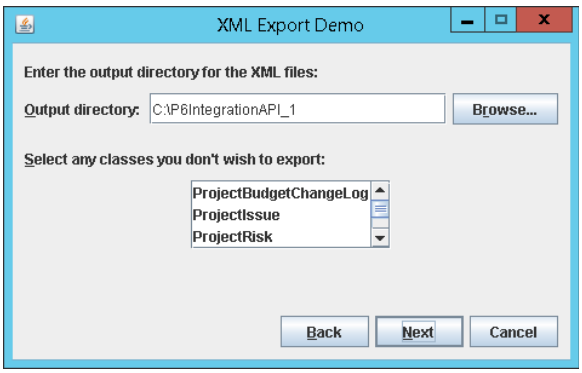


Note: If Primavera P6 uses the P6 Professional format (default), you may encounter an error. For instructions on how to fix it, see "Troubleshooting Cobra Primavera Setup Errors" in this guide.

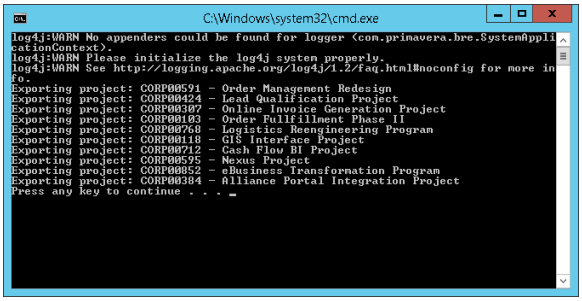
3. Specify your login information and click **Next**.



4. Specify the output directory of the XML files and click **Next**.



The command screen displays that the test is successful.

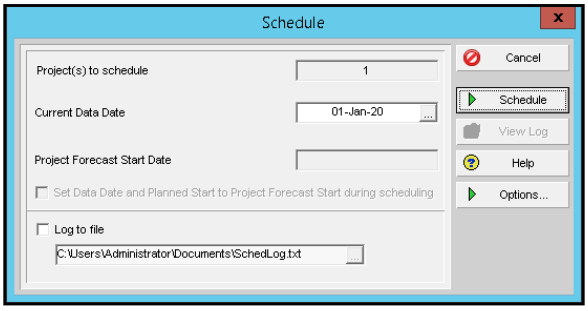


Set the Data Date in Primavera P6

When you follow this procedure, open the project in both Cobra and Primavera P6. To ensure proper API functionality and consistent time phasing between the two applications, make sure that the calendars in both applications match.

To set the data date:

1. Launch Cobra and open the project.
2. Launch Primavera P6 and open the project.
3. Set the data date in Primavera.
    a. Click **Tools » Schedule**.
    b. In the Schedule dialog box, specify the required information.



> **Note:** The date specified in the **Current Data Date** field must match the Cobra project's status date.

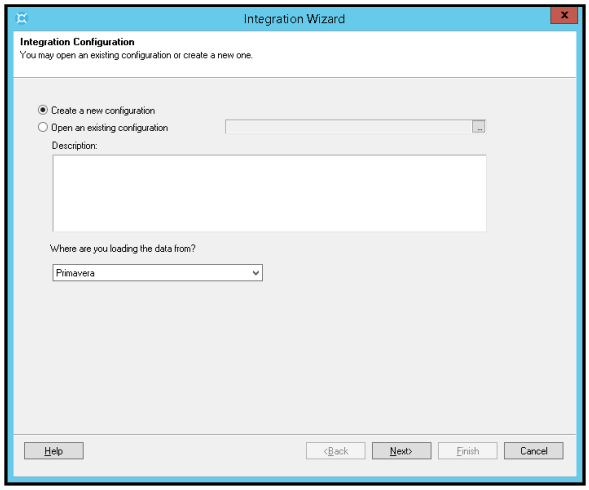
Run the Integration Wizard

Follow this procedure to import Primavera data to Cobra using the Primavera P6 API.

> **Attention:** For more information on the Integration Wizard pages, see "Integration Wizard-Scheduling Tools and Files" in the Cobra Help System under **Integration » Integration Wizard » Data Import Using Scheduling Tools and Files**.

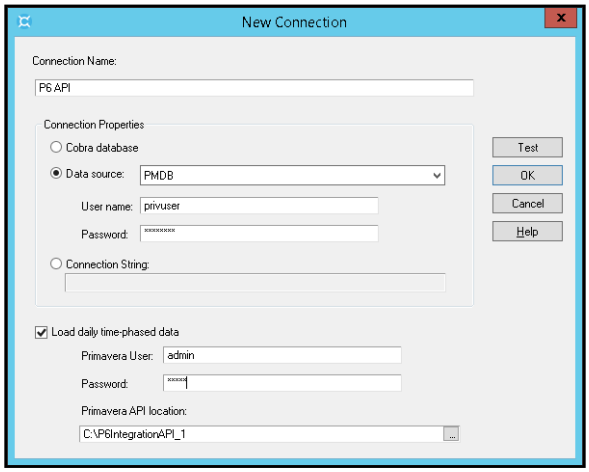
To run the Integration Wizard:

1. In Cobra, click the Integration tab and then click **Primavera**.
2. On the Integration Configuration page, specify the required fields, and click **Next**.



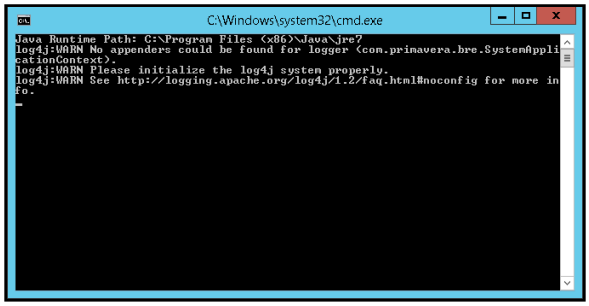
3. In the New Connection dialog box, specify the required fields to create a new connection to the Primavera P6 database.

