SAP BusinessObjects Enterprise XI 3.1 Sizing Guide

Windows

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Preface

About this Document

This document describes how to calculate the CPU and CMS requirements for IDD JSP, IDD ASP, and Voyager while planning an SAP BusinessObjects Enterprise XI 3.1 deployment. This document also describes how to compute the load on a system based on the number of users and the types of interaction. In addition, this document discusses the hardware specifications for IDD JSP, IDD ASP, and Voyager.

This document provides sizing-related information that is applicable only to Windows. Given that a number of variables, such as inherent CPU differences, hyperthreading, network, report design, functionality, and SDK, can impact the sizing process, you must use the methods described in this document only as a guideline.

This document will be modified or updated as new sizing/configuration-related information becomes available.

Who Should Read this Document?

This document is intended for personnel who are involved in planning SAP BusinessObjects Enterprise deployments. Readers of this document must be familiar with operating system concepts, networking, web application server management, and the SAP BusinessObjects Enterprise application.

Related Documentation

The following documents provide more information about installing, configuring, and managing the SAP BusinessObjects Enterprise XI 3.1 application:

- *BusinessObjects Enterprise Administrator's Guide*
- *BusinessObjects Enterprise Installation Guide*

For more information on how you can obtain assistance from the SAP Business Objects Field Services, visit the SAP website at:
http://www.sap.com/services/bysubject/businessobjectsconsulting/index.epx

1. Introduction to SAP BusinessObjects Enterprise System Sizing and CMS

Overview

This chapter provides an overview of the SAP BusinessObjects Enterprise sizing process. It also provides a short description of each step in the sizing process. In addition, this chapter discusses some of the most important functions of the Central Management Server.

What is Sizing?

SAP BusinessObjects Enterprise XI 3.1 is a flexible, scalable, and reliable solution for delivering powerful, interactive reports to end users through any web application—intranet, extranet, Internet, or the corporate portal. Whether it is used for distributing weekly sales reports, providing customers with personalized service offerings, or integrating critical information into corporate portals, SAP BusinessObjects Enterprise delivers tangible benefits that extend across and beyond the organization. As an integrated suite for reporting, analysis, and information delivery, SAP BusinessObjects Enterprise provides a solution for increasing end-user productivity and reducing administrative efforts.

SAP BusinessObjects Enterprise deployments can be customized depending on the requirements of organizations. These requirements are invariably related to the number of users, usage types, and the load owing to the number of requests that are made simultaneously. Accordingly, one of the most important tasks involved in deploying the SAP BusinessObjects Enterprise solution consists in determining these requirements, in order to design a scalable reporting application that meets the above-mentioned expectations and delivers optimal performance.

BusinessObjects Enterprise system sizing refers to the set of activities involved in determining CPU and server instance requirements for a given workload. These requirements are calculated based on the number of users (potential users and concurrent active users), the types and extent of system usage, and the frequency with which users interact with the system. Information about these parameters is also used to assess the processor requirements and decide on a configuration that is appropriate for the projected workload on the system.

Sizing-related activities are carried out based on the following assumption: component-wise or service-wise requirements can be calculated individually if you have adequate information about the capacity of each component or service (along with information about hardware resources such as CPU and memory) to respond to simultaneous requests for a specific time period.

Note: Apart from the number of users, extent and types of usage, and the number of simultaneous requests, you must consider the BusinessObjects Enterprise components to be installed and the security of both system and data. However, this document does not discuss these two aspects. For information on determining the components to be

installed and security requirements, see the *BusinessObjects Enterprise Installation Guide.*

Sizing Process: A Preview

The BusinessObjects Enterprise sizing process consists of the following steps:

1. **Determining the load**
   This step consists in determining the number of users who will use the system, the extent and types of user and client activities, and the frequency with which users will interact with the system.
2. **Determining service thresholds**
   This step consists in determining the threshold of each service in the BusinessObjects Enterprise system. Services refer to BusinessObjects Enterprise software components that are required to support the load and functionality.
3. **Determining CPU requirements**
   This step consists in determining the number of CPUs required for supporting the load and functionality.
4. **Determining configuration and infrastructure requirements**
   This step consists in determining the appropriate configuration for systems in the BusinessObjects Enterprise environment, in order to ensure reliability and optimal performance.

Note: We recommend that you avail the assistance of SAP Business Objects Field Services through your local SAP contact while planning a BusinessObjects Enterprise deployment.

Central Management Server

The Central Management Server (CMS) is one of the principal components of the SAP BusinessObjects Enterprise system. The CMS authenticates users and user groups, and monitors the availability of other BusinessObjects Enterprise services. It maintains the BusinessObjects Enterprise system database. This database contains information about users, user groups, security, BusinessObjects Enterprise content, and services. The CMS also maintains a separate database that contains information about user activity.

The functions performed by the CMS include the following:

- Managing users and user groups: involves creating, mapping, modifying, and organizing information about users and user groups.
- Managing object security: involves authenticating and authorizing users.
- Managing scheduled tasks: Scheduling refers to running an object at a specified time, rather than immediately after the object is created or modified. When you schedule an object, the task is executed at the specified time without any user intervention. You can also specify a recurrence pattern and additional parameters while scheduling an object.
- Managing historical tasks: involves maintaining information about the status of each instance, such as Success or Failed.

- Managing system objects: involves logging and storing information about objects in the system database as soon as these objects are created.
- Managing licenses: involves identifying license keys based on the number of concurrent, named, and processor licenses.
- Managing name services: involves maintaining servers as soon as they are added. Servers use name services to register with the CMS.
- Managing system database: involves maintaining correct info-objects in the system database.
- Managing cluster information: involves storing information about clusters in the BusinessObjects Enterprise environment.

2. Determining System Load

Overview

This chapter discusses the factors that constitute the load on an SAP BusinessObjects Enterprise system. It also describes how to determine the load, based on the number of users, extent and types of usage, and the number of simultaneous requests made to the SAP BusinessObjects Enterprise system.

Note: The tasks involved in determining the load on an SAP BusinessObjects Enterprise system are common for IDD ASP, IDD JSP, and Voyager.

What is Load?

Load refers to the number and types of users, extent and types of usage, and the number of simultaneous requests. The load on an SAP BusinessObjects Enterprise system can be calculated based on the following parameters:

- Potential users: The number of users who can log into the system.
- Concurrent active users: The number of users who are logged into the system at the same time and are actively interacting with the system. These interactions include tasks such as opening folders, viewing reports and scheduling reports. Concurrent active users must be distinguished from concurrent users. The latter refers to the number of users who have logged into the BusinessObjects Enterprise system, but are not performing any activity.
- Simultaneous requests: The number of requests made by concurrent active users to the BusinessObjects Enterprise system at the same time. The number of simultaneous requests is determined by the usage types and the frequency with which users interact with the system.

Of these parameters, the number of concurrent active users and the number of simultaneous requests are crucial for determining the resources required and the appropriate configuration for a high-performing and reliable SAP BusinessObjects Enterprise system.

Estimating System Load

This section describes how to estimate the load on an SAP BusinessObjects Enterprise system. Estimating the load on an SAP BusinessObjects Enterprise consists of the following tasks:

- Calculating the number of potential users
- Calculating the number of concurrent active users
- Calculating the number of simultaneous requests

Calculating the Number of Potential Users

The number of potential users refers to the number of users who will be given access permissions on the SAP BusinessObjects Enterprise system.

Calculating the Number of Concurrent Active Users

In most cases, the number of concurrent active users turns out to be anywhere between 10 percent and 20 percent of the number of the potential users. For example, if the number of potential users is 1000, then, in most cases, the number of concurrent active will be anywhere between 100 and 200. This figure is only a rough estimate; the exact figures may vary depending on the size of the deployments.

Guideline for estimating the number of concurrent active users:

Number concurrent active users = Number of potential users × 10/100

Calculating the Number of Simultaneous Requests

In most cases, the number of simultaneous requests is approximately 10 percent of the number of the concurrent active users.

Guideline for estimating the number of simultaneous requests:

Number of simultaneous requests = Number of concurrent active users × 10/100

This formula enables you to arrive at a general estimate; however, you can arrive at a more precise number by classifying the types of users as follows:

- Heavy users: Users who are permanently logged into the system and view reports continuously.
- Active users: Users who are logged into the system throughout the day and make a request almost every four seconds.
- Moderate users: Users who are logged into the system throughout the day and make a request almost every eight seconds.
- Light users: Users who log into the system infrequently and view reports or make other requests once every 16 seconds.

Based on the number of concurrent active users, which was calculated earlier, you can calculate the number of users in each of the four categories as follows:

If the number of concurrent active users is 100, then:

User Type	Number of Concurrent Users	Percentage
Heavy	15 concurrent active users	15%
Active	45 concurrent active users	45%

Moderate	25 concurrent active users	25%
Light	15 concurrent active users	15%

Based on these results, you can calculate the frequency with which requests are made as follows:

- For every 100 heavy concurrent active users, 100 simultaneous requests are made (**100%**)
- For every 100 active concurrent active users, 25 simultaneous requests are made (**25%**)
- For every 100 moderate concurrent active users, 12 simultaneous requests are made (**12%**)
- For every 100 light concurrent active users, 6 simultaneous requests are made (**6%**)

You can use the following formula to calculate the number of simultaneous user requests on an SAP BusinessObjects Enterprise system:

(((Concurrent active users X % **of Heavy Users)** / 100) * (1)) + (((Concurrent active users X % **of Active Users)** / 100) * (**0.25))** +
(((Concurrent active users X % **of Moderate Users**)/ 100) * (**0.12**)) + (((Concurrent active users X % **of Light Users)** / 100) * (**0.06**)) = Number of Simultaneous Users (rounded)

If the number of concurrent users is 100, then the number of simultaneous user requests is:

(((100 X **15)** / 100) * (1))) + (((100 X **45)** / 100) * (0.25)) + (((100 X **25)** / 100) * (0.12)) + (((100 X **15)** / 100) * (0.06)) = **31**

3. Determining Requirements for IDD JSP

Overview

This chapter describes how to determine the requirements for IDD JSP. It also provides the results of a sample sizing exercise. In addition, it discusses the hardware specifications for IDD JSP.

Determining the requirements for IDD JSP involves the following tasks:

- Calculating CPU and CMS requirements for Crystal Reports
- Calculating CPU and CMS requirements for Desktop Intelligence Server
- Calculating CPU and CMS requirements for Web Intelligence Server

Calculating CPU and CMS Requirements for Crystal Reports

Calculating the CPU and CMS requirements for Crystal Reports involves the following tasks:

- Setting the BusinessObjects Enterprise and Tomcat parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView.
2. Listing the Crystal reports.
3. Opening a report with 10000 rows.
4. Searching for a text in the report.
5. Drilling down the report.
6. Drilling up the report.
7. Closing the report.
8. Logging out.

Report type: The report contains 779 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise and Tomcat Parameters

The following table lists the BusinessObjects Enterprise and Tomcat parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsIncache 100000
Crystal Reports Cache	Maximum Cache Size (in kilobytes)	512

Crystal Reports Cache	Oldest On-Demand Data Given to Clients (in seconds)	300000
Crystal Reports Processing Server	Database Records Read When Previewing or Refreshing	0
Crystal Reports Processing Server	Oldest On-Demand Data Given to Clients (in seconds)	300000
Tomcat	Java Heap	1024 kB
Tomcat	maxThreads	500
Tomcat	connectionTimeOut	2000000

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

1. The number of concurrent active users
2. The number of simultaneous user requests, which includes viewing or querying CMS objects
3. Volume of batch scheduling
4. Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one CRproc instance and one CRcache instance can support 128 active users. When you increase the number of users, errors occur and the response time increases. However, when you add an instance each of CRproc and CRcache, one CMS in a system with two CPUs can support 50 percent more users; that is, the CMS can now support 192 active users. From this observation, it follows that a system with one CPU, one CMS, two CRproc instances, and two CRcache instances can support 96 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of the tasks that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, if the CMS response time and throughput are high, you must allocate additional CPUs.

Processor Requirements

The graphs included in this section indicate that increasing the number of CMS instances does not improve the throughput or reduce the response time. However, when

you increase the number of CPUs to 4, the response time for 16 users and 32 users is reduced by 50 percent, and the throughput improves by 100 percent.
These observations indicate that 16 users per CPU results in better response time and throughput.

