Cobra P6 Integration Configuration

For Cobra 5.1 Client/Server and n-Tier Deployments

Everything you needed to know about configuring your deployment of Cobra 5.1 when you wish to integrate with Primavera P6.
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1 COBRA – P6 INTEGRATION CONFIGURATION FOR CLIENT/SERVER AND N-TIER DEPLOYMENTS

1.1 INTRODUCTION

This document describes the configuration requirements needed for integrating Deltek Cobra 5.1 with Primavera P6 R8.2 in a client/server or n-Tier deployment of Cobra. Client/Server and n-tier deployments of Cobra are very similar in most respects with n-tier offering additional capabilities due to the option for multiple application server installs.

Use this document to understand how client/server and n-Tier deployments are structured and where to install and setup the necessary ODBC data source and P6 Integration API components.

1.2 COBRA IN AN N-TIER DEPLOYMENT

For larger deployments of Deltek Cobra, the n-Tier configuration capability provides many benefits including redundancy, failover protection, easier software distribution, improved availability and performance through load balancing and automatic client-side updates.

The term n-Tier simply means that Cobra can be installed across ‘n’ number of tiers on a network system. These tiers can be described as the Client Tier (installed on a workstation), the Application Tier (installed on one or more server machines) and a Database Tier (installed on a server).
Unlike a standalone installation of Cobra, where the software and database are installed on a single machine, an n-Tier installation can be spread out over different servers on the network. When it comes to using the Integration Wizard to connect Cobra to third-party systems such as Primavera P6, you need to know on which server to install such items as the ODBC data source and Primavera P6 Integration API software in order to complete a successful connection. You also need to know a few details about how the API and ODBC data sources need to be configured. The following provides these details.

1.3 Installing Cobra 5 as an n-Tier Deployment

The installation of an n-Tier deployment requires the following steps:

- Establish an Oracle 10g, 11g or Microsoft SQL Server 2003/2008 database for the Cobra data schema. The details of the database location, name and port number will be requested during the Cobra installation process. You will need an administrator level username and password for the database.
- Microsoft .NET 3.5 must be installed on the Cobra application server tier.
- Java Developer Kit (JDK) 6 Update 27 or later should be installed on the Cobra application server tier (required for the Oracle Universal Installer).
- If either P6 or Cobra is installed using an Oracle 10g or 11g database, you will need to install an Oracle Administrative client or ODAC client that includes the Oracle ODBC drivers.

Note: the above steps are also applicable to a client/server installation of Cobra. Simply perform the setup steps described here on the server machine of your Cobra client/server installation.

For detailed instructions for installing an n-Tier deployment of Cobra 5.1, see the DeltekCobra51InstallationGuide.pdf provided with the software. This contains very comprehensive step-by-step instructions for the entire installation process.

The DeltekCobra51InstallationGuide.pdf file will be available among the Cobra 5.1 installation files provided by Deltek.
2 SETTING UP YOUR CLIENT/SERVER OR N-TIER ENVIRONMENT FOR PRIMAVERA P6 INTEGRATION

To perform a complete integration between Cobra 5 and Primavera P6, you need to setup two components.

1. Create an ODBC data source that will allow the Cobra Integration Wizard to connect to the P6 database.
2. Install and configure the P6 Integration API to allow the Cobra Integration Wizard to load daily time-phased data from P6 into the Cobra project.

2.1.1 ABOUT ODBC DATA SOURCES

The ODBC data source must be configured on the Cobra application server tier and pointed at the P6 database. This is the minimum configuration required to integrate Cobra with P6. The ODBC portion of the Integration Wizard provides the bulk of the connectivity required to integrate with P6.

If you intend to use the ‘Load daily time-phase data’ option, you will also need to install the P6 Integration API on the Cobra application server and configure this to point to the P6 database also.

This option is only required if your projects employ profiled resource loadings across work packages; i.e. the spread of resources is not even along the duration of a work package. The ODBC option will only load resources in an even spread along the work package duration, regardless of its profile in P6.
2.1.2 Setting up an ODBC Data Source for Microsoft SQL Server P6 Databases

If your P6 installation is sitting on a Microsoft SQL Server database, you will need to setup an ODBC data source to allow the Integration Wizard to connect to the P6 data.