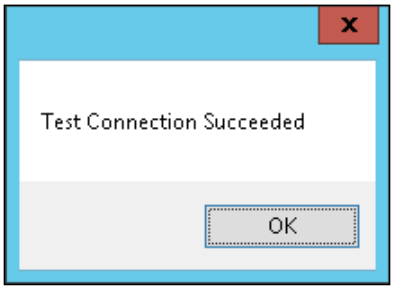
> **Attention:** For more information, see "New Connection Dialog Box of the Integration Wizard-Primavera" in the Cobra Help System under **Integration » Integration Wizard » Data Import Using Scheduling Tools and Files » Connection Selection Page of the Integration Wizard » New Connection Dialog Box of the Integration Wizard**.



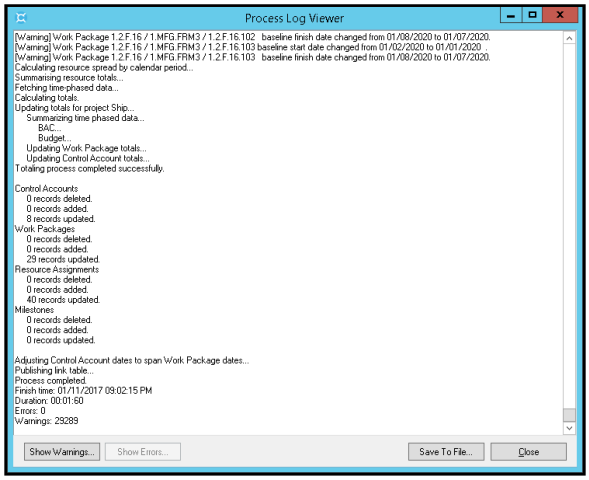
4. Click the **Test** button.

   The following screen and message box display.





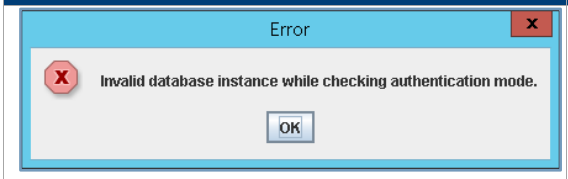
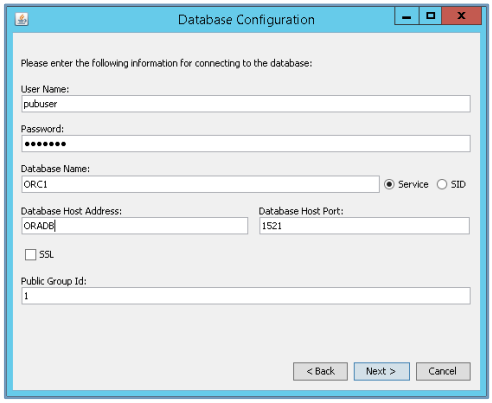
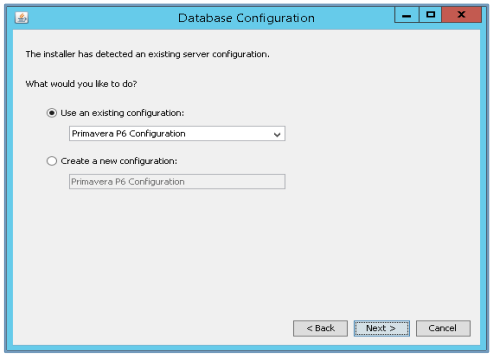
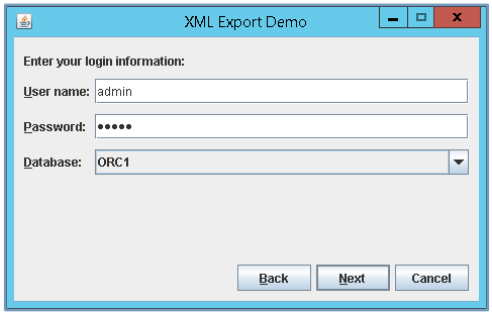
5. Complete the pages of the Integration Wizard and check the process log.

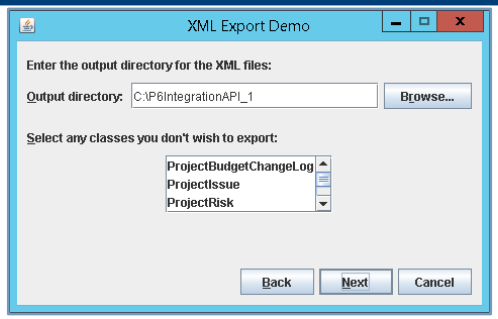
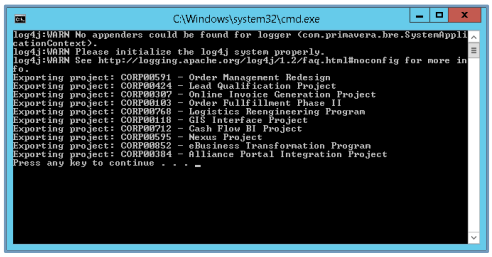
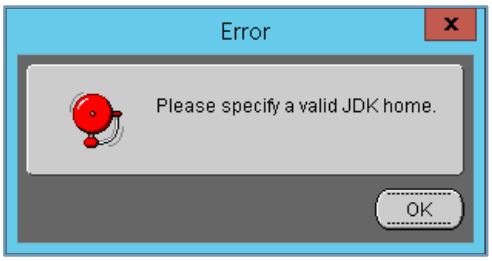


Troubleshooting Cobra Primavera Setup Errors

This table outlines potential issues that you might encounter during the setup of the Cobra Primavera Integration, along with corresponding troubleshooting steps.

Issue and Cause	Troubleshooting Steps
Issue: Error encounter when running the Demo Export command.	**To fix this issue:** 1. Navigate to the P6 Professional directory and locate and copy **intgserver.jar** to the API directory.