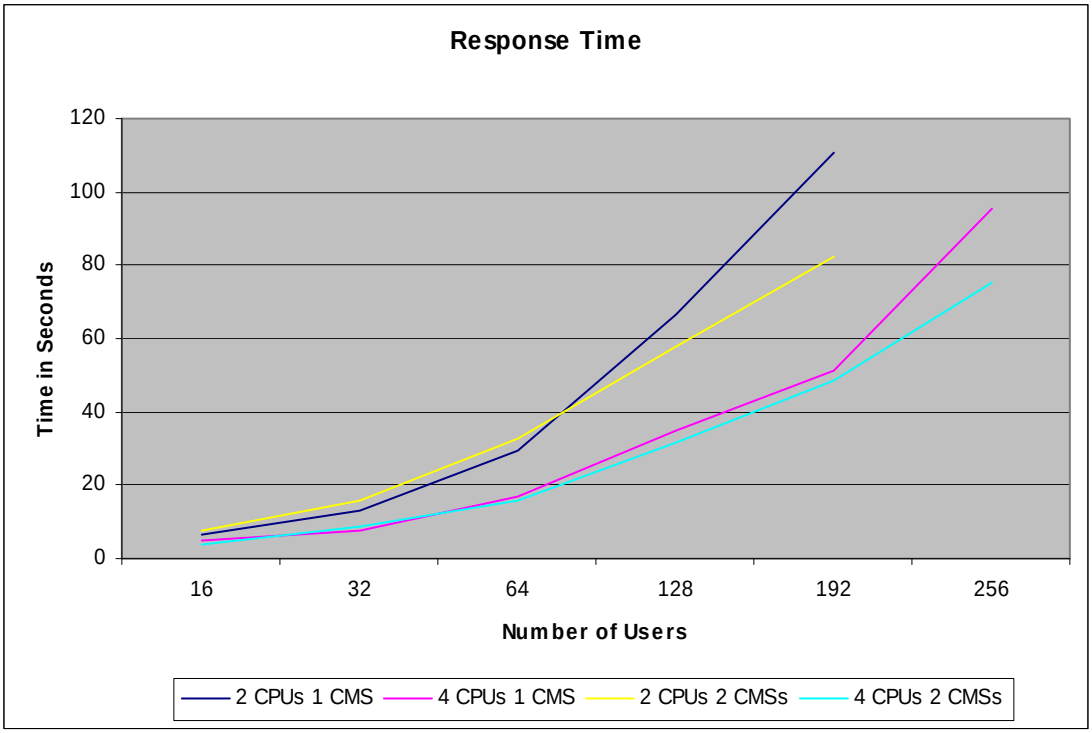
Note: If response time is not a constraint, then you can allocate 96 users per CPU.

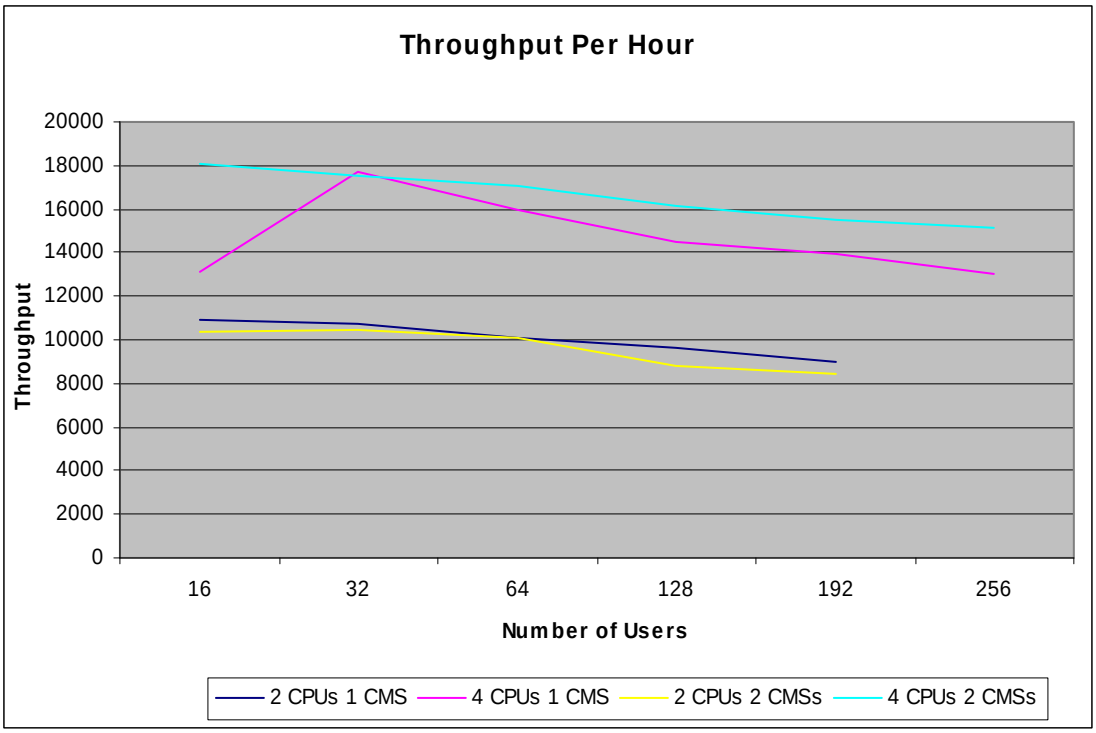
The number of CPUs required to support 100 concurrent active users can be calculated as follows:

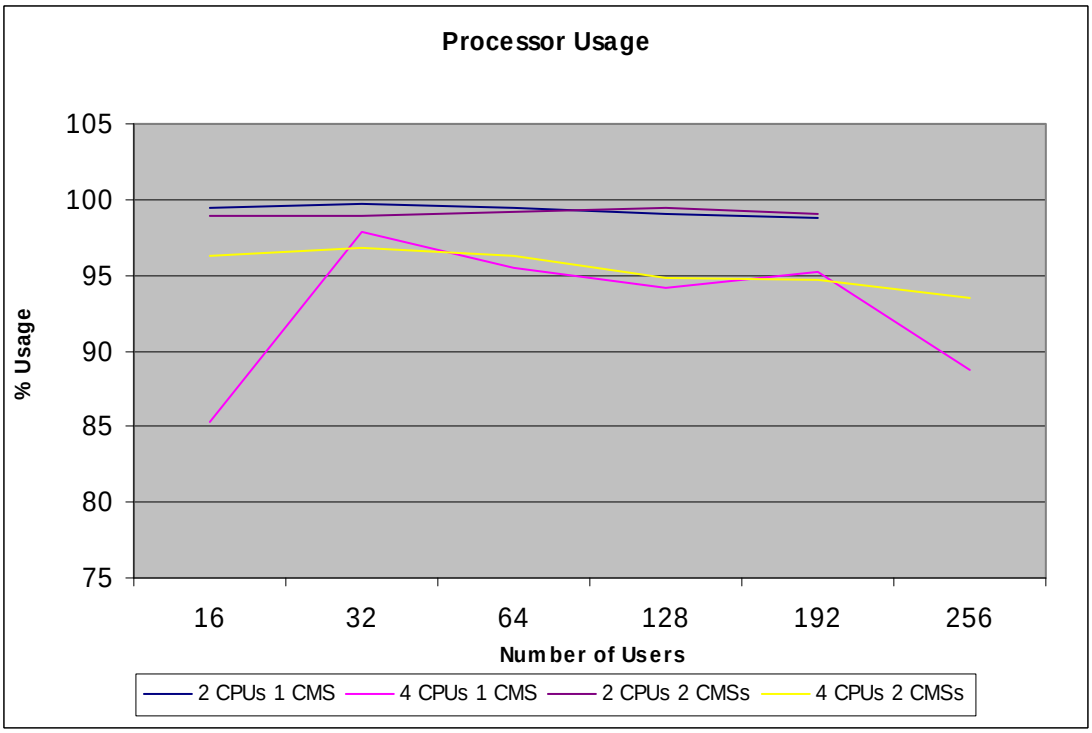
100 concurrent active users / 16 concurrent active users per 1 CPU = 7 CPUs

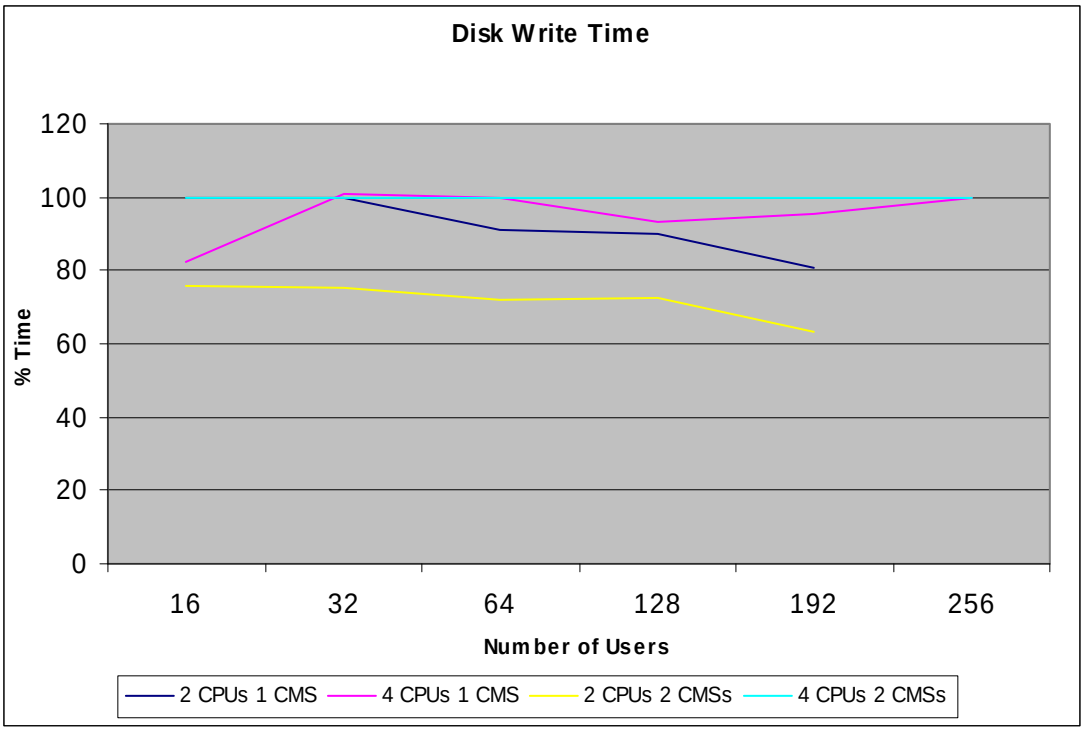
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
Throughput
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
% Usage
105
100
95
90
85
80
75
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Calculating CPU and CMS Requirements for Desktop Intelligence Server

Determining the CPU and CMS requirements for Desktop Intelligence Server involves the following tasks:

- Setting the BusinessObjects Enterprise and Tomcat parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView
2. Listing all Desktop Intelligence documents.
3. Searching for a Desktop Intelligence document.
4. Opening a Desktop Intelligence document.
5. Navigating to a specific page in the Desktop Intelligence document.
6. Drilling down the Desktop Intelligence document.
7. Closing the Desktop Intelligence document.
8. Logging out.

Report type: The report contains 72 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise and Tomcat Parameters

The following table lists the BusinessObjects Enterprise and Tomcat parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsIncache 100000
Desktop Intelligence Cache Server	Viewer Refresh Always Yields Current Data	Enabled
Desktop Intelligence Cache Server	Share Report Data between Clients	Enabled
Desktop Intelligence Cache Server	Maximum Cache Size (kB)	102400
Desktop Intelligence Processing Server	Viewer Refresh Always Yields Current Data	Enabled
Desktop Intelligence Processing Server	Share Report Data between Clients	Enabled
Desktop Intelligence Processing Server	Max Concurrent Jobs	0
Desktop Intelligence Processing Server	Preloaded Report Jobs	10
Tomcat	Java Heap	1024 kB
Tomcat	maxThreads	500
Tomcat	connectionTimeOut	2000000

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which includes viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one Desktop Intelligence Server instance can support a maximum of 192 active users. Increasing the number of Desktop Intelligence Server instances to two does not result in a corresponding increase in the number of users that the CMS can support. However, a marginal improvement in the response time is observed. This indicates that a system with one CPU, one CMS, and two Desktop Intelligence Server instances can support a maximum of 96 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of tasks that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, if the CMS response time and throughput are high, you must allocate additional CPUs.

Processor Requirements

Increasing the number of CMS instances does not result in any improvement in performance. The response time for 32 users with four CPUs is same as the response time for 16 users with two CPUs. This indicates that 16 users per CPU results in better response time and throughput.

