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P6 Reporting Database User's Guide
Release 2.1

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Preface

With P6 Reporting Database, you can generate databases that can be used to extract and transform data from the P6 EPPM database. You can use this data to create reports using the Oracle Business Intelligence Suite.

The two types of databases are the Operational Data Store (ODS) and the Star Schema Database (Star).

In This Chapter

About this Guide

This guide explains how to use ODS with the P6 EPPM database to extract data for use in creating reports through the Oracle Business Intelligence Suite. This guide:

- Provides an overview of the P6 Reporting Database, ODS, and the Extract, Transform, and Load (ETL) process.
- Provides an overview of P6 Analytics.
- Provides information about ODS security
- Describes using BI Publisher to create reports.

P6 Reporting Database and P6 Analytics Documentation

You can access the P6 Reporting Database and the P6 Analytics documentation from the physical media or download location (the most up to date documentation is available on the Oracle Technology Network (OTN)).

Go to the following website, and then select the link for the appropriate version of Primavera P6 Enterprise Project Portfolio Management:

http://www.oracle.com/technetwork/documentation/primavera-093289.html

Double-click the applicable PDF file to view the information in Adobe Acrobat Reader. The following table describes the available documentation.

Title	Description
Oracle P6 Reporting Database Administrator's Guide	Explains how to: ▸ Install and configure P6 Reporting Database. ▸ Generate the ODS database. ▸ Install and configure the Oracle Gateway if the P6 EPPM is installed on a Microsoft SQL Server. ▸ Run the Configuration Utility
Oracle P6 Reporting Database User's Guide	Provides information about using ODS and Star with the P6 EPPM database to extract data that you can use to create reports.
P6 Analytics Administrator's Guide	Explains how to: ▸ Install and configure the Star database. ▸ Install and configure the Oracle Business Intelligence software. ▸ Configure Oracle Business Intelligence to work with P6 Reporting Database. ▸ Run the Configuration Utility.
Oracle P6 Analytics User's Guide	Provides information about: ▸ Using Oracle Business Intelligence to create reports. ▸ Oracle Business Intelligence Dashboards and Answers.
	The Security Guidance icon,  , helps you to quickly identify security-related content to consider during the P6 Reporting Database and P6 Analytics installation and configuration process.

Where to Get Support

If you have a question about using Oracle Primavera products that you or your network administrator cannot resolve with information in the documentation or help, go to:

http://www.oracle.com/us/support/index.html

This page provides the latest information on contacting Oracle Global Customer Support and the support renewals process.

Go to ***http://download.oracle.com/docs/cd/E17266_01/index.htm*** for the latest updates to the P6 EPPM 8.0 Documentation library.

Before You Begin

This section provides a general overview of P6 Reporting Database, including the Extract, Transform, and Load (ETL) process, and scheduling updates from the P6 EPPM Database.

It provides an overview of the P6 Analytics, a separately sold product that provides customers with an in-depth and comprehensive method for analyzing and evaluating their project performance, project history, and resource assignments and utilization.

In This Chapter

About P6 Reporting Database

P6 Reporting Database works with the P6 EPPM database to provide a robust and powerful reporting solution. With P6 Reporting Database, you can create day-to-day operational reports based on all aspects of your P6 EPPM data, through use of the Operational Data Store (ODS).

With the addition of P6 Analytics (sold separately), you can perform business intelligence analysis using the Star Schema (Star).

The Extract, Transform, and Load (ETL) process provides data movement between the P6 EPPM database and the ODS and Star reporting databases.

About Security in P6 Reporting Database

This section provides an overview of security in P6 Reporting Database.

About ODS Security

The ODS security model emulates the P6 EPPM security model. The Resource and Project Access control policies are maintained in ODS. See "ODS Security Configuration" in the *P6 Reporting Database Administrator's Guide* or in the *P6 Analytics Administrator's Guide*, and also "ODS Security" in the *P6 Reporting Database User's Guide* or in the *P6 Analytics User's Guide* for more information.

About the ETL Data Process

Integration API

At the scheduled time, the ETL process launches the P6 Reporting Database Integration API, which calculates changes to the underlying data in the P6 EPPM database since the last time that the ETL process was run.

When the API calculation has completed, stored procedures are called that perform the transformation processing (for example, calendar calculation and hierarchical referencing).

When transformation processing completes, distribution occurs from the Stage database to the ODS database and Star database .