Issue and Cause	Troubleshooting Steps
 **Cause**: Primavera P6 uses the P6 Professional format, which is the default format.	2. Navigate to the API installation directory, locate **dbconfig.cmd** and run it. 3. On the Database Configuration page, verify that the connection information is correct and click **Nex**t.  4. Click Use an existing configuration, select Primavera P6 Configuration and click Next.  5. Navigate to the Primavera P6 installation folder, locate **demoexport.cmd** and run it. 6. In the XML Export Demo dialog box, verify that the information is correct and click **Next**. 

Issue and Cause	Troubleshooting Steps
	 The command screen displays that the test is successful. 
Issue: Error encountered when running the Primavera P6 installer.  **Cause**: Java Development Kit is not installed.	**To fix this issue:** ▪ Install JDK and set the environment variable for Java.
Issue: Primavera P6 R8.1 and Primavera R8.2 Integration APIs are not designed to work with Primavera P6 R8.1 and Primavera R8.2 Professional databases.	**To fix this issue:** 1. Install Primavera P6 Professional R8.1 or Primavera P6 R8.2. 2. Download, extract, and install the Integration API but do not run the Database Configuration Wizard. 3. Copy the integration jar file from the Primavera P6 Professional installed folder to the API installation folder.

Issue and Cause	Troubleshooting Steps
	For instance, copy intgserver.jar from C:\Program Files\Oracle\Primavera P6\P6.Professional\Pro\Java\lib to C:\P6IntegrationAPI_1\lib. 4. On the **Start** menu, navigate to **Oracle – Primavera P6 » Primavera P6 API » Database Configuration** and right-click it, and select **Run as administrator**. 5. On the **Start** menu, navigate to **Oracle – Primavera P6 » Primavera P6 API » Demo » General Demo** to run the API Demo. **Note:** This step is optional.

Useful Links

The following table provides a list of useful Oracle KBAs for reference.

Oracle Document ID and Description	Document Link
Doc ID 1332754.1: P6 Web Services and Integration API Errors: "Invalid database instance while checking authentication mode" and "YOUR DATABASE SCHEMA TYPE DID NOT MATCH THE SCHEMA TYPE EXPECTED BY PRIMAVERA"	P6 Web Services and Integration API Errors: "Invalid database instance while checking authentication mode" and "YOUR DATABASE SCHEMA TYPE DID NOT MATCH THE SCHEMA TYPE EXPECTED BY PRIMAVERA" (oracle.com)
Doc ID 2268703.1: External Storage of Encryption Keys for P6 EPPM	External Storage Of Encryption Keys For P6 EPPM (oracle.com)

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Appendix H: Configure Oracle ODP.NET in Cobra

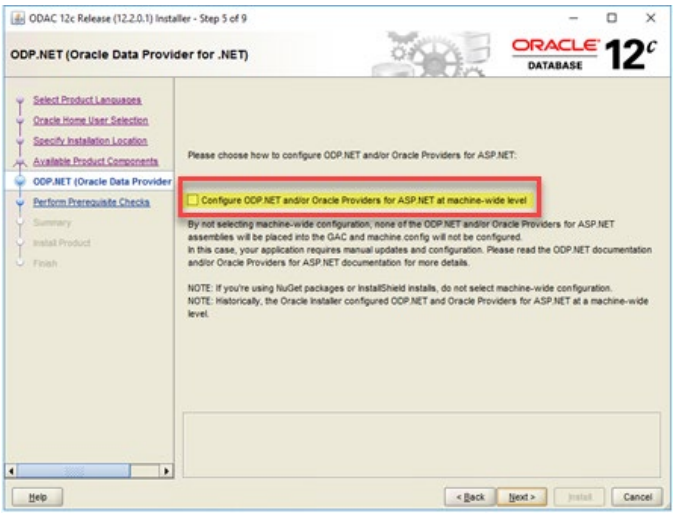
If you install the Administrative Oracle Client before installing Cobra, the drivers are automatically registered. If you uninstall and reinstall the Oracle client, you must manually register the ODP.NET driver in the Global Assembly Cache (GAC).

To configure Oracle ODP.NET:

1. Download the installer from the Oracle site.

   Ensure that you choose the ODAC installer corresponding to the version of Oracle you are using.

2. Launch the installer and follow the prompts to proceed with the installation.
3. On the page where the installer prompts you to configure ODP.NET and/or Oracle Providers, select the **Configure ODP.NET and/or Oracle Providers for ASP.NET at the machine-wide level** option.



> **Note:** The option label varies depending on the ODAC version you are installing.

4. Complete the pages of the installation wizard.
5. Verify that ODP.NET is registered in the GAC.
   a. Navigate to the **<Microsoft.NET Framework Directory>\<version>\Config** folder on your machine.

      For instance, **C:\Windows\Microsoft.NET\Framework\v4.0.30319\Config**.

   b. Locate the machine.config file and open it using a text editor, such as Notepad.
   c. Find **<DBProviderFactories>** and verify that "**ODP.NET, Unmanaged Driver**" exists.

   For example:

```
<system.data>
    <DbProviderFactories>
```

```
      <add name="ODP.NET, Managed Driver"
invariant="Oracle.ManagedDataAccess.Client" description="Oracle Data
Provider for .NET, Managed Driver"
type="Oracle.ManagedDataAccess.Client.OracleClientFactory,
Oracle.ManagedDataAccess, Version=4.121.2.0, Culture=neutral,
PublicKeyToken=89b483f429c47342"/>

      <add name="ODP.NET, Unmanaged Driver"
invariant="Oracle.DataAccess.Client" description="Oracle Data Provider
for .NET, Unmanaged Driver"
type="Oracle.DataAccess.Client.OracleClientFactory, Oracle.DataAccess,
Version=4.121.2.0, Culture=neutral, PublicKeyToken=89b483f429c47342"/>

    <add name="Microsoft SQL Server Compact Data Provider 4.0"
invariant="System.Data.SqlServerCe.4.0" description=".NET Framework Data
Provider for Microsoft SQL Server Compact"
type="System.Data.SqlServerCe.SqlCeProviderFactory,
System.Data.SqlServerCe, Version=4.0.0.0, Culture=neutral,
PublicKeyToken=89845dcd8080cc91"/></DbProviderFactories>

  </system.data>
```

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Appendix I: The BCR Snapshot Database

The Budget Change Request (BCR) Analysis report provides a summary and detailed information about the changes processed in a particular period.

