ORACLE®
INSTANTIS
EnterpriseTrack

Performance and Sizing Guide
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Contents

Introduction

This document provides an estimate of the hardware and software requirements for deploying Oracle Instantis EnterpriseTrack. Four deployment scenarios are considered—very small, small, medium, and large. Recommendations for each type are also provided. These recommendations should only be considered as guidance for planning product deployment.

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.
▶ Load balancing specifics, software and hardware, are beyond the scope of this document.

Notes:

▪ The configurations described in this document provide high performance at a reasonable cost, and are thus not minimum configurations. Your experience may vary depending upon your data configuration and usage patterns.

▪ Contact Oracle Support if you have questions regarding specific hardware configuration.

Architecture Overview

Server Requirements

Oracle Instantis EnterpriseTrack uses the J2EE specification to build a flexible and scalable cross-platform solution. The J2EE platform consists of a set of industry-standard services, APIs, and protocols that provide functionality for developing multi-tiered, web-based, enterprise applications. The division of tiers enables the application to scale according to performance demands.

Oracle Instantis EnterpriseTrack requires the following elements:

▶ **Presentation tier:** A web server layer rendering JSPs, JavaScript, and so on, which presents a feature-rich user interface accessible through various supported browsers.
▶ **Middle tier:** A J2EE application server forms the middle tier where all business logic for Oracle Instantis EnterpriseTrack is implemented. This layer runs the business logic for Oracle Instantis EnterpriseTrack.
▶ **Data tier:** The data tier consists of a standalone or clustered RDBMS environment utilizing Java Database Connectivity (JDBC) to integrate with the middle tier.

▶ **Mail:** An SMTP capable mail server (e.g.: Send mail, Microsoft Exchange, etc.) is required to deliver outbound SMTP email messages to the mail server.

▶ **Operating Systems:** Windows or Linux.

The following figure depicts an overview of the Oracle Instantis EnterpriseTrack deployment:
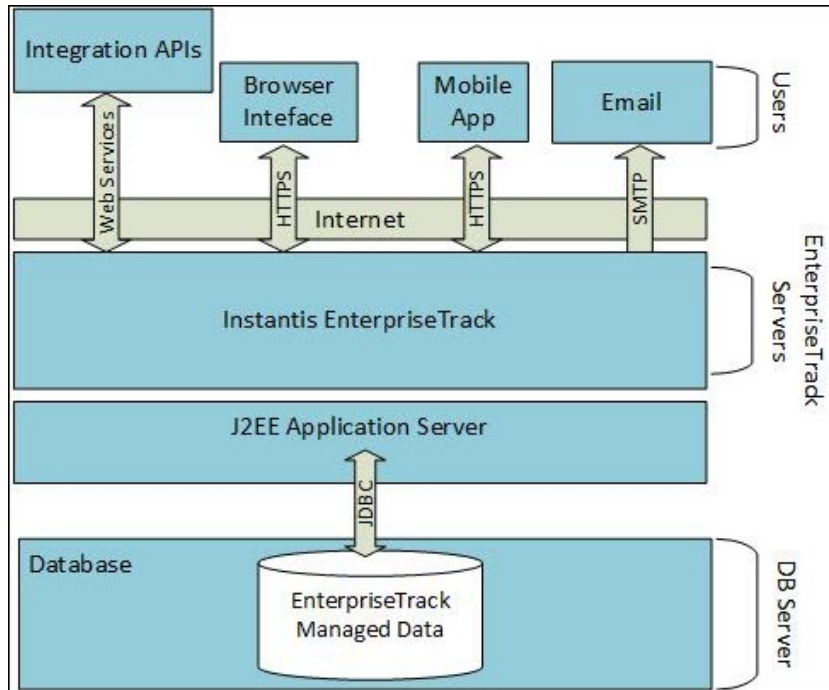
Performance and Scalability Considerations

While there are multiple ways to achieve the desired performance and scalability levels in Oracle Instantis EnterpriseTrack, the performance considerations are grouped into two categories: vertical scaling and horizontal scaling. There are several advantages and disadvantages for each category. Organizations can decide which category to use, basing their decision on:

▶ Availability requirements

▶ Short-term versus long-term outlook of system usage

▶ Number of concurrent users

▶ Desired level of performance

▶ Seasonality and frequently used application areas

In This Section

Vertical Scaling

Vertical scaling is usually a good approach if the application bottlenecks are processor and memory-related.