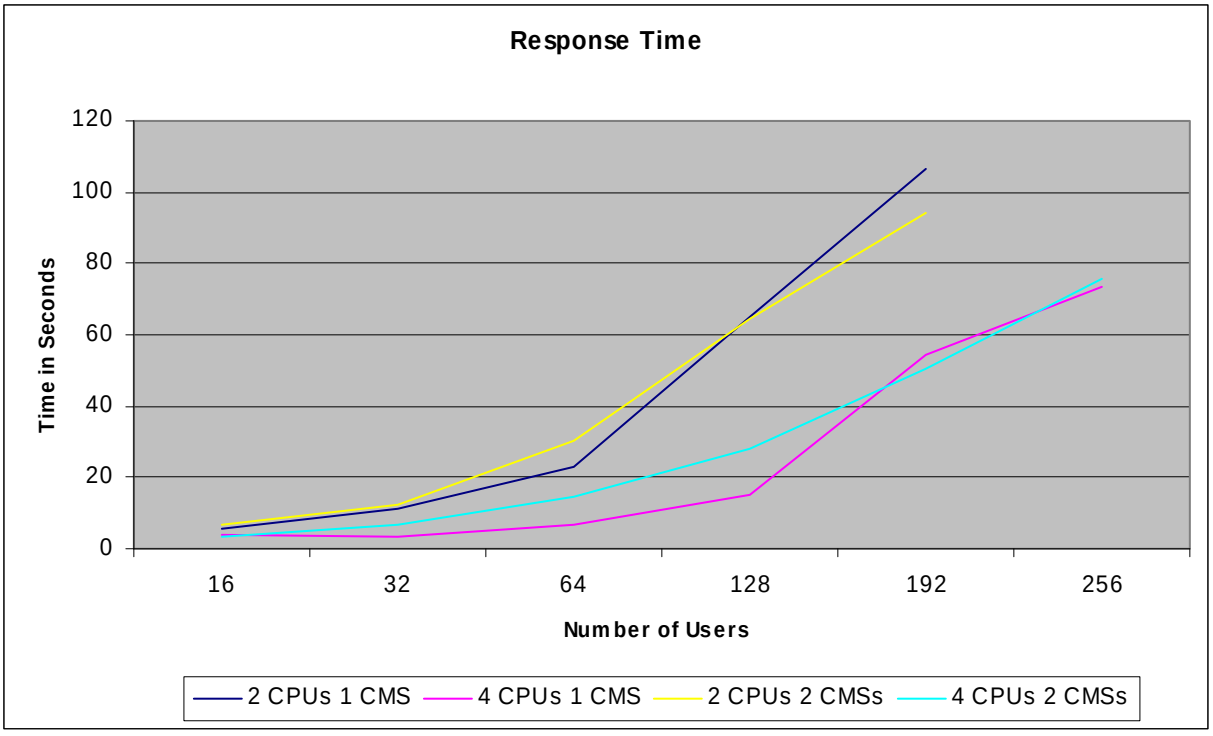
Note: If response time is not a constraint, then you can allocate 96 users per CPU.

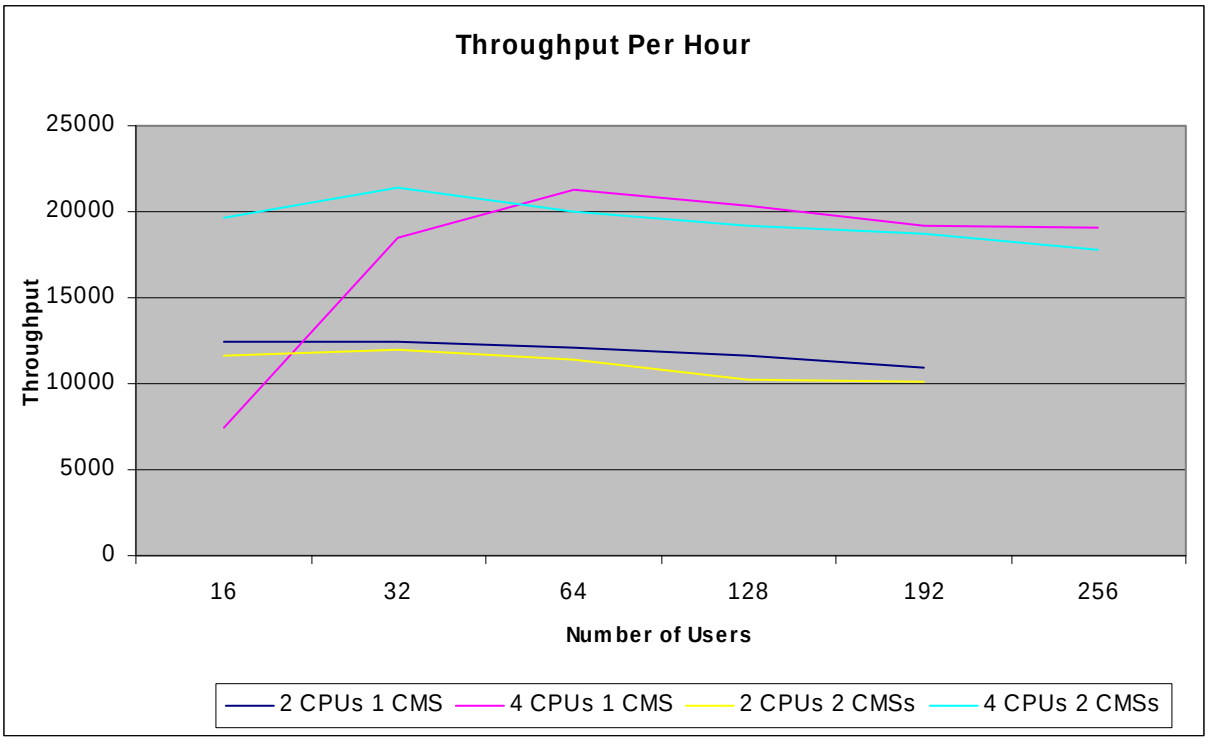
The number of CPUs required to support 100 concurrent active users can be calculated as follows:

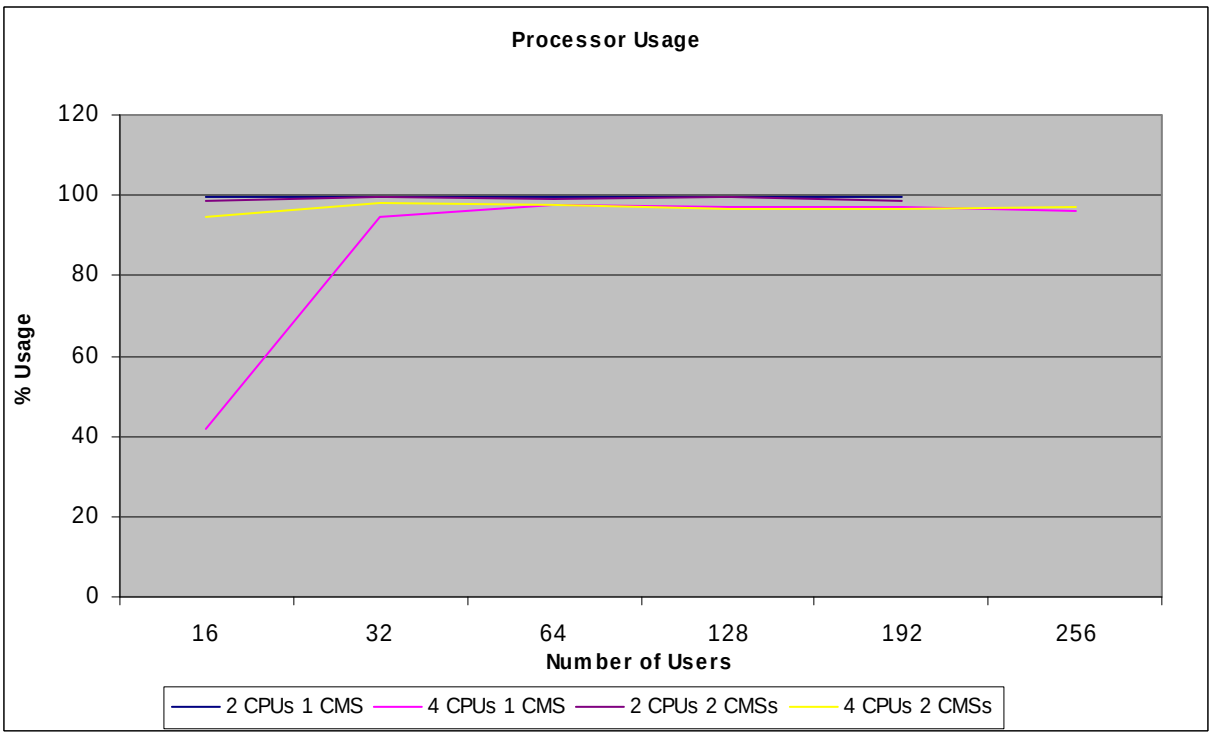
100 concurrent active users / 16 concurrent active users per 1 CPU = 7 CPUs

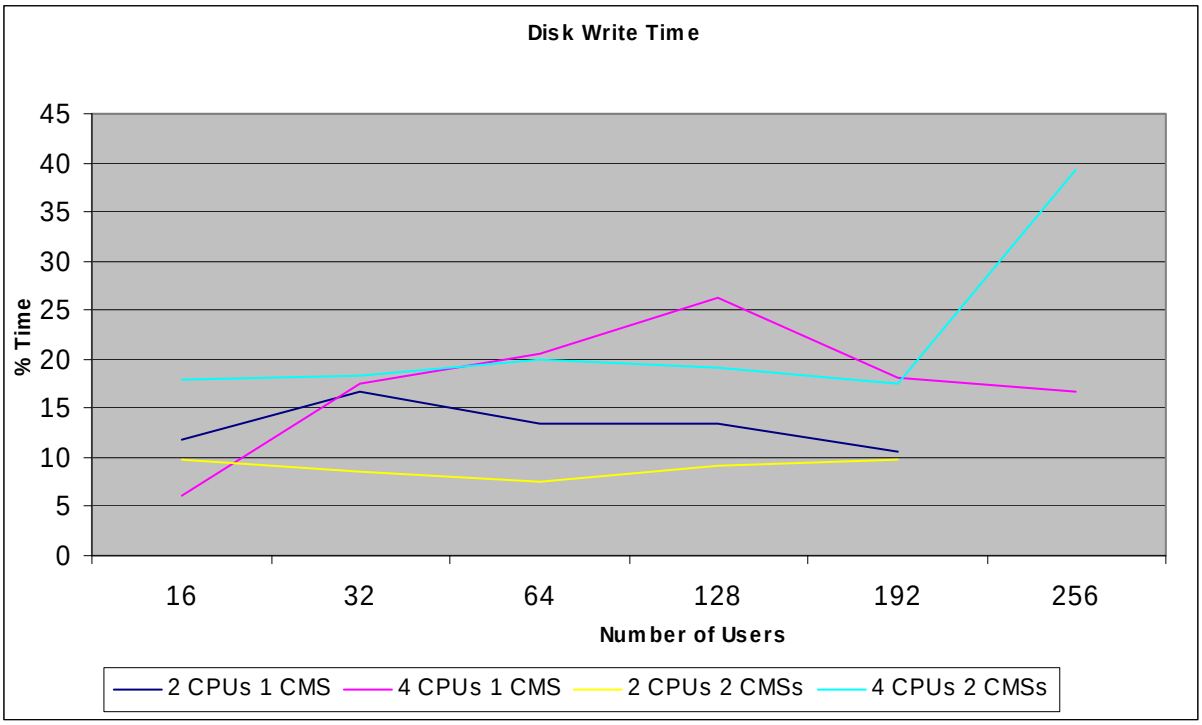
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
25000
20000
15000
10000
5000
0
Throughput
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
120
100
80
60
40
20
0
% Usage
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Calculating CPU and CMS Requirements for Web Intelligence Server

Determining the CPU and CMS requirements for the Web Intelligence Server involves the following tasks:

- Setting the BusinessObjects Enterprise and Tomcat parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView
2. Listing all Web Intelligence documents.
3. Searching for a specific Web Intelligence document.
4. Opening the Web Intelligence document.
5. Navigating to a specific page in the Web Intelligence document.
6. Drilling down the Web Intelligence document.
7. Drilling up the Web Intelligence document.
8. Closing the Web Intelligence document.
9. Logging out of InfoView.

Report type: The report contains 236 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2 database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise and Tomcat Parameters

The following table lists the BusinessObjects Enterprise and Tomcat parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsIncache 100000
Web Intelligence Report Server	Maximum Connections	300
Tomcat	Java Heap	1024 kB
Tomcat	maxThreads	500
Tomcat	connectionTimeOut	2000000

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which includes viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one Web Intelligence Server instance can support 128 active users. When you increase the number of users to more than 128, then errors occur and the response time increases. However, when you increase the number of Web Intelligence Server instances to two, the system with two CPUs and one CMS supports 128 users. This indicates that a system with one CPU, one CMS, and two Web Intelligence Server instances can support a maximum of 64 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of activities that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, you must allocate additional CPUs if the CMS response time and throughput are high.

Processor Requirements
The graphs included in this section indicate that increasing the number of CMS instances does not result in a corresponding improvement in performance. However, if the number of CPUs is increased to 4, the response time for 16 users and 32 users decreases by 50 percent and the throughput increases.

These observations indicate that eight users per CPU results in better response time and throughput.

