Oracle
Primavera
Gateway Performance and Sizing Guide for On-Premises

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Contents

Overview of the Gateway Performance and Sizing Guide

Primavera Gateway is an application that facilitates sharing and synchronizing project and resource information data between Primavera applications and other enterprise applications. By creating providers, which are used as a channel to connect with the corresponding software application, Primavera Gateway enables you to combine management and scheduling functionality of Primavera applications with other enterprise software. Providers can reside on either side of a data flow connecting a source application with a destination application.

This document provides guidance for planning product deployment with:

- Estimates of hardware and software requirements for Primavera Gateway and P6 Web Services
- Recommendations for two deployments - standard and large

In This Section

Prerequisites

Oracle Database

You must install the Oracle database server before you can install the Primavera Gateway database. Your Oracle account representative is always your best source for licensing details. For supported versions of the database, see the *Tested Configurations* document.

Notes:

- You must install Oracle Multimedia, along with these supporting components: Oracle JVM, Oracle XML DB (XDB), and XML Developer's Kit (XDK). Unless you specify otherwise, all these components automatically get installed with the latest versions of the supported Oracle database. If you chose not to install these components, you will need to install them before you install Primavera Gateway. See the *Oracle Multimedia's User's Guide* on Oracle Help Center for information on how to install these components.
- Oracle Text is a required component of Oracle Database.
- You must use UTF8 encoding to support Primavera Gateway's localized user interface.

WebLogic

You will need to install WebLogic to deploy Primavera Gateway. For supported versions, see the *Tested Configurations* document. Also, consult WebLogic's documentation for installation instructions.

Note: On Windows, Oracle recommends you install the application server to a folder with a short name containing no spaces.

Primavera Application Database

Gateway supports integration with the following Primavera applications:

- P6 Enterprise Project Portfolio Management (P6 EPPM) and P6 Web Services

  Note: When you run Primavera Gateway, and connect to a P6 EPPM database, information about your P6 EPPM installation is needed when you install the P6 Web Services.

- Primavera Cloud
- Unifier
- EnterpriseTrack

To connect with any of the above applications using Gateway, you will need to install the relevant product and database. For detailed installation instructions, go to http://www.oracle.com/technetwork/apps-tech/primavera/documentation/index.html.

P6 Web Services

To integrate with P6 EPPM, Primavera Gateway requires you to install the P6 Web Services as well. See the *Installing and Configuring P6 EPPM* document in the P6 EPPM documentation library for more information on deploying and configuring the P6 Web Services.

Assumptions

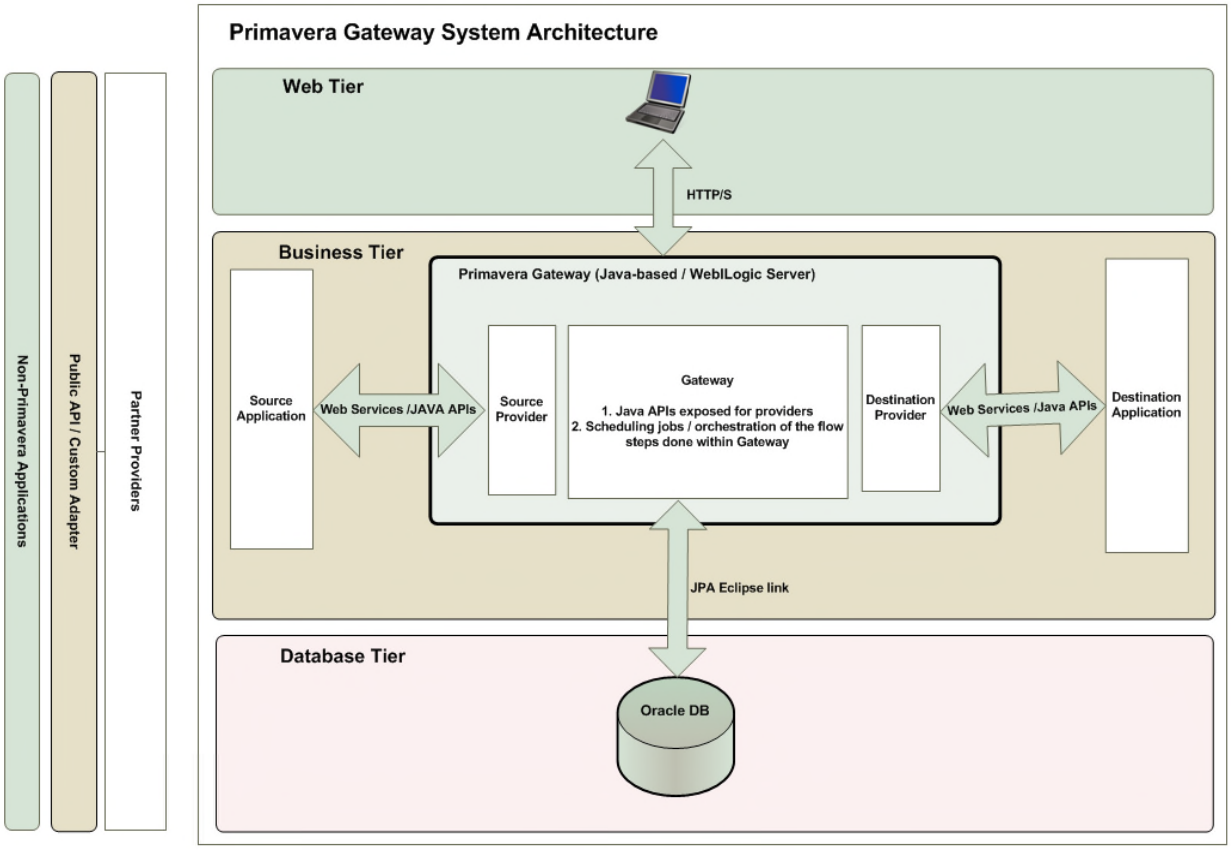
The following assumptions are made in this document:

- A highly available environment is desired.
- Database specific best practices for high availability, backup, and recovery are being followed.

  Note: The hardware and software requirements for the third-party ERP Web Services/API implementation are out of the scope of this document.

Primavera Gateway System Architecture

Primavera Gateway is a three-tier system that includes web, business, and database tiers. Each of these tiers provide specific functions to synchronize data between a source application and a destination application. The system architecture diagram below describes how these three tiers work together to synchronize data between applications.



The following table provides additional information about how the three tiers work together to synchronize data.

Tier	Description
1. Web Tier	This tier provides a browser-based user interface. You use this interface to create, view, schedule, and monitor business flows to synchronize data between a source application and a destination application.
2. Business Tier	This tier provides the provider logic that orchestrates the business flow steps and includes the Gateway Framework and the following providers: ▸ P6 ▸ Primavera Cloud ▸ EnterpriseTrack ▸ Unifier ▸ Sample ▸ File The Gateway framework is a web application that is deployed on a WebLogic application server and provides the following functions: ▸ Provides orchestration of the business flow steps within Primavera Gateway. ▸ Provides job scheduling services.
3. Database Tier	This tier stores the Primavera Gateway schema and data, which includes the following items: ▸ Cross references (Xref), data value mappings (DVM), flows, metadata (data dictionary), and customizations ▸ Audit information, logs, and intermediate artifacts ▸ Configuration settings ▸ Schedules

Typical Primavera Gateway Deployment

Primavera Gateway resides on a WebLogic application server, and the Primavera Gateway data repository resides on the database server.

A typical Primavera Gateway deployment consists of the following components:

- A WebLogic application server

End-users, including administrators, interact with Primavera Gateway through the application server.

- RDBMS as a data repository for Primavera Gateway

  Depending on the dataset size, the database server can be a standalone server.

P6 Web Services also resides on the application server and uses the P6 EPPM database as a data repository.

For optimized performance, Oracle Primavera recommends the following components co-located:

- The Primavera Gateway application server
- Primavera Gateway RDBMS
- The P6 Web Services application server and
- Primavera application RDBMS

For example, within the same subnet, to avoid network latency.

Performance Considerations

There are multiple ways to achieve the desired performance level in Primavera Gateway. Organizations can decide this based on the following factors:

- Desired level of performance
- Availability requirements
- Short-term or long-term outlook of system usage

JVM Heap Sizes

Primavera Gateway objects (such as Flows, Synchronizations, etc.) are stored in the Java Virtual Machine (JVM) heap allocation of the Primavera Gateway application server, and the P6 EPPM objects (such as Projects, Activities, Assignments, etc.) are stored in the Java Virtual Machine (JVM) heap allocation of the P6 Web Services application server.

Most of these objects are short-lived and are periodically cleaned up by the JVM's garbage collection mechanism. However, as the number of objects increases, performance and scalability is affected by the available heap space in the JVM. Increasing the heap size is an easy way to achieve desired performance and scalability.

Hardware Upgrade

Desired performance and scalability can also be achieved by:

- upgrading the CPU
- adding extra cores
- adding physical memory
- upgrading to faster I/O devices
- upgrading or installing 64-bit hardware

Oracle Primavera recommends 64-bit hardware for performance benefits.