About Scheduling

Once the ODS and Star databases are fully installed, you will decide when and how often to update the databases from the P6 EPPM database. These updates will be performed in an incremental fashion. This means that only the data that has changed in the P6 EPPM database since the last time the ETL process was run will be transferred.

The process for updating the ODS and Star databases can be launched in the following ways:

- Manually when required.
- Scheduled to occur exactly once sometime in the future.
- Scheduled to recur during regular intervals.

The file that launches the ETL process is:

- incremental.bat on a Windows platform.
- incremental.sh on a non-Windows platform. For information on supported non-Windows platforms, see the Tested Configurations document on the release media or download.

The incremental.bat or incremental.sh file resides in the following folder of your P6 Reporting Database installation folder:

<installation folder>\p6rdb

To ensure that your P6 Reporting Database system has the latest data from the P6 EPPM database, it is recommended that you run the incremental data refresh process daily during non-peak hours.

> **Note:** Allow sufficient time to complete the scheduled run of the ETL process. The start of a process should not over-run the completion of another. This can cause unexpected results, and is **not** recommended.

Any mechanism can be used to launch, or schedule the launch, of the incremental.bat (or incremental.sh) file. The Windows AT command, Task Scheduler, or Unix CRON are all viable options.  The user who initiates the Incremental process needs read/write access to the P6 Reporting Database installation folder.

About Calculated Fields

Calculated fields apply to both the ODS and Star databases, and are not stored as physical fields in the P6 EPPM database. Instead, values stored in the P6 EPPM database are loaded by the application, and calculations are applied in memory. During the ETL process, these values are calculated by the API and stored as physical fields in the ODS and Star.

For example, the actual hours measure shows how many hours each resource has charged to a given project or WBS during specific time periods. During the ETL process, the actual hours are "spread" across the specific time periods, and the data is placed in periodic buckets in the ODS and Star databases.

About P6 Analytics

P6 Analytics, sold separately, provides an in-depth and comprehensive method for analyzing and evaluating project performance, project history, resource assignments and utilization. It includes all P6 Reporting Database functionality, and also includes the Star database. See About the Star Database.

Built upon the Oracle Business Intelligence suite (Dashboards and Answers), it delivers a catalog of Dashboards and Answers requests that provide an interactive way of viewing, analyzing, and evaluating P6 EPPM data. In addition, it provides a Repository (RPD) file that contains the data mappings between the physical data and the presentation layer of OBI.

The dashboards provide detailed insight into your P6 EPPM data through the use of analytical charts, tables, and graphics. Dashboards have the ability to navigate to other requests to provide precise root cause analysis. In Addition, you can configure individual requests with the P6 EPPM Action Link, enabling you to navigate directly to your P6 site for true "Insight to Action" capabilities. Reports created with Oracle BI Answers can be saved in the Oracle BI Presentation Catalog, and can be integrated into any Oracle BI home page or dashboard. Results can be enhanced through options such as charting, result layout, calculation, and drill-down features.

P6 Analytics provides an RPD file to be used with the Oracle Business Intelligence suite. The RPD file contains:

- A physical representation of the Star schema.
- A business layer where customized calculations are performed.
- A presentation layer that groups all of the Star database fields into logical subject areas.

The RPD delivers an extensive amount of Earned Value, Costs, Units, Percent Completes, and other key performance indicators. It enables data to be sliced by items such as time, project, eps, portfolios, activities, and resources.

P6 Analytics delivers a sample dataset, consisting of Star data, from which the Dashboards and Answers requests in the catalog were built. This sample data can be used to view the power of dashboard and Answers requests delivered in the catalog, which will give the user an idea of how the catalog can be integrated with their data. For information on configuring the sample dataset, see the P6 Analytics SampleData.pdf document that is included in the P6Analytics\Sample folder on your release media or download.

Operational Data Store (ODS)

This section provides an overview of the ODS and the data that it contains.

In This Chapter

Fields in the ODS

The Operational Data Store (ODS) portion of the P6 Reporting Database is a relational database that contains the following information from the P6 EPPM database:

- Physical fields
- Calculated fields
- De-normalized fields (including Hierarchies, Calendars, and Spreads)
  - Using the ETL calculations and aggregation, summary fields are populated during the runETL and Incremental processes.
  - There is no dependency on running the P6 EPPM summarizer in order to be able to produce reports on summary data.