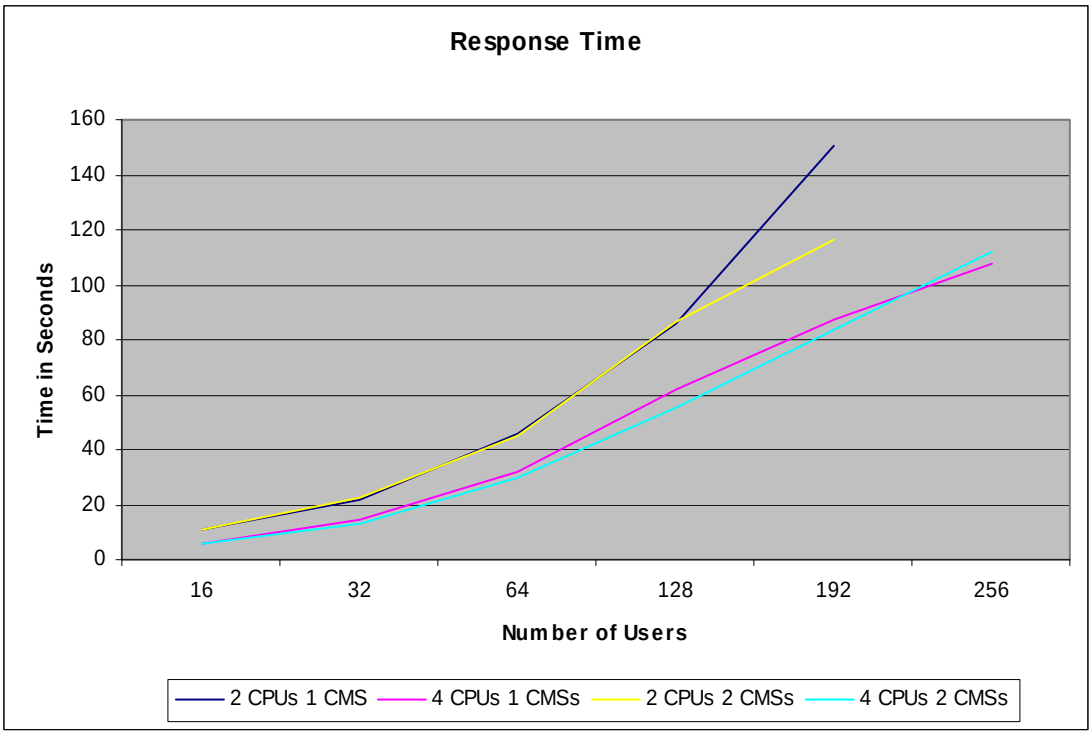
Note: If response time is not a constraint, then you can allocate 64 users per CPU.

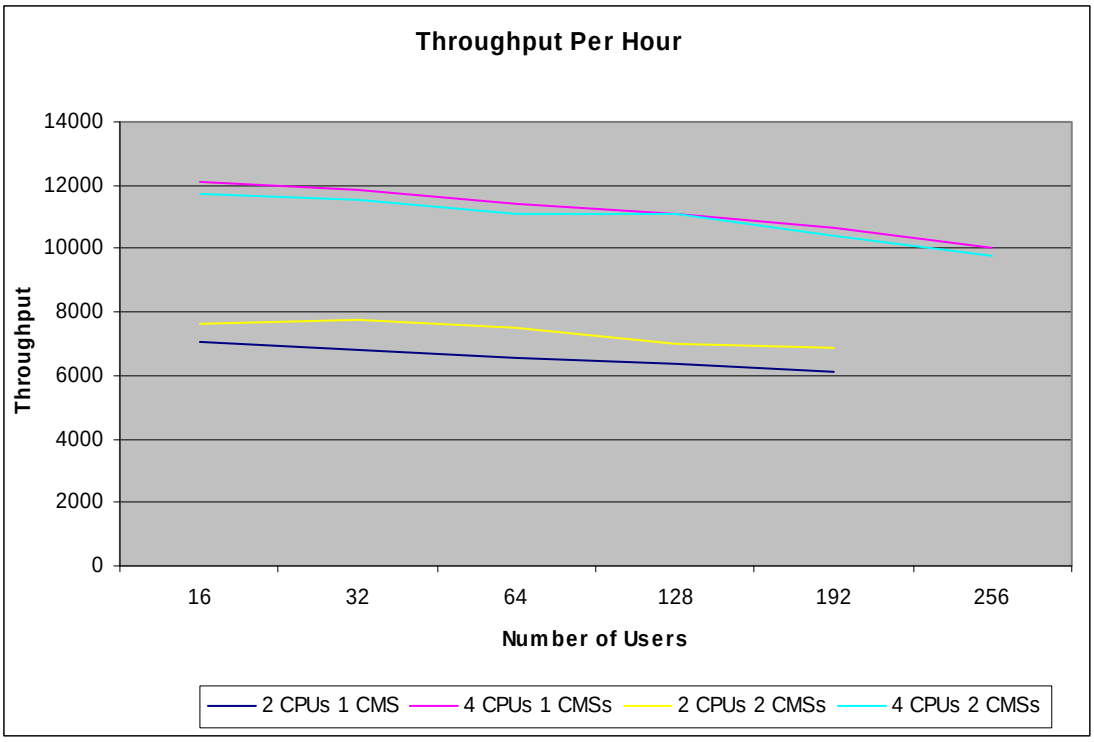
The number of CPUs required to support 100 concurrent active users can be calculated as follows:

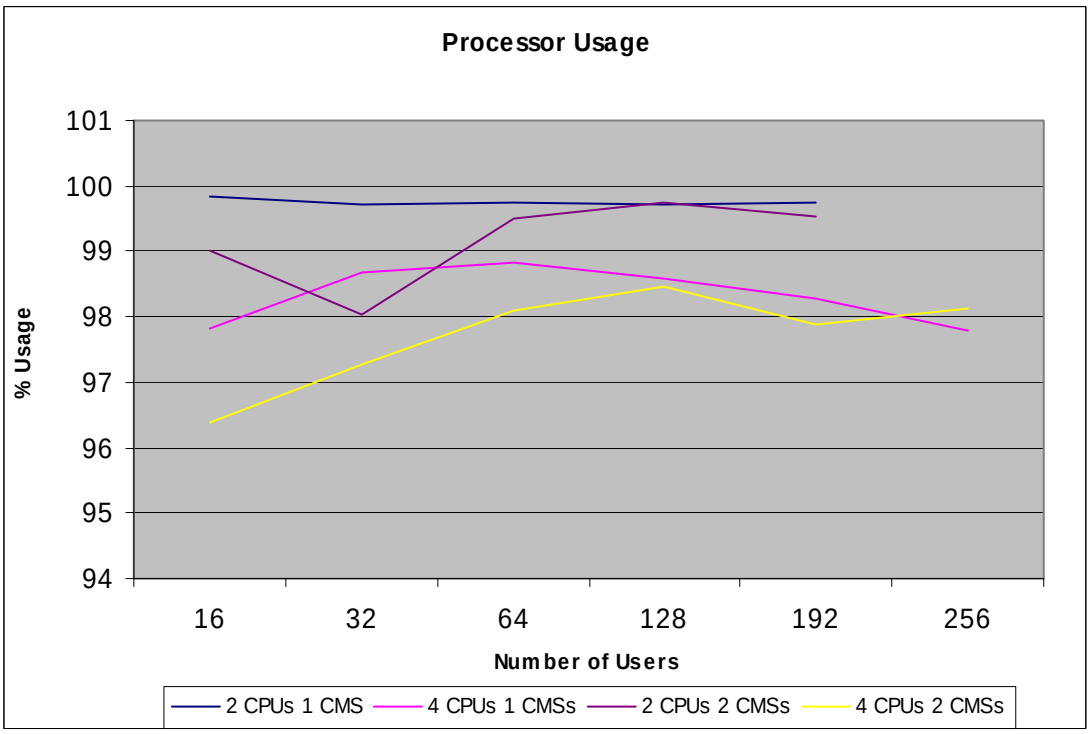
100 concurrent active users / 8 concurrent active users per 1 CPU = 13 CPUs

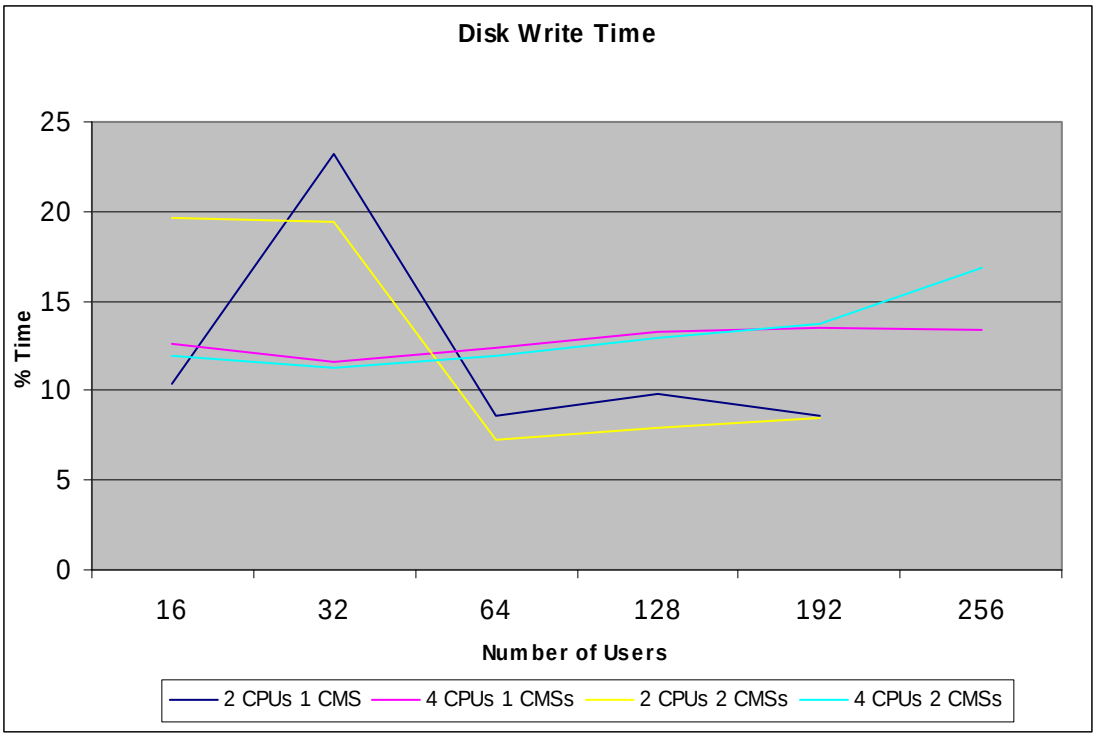
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
14000
12000
10000
8000
6000
4000
2000
0
Throughput
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMSs
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
101
100
99
98
97
96
95
94
% Usage
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMSs
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Hardware Specifications

The following table lists the hardware specifications for IDD JSP:

Component	Specifications
Middle-Tier System	18GB RAM, 2 CPUs and 4 CPUs, 2.6GHz Speed, Windows 2003 Server SP2
Application Server	Tomcat that is installed along with BusinessObjects Enterprise
Distribution of Servers	Tomcat, CMS, and FileRepositoryServers (FRS) on a Single Box (Mono Box)
CMS Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
Reporting Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
Conductor/Player	4 CPUs, 2600Mhz / 4GB RAM enabled
Testing Tool	QALoad 5.2

4. Determining Requirements for IDD ASP

This chapter describes how to determine the requirements for IDD ASP. It also provides the results of a sample sizing exercise. In addition, this chapter discusses the hardware specifications for IDD ASP.

Determining the requirements for IDD ASP involves the following tasks:

- Calculating CPU and CMS requirements for Crystal Reports
- Calculating CPU and CMS requirements for Desktop Intelligence Server
- Calculating CPU and CMS requirements for Web Intelligence Server

Calculating CPU and CMS Requirements for Crystal Reports

Calculating the CPU and CMS requirements for Crystal Reports involves the following tasks:

- Setting the BusinessObjects Enterprise parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView
2. Listing Crystal Reports documents.
3. Opening a document with 10000 rows.
4. Searching for a specific text in the document.
5. Drilling down the document.
6. Drilling up the document.
7. Closing the document.
8. Logging out.

Report type: The report contains 779 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise Parameters

The following table lists the BusinessObjects Enterprise parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsIncache 100000
Crystal Reports Cache	Maximum Cache Size (kB)	512

Crystal Reports Cache	Oldest On-Demand Data Given to Clients (in seconds)	300000
Crystal Reports Processing Server	Database Records Read When Previewing or Refreshing	0
Crystal Reports Processing Server	Oldest On-Demand Data Given to Clients (in seconds)	300000

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which includes viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one CRproc instance and one CRcache instance can support a maximum of 64 active users. Increase in the number of CRproc and CRcache server instances to two does not result in an increase in the number of users. However, an improvement in the response time is observed; that is, a system with two CPUs, one CMS, and two CRproc and CRcache server instances can support 64 active users.

This indicates that a system with one CPU, one CMS, two CRproc and CRcache server instances can support 32 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of activities that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, you must allocate additional CPUs if the CMS response time and throughput are high.

Processor Requirements

The graphs included in this section indicate that increasing the number of CMS instances does not result in better performance. However, when you increase the number of CPUs to 4, the response time for 16 users and 32 users is reduced by 50 percent.

These observations indicate that eight users per CPU results in better response time and throughput.