Operating System Upgrade

The desired performance level can also be achieved by:

- upgrading to latest versions of the operating system
- installing the latest patch updates
- installing a 64-bit version

Oracle Primavera recommends the 64-bit version for performance benefits.

Database Scaling and Clustering

Database server scaling options are available and have been widely adopted and implemented.

Database clustering enables multiple nodes in a clustered system to mount and open a single database that resides on shared disk storage. This configuration provides high availability in the database environment. Oracle Real Application Clusters (RAC) is an example of database clustering.

Network Bandwidth Considerations

Oracle Primavera Gateway is a web-based application where users request to run synchronization using various browsers, ideally within the same LAN / WAN.

In a typical implementation, you will deploy the Primavera Gateway and P6 Web Services on separate physical servers. So, you must maximize the bandwidth and minimize latency between servers. Ideally, the servers reside in the same data center with gigabit or more Ethernet connection between the servers. (Oracle Primavera performance tests are performed with servers in a central data center with gigabit connections.)

Deployment Considerations

Oracle Primavera Gateway performance depends on the load and the response characteristics of each tier. Factors affecting performance are identified in the following sections. These factors should be considered during deployment planning.

Oracle Primavera Gateway Applications Server

The number of concurrent running synchronizations and the number of synchronized P6 objects largely affects web client performance, and the CPU and memory requirements of the application server.

Oracle Primavera P6 Web Services Applications Server

The following factors can affect the performance of P6 Web Services :

- Size of SOAP request and response messages

  All requests should make use of meaningful P6 objects and object attributes to reduce the amount of returned data.
- Usage of P6 services (such as Summarizer, Scheduler)

Deployment Categories

Primavera Gateway deployments can be classified into two categories: Standard and Large. Some of the factors considered for defining these categories are outlined in the following table. These factors influence the hardware and software specifications during Primavera Gateway deployment.

> **Note**: For optimal system performance, Oracle Primavera highly recommends deploying Primavera Gateway and P6 EPPM with P6 Web Services on a 64-bit architecture.

A 64–bit architecture includes a 64-bit hardware, 64-bit operation system, 64-bit application servers and databases deployments, using 64-bit Java JDK.

		Deployment Categories	
		Standard	**Large**
Number of Objects in Synchronizati	Resources	1,000 or less	more than 1,000
	Projects	200 or less	more than 200
	Activities	1,000 or less	more than 1,000

The following sections provide a few examples of synchronization times for importing and exporting in standard and large deployments.

Synchronization Scenarios in Standard Deployments

It usually takes up to a few minutes to run a synchronization on standard deployments.

> **Note:** The real synchronization time may vary and time depends on many performance factors. Refer to the ***Deployment Considerations*** (on page 10) of this document.

The following table shows approximate expected timing of importing and exporting synchronizations in the P6 - P6 standard environment.

Scenario 1: Importing Resources in Standard Deployments	
Objects in Synchronization	**Units**
Number of RESOURCEs	500
RESOURCE CODEs for each RESOURCE	5
Number of UDFs for each RESOURCE	5
Number of fields for each RESOURCE	25
RESOURCE ASSIGNMENT for each RESOURCE	1
Total number of fields	12,500
Synchronization Time	under 15 minutes

Scenario 2: Importing a Single Project in Standard Deployments	
Objects in Synchronization	**Units**
Number of ACTIVITY (ies)	500
UDFs for each ACTIVITY	10
Number of ACTIVITY CODES for each ACTIVITY	5
RESOURCE ASSIGNMENT	1
Fields for each ACTIVITY	30
Total number of fields	15,000
Synchronization Time	under 15 minutes

Scenario 3: Exporting Projects in Standard Deployments	
Objects in Synchronization	**Units**
Number of PROJECTs with minimum fields	50
Fields in each PROJECT	7

Scenario 3: Exporting Projects in Standard Deployments	
Objects in Synchronization	**Units**
Total number of fields	350
Synchronization Time	under 2 minutes

Synchronization Scenarios in Large Deployments

Synchronization of large number of objects on large deployments may take more significant amount of time The following table shows approximate expected timing of importing and exporting synchronizations in a P6 - P6 large environment.

> **Note:** The real synchronization time may vary and time depends on many performance factors. Refer to the ***Deployment Considerations*** (on page 10) of this document.