Physical Fields from the P6 EPPM Database

The ODS is a super set of the P6 EPPM database: it includes data from P6, and presents it in a manner that facilitates report creation. Physical fields from the P6 EPPM database are presented with easy to understand column names. Refer to the OdsFieldMapTable.html file, located in the physical media or download location, for detailed information relating to the fields in the ODS.

Calculated fields from P6 EPPM Database

Calculated fields are normally present in the P6 Professional and P6 applications, but not in the P6 EPPM, and are calculated and stored in the ODS. See the OdsFieldMapTable.html file located in the physical media or download location for additional information relating to the calculated fields in the ODS.

> **Note:** For diagrams of the ODS schema, see the ODS_SCHEMA.zip file included in the documentation folder of the Media pack. You need to use Oracle SQL Developer Data Modeler software in order to open this file. For information about downloading this software, see the following web site:
>
> ***http://www.oracle.com/technetwork/developer-tools/datamodeler/overview/index.html***

Denormalized Fields from the P6 EPPM Database

By de-normalizing the fields from the P6 EPPM, the ODS database is particularly conducive to generating reports, as extensive joins will not be necessary. The following types of fields are de-normalized in the ODS:

- Name fields
- Hierarchies
- Calendars
- Spreads

Refer to the OdsFieldMapTable.html file located in the physical media or download location for detailed information relating to the fields in the ODS.

Hierarchies

There are several hierarchy tables in ODS. The purpose of these hierarchy tables is to facilitate many types of roll-up queries. Instead of writing complex recursive or "tree-walking" SQL, users can take advantage of the extra rows and columns in these hierarchy tables to write much simpler queries. The ODS contains the following hierarchy Tables:

- CostAccountHierarchy
- EPSHierarchy
- ProjectCodeHierarchy
- ActivityCodeHierarchy
- ResourceCodeHierarchy
- WBSHierarchy

For each hierarchy table, there is a row for every parent-descendant relationship.

> **Note:** This is more extensive than merely a row for every parent-child relationship. There is also a reflexive row for each object (where the object is both parent and child).

Each hierarchy table contains a set of columns for the parent object, and a set of columns for the child object. In addition, there are several metadata columns that contain the number of levels from the top for the parent and child, and whether the child has children.

ODS Calendar Table

The **Calendar** table in the ODS represents days for which work occurs. There are three types of calendars:

- Global
- Resource
- Project

For each calendar defined in the P6 EPPM Database, the ODS Calendar table will contain a set of rows representing each distinct day within the Full Calendar Date Range (as defined in the ODS configuration screen). Each row contains the calendar **name** it represents, the calendar **type**, the actual **date** of the day it represents, and a bitmap of work hours.

ODS Field Name	Data Type	Example Value	Description
ObjectId	integer	566	The unique ID generated by the system.
IsDefault	string	N	The flag that identifies the default global calendar (applies to global calendars only).'Y' or 'N'
Name	string	Crew4	The name of the calendar.
ProjectObjectId	integer	275	The unique ID of the associated project.
BaseCalendarObjectId	integer	633	The unique ID of the global calendar to which this calendar is linked. Any changes to the global calendar are automatically propagated to this calendar.
lastchangedate	date	7/6/07 16:46	The date that the calendar was last edited
Type	string	[CA_Rsrc,CA_Base,CA_Project]	The calendar type - either Global ('CA_Base'), Resource ('CA_Rsrc'), or Project ('CA_Project'). Global calendars can be assigned to projects and resources. Resource calendars can be assigned only to resources. Project calendars are specific to projects.
daydate	date	9/20/07 0:00	The actual day that the calendar row represents
WeekdayNumber	integer	5	integer day of week (1-7), Sunday=1 if Sunday is selected as the first day of the week in the Admin Preferences of the P6 EPPM module.
WorkDayFlag	string	Y	Y' or 'N', indicates if this day has work time.
TotalWorkHours	double	8	Number of work hours for the day.
WorkHoursByHalfHour	string	000000000000000011111111110011111111100000000000000	Bit mask (48 bits) for each half hour of the day, indicating whether the half hour is work time. 0=nonwork time, 1=work time. The first bit represents 00:00-00:30, the second bit represents 00:30-01:00, etc.
WorkDayStartTime	date	9/20/07 8:00	Time of day when work first starts.
WorkDayFinishTime	date	9/20/2007 17:00:00 pm	Time of day when work stops.