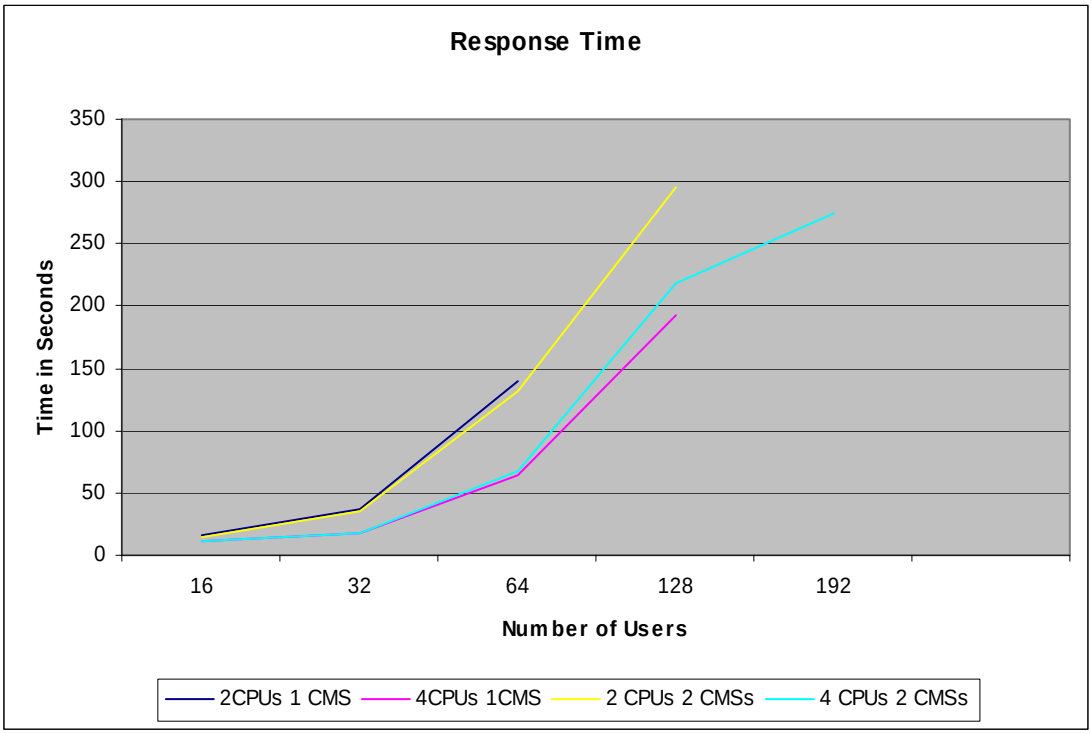
Note: If the response time is not a constraint, then you can allocate 64 users per CPU.

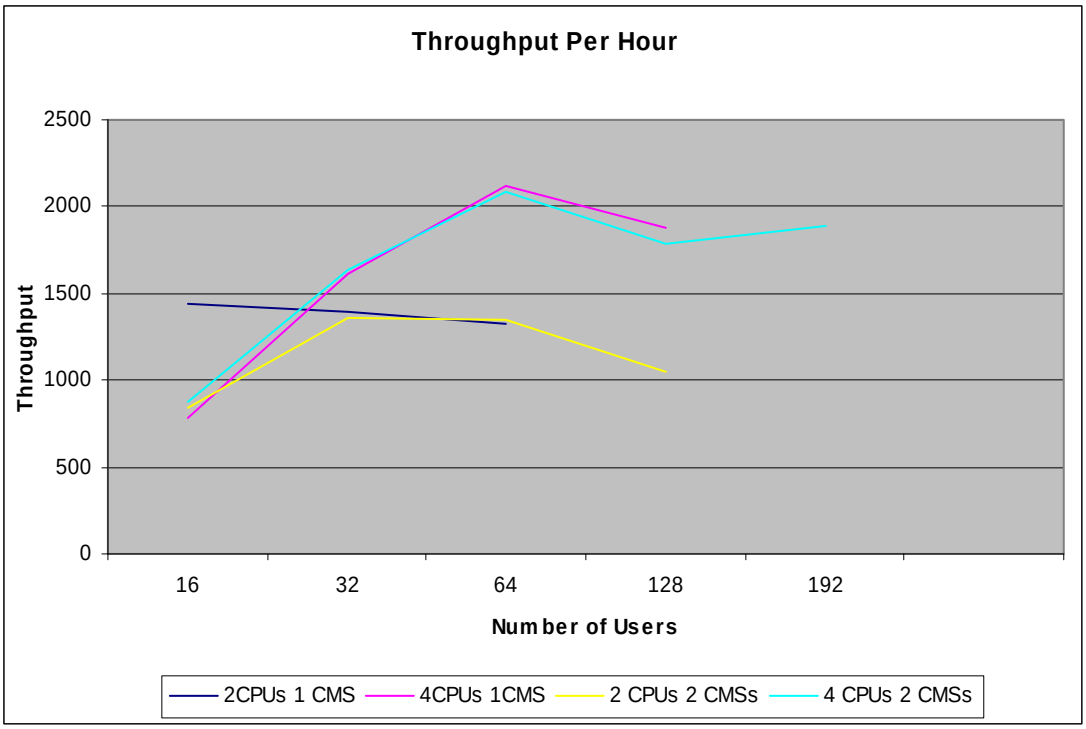
You can calculate the number of CPUs required as follows:

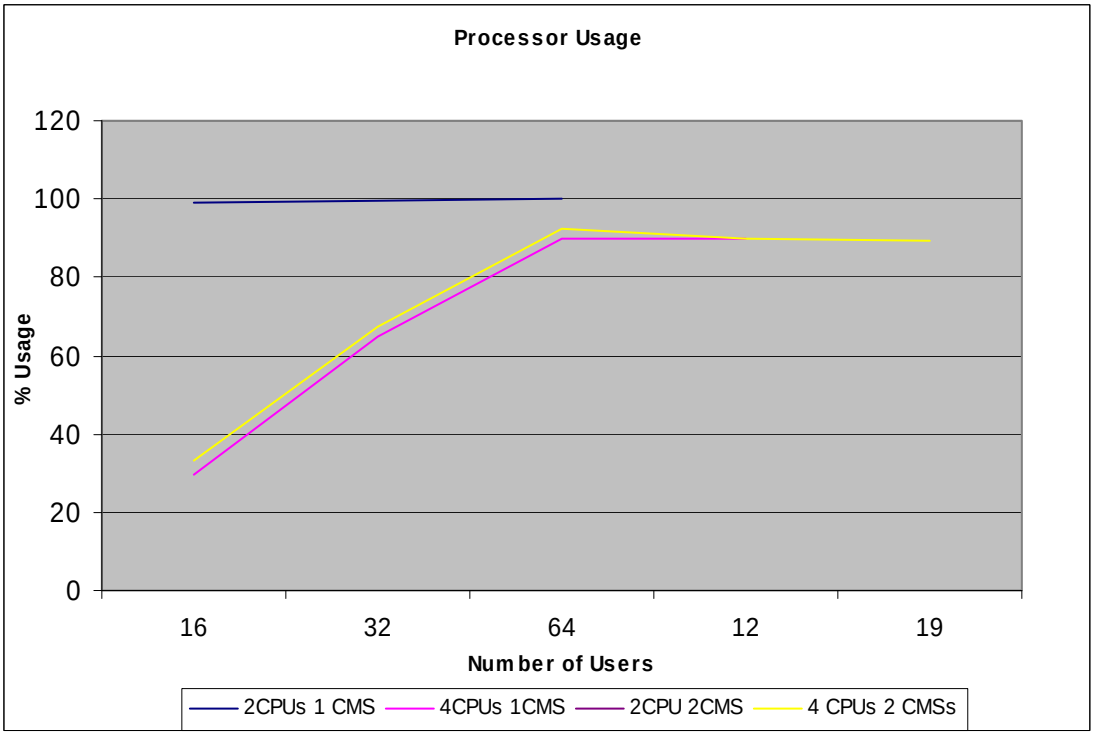
100 concurrent active users / 8 concurrent active users per 1 CPU = 12 CPUs

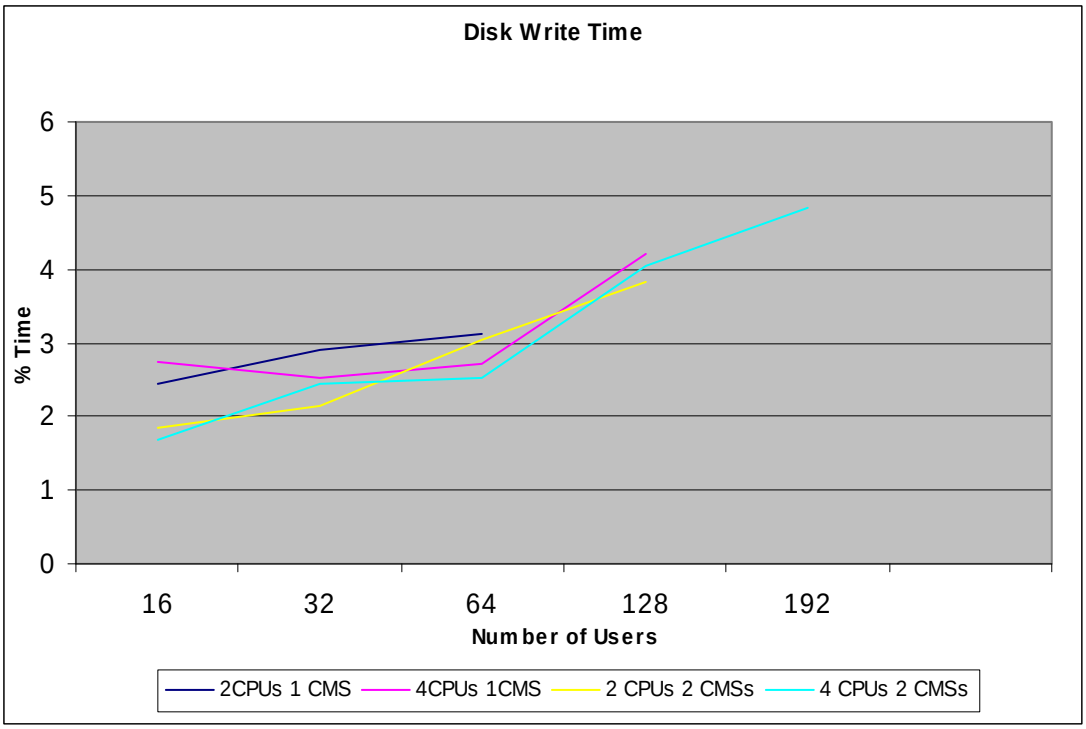
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
2500
2000
1500
1000
500
0
Throughput
16
32
64
128
192
Number of Users
2CPUs 1 CMS
4CPUs 1CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
120
100
80
60
40
20
0
% Usage
16
32
64
12
19
Number of Users
2CPUs 1 CMS
4CPUs 1CMS
2CPU 2CMS
4 CPUs 2 CMSs



Calculating CPU and CMS Requirements for Desktop Intelligence Server

Determining the CPU and CMS requirements for Desktop Intelligence Server involves the following tasks:

- Setting the BusinessObjects Enterprise parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView
2. Listing all Desktop Intelligence documents.
3. Searching for a Desktop Intelligence document.
4. Opening the Desktop Intelligence document.
5. Navigating to a specific page in the Desktop Intelligence document.
6. Drilling down the Desktop Intelligence document.
7. Closing the Desktop Intelligence document.
8. Logging out.

Report type: The report contains 72 pages and includes both charts and crosstabs. This report was created using by Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise Parameters

The following table lists the BusinessObjects Enterprise parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsIncache 100000
Desktop Intelligence Cache Server	Viewer Refresh Always Yields Current Data	Enabled
Desktop Intelligence Cache Server	Share Report Data between Clients	Enabled
Desktop Intelligence Cache Server	Maximum Cache Size (kB)	102400
Desktop Intelligence Processing Server	Viewer Refresh Always Yields Current Data	Enabled
Desktop Intelligence Processing Server	Share Report Data between Clients	Enabled
Desktop Intelligence Processing Server	Max Concurrent Jobs	0
Desktop Intelligence Processing Server	Preloaded Report Jobs	10

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which includes viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one Desktop Intelligence Server instance can support 64 active users. When you increase the number of users, errors occur and the response time increases. However, increasing the number of Desktop Intelligence Server instances to two does not result in an increase in the number of users but the response time is observed to be better. This indicates that a system with one CPU, one CMS, and two Desktop Intelligence Server instances can support a maximum of 32 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of activities that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, you must allocate additional CPUs if the CMS response time and throughput are high.

Processor Requirements

The graphs in this section indicate that increasing the number of CMS instances does not improve performance. The response time for two CPUs with 16 users is same as the response time for four CPUs with 32 users. These observations indicate that 8 users per CPU results in better response time and throughput.