Scenario 1: Importing Resources in Large Deployments	
Objects in Synchronization	**Units**
Number of RESOURCEs	10,000
RESOURCE CODEs for each RESOURCE	5
Number of UDFs for each RESOURCE	5
RESOURCE ASSIGNMENT for each RESOURCE	1
Number of fields for each RESOURCE	25
Total number of fields	250,000
Synchronization Time	under 2 hours

Scenario 2: Importing a Single Project in Large Deployments	
Objects in Synchronization	**Units**
Number of ACTIVITY (ies)	5000

Scenario 2: Importing a Single Project in Large Deployments	
Objects in Synchronization	**Units**
UDF CODEs for each ACTIVITY	10
ACTIVITY CODEs for each ACTIVITY	5
RESOURCE ASSIGNMENT	1
Fields for each ACTIVITY	30
Total number of fields	150,000
Synchronization Time	under 2 hours

Scenario 3: Exporting Projects in Large Deployments	
Objects in Synchronization	**Units**
Number of PROJECTs with minimum fields	500
Fields in each PROJECT	7
Total number of fields	3,500
Synchronization Time	under 15 minutes

Configuration for Deployment Categories

The following sections provide estimates of server configurations for small and large deployments of Primavera Gateway.

Standard Deployment

Primavera Gateway Application Server Configuration - Standard Deployment

Operating Systems	Windows server 64-bit or Oracle Enterprise Linux (OEL) 64-bit, or Solaris 64-bit
RAM	4 GB

Java Heap Size	1 GB
Storage	10 GB

Primavera Gateway Database Server Configuration - Standard Deployment

Operating System	Windows server 64-bit, Oracle Enterprise Linux (OEL) 64-bit, or Solaris 64-bit
RAM	4 GB
Storage	50 GB

P6 Web Services Application Server Configuration - Standard Deployment

Operating System	Windows server 64-bit, Oracle Enterprise Linux (OEL) 64-bit, or Solaris 64-bit
RAM	4 GB
Java Heap Size	1 GB
Storage	10 GB

Large Deployment

Primavera Gateway Application Server Configuration - Large Deployment

Operating System	Windows server 64-bit, Oracle Enterprise Linux (OEL) 64-bit, or Solaris 64-bit
RAM	8 GB
Java Heap Size	4 GB
Storage	10 GB

Primavera Gateway Database Server Configuration - Large Deployment

Operating System	Windows server 64-bit, Oracle Enterprise Linux (OEL) 64-bit or Solaris 64-bit
RAM	4 GB
Storage	50 GB

P6 Web Services Application Server Configuration - Large Deployment

Operating System	Windows server 64-bit, Oracle Enterprise Linux (OEL) 64-bit, or Solaris 64-bit
RAM	8 GB
Java Heap Size	4 GB
Storage	10 GB

Other Factors

This document covers performance for the overall Primavera Gateway configuration architecture. However, factors involved in the database setup play a very important role in performance. The following factors can impact database performance:

- Hardware architecture and operating system
- NIC (number of NICs, speed and duplex settings)
- Number of database instances on a server (dedicated versus shared)
- Disk storage system performance (I/O speed, buffer, mirroring)
- Table space layout and extent sizing
- Table data, index, and LOB distributions on table spaces
- Table and index fill factor definition
- Database block sizing
- Connection management (dedicated versus MTS)
- RAM allocations (automatic, SGA, PGA, shared pool, buffer pool)
- CBO optimizer parameter configuration setting
- Database table and index statistics gathering mechanism and frequency
- Anti-virus software
- Additional database jobs

Conclusion

Following a systematic approach to evaluating, planning, and testing the architecture for your Primavera Gateway deployment is the only way to assure a successful deployment. With careful examination of the performance objectives, system availability requirements, short-term versus long-term outlook of system usage, the appropriate hardware choices can be made early in the process.

Frequently Asked Questions

Q. How much hardware does a Primavera Gateway installation require?

Tables that describe the recommended hardware for each deployment size are described in the "Deployment Architectures" section of this document.

Q. How much disk space does Primavera Gateway require?

The Primavera Gateway application requires little space. However, you do need enough space to run the application server software (such as WebLogic) and to keep historic log files. You must also ensure that you have the appropriate amount of disk space available on you database server. Disk space recommendations can be found in the "Deployment Architectures" section of this document.

Q. Does use of P6 Services affect performance?

Yes, using P6 Services in the synchronizations does affect overall performance for the Primavera Gateway application.

Q. Should Primavera Gateway be installed on the same server as P6 Web Services?

For large deployments Oracle Primavera recommends installing Primavera Gateway on a dedicated server.

Q. Should the Primavera Gateway database be installed in a shared database environment?

For large deployments Oracle Primavera recommends a dedicated Primavera Gateway database server.

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