The BCR Analysis report, which is generated in PM Compass, displays before and after data for change requests processed for a period and highlights any discrepancies; that is, data that was not processed as planned.

In order to run the BCR Analysis report, you must first set up the BCR Snapshot database using the Cobra Data Tool. The BCR Snapshot database must have a schema that matches your production or source database.

The steps to set up the BCR Snapshot database are discussed in detail in this appendix.

Once the BCR Snapshot database is set up, open PM Compass, and access the BCR Analysis Report form, where you can filter the data that you want to in the report, and run the report itself.

Attention: For more information, see "BCR Analysis Report" in the PM Compass Help System under **Reports**.

Important Terms

This table describes some terminologies used in BCR Analysis report feature.

Term	Description
BCR	A Budget Change Request (BCR) shows the state of a change in three phases: ▪ **Before**: The state of the project data before the BCR. ▪ **Requested**: The requested changes to the project data. ▪ **After**: The state of the project once the changes have been applied to the live project.
BCR Analysis Report	The BCR Analysis report can be displayed for one or multiple on many BCRs, showing all three phases of data for each BCR. An individual BCR may contain a small or large amount of data, which only pertains to the entities (Control Accounts and below) that are affected by the BCR.
BCR Snapshot	A BCR Snapshot represents the Cobra project data for one phase of a BCR, along with all relevant ancillary data:

Term	Description
	▪ **Original**: A snapshot of the live project data when the PM Compass sandbox is created. Control accounts added to the BCR will also be added to this snapshot. ▪ **Before**: A snapshot of the current live project data up to the point of completing the BCR. ▪ **Requested**: A snapshot of the PM Compass sandbox project up to the point of completing the BCR. ▪ **After**: A snapshot of the live project data once the BCR changes have been applied.
Snapshot Database	A new database/schema created to hold the snapshots used in the BCR Analysis Report. The BCR Snapshots are stored in a separate database from the Cobra-PM Compass main database. The Snapshot database must have a schema that matches the production or source database. This schema is expected to have all the same Cobra tables, shared tables, objects, and configuration.
Main Database	This term refers to the source or production database.

BCR Analysis Report Requirements

It is important to understand the requirements to configure the BCR Snapshot database to support running the BCR Analysis report in PM Compass.

These requirements are as follows:

- You must install Cobra 8.5 or later and PM Compass 8.2 Cumulative Update 10 or later.
- You must set up the BCR Snapshot database.
- You must configure the Cobra Data Tool to connect to the BCR Snapshot database.

Implementation Summary

This is the summary of steps to set up the BCR Snapshot database to support running the BCR Analysis report in PM Compass.

Step	Description
1	Install or upgrade Cobra and PM Compass in the main database.

Step	Description
	▪ Install or upgrade Cobra. ▪ Install or upgrade PM Compass.
2	Run the scripts to create the Snapshot database.
3	Configure the Cobra Data Tool to connect to the Snapshot database.
4	Add additional results and the user field to the Snapshot database. ▪ Add additional results to the Snapshot database using the Cobra Data Tool. ▪ Add additional user fields to the Snapshot database.
5	Run the **RecreateAsGlobalTempTables_Oracle.sql** script. This step is optional.

After setting up the Snapshot database, processing a Budget Change Request will automatically create snapshots. Subsequently, you can generate the BCR Analysis Report in PM Compass.

Step 1: Install or Upgrade Cobra and PM Compass in the Main Database

Follow the procedures in this guide to install Cobra and see the *PM Compass Installation Guide* for instructions on installing PM Compass and creating or upgrading the main database.

Step 2: Run the Scripts to Create the Snapshot Database

The Snapshot database must have a schema that matches the main database. This database/schema should contain all the Cobra tables, and the data structures must align.

Follow this procedure to create the Snapshot database, which will be linked to the main database and should be dedicated exclusively to one main database.

1. Verify that Cobra is not running.
2. Create a new blank database or schema.
3. Run the required scripts to create the tables in the snapshot database.

Attention: For more information, see "Run the Scripts Manually" under Post Installation in this guide

   For instance, run **RunAllCreateScripts_Oracle.bat** using the following parameters: **OracleServer/Snapshot Cobra Password**

   where **Snapshot** is the new database/schema created to hold the snapshots.

   Sample script: RunAllCreateScripts_Oracle.bat OracleServer/Snapshot Cobra Password

4. Run **RunBCRSSCreateScripts_Oracle.bat** using the same parameters in Step 3.

   Sample script: RunBCRSSCreateScripts_Oracle.bat OracleServer/Snapshot Cobra Password

5. Run **RunBCRSSCreateScripts_Oracle.**bat against the main database using the same parameters in Step 3.

Sample script: RunBCRSSCreateScripts_Oracle.bat OracleServer/Cobra Cobra Password

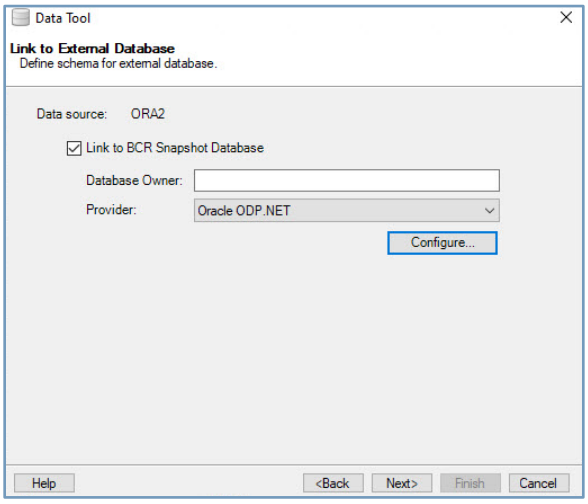
> **Note:** Running these required scripts creates the **CHNG_REQST** and **CHNG_RQST_PROGRAM** tables on the main database.