ODS Field Name	Data Type	Example Value	Description
IsBaseline	string	N	Set to 'Y' if this is a project calendar and the project is a baseline project.

Spreads

The following tables in the ODS contain spread bucket data:

- EPSSpread
- ProjectSpread
- WBSSpread
- ActivitySpread
- ResourceAssignmentSpread

Each spread table contains spread data columns. Each spread row contains the spread data for a given object (for example: EPS, project, or WBS) for a particular time period. The Spread data is aggregated from the Activity and Resource Assignment Spread tables to the WBS, project, and EPS Spread tables.

ODS Security

This section provides information about ODS security, including differences between P6 EPPM security and P6 Reporting Database security.

In This Chapter

ODS Security Differences

There is one area where security rules differ slightly from the rules applied to the P6 EPPM databases. For the ODS, the user must have the **View Project Financials** privilege applied to the project level (or any of its parent EPS nodes) in order to see any of the project costs.

Applying the **View Project Financials** privilege to a child WBS node is not sufficient to allow costs to be seen for that WBS – it must be applied to the project level or above. This differs from the P6 EPPM client behavior in which cost access can be granted to individual WBS nodes within a project.

Adding or Deleting Users, or Modifying User Access

For complete information about adding or deleting users, or modifying user access, see the Primavera *P6 Reporting Database Administrator's Guide* or the *P6 Analytics Administrator's Guide* (if you purchased P6 Analytics).

Creating Reports in BI Publisher

This section provides general information about creating reports in BI Publisher. For complete information about using BI Publisher, see the documentation that comes with the product and the online help.

In This Chapter

Creating a Folder for the Report

Before you create a report, create a folder to hold the report if the correct folder does not already exist.

1) Log onto BI Publisher, and click the **Reports** tab.
2) Click the **Create a new folder** link.
3) Enter a name for the folder.
4) Creating and adding permissions onto the folders in BI Publisher can prevent those users who do not have access to certain data from viewing these reports.
   - BI Publisher enables the creation a security model based on roles that will prevent users from accessing report inside of specific folders.
   - Folder structures should be created and reports stored in specific folders based on the BI Publisher user's role.

Creating the Report

On the BI Publisher Reports tab:

1) Click the folder in which you want to create the report.
2) Click the **Create a new report** link.
3) Enter a name for the report.

Editing a Report

The menu items available for editing reports are described in the following table:

Menu Item	Description
Data Model	The Data Model enables you to select the data to be used for the report in forms such as: ▸ SQL Query ▸ XML files ▸ Web Service ▸ Data Template ▸ Oracle BI Answers ▸ Oracle BI Discoverer ▸ File ▸ MDX Query
List of Values	Enables you to add filtering criteria on a report by using menus.
Parameters	Populate the List of Values.
Layouts	To use Layouts, you must install the BI Publisher Microsoft Word Add-on. This will enable you to create templates to add to your layouts. In Word, you must import your data from an XML file.

Exporting Data to an XML File

Exporting the data to XML makes it available for importing the data using the Microsoft Word BI Publisher plug-in. In BI Publisher, do the following:

1) Click **View**.
2) Select **XML** as the Data Type.
3) Click **Export**.

Creating Report Templates

Do the following in Microsoft Word to create report templates:

1) Import the XML file containing the data. Use Microsoft Word to create your report templates.
2) Once the templates are complete, use the Microsoft Word BI Publisher plug-in to upload the templates for this report.
3) Go to Edit Report, Layouts, and choose the template you just uploaded. Click **View** to preview the report with the new template.

Sample BI Publisher Reports

This section lists and describes the sample BI Publisher reports that are supplied with P6 Reporting Database and P6 Analytics. You can use these sample reports to display the various types of project and portfolio data you need. Running a report with the sample data provided will show all codes used in that report. When you run a report with your own data, and do not have that particular code defined, that code will not appear on the report.

Activity Reports

Activity Look-Ahead Report

Enables the user to select a value for a number of weeks, and then shows the activities that are expected to be performed during that time frame.

Activity Relationships Report

Shows each activity with its relationships nested beneath.

Enables users to filter activities:

- By any attribute (such as Activity Code).
- By the activity's predecessor or successor based on the predecessor or successor attributes (such as Activity Code).

Calculated Fields

Enables users to perform calculations based on whichever data fields are exposed to the reporting engine. For example, display a list of activities and their durations. Create two new fields to capture Low estimate and High estimate. Low might be 80% of the Planned Duration, while High might be 125% of Planned Duration.