These next steps show how to setup an ODBC Data Source for SQL Server.

1. On the Cobra Application Server, click on the Start menu and select Control Panel.

2. In the Control Panel, choose Administrative Tools.
3. In the Administrative Tools dialog, double-click on the Data Sources (ODBC) option.

4. In the ODBC Data Source Administrator dialog, click on the System DSN tab.
5. Click the **Add** button.

6. In the resulting **Create New Data Source** dialog, select the **SQL Native Client** option.
7. Click Finish.

8. In the Create a New Data Source to SQL Server dialog, enter the name, description and server to which you are connecting.

![Create a New Data Source to SQL Server dialog]

9. Click Next >.

10. In the authentication dialog, select either the ‘With SQL Server authentication.... ’, option and enter an administrator level user name and password or, go with the Integrated Windows authentication option if supported by your network.

   Note: this latter option would use the Windows/NT user’s credentials to authenticate the user. Therefore the Windows user must have administrator access to the SQL Server database.
11. Click **Next >**.

12. In the dialog, check the ‘**Change the default database to:**’ option and select the database for connection.
13. Click **Next >**.

14. In this dialog, click **Finish**.
15. In the resulting **ODBC Microsoft SQL Server Setup** dialog, click the **Test Data Source**... button.

16. If all is well, you should see the following **TESTS COMPLETED SUCCESSFULLY!** message. You’re now done.
17. Click **OK** to close each of the open dialogs.

Going back to the client tier now and running the Integration Wizard, we can see the new ODBC Data Source we created on the application server by clicking the **Data source:** field’s drop down in the **Edit Connection** dialog.

![Edit Connection](image_url)

Use the **Test** button to further verify that your data source is working.

![Test Connection](image_url)
2.1.3 Setting up an ODBC Data Source for Oracle Databases

If your P6 installation is sitting on an Oracle 10g or 11g database, you will need to install one of the Oracle client options on this server to get a working ODBC connection.

There are various Oracle client options available and you will need to choose the one that best suits your environment. Firstly, you need to determine if the application server is running a 32-bit or 64-bit Operating System, and be sure you download a client for that environment.

You should also make sure that the Client you are installing includes an ODBC driver. Some of the lighter Oracle instant clients don’t include ODBC drivers, so check the components included on Oracle’s web site prior to downloading.

Above: sample of Oracle download site with Oracle Data Access Components (ODAC) included drivers and options listed.

2.1.4 Examples of Client Options are:

ODAC downloads for 32-bit and 64-bit Microsoft Windows operating systems available from this location: (we found the ODAC option was the lightest install. The full Oracle Client requires the Administrator installation option to get the ODBC drivers installed.)


Oracle 10g and 11g Clients for 32-bit and 64-bit Microsoft Windows operating systems available at this location:

https://edelivery.oracle.com

Once the installation is completed, you will see the Oracle driver in the Create new data source dialog as shown in the following example.
2.2 **SETTING UP AN ORACLE ODBC DRIVER**

Connecting to an Oracle database via an ODBC driver requires the following steps:

1. **Install the ODAC (Oracle Data Access Components) or Oracle Client on the Application Server tier or tiers.**

2. **Setup the SQLNET and TNSNAMES files in the Client or ODAC home’s Admin directory**

3. **Use the ODBC Data Source configuration tools to create the ODBC Data Source**

The following shows the process involved for each of these above steps to get you a working connection to an Oracle database.

**Prerequisites:**

Java JDK 6 Update 27 or later must be installed on the application server tier prior to installing the Oracle client. A Java JRE or JDK is required by the Oracle Universal Installer to run the installation program. Installing a JDK version 6 is recommended as the P6 Integration API will require this during the installation process.
2.2.1 **STEP 1 – INSTALL THE ODAC OR ORACLE CLIENT**

In this example we will be installing the ODAC client to complete an ODBC setup on a Windows 7 (64-bit) operating system.