Step 3: Link the Snapshot Database to the Main database

Follow this procedure to connect to the Snapshot database using the Cobra Data Tool.

To use the Cobra Data Tool to connect to the Snapshot database:

1. Run the Cobra Data Tool as an Administrator.
2. In the Data Tool Login dialog box, enter your password and click **OK**.
3. On the Data Sources page, select the data source of the main database.
4. Click **Next** and navigate the pages of the Cobra Data Tool Wizard.
5. On the Link to External Database page, perform the following actions and click **Next**.
    a. Select the **Link to External Database** option.
    b. Specify the connection details of the Snapshot database using the same data provider as the main Cobra data source.



> **Note:** BCR Analysis report will not work using SQL Server Native Client 11.0 data provider.

> **Attention:** For more information on how to configure the Snapshot database configuration, click the **Help** button.

6. On the Confirmation page, click **Finish** when the **Link to External Database will be updated** message is displayed.
7. Restart the Cobra Web Service.

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Step 4: Add Results to the Snapshot Database

The Snapshot database must mirror the results of the main database. To achieve this, take note of the following:

- Create a new data source for the Snapshot database.

  Set up a fresh data source specifically for the snapshot database. This ensures that it captures the same results as the main database.

- Prevent Cobra users from selecting the Snapshot data source.

  When adding results to the Snapshot database, perform the necessary steps from an admin client installation. Avoid using the Citrix user folder, as this folder is visible to all Cobra users.

  After adding results to the Snapshot database, delete the data source associated with it. This prevents users from accidentally selecting it.

- Customize the Data Tool.

  You can point the Data Tool to a different **datasources.dat** file by using a parameter during startup.

  > **Attention:** For more information, see "Running Cobra with Command Line Parameters" in the Cobra Help System under **Getting Started » Launching Cobra**.

To add results to the Snapshot database:

1. Run the Cobra Data Tool as an Administrator.
2. In the Data Tool Login dialog box, enter your password and click **OK**.
3. On the Data Sources page, select the main database connection and click **Next**.
4. On the Options page, select **Define Results** and click **Next**.
5. On the Define Results page, take note of the results defined for the main database.
6. Click **Back** twice to return to the Data Sources page.
7. Click **Add** to add a new data source connection to the snapshot database.

   > **Attention:** For more information, see "Add a New Data Source" in this guide.

1. On the Data Sources page, select the new data source and click **Next**.
2. On the Options page, select **Define Results** and click **Next**.
3. On the Define Results page, add the same results for the main database to the snapshot database.
4. Click **Next** and then click **Finish**.

Add Additional User Fields to the Snapshot Database

If you have modified your main Cobra database to have additional user fields on the CAWP table, run the required script to add the additional user fields to the Snapshot database.

Attention: For more information, see "Appendix E: Configuring Cobra to Support Additional User Fields" in this guide.

Step 5: Run the RecreateAsGlobalTempTables_Oracle.sql Script

You must run the **RecreateAsGlobalTempTables_Oracle.sql** script only if you have previously run it.

To run the RecreateAsGlobalTempTables_Oracle.sql script:

1. Navigate to the Scripts folder.

   Attention: For more information on the location of the scripts, see "Script Location" under Running the Database Scripts in this guide.

2. Locate the **RecreateAsGlobalTempTables_Oracle.sql** script and run it manually.

Additional Topics

This section contains additional topics about setting up the Snapshot database.

Create a Data Source using the BCR Snapshot Database on a Machine Not Accessible by Cobra Users

You must create the data source by adding it to the BCR Snapshot database on a machine dedicated to System Administrators only, ensuring that it is not accessible by Cobra users.

To create a data source using the BCR Snapshot database:

1. Navigate to the Cobra installation directory and locate the **Datasources.dat** and **Config.dat** files.
2. Create a new folder (within or outside the Cobra installation directory).
3. Copy the **Datasources.dat** and **Config.dat files** from the Cobra installation directory and paste them to the folder you created.
4. Launch Cobra or the Data Tool by using the **/configfolder** parameter or by creating a new application shortcut.
   - To launch the application using the **/configfolder** parameter:
     a. Launch and right-click the **Command Prompt** and select **Run as administrator**.
     b. On the Administrator Command Prompt window, enter the syntax that corresponds to the application you are launching.

     Note: Refer to the table below.

   - To create an application shortcut:
     a. Right-click any empty area on the Windows desktop.
     b. On the shortcut menu, click **New » Shortcut**.

c. In the Create Shortcut dialog box, click **Browse** and navigate to the folder where the application is installed.

d. Select the application and click **OK**.

e. In the **Type the location of the item** field, place the cursor after the closing quotation mark and add the command line parameter you want to use.

> **Note:** Refer to the table below.

f. Click **Next**.

g. Enter a name for the shortcut and click **Finish**.

Application	Syntax	Example
Cobra	"<Cobra Installation Location>\DeltekCobra.exe" /configfolder:"<Target folder> where <Target folder> is the location of the Config.dat or IdeaBlade.Ibconfig file	"C:\Program Files\Deltek\Cobra\DeltekCobra.exe" /configfolder:C:\my cobra config
Data Tool	<Cobra Installation Location>\DataTool.exe" /configfolder:<Target folder> where <Target folder> is the location of the Config.dat or IdeaBlade.Ibconfig file	"C:\Program Files\Deltek\Cobra\DataTool.exe" /configfolder:C:\my cobra config

> **Attention:** For more information, see "Running Cobra with Command Line Parameters" in the Cobra Help System under **Getting Started » Launching Cobra**.