JVM Heap Sizes

The application objects (such as Ideas, Proposals, Timesheets, Projects, Activities, etc.) are stored in the Java Virtual Machine (JVM) heap allocation. Most of these objects are short-lived and are periodically cleaned up by the JVM's garbage collection mechanism. As the number of concurrent users 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. Oracle recommends using a 6GB heap for better results.

Hardware Upgrade

You can achieve the desired performance and scalability by upgrading the CPU, adding extra cores, adding physical memory, and upgrading to faster I/O devices. Oracle Instantis EnterpriseTrack requires 64-bit hardware.

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. Oracle Instantis EnterpriseTrack recommends the 64-bit version.

While vertical scaling is easier to achieve, it does not address availability completely. If the desired level of availability is high, then vertical scaling alone will not be sufficient.

Horizontal Scaling

Horizontal scaling involves adding additional nodes on an existing system.

Application Scaling and Clustering

As the demand for applications grows, you can add additional nodes to an existing application server cluster to handle the increased system load. For high availability requirements, horizontal scaling is the better option.

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. One example of database clustering is Oracle Real Application Clusters (RAC).

Deployment Considerations

Performance-affecting factors are identified and discussed in the following sections. You should consider these factors during the deployment planning stage.

In This Section

Implementation Platforms

The implementation platform is determined by the server operating system and by the type of application and database server. Oracle Linux was used as the implementation platform in our performance tests to arrive at these recommendations.

Implementation Sizes

For the purposes of these guidelines, implementation size is measured by the peak number of concurrent users of EnterpriseTrack. While peak number of concurrent users is a good indicator of how you should configure your hardware, there are many factors that may yield unpredictable results. These factors include: the size of user data, the type of operations users are performing, as well as other factors determined by the characteristics of the solution implemented in EnterpriseTrack.

Oracle recommends that you assess the hardware needs for Oracle Instantis EnterpriseTrack components after the design of the implementation is complete.

Deployment Categories

Oracle Instantis EnterpriseTrack deployments are classified into four categories: very small, small, medium, and large. The following sections provide estimates of server configurations by varying the number of named users/licensed and concurrent users. A named user is a user who has an account with the system, but is not currently logged in. A concurrent user is a user currently logged in the system.

> **Note**: The hardware sizing is based on concurrency figures and concurrency is assumed to be 20% of the named users. For example, if 250 users are the named user, we assume no more than 50 users will be actively using the system at any given time.

Implementation Size	Concurrent Users
Very Small	Up to 50
Small	Up to 100
Medium	Up to 200
Large	200 to 500

Deployment Architectures

In This Section

Very Small Implementation

Server Host	Hardware Configuration (Total)	Platform Software Installed	EnterpriseTrack Components Installed
EnterpriseTrack Web Server	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 4 GB RAM 50 GB disk space	Oracle Linux	EnterpriseTrack Web Server components Oracle HTTP Server
EnterpriseTrack Application Server	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 16 GB RAM Heap 6 GB 100 GB disk space	Oracle Linux	EnterpriseTrack Application Server components (war/ear file) Oracle WebLogic
EnterpriseTrack Database Server **	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 16 GB RAM SGA 9GB 100 GB disk space	Oracle Linux	EnterpriseTrack DB Server components(schema) Oracle Database

Notes:

- 1 vCPU is the same as 1 processor core.
- ** Disk space consumption depends on the number of projects, ideas, documents, and other business data that are uploaded.
- Refer to the *Tested Configurations* document for a list of supported versions.