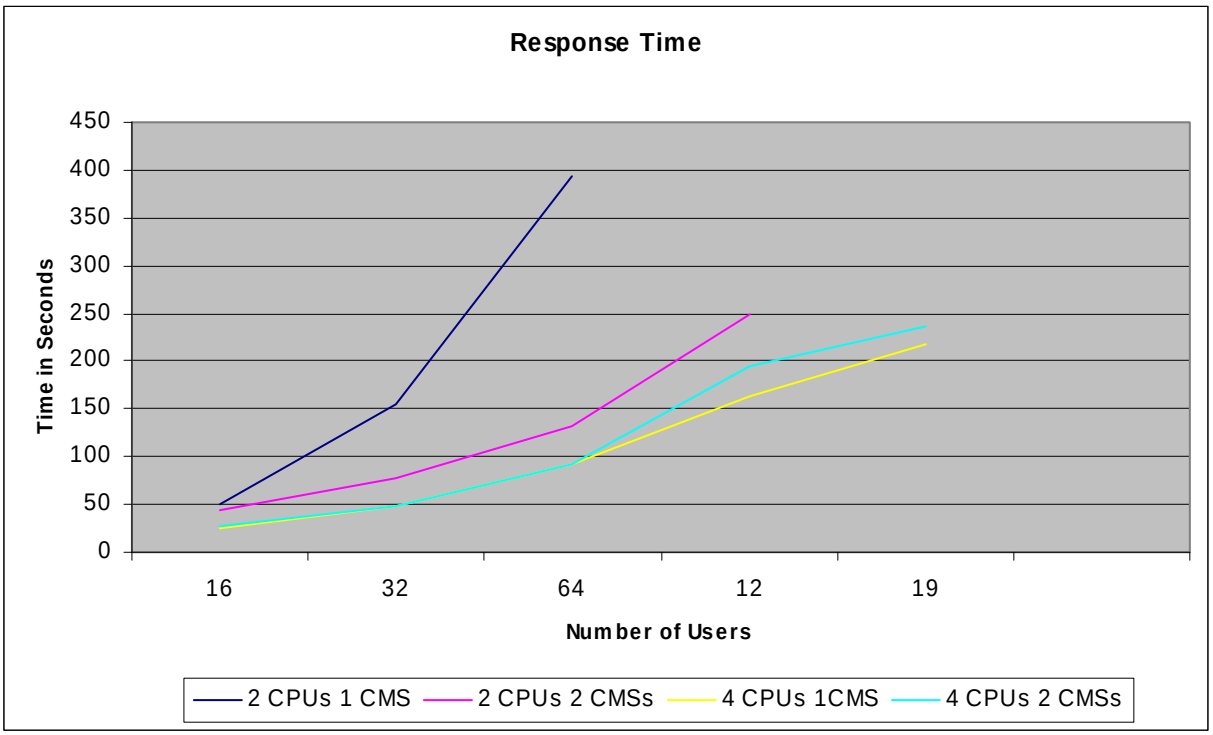
Note: If the response time is not a constraint, then you can allocate 32 users per CPU.

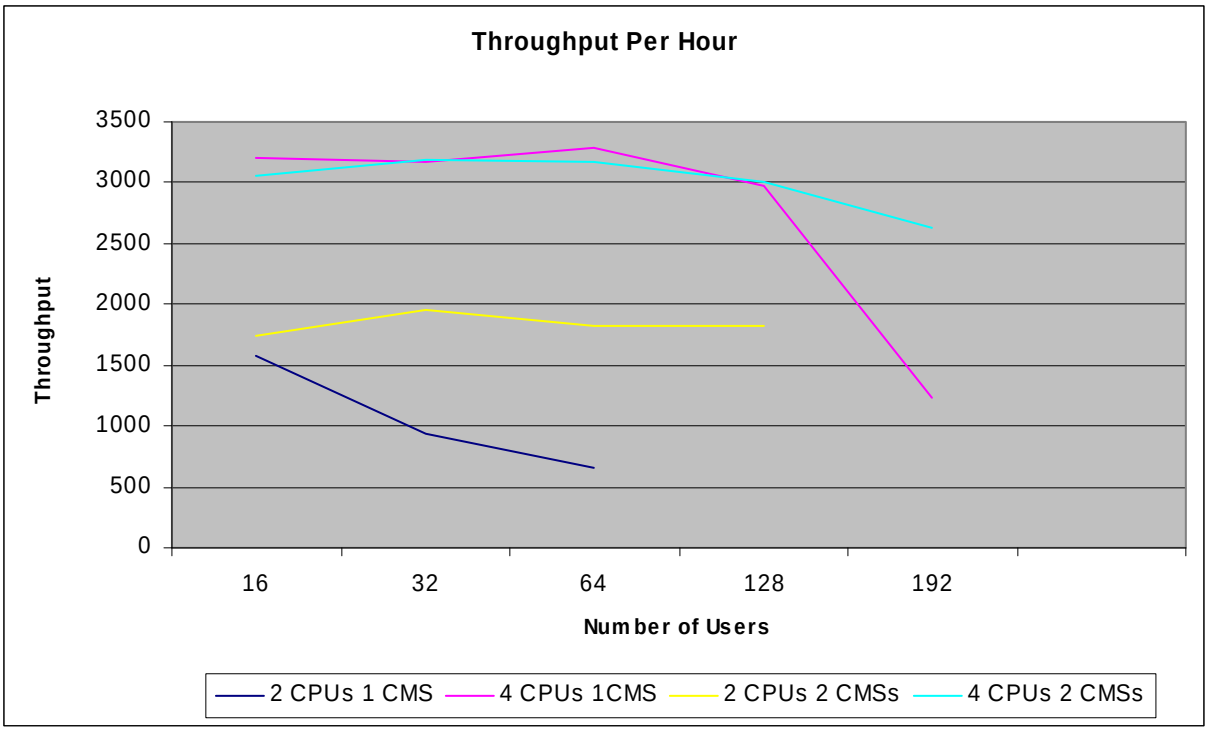
You can calculate the number of CPUs required as follows:

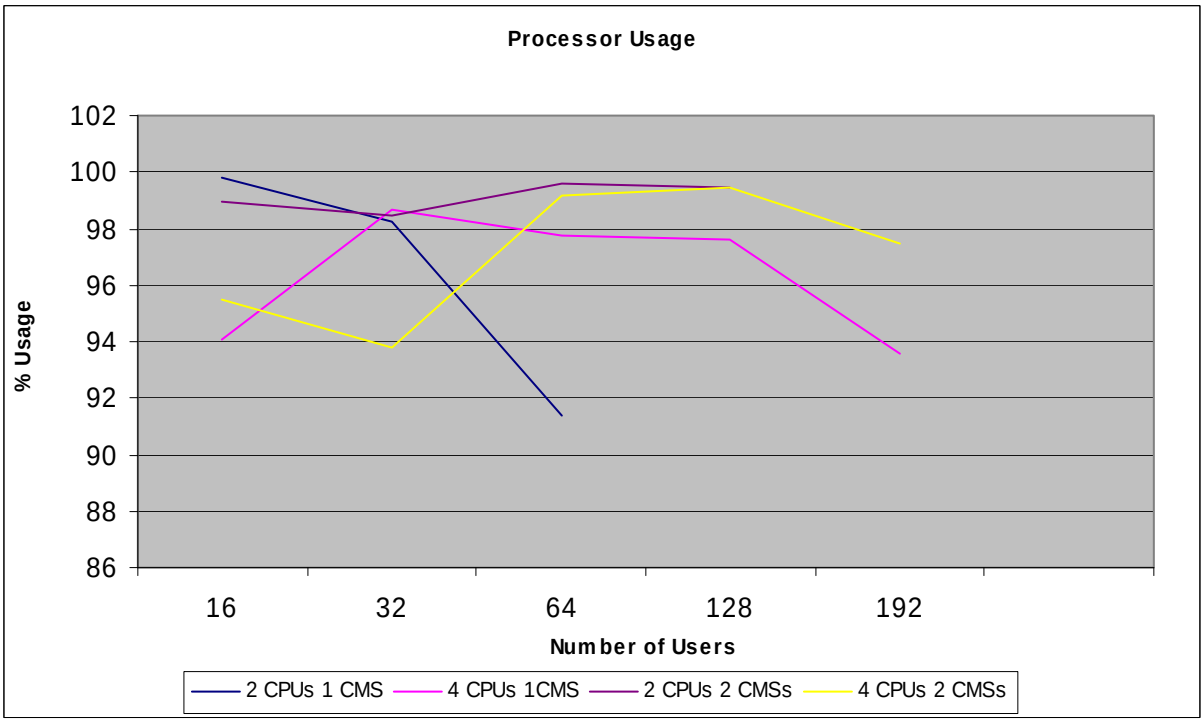
100 concurrent active users / 8 concurrent active users per 1 CPU = 12 CPUs

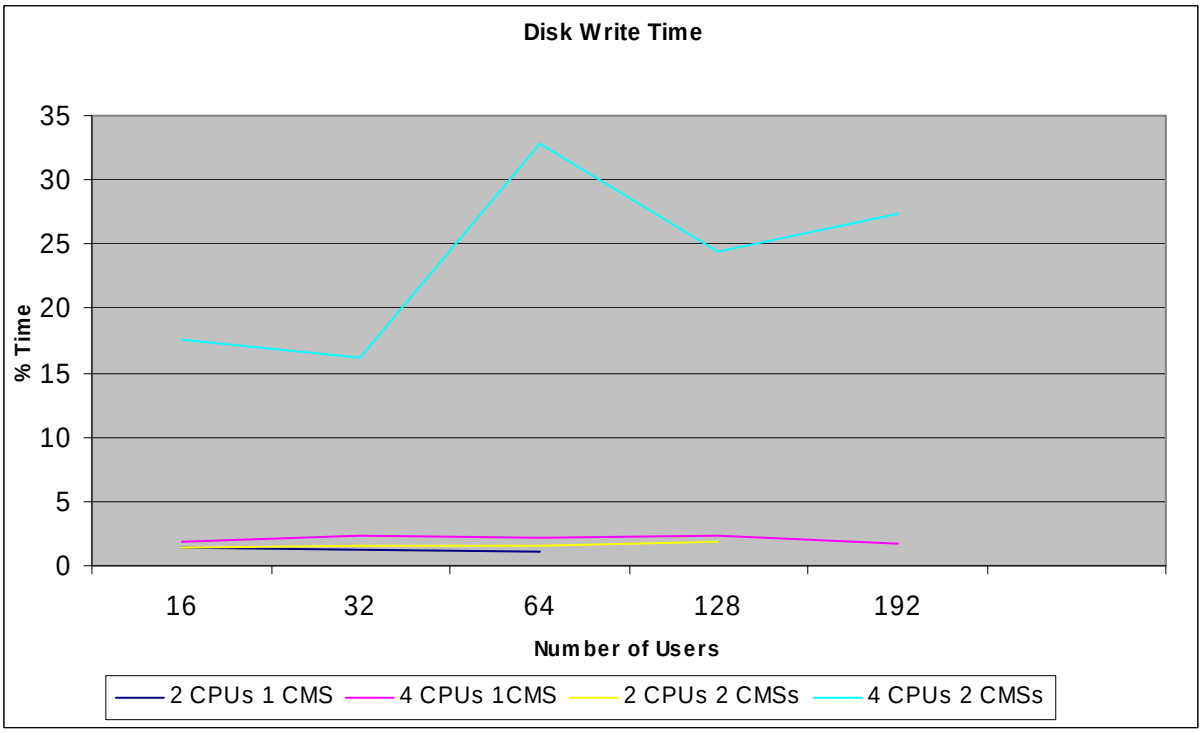
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
Throughput
3500
3000
2500
2000
1500
1000
500
0
16
32
64
128
192
Number of Users
2 CPUs 1 CMS
4 CPUs 1CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
% Usage
102
100
98
96
94
92
90
88
86
16
32
64
128
192
Number of Users
2 CPUs 1 CMS
4 CPUs 1CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Calculating CPU and CMS Requirements for Web Intelligence Server

Determining the CPU and CMS requirements for the Web Intelligence Server involves the following tasks:

- Setting the BusinessObjects Enterprise parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView
2. Listing all Web Intelligence documents.
3. Searching for a specific Web Intelligence document.
4. Opening the Web Intelligence document.
5. Navigating to a specific page in the Web Intelligence document.
6. Drilling down the Web Intelligence document.
7. Drilling up the Web Intelligence document.
8. Closing the Web Intelligence document.
9. Logging out of InfoView.

Report type: The report contains 236 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise Parameters

The following table lists the BusinessObjects Enterprise parameters:

Server	Parameter	Value to be set
CMS	Command Line	-maxObjectsIncache 100000
WI Report Server	Maximum Connections	300

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which includes viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one Web Intelligence Server instance can support a maximum of 64 active users. When you increase the number of users to more than 64, errors occur and the response time increases. Increasing the number of Web Intelligence Server instances to two does not result in any improvement in the performance. This indicates that a system with one CPU, one CMS, and one Web Intelligence Server instance can support a maximum of 32 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the nature of activities that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, you must allocate additional CPUs if the CMS response time and throughput are high.

Processor Requirements

The graphs in this section indicate that increasing the number of server instances does not result in a corresponding improvement in performance. However, when you increase the number of CPUs to 4, then the response time for both 16 users and 32 users decreases by 50 percent and the throughput increases. This indicates that eight users per CPU offers better response time and throughput.

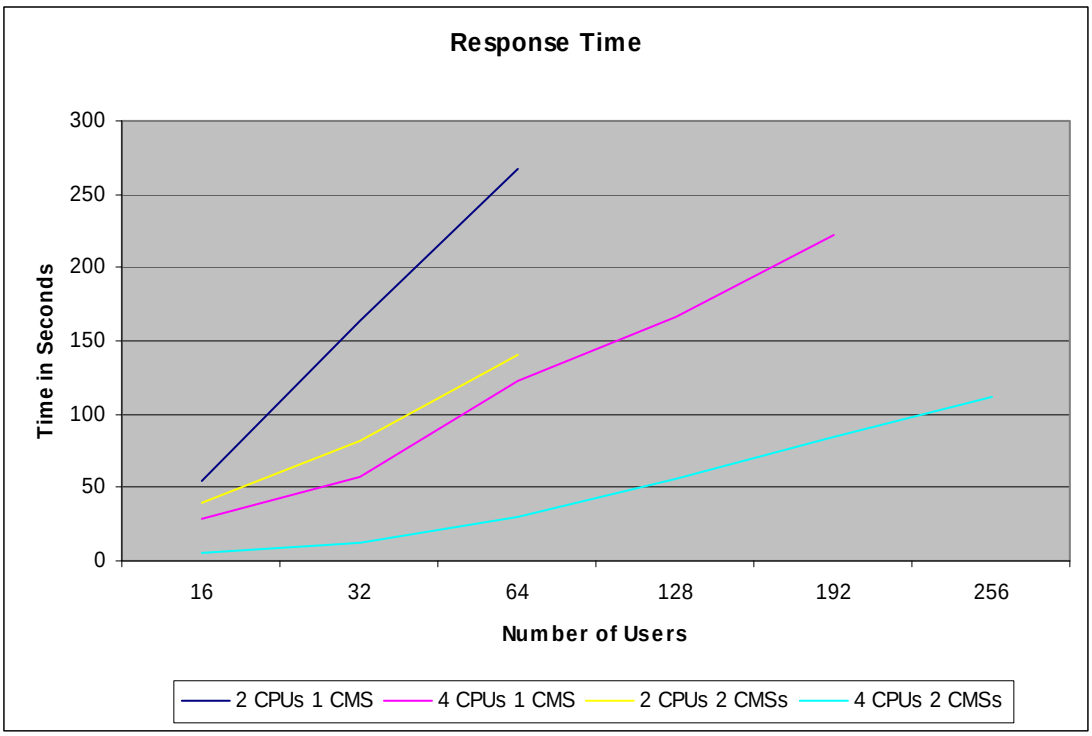
Note: If response time is not a constraint, then you can allocate 32 users per CPU.

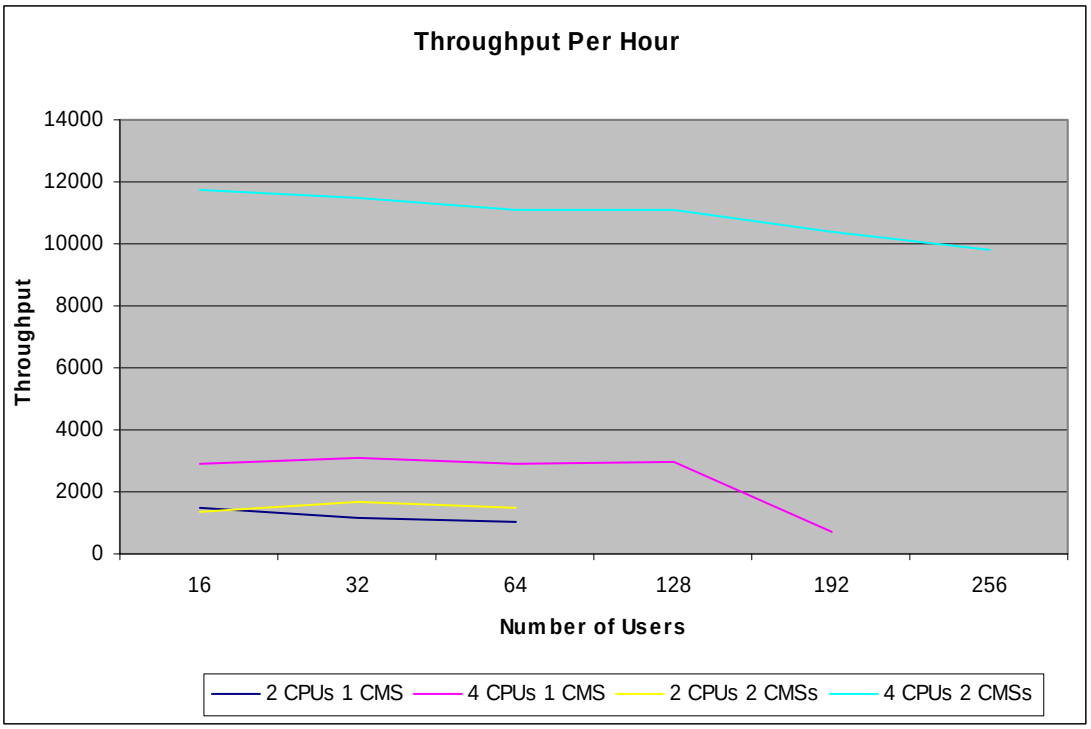
You can calculate the number of CPUs as follows:

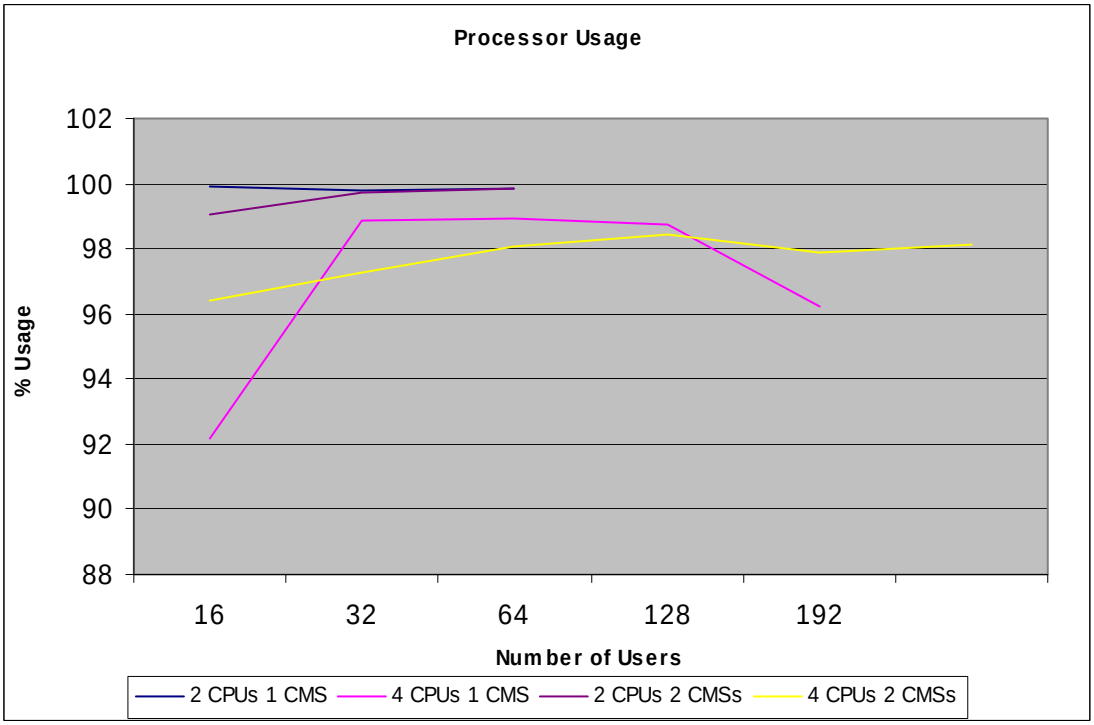
100 concurrent active users / 8 concurrent active users per 1 CPU = 13 CPUs

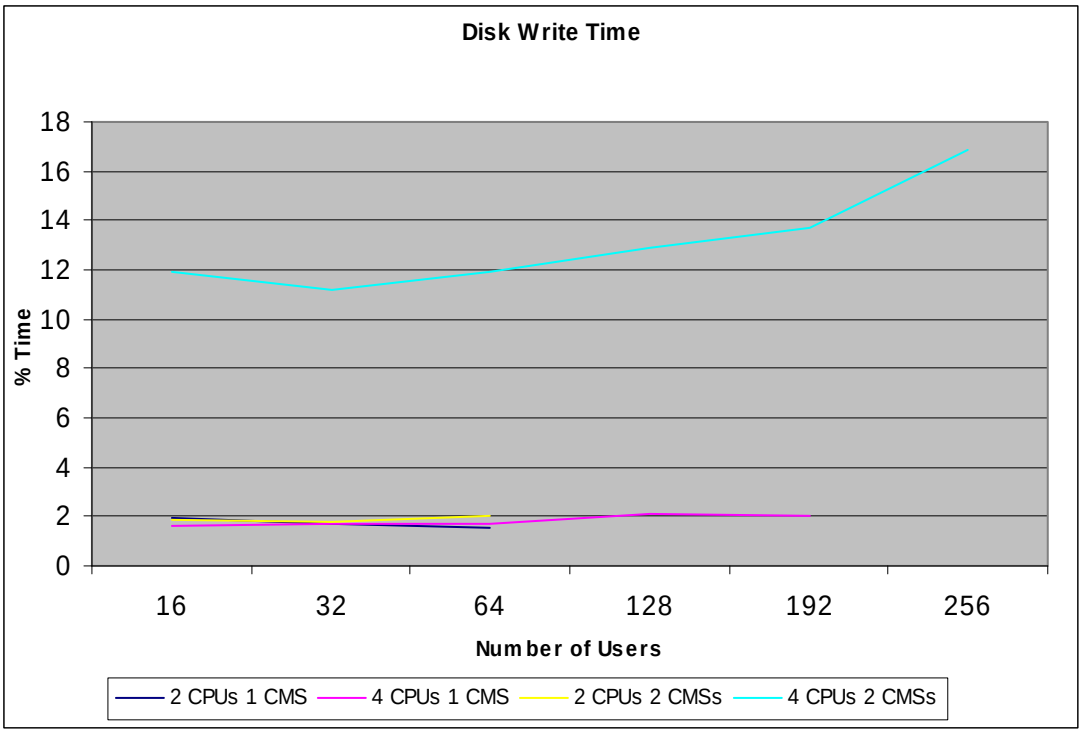
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
14000
12000
10000
8000
6000
4000
2000
0
Throughput
16
32
64
128
192
256
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
102
100
98
96
94
92
90
88
% Usage
16
32
64
128
192
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Hardware Specifications

The following table lists the hardware requirements for IDD ASP:

Component	Specifications
Middle-Tier Machine	18GB RAM, 2 CPUs and 4 CPUs, 2.6GHz speed Windows 2003 Server SP2
Application Server	IIS Server 6
Distribution of Servers	IIS, CMS, and FileRepositoryServers (FRS) on a Single Box (Mono Box)
CMS Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
Reporting Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
Conductor/Player	4 CPUs, 2600Mhz / 4GB RAM enabled
Testing Tool	QALoad 5.2

5. Determining Requirements for Voyager

Overview

This chapter describes how to determine the requirements for Voyager. It also describes the results of a sample sizing exercise. In addition, it discusses the hardware requirements for Voyager.

Determining the requirements for Voyager involves the following tasks:

- Setting the BusinessObjects Enterprise parameters
- Calculating the number of CMS services required
- Calculating the number of processors required

Workflow

The workflow consists of the following steps:

1. Logging into InfoView.
2. Listing all documents.
3. Selecting the first connection.
4. Adding a dimension to the Voyager workspace.
5. Drilling down the column.
6. Drilling down the row.
7. Selecting the Vertical Bar chart.
8. Selecting Page 2.
9. Adding the second dimension.
10. Adding Slice data.
11. Drilling down the dimension.
12. Adding a measure.
13. Inserting the Box plot.
14. Changing the chart type.
15. Inserting the calculation
16. Sorting the Commit Time column.
17. Inserting the traffic signal.
18. Logging out.

Report type: The report contains 779 pages and includes both charts and crosstabs. This report was created by using Oracle 10.2g database, with the CMS repository containing 5000 users and 4484 objects.

Setting BusinessObjects Enterprise Parameters

The following table lists the BusinessObjects Enterprise parameters:

Server	Parameter	Value to be set
Central Management Server	Command Line	-maxObjectsInCache 100000
MDAS	Number Instance	5
MDAS	Command Line	-maxsession 30

Calculating the Number of CMS Services Required

The number of CMS services required depends on the following factors:

- The number of concurrent active users
- The number of simultaneous user requests, which involves viewing or querying CMS objects
- Volume of batch scheduling
- Fault tolerance requirements

The CMS supports clustering capabilities. A cluster consists of two or more CMS servers working together against a common CMS system database. If a system that is running a CMS fails, a system with another CMS will continue to service BusinessObjects Enterprise requests. This "high availability" support helps ensure that users can access information even if a component fails. For more information about clustering, see the *BusinessObjects Enterprise Administrator's Guide*.