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Appendix J: Performing Silent Installation or Uninstallation of Cobra

This section includes instructions about silent installation or uninstallation of Cobra.

Important: During silent installation, database server information is captured and saved in the silent install file. Make sure the silent install file is securely stored or deleted after the silent install completes.

New Silent Installation

This section outlines steps to run a new silent installation of Cobra.

To install Cobra using silent installation:

1. Copy the Cobra 8.7 installation files to a drive on the server.

   For example:

   `E:\87\main\build8.7.0700.2370\`

   `Launch the Command Prompt and select` **`Run as administrator.`**

2. Enter the following command to create the silent install file:

   ```
   <full path of the Cobra executable file on the server> -r -f1<full path to save the silent install file>
   ```

   For example:

   ```
   E:\87\main\build8.7.0700.2370\DeltekCobra87.exe -r -f1E:\Script\Newinstall.iss
   ```

   Note:

   - The **-r** parameter records the installation selection to the silent install file.
   - There is no space between **-f1** and the path of the silent install file.

3. Enter the following command to install Cobra using the silent install file:

   ```
   <full path of the Cobra executable file on the server> -s -f1<full path to save the silent install file>
   ```

   For example:

   ```
   E:\87\main\build8.7.0700.2370\DeltekCobra87.exe -s -f1E:\Script\Newinstall.iss
   ```

   Note:

   - The **-s** parameter installs Cobra using the silent install file.
   - There is no space between **-f1** and the path of the silent install file.

   The new silent installation runs and completes without prompts.

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Upgrade Silent Installation

This section outlines steps to upgrade Cobra using silent installation.

To upgrade Cobra using silent installation:

1. Copy the Cobra 8.7 installation files to a drive on the server.

   For example:

   ```
   E:\87\main\build8.7.0700.2370\
   ```

2. Launch the Command Prompt and select **Run as administrator**.
3. Enter the following command to create the upgrade silent install file:

   ```
   <full path of the Cobra executable file on the server> -r -f1<full path to save the upgrade silent install file>
   ```

   For example:

   ```
   E:\87\main\build8.7.0700.2370\DeltekCobra87.exe -r -
   f1E:\Script\Upgradeinstall.iss
   ```

   Note:

   - The **-r** parameter records the installation selection to the upgrade silent install file.
   - There is no space between **-f1** and the path of the upgrade silent install file.

4. Enter the following command to upgrade Cobra using the upgrade silent install file:

   ```
   <full path of the Cobra executable file on the server> -s -f1<full path to save the upgrade silent install file>
   ```

   For example:

   ```
   E:\87\main\build8.7.0700.2370\DeltekCobra87.exe -s -
   f1E:\Script\Upgradeinstall.iss
   ```

   Note:

   - The **-s** parameter installs Cobra using the upgrade silent install file.
   - There is no space between **-f1** and the path of the upgrade silent install file.

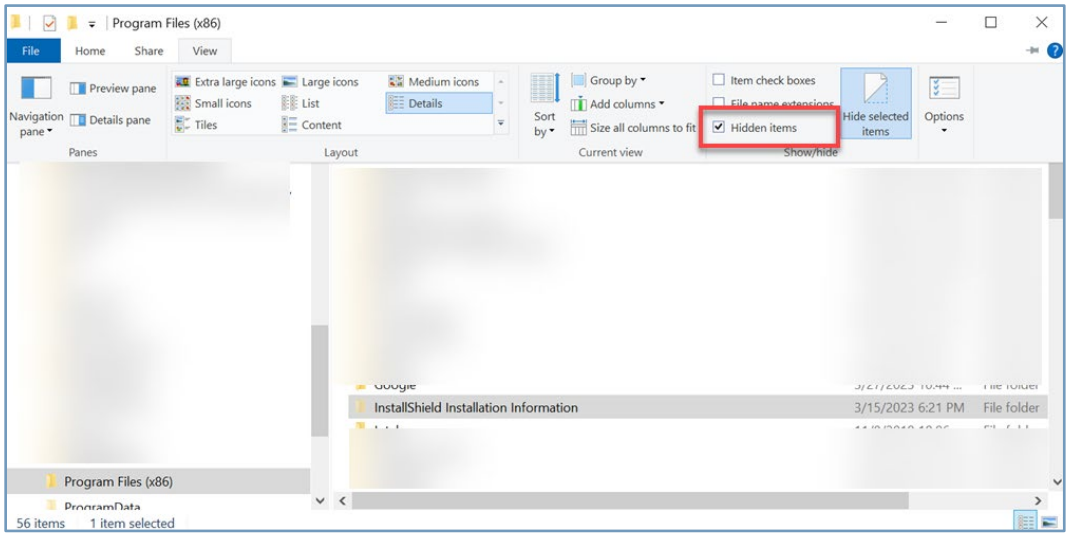
The upgrade silent installation runs and completes without prompts.