1. Download the ODAC112030_x64.zip file from Oracle’s web site:


2. Unzip the file to a location of your choosing.

3. Locate the **Setup.exe** file under the root directory of the extracted zip file’s directories.

4. Double-click to run the setup program.

5. In the **Oracle Universal Installer**, click the **Next** button.
6. In the ‘Select a Product to Install’ dialog, go with the default ‘Oracle Data Access Components for Oracle Client 11.2.0.3.0’ option.

7. In the ‘Install Location’ dialog, enter a path to install the ODAC home directory to in the ‘Oracle Base’ field.
8. In the ‘Available Product Components’ dialog, go with the default options.

9. In the ‘Summary’ dialog, verify that the components you have selected for install include the ‘Oracle ODBC Driver for Instant Client 11.2.0.3.0’.
10. Click ‘Install’.

11. When the installation is complete, click ‘Exit’.

This concludes the steps for installing the ODBC drivers.
2.2.2 **STEP 2 - SETUP THE SQLNET.ORA AND TNSNAMES.ORA FILES**

1. Locate the **SQLNET.ora** and **TNSNAMES.ora** in the ‘samples’ directory of the newly installed Oracle client home directory. This is typically:
   C:\app\johndoe\product\11.2.0\client_1\Network\Admin\Sample

2. Where ‘johndoe’ is the windows user name.

3. Copy these two files into the ‘Admin’ directory above.

4. Open the ‘TNSNAMES.ora’ file in Notepad and enter your Oracle database details in the file.
5. Save your changes.

*Note: the ‘SQLNET.ora’ generally doesn’t need to be changed.*
2.2.3 **STEP 3 – CREATE THE ODBC DATA SOURCE**

1. In the Windows **Start** menu, click on the **Data Sources (ODBC)** icon that was created by the ODAC client install.

2. In the **User DSN** tab of the **ODBC Data Source Administrator** dialog, click **Add**.

3. In the ‘**Create New Data Source**’ dialog, select the ‘**Oracle in OraClient 11g_home1**’ driver.
4. Click ‘Finish’.

5. In the ‘Oracle ODBC Driver Configuration’ dialog, enter the details of your data source.

   - **Data Source Name**: P6_Connect
   - **Description**: Connect to P6 database
   - **TNS Service Name**: P6PMDB
   - **User ID**: system

   ![Oracle ODBC Driver Configuration dialog](image)

   *Note: you should be able to select the TNS Service Name from the drop down list. This name will be that which you named in the TNSNAMES.ora file’s Alias = section.*

6. Click ‘Test Connection’ to ensure your settings are all correct.
7. When prompted, enter the database login credentials.

8. Click ‘OK’.

9. Click **OK** to complete the process.

Once you have created an Oracle ODBC data source on the Cobra application server, you will see the data source offered as an option in the Integration Wizard’s **Edit Connection** dialog.
2.2.4 Possible Issues:
Make sure to create the ODBC data source with a user that has administrative access to the Oracle database. For example, use the standard ‘system’ login as shown in the previous figure.

You should then connect to the database in the Edit Connection dialog using a privileged user, typically this is the privuser schema owner created during the P6 database creation process.

If your project list is blank in the Connection Info dialog, then you have not created the ODBC data source with a user that has sufficient database access. Reconfigure the Oracle ODBC data source with a more privileged user to correct this problem.
2.3 Installing and Configuring the P6 Integration API

To be clear, you execute these next steps on the Cobra application server. Also keep in mind, if you have two or more application tiers, you must repeat these steps on each application server. This will guarantee consistent Cobra capabilities regardless of which server the load balancer throws the user onto.

**IMPORTANT NOTE:** at the time of writing, Deltek Cobra only supports P6 Integration API connectivity to the P6 EPPM R8.x (web client) database schema referred to as the ‘PMDB’ schema. If your environment is based upon a P6 Professional Client R8.x database schema, referred to as the ‘PPMDB’ schema, the API connection will not work.

When you install the P6 Integration API, it will create a home directory for itself right below the C: drive. This location will need to be shared on the network in order that the Integration Wizard will be able to see its location. That sharing step is critical to the success of P6 integration API functionality.