Small Implementation

Server Host	Hardware Configuration (Total)	Platform Software Installed	EnterpriseTrack Components Installed	Notes
EnterpriseTrack Web Server	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 4 GB RAM 50 GB disk space	Oracle Linux	EnterpriseTrack Web Server components Oracle HTTP Server	
EnterpriseTrack Application Server	8 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 32 GB RAM Heap-6GB 100 GB disk space	Oracle Linux	EnterpriseTrack Application Server components (war/ear file) Oracle WebLogic	*Two application server nodes are recommended along with a load balancer to distribute the load.
EnterpriseTrack Database Server**	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 16 GB RAM SGA 9GB 200 GB disk space	Oracle Linux	EnterpriseTrack DB Server components(schema) Oracle Database	

Notes:

- 1 vCPU is the same as 1 processor core.
- * Each EnterpriseTrack application server node supports 50 concurrent users. Add as many application servers as necessary to support the total number of concurrent users.
- ** Disk space consumption depends on the number of projects, ideas, documents, and other business data that uploaded.
- Refer to the *Tested Configurations* document for a list of supported versions.

Medium Implementation

Server Host	Hardware Configuration (Total)	Platform Software Installed	EnterpriseTrack Components Installed	Notes
EnterpriseTrack Web Server	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 4 GB RAM 100 GB disk space	Oracle Linux	EnterpriseTrack Web Server components Oracle HTTP Server	
EnterpriseTrack Application Server	12 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 48 GB RAM Heap-6GB 200 GB disk space	Oracle Linux	EnterpriseTrack Application Server components (war/ear file) Oracle WebLogic	*Four application server nodes are recommended along with a load balancer to distribute the load.
EnterpriseTrack Database Server **	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 16 GB RAM SGA 9GB 400 GB disk space	Oracle Linux	EnterpriseTrack DB Server components(schema) Oracle Database	

Notes:

- 1 vCPU is the same as 1 processor core.
- * Each EnterpriseTrack application server node supports 50 concurrent users. Add as many application servers as necessary to support the total number of concurrent users.
- ** Disk space consumption depends on the number of projects, ideas, documents, and other business data that are uploaded.
- Refer to the *Tested Configurations* document for a list of supported versions.

Large Implementation

Server Host	Hardware Configuration of Single Node	Platform Software Installed	EnterpriseTrack Components Installed	Notes
EnterpriseTrack Web Server	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 4 GB RAM 100 GB disk space	Oracle Linux	EnterpriseTrack Web Server components Oracle HTTP Server	
EnterpriseTrack Application Server *	4 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 16 GB RAM Heap 6 GB 200 GB disk space	Oracle Linux	EnterpriseTrack Application Server components (war/ear file) Oracle WebLogic	*N number of application server nodes are recommended along with a load balancer to distribute the load.
EnterpriseTrack Database Server**	8 vCPUs of Intel(R) Xeon(R) CPU E5-2690 0 @ 2.90GHz 32 GB RAM SGA 12GB 500 GB disk space	Oracle Linux	EnterpriseTrack DB Server components(schema) Oracle Database	

Notes:

- *Each EnterpriseTrack application server node supports 50 concurrent users. Add as many application servers as necessary to support the total number of concurrent users.
- ** Disk space consumption depends on the number of projects, ideas, documents, and other business data that are uploaded.
- 1 vCPU is the same as 1 processor core.
- Refer to the *Tested Configurations* document for a list of supported versions.

Network Bandwidth Estimation

Oracle Instantis EnterpriseTrack is a web-based application where users make requests to the server using browsers. The browsers stores the static content in the cache and only dynamic requests are sent to the server. The following table gives an estimate of the client network bandwidth required to run the application.

Product	Bandwidth/User (Mbps)	Average Payload
EnterpriseTrack	1.62	0.58 MB

Bandwidth is calculated on the basis of amount of data transferred over the network (request and received bytes) for a request. An HTTP request may consist of different components and all dynamic components (components not cached by the browser) are taken into consideration. Assuming a page takes 3 seconds to load, the amount of data traveled over the network is calculated and bandwidth for that request is calculated in Mbps (Mega bits per second).

Caching of static application components helps reduce bandwidth used by Oracle Instantis EnterpriseTrack. Caching reduces network roundtrips, which boosts the performance of the application. The proposed bandwidth estimates take caching into consideration. First page hits to the server are not taken into consideration for bandwidth estimation. The first hit to the server is costly as all static web components are fetched from the server. Subsequent requests contact server only for dynamic content.