Silent Uninstallation

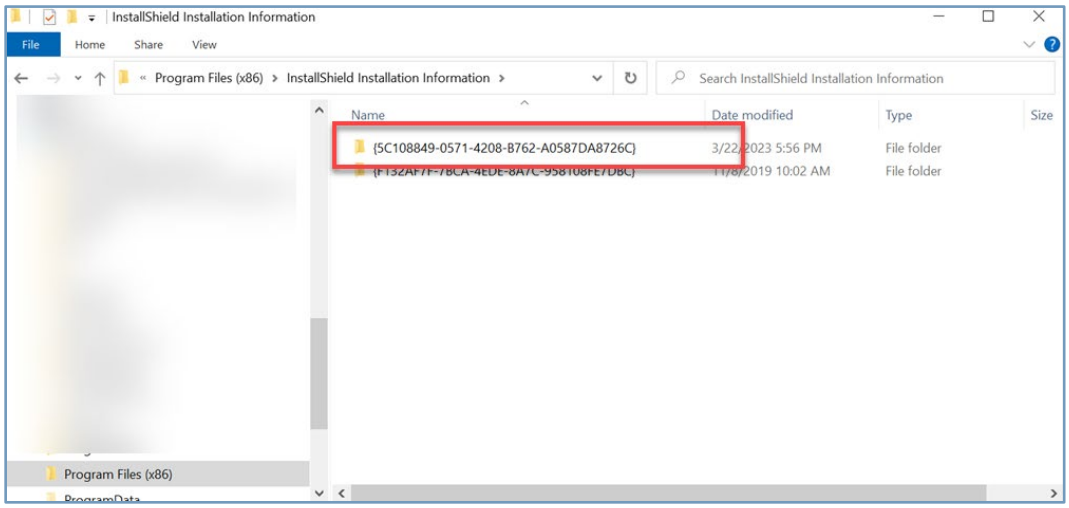
This section outlines steps to run a silent uninstallation of Cobra.

To remove Cobra using silent uninstallation:

1. On the machine where Cobra is installed, display Windows Explorer, and navigate to the **C:\Program Files (x86)** folder.
2. On the Windows Explorer toolbar, verify if **Hidden Items** is selected.



3. Navigate to the **InstallShield Installation Information\{5C108849-0571-4208-B762-A0587DA8726C}** folder and verify that the **DeltekCobra87.exe** file and other related files are there.



Important: If the **{5C108849-0571-4208-B762-A0587DA8726C}** folder or the **DeltekCobra87.exe** file, along with the other related files, does not exist, contact Deltek Support Services.

4. Launch the Command Prompt and select **Run as administrator**.
5. Enter the following command to create the silent install file to remove Cobra:

```
"C:\Program Files (x86)\InstallShield Installation Information\{5C108849-0571-4208-B762-A0587DA8726C}\DeltekCobra87.exe" -r -f1<full path of the silent install file>\Uninstall.iss
```

For example:

```
"C:\Program Files (x86)\InstallShield Installation Information\{5C108849-0571-
4208-B762-A0587DA8726C}\DeltekCobra87.exe" -r -f1E:\Script\Uninstall.iss
```

Note:

- The **-s** parameter uninstalls Cobra using the silent install file.
- There is no space between **-f1** and the full path of the silent install file.

The silent uninstallation runs and completes without prompts.

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Appendix K: PPM Encryption Conversion Utility

The PPM Encryption Conversion Utility is designed to scan a computer for all copies of installed PPM products and validate if the PPM products have been upgraded to compatible versions that support the new protocols. It also validates any configuration files and databases that are shared by the PPM products are eligible to be upgraded to support the new protocols.

These validations are designed to ensure that the upgrade is only performed when all installed PPM products are compatible with the new protocols, which guarantees that environments with a mix of new PPM products and older PPM products will continue to function properly until all installed versions of PPM products are compatible with the new protocols.

If configuration files and databases that are shared by PPM products are eligible to be upgraded, the PPM Encryption Conversion Utility performs the necessary upgrades to the configuration files and databases to enable the use of the new protocols.

Important: Check to see if the PPM product you are integrating with Cobra has support for PPM Encryption Conversion Utility. This will help you make sure the right installation steps are taken, avoiding any potential problems. For more information, see "Integrate Cobra with Other PPM Products" in this guide.

Note:

- The PPM Encryption Conversion Utility must be run on all computers that have PPM Product configuration files on them to upgrade the configuration files to support.
- Each PPM product is shipped with this tool (**PPMEncryptionConverter.exe**) and its location may vary per product. For more information, see "Run the PPM Encryption Conversion Utility" in this guide.

Upgrading from Older Versions

When upgrading from older versions of PPM Products to new versions, PPM Products will continue to use the previous protocols by default to ensure compatibility with older versions of PPM Products. Therefore, a separate conversion process is required to upgrade existing PPM Product configuration files and data sources to enable the use of the new protocols.

To support the conversion process, PPM products include a new PPM Encryption Conversion Utility application that is designed to perform the upgrade of existing PPM Product configuration files and data sources to enable the use of the new protocols.

Note:

- Deltek strongly recommends that you run the new PPM Encryption Conversion Utility application to upgrade existing PPM Product configuration files and data sources to enable the use of the new protocols.
- New installations of PPM Products and data sources are pre-configured to use the new protocols by default. New installations do not need to run the PPM Encryption Conversion Utility.

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Run the PPM Encryption Conversion Utility

You need to run this tool under the following conditions:

- You have an environment with existing PPM products.
- All PPM products have been upgraded to a version that supports the new hashing and encryption protocols.

Note: You do not need to run the tool when all files and databases have already been converted.

- The **UserID** and **Password** value in each data source are encrypted with AES1 protocol (the value starts with **000001).**
- All configuration files and data sources on the details screen are disabled and the Errors column displays "File/Datasource has already been converted."
- The WST_UPD table in the database contains the _PASSWORDHASHPROTOCOL = 1 and _ENCRYPTIONPROTOCOL = 4 categories.

To run the conversion utility tool:

1. Navigate to the location of the PPM Encryption Conversion Utility.
   - **C:\Program Files (x86)\Deltek\Cobra**

or

   - On the **Start** menu, click **Deltek Cobra 8.7 » Deltek PPM Encryption Converter Utility**.
2. Double-click **PPMEncryptionConverter.exe** or click the corresponding shortcut from the **Start** menu.

   It automatically detects all installed PPM products in your machine and determines whether the installed products are compatible to determine if their files and databases are eligible for upgrade.