**Prerequisites:** you will need to have a Java Developer Kit (JDK) installed on the application server. We recommend JDK version 6 update 27 for the R8.2 version of the Integration API, but later updates should also work well. See Oracle’s **Tested Configs.xlsx** file for the most up-to-date supported Java JDKs.

Follow these next steps to install and configure the P6 Integration API:

1. On the Cobra application server, download the P6 Integration API installation image from the Oracle Delivery cloud.

   [https://edelivery.oracle.com](https://edelivery.oracle.com)

   a. Navigate to the **Primavera P6 Enterprise Project Portfolio Management R8.2 Media Pack v2 for Microsoft Windows** page on the web site.

   b. Locate and download the **Primavera P6 Integration API R8.2 for Microsoft Windows – V29694-01** file.
2. Unzip the media pack file to a convenient location on the server’s directory structure.

3. When the file is unzipped, locate the **P6_R82_Integration_API/Disk1/install** directory.

4. Double-click on the **setup.exe** file in the install directory.

5. A command window will open briefly while the Java based **Universal Installer** loads.
6. Next the welcome screen appears. Click **Next**.

7. In the **Select Installation Type** dialog, go with the default ‘**Local Mode Packages Only (27MB)**’ option.
8. In the **Specify Home Details** dialog, we recommend that you go with the default settings offered.

*Note: double-check the drive letter offered in the ‘Path:’ field. This often points to an incorrect*
drive letter such as G: or E:, when it should be C:. You can manually fix this by editing the field directly with your mouse and keyboard.

The Home directory is where the API software program files will reside on the server at the completion of installation.

9. Click Next.

10. In the Available Product Components dialog, go with the default Integration API selection by clicking Next.

11. In the JDK Home Directory dialog, you will need to point to the location of your JDK installation.

   Note: this must be a Java Developer Kit (JDK) installation, not a Java Runtime Environment (JRE) installation. If you haven’t already installed a JDK on this machine, you can do so now while leaving this dialog open. Once installed, you can click the browse button to locate your JDK directory and will be able to proceed with the installation.

12. Click Next.

13. In the Summary dialog, click on the Install button.
14. You will see an Install progress dialog briefly.

15. Next, the Configuration Assistants dialog appears (shouldn’t that be ‘Assistance’?)...
16. ...followed by the **Database Configuration** dialog. Select the required database type for your P6 deployment.

17. Click **Next >**.

18. In the resulting dialog, enter the details for the P6 database you wish the API to connect with.
19. The installer will create a configuration profile for the Integration API. Click **OK** when the configuration success prompt appears.
20. In the **End of Installation** dialog, click **Exit** to complete the process.

This completes the steps for installing the API on the Cobra application server.
2.4 SHARING THE INTEGRATION API HOME DIRECTORY

The final and critical step in this API configuration is to make the home directory for the API available as a shared directory on the network. If the drive is not shared, then the user’s client workstation will not be able to indicate a valid path when configuring the Integration Wizard.

Take a look at the following figure.

Working in the ‘Load daily time-phased data’ area of the Edit Connection dialog, you can see that the Primavera API location: field is not seeing the APIs true home directory. The message ‘Directory not accessible from server.’ is also misleading. What it’s actually telling us is that this dialog (being generated on the client workstation) can’t see such a directory on the application server.

By sharing the Integration APIs home directory on the network, it will be possible to access the directory during integration operations.
To share the directory, follow these next steps:

1. On the Cobra application server, open a file explorer window.

2. Locate the **P6IntegrationAPI_1** home directory, by default `C:\P6IntegrationAPI_1`.

3. Right click on the **P6IntegrationAPI** home directory.

4. Select the **Sharing and Security...** option.

5. In the **P6IntegrationAPI_1** Properties dialog, check the ‘Share this folder on the network’ option.
6. Click **OK** to share the directory.

7. Back in the **Edit Connection** dialog, you can now select this directory using the ellipse [...] button on the Primavera API Location field.
8. Select the shared P6IntegrationAPI_1 directory in the **Browse for Folder** dialog.

9. Use the **Test** button to verify that everything is connecting as it should be.

You are now ready for Primavera P6 Integration while running in a Cobra n-Tier environment.