Other Factors

This document covers performance for the overall Oracle Instantis EnterpriseTrack configuration architecture. However, factors involved in the database setup play a very important role in performance. The following factors could impact database performance:

▸ Hardware architecture and operating system
▸ NIC (number of NICs, speed, 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, and so on)

▶ CBO optimizer parameter configuration setting
▶ Database table and index statistics gathering mechanism and frequency
▶ Anti-virus software
▶ Additional database jobs

Other Actions that Affect Performance

The following list breaks down the major factors that may affect hardware resources. Most of these cannot be known until later in the implementation process. Use this list as a guide to help you assess your needs and to avoid implementation designs that can create performance issues.

Number of Projects

A large number of projects or a large number of activities per project.

Impact: The response time may increase if the number of activities per project is greater than 500, or if there are more than a million activities across all projects

Documents

The number and size of the uploaded documents.

Impact: Additional disk space is required to hold all uploaded documents.

Suggestion: Due to database overhead, we recommend a disk space of at least 30% more than aggregate uploaded document size.

Firewall & Network latency

The network connection between the application servers and the database should be low-latency, with both application and database servers on the same LAN.

Impact: Increasing the database network latency increases response times significantly.

Suggestion: If possible, install the application tier and database on the same local area network.

Where to Get Documentation

Complete documentation libraries for EnterpriseTrack releases are available on the Oracle Technology Network (OTN) at:

http://www.oracle.com/technetwork/documentation/default-1956119.html

From this location you can either view libraries online or download them to have local copies. We recommend viewing them from OTN to ensure you always access the latest versions, including critical corrections and enhancements.

The documentation assumes a standard setup of the product, with full access rights to all features and functions.

Help System Access

EnterpriseTrack is configured to access its help system directly on OTN. However, a downloadable version of the help system is also available on OTN if you need to download, deploy, and access a local copy.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Where to Get Training

To access comprehensive training for all Primavera products, go to:

http://education.oracle.com

Oracle Learning Library

The Oracle Learning Library (OLL) provides online learning content covering Primavera products. Content includes videos, tutorials, articles, demos, step-by-step instructions to accomplish specific tasks, and self-paced interactive learning modules.

To access the learning library's Primavera content, go to:

http://www.oracle.com/oll/primavera

Where to Get Support

If you have a question about using Oracle products that you or your network administrator cannot resolve with information in the documentation or help, click http://support.oracle.com. This page provides the latest information on contacting Oracle Global Customer Support, knowledge articles, and the support renewals process. For more information about working with Support, visit https://support.oracle.com/epmos/faces/DocumentDisplay?id=888813.2 to view **Support Tools & Tips**.

Using Primavera's Support Resource Centers

Primavera's Support Resource Center provides links to important support and product information. Primavera's Product Information Centers (PICs) organize documents found on My Oracle Support (MOS), providing quick access to product and version specific information such as important knowledge documents, Release Value Propositions, and Oracle University training. PICs also offer documentation on Lifetime Management, from planning to installs, upgrades, and maintenance.

Visit https://support.oracle.com/epmos/faces/DocumentDisplay?id=1486951.1 to access links to all of the current PICs.

PICs also provide access to:

- **Communities** are moderated by Oracle providing a place for collaboration among industry peers to share best practices.
- **News** from our development and strategy groups.
- **Education** contains a list of available Primavera product trainings through Oracle University. The Oracle Advisor Webcast program brings interactive expertise straight to the desktop using Oracle Web Conferencing technology. This capability brings you and Oracle experts together to access information about support services, products, technologies, best practices, and more.

Creating a Service Request

EnterpriseTrack integrates with different Oracle applications; when you create a Service Request, be sure to open the request with the proper Support team. To ensure you reach the proper Support team, enter the correct product information when you create the Service Request. Each product has its own support line.

▸ Use the **Instantis EnterpriseTrack** support line when you are having installation, configuration, or connection issues related to EnterpriseTrack.

▸ Use one of the following support lines when you are having installation or configuration issues that do not relate to EnterpriseTrack:

  ▸ Oracle WebLogic Server

  ▸ Oracle Database Server

  ▸ BI Publisher

  ▸ Oracle Access Manager

Keeping Your Software Up to Date

To ensure you have the latest versions of your products, be sure to download and install all available patch sets from http://support.oracle.com.

Finding Security-related Patches

To get the latest information about Critical Patch Updates, visit http://www.oracle.com/technetwork/topics/security/alerts-086861.html.

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