CMS Requirements

On a system with two CPUs, one CMS with one CRproc and one CRcache server instance can support a maximum of 128 users. However, when you attempt to increase the number of users to more than 128, errors occur and the response time exceeds 300 seconds. This indicates that a system with one CPU, one CMS, two CRproc instances, and two CRcache instances can support a maximum of 64 users.

Calculating the Number of Processors Required

The number of CPUs required to support the CMS services depends on the type of tasks that are run on the CMS. For example, if you are making large-scale updates on the CMS system database, such as adding or deleting a large number of users, or viewing a large number of objects, it results in a large overhead on the CPU. Hence, you must allocate additional CPUs if the CMS response time and throughput are high.

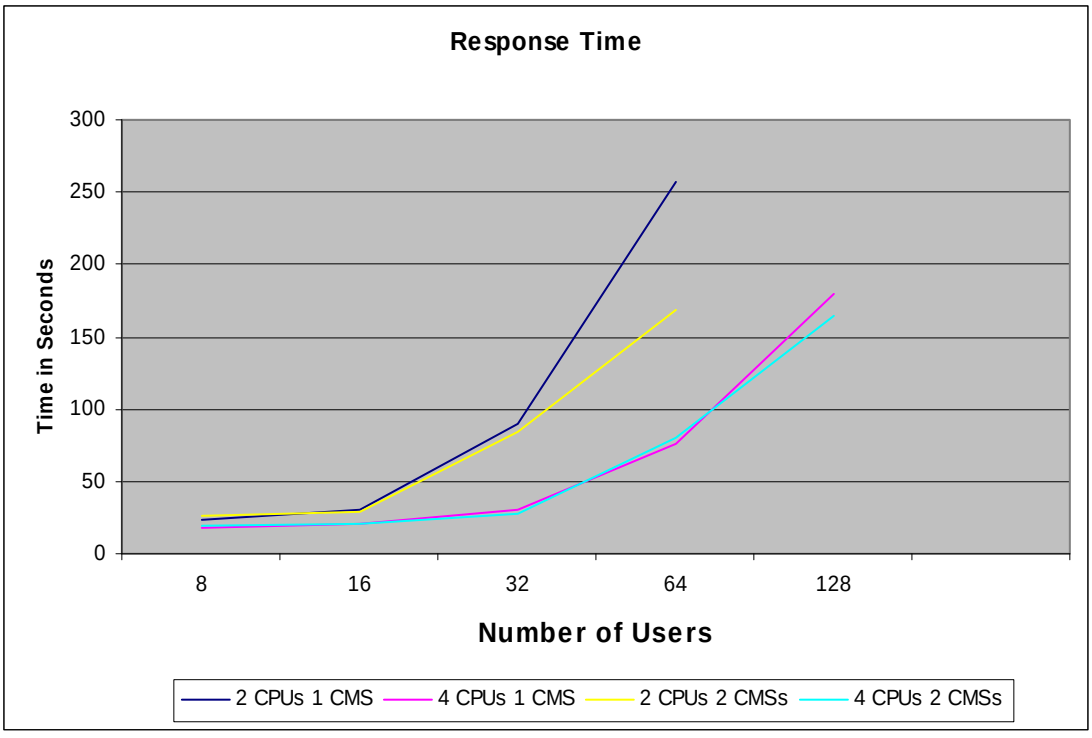
Processor Requirements
The graphs in this section indicate that increasing the number of CMS instances does not improve the response time. However, when you increase the number of CPUs from two to four, the response time for both 16 users and 32 users decreases by 50 percent, and the throughput increases twofold. This indicates that allocating eight users per CPU results in better response time and throughput.

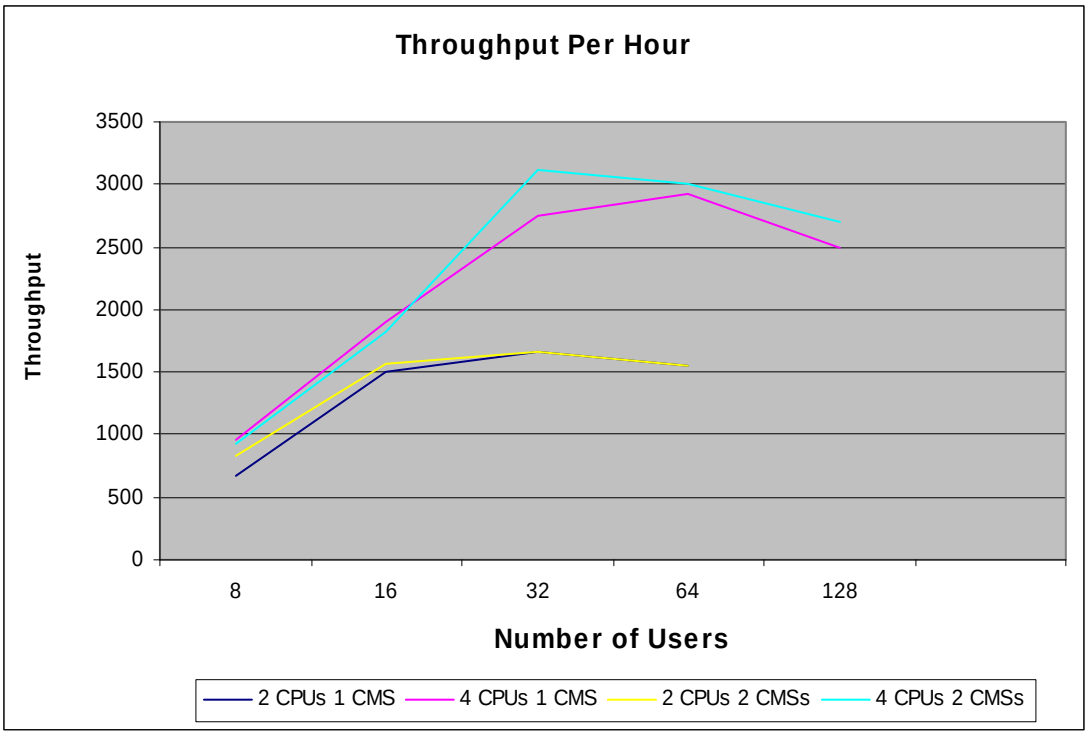
Note: If response time is not a constraint, then you can allocate 64 users per CPU.

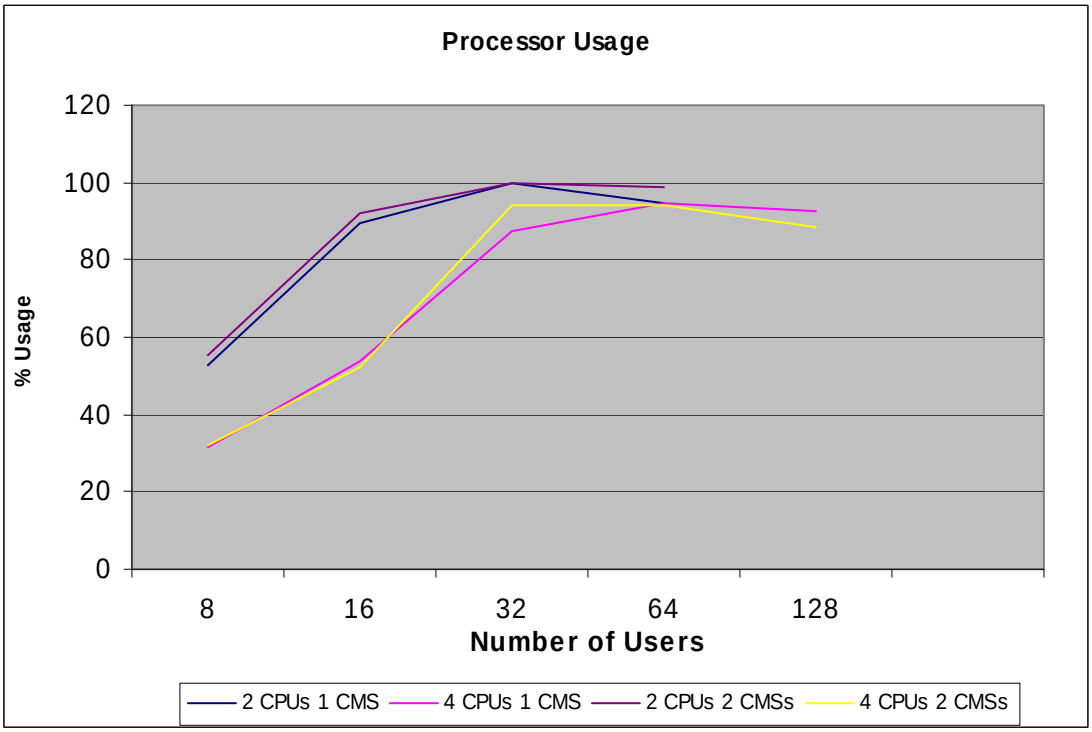
100 concurrent active users / 8 concurrent active users per 1 CPU = 12 CPUs

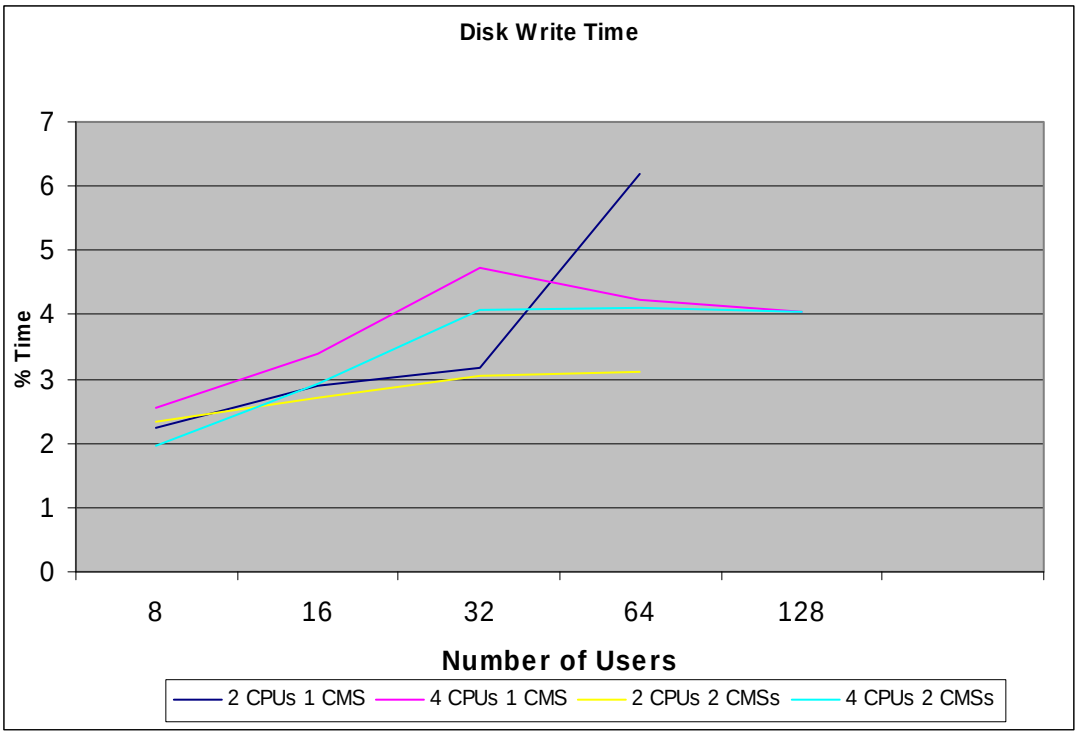
Note: The framework used to determine the number of processors must be treated as a general guideline. The exact number of CPUs required depends on factors such as CPU speed, network, and database connectivity.

Graphs




Throughput Per Hour
Throughput
3500
3000
2500
2000
1500
1000
500
0
8
16
32
64
128
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs


Processor Usage
% Usage
120
100
80
60
40
20
0
8
16
32
64
128
Number of Users
2 CPUs 1 CMS
4 CPUs 1 CMS
2 CPUs 2 CMSs
4 CPUs 2 CMSs



Hardware Specifications

The following table lists the hardware requirements for Voyager:

Component	Specifications
Middle-Tier Machine	18GB RAM, 2 CPUs and 4 CPUs, and 2.6GHz speed Windows 2003 Server SP2
Application Server	Tomcat that is installed along with BusinessObjects Enterprise
Distribution of Servers	Tomcat, CMS, and FileRepositoryServers (FRS) on Single Box (Mono Box)
CMS Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
Reporting Database	Oracle 10.2, 4 CPUs, 2600Mhz / 4GB RAM enabled. Oracle SGA = 1.5GB
OLAP Server	SQL Server AS 2005
Conductor/Player