   Note: Upon launching the conversion utility, it creates the PPM Encryption Converter folder for the backup files in the **C:\Users\<User Name>\Documents\Deltek**. This folder contains <Backup> folders using the **yyyymmdd_hhmmss** name format, which refers to the date and time when the conversion utility is launched (for example, 20221116-194029). Each <Backup> folder contains the Backup sub-folder and the **PPMEncryptionConverter.log** (which is created after the conversion process).
3. On the first screen of the PPM Encryption Conversion Utility dialog box, click **Next**.

> **Note:** This screen contains the Products grid, which displays all installed PPM products in your machine. The grid is read-only.
>
> - The corresponding version and compatibility status of each installed product also display. Products with the **Compatible** column set to **Yes** indicate that they meet the minimum compatible version.
> - When you hover your mouse cursor over a product in the list, it displays the installation location of the that product.

4. On the second screen, select the database configuration files and data sources you need to upgrade.

   Selecting a configuration file in the Files grid displays all the databases in the Datasources grid and checks whether they can be converted. Alternatively, you can click the **Check all datasources** button to verify the status of all data sources in all of the files instead of selecting the files one by one.

   > **Note:**
   >
   > - You cannot select and upgrade the configuration files and data sources of those PPM products that do not meet the minimum compatible version.
   > - Different icons display beside the available files and data sources to indicate their conversion status. For more information, see "Conversion Status Icons" in the *Deltek PPM Encryption Conversion Utility Guide*.

   If you need to add more encrypted files to convert, click **Add**.

   > **Note:** PPM products have various locations (or containers) where encrypted and hashed data is stored. For more information, see "Updated Files and Data" in this guide.

5. Click **Process**.

   > **Note:** During the conversion process, the PPM Encryption Conversion Utility creates a copy of the database configuration file in the Backup folder. The backup name has the **<n>.<filename>** format, where **<n>** represents a number starting from 1 to make the backup files unique (such as, 1.datasources.dat, 2.ideablade.ibconfig, and 3.databases.enc).
   >
   > It also creates a file named **FileMapping.txt**, which contains the mappings of both the backup and original files. The mapping follows the **<backup file> (<original file>)** format. For example, 1.datasources.dat (C:\Program Files (x86)\Deltek\Cobra\datasources.dat).
   >
   > After the conversion process, the WST_UPD (for all products), WST_CFG (for Cobra and Open Plan), and WST_UPF (for Acumen Touchstone and Open Plan) tables are updated.

Updated Files and Data

PPM products use different files to store encrypted and hashed data.

For Cobra, the updated files are **Datasources.dat**, **IdeaBlade.ibconfig**, and SQL Databases.

> **Attention:** For more information, see "Updated Files and Data" in the *Deltek PPM Encryption Conversion Utility Guide*.

Change Passwords

After a PPM data source has been upgraded by the PPM Encryption Conversion Utility, users are prompted to update their password the very first time they log on to the converted data source using a PPM product. This is a necessary step to update the users stored password to use the new password protocol for storing user passwords.

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Appendix L: If You Need Assistance

If you need assistance installing, implementing, or using Cobra, Deltek makes a wealth of information and expertise readily available to you.

Customer Services

Deltek has always maintained close relationships with client firms, helping with their problems, listening to their needs, and getting to know their individual business environments. A full range of customer services has grown out of this close contact, including the following:

- Extensive self-support options through the Deltek Support Center
- Phone and email support from Deltek Support Services analysts
- Technical services
- Consulting services
- Custom programming
- Classroom, on-site, and Web-based training

Attention: Find out more about these and other services from the Deltek Support Center.

Deltek Support Center

The Deltek Support Center is a support Web site for Deltek customers who purchase an Ongoing Support Plan (OSP).

The following are some of the many options that the Deltek Support Center provides:

- Search for product documentation, such as release notes, install guides, technical information, online help topics, and white papers
- Ask questions, exchange ideas, and share knowledge with other Deltek customers through the Deltek Support Center Community
- Access Cloud-specific documents and forums
- Download the latest versions of your Deltek products
- Search Deltek's knowledge base
- Submit a support case and check on its progress
- Transfer requested files to a Deltek Support Services analyst
- Subscribe to Deltek communications about your products and services
- Receive alerts of new Deltek releases and hot fixes
- Initiate a Chat to submit a question to a Deltek Support Services analyst online

Attention: For more information regarding Deltek Support Center, refer to the online help available from the Web site.

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Access Deltek Support Center

To access the Deltek Support Center:

1. Go to https://deltek.custhelp.com.
2. Enter your Deltek Support Center **Username** and **Password**.
3. Click **Login**.

> **Note:** If you forget your username or password, you can click the **Need Help?** button on the login screen for help.

Additional Documentation

The following table lists the Deltek documentation available for this release. Except where noted, all the user guides and quick reference guides listed in this table are available for download from the Deltek Support Center.

Document Name	Description
Deltek Cobra 8.7 Release Notes	This document contains valuable information concerning the installation and use of the product and describes outstanding issues.
Deltek Cobra 8.7 Help System	The Deltek Cobra Help system provides administrators and users with screen/field-level documentation for all applications and functions in the current release. You can access the Help system from the Cobra application.
Deltek Cobra 8.7 Technical Overview and System Requirements	The Technical Overview and System Requirements document serves as a guideline for hardware and software requirements and provides your firm's IT department with information about the technical deployment architecture of Cobra.
Deltek Cobra 8.7 Data Tool Help System	The Cobra Data Tool Help system provides help for all areas of the Cobra Data Tool application
Deltek Cobra 8.7 Data Structure	This document provides you with an updated version of all Cobra tables as well as the WST tables used by several applications, such as Open Plan and Cobra.
Deltek Cobra Essentials	The intent of this guide is to help you become familiar with Cobra's basic capabilities.