This would be an option for calculations that might some day be performed by a Global Change or expanded calculated UDFs.

Calendar Specifications

Used to create a single report that inventories all calendars that will also show where that calendar is used (projects and resources).

Cross-Project Relationships Report

Shows how projects impact other projects, and enables the use of the project schedule relationships defined by P6 EPPM. It does not open the project plan.

Shows relationships within a portfolio, and also to projects outside of the portfolio.

Shows the nature of the relationship. For example:

- It might show that project XYZ is linked to Project ABC via (2) activity relationships. ABC's task 101 (design system) has a predecessor from XYZ's task 3301 (finalize component design).
- It can show the status of these relationships (for example, project XYZ's tasks might have recently slipped and impact Project ABC).

This report enables users to notify P6 EPPM to take action.

Issues Report

Can produce reports for both Issue and Risk logs.

Includes all related fields while enabling grouping, sorting, and filtering based on any field.

Planning Spreadsheet Data

Enables users to create static reports based on data captured within the resource planning spreadsheet.

Provides options for formatting and printing.

Enables more flexible grouping and sorting of data.

Users can report on live spreadsheet data, even if their projects are set to summarize detailed resource data instead of high-level spreadsheet data.

Project Steps Hierarchy Report

Shows the entire project breakdown including Project, WBS, activities and steps nested within a single view.

Project Template Mgmt

Enables users (who must manage many project templates) to create a report that:

- Inventories the project templates.
- Lists the basic attributes or details of each template.

Role Assignments Report

Shows which resources can fill each role.

Schedule Report with Notebooks

Shows project activity information that includes the rich text information stored within Notebook fields.

Enables the user to choose which Notebook Topics to use for a given report.

Administrative Reports

Responsibility Assignments Report

Shows the OBS and projects to which each user has access.

Security Profile Privileges

Shows which privileges are granted to each profile (both for Global and Project).

User Mgmt Report

Creates a report that shows which users:

- Have access to P6.
- Have access to each module.
- Are assigned to each Global Profile.

Project Reports

Code Descriptions Report

Enables users to choose which Code Value field is displayed (Value ID versus Value Description).

Document Assignment Report

Shows all documents within a single project, or across multiple projects.

Enables users to display or organize documents by any document attributes.

Portfolio Scorecard Plus Report

A multi-project report that summarizes key project header data (dates, units, costs, codes, and UDFs) as well as other filtered data types (such as Notebooks, Issue, and Risks).

Project Compliance

Enables users to create a report that:

- Shows which projects are following best practices and using the appropriate project settings.
- Can report across all projects or on a subset of projects.
- Can indicate which projects are exceptions.

Project Ratings Report

Shows a bubble chart of the strategic financial rating for projects. Users can create a report for one or more projects. The report shows the at completion total cost for the project.

Project Status Summary Report

Creates a single page report that summarizes the key points about a project's status and health.

This report is flexible enough to determine which fields and data types are included, since some customers might not use certain elements (for example, risks).

Typical data will include:

- All project header data (units, costs, dates, codes, UDFs, and Notebooks)
- Filtered data from activities and milestones, issues, risks, and resource team

Resource Reports

FTE (Headcount) Report

Enables users to create a report that analyzes role usage over time periods.

It displays the usage in terms of headcount or FTEs (full time equivalent). For example, 3.5 people for January.

Resource Code Assignments Report

A single report that shows which resources are assigned to each resource code.

Can be organized by resource to show which code assignments each individual resource has.

Resource Look-Ahead Report

Shows resource assignment information to enable users to inform resources of the work that they should be focused on. The assignments show the project and activity to which each assignment belongs.

Shows key information about projects and activities within the same view as the assignment data (for example, codes and durations).

Resource Role Skill Sets Report

Details the roles each resource can play.

Resource Spreads Grouped by Project Report

Enables users to create a report to aid in analyzing resource demand versus supply. This report can organize, filter, sort, and stack by multiple attributes of both resources and projects.

Users can analyze resource and role teams, and then further organize, filter, sort, and stack by resource and project codes or activity codes. For example: Create a report that shows demand for part-time (R-code) resources in Asia-Pac (R-code), and stack by Project Type (P-code). Also show their limit line.

Sample Reports

Project Status Summary Report

Creates a single page report that summarizes the key points about a project's status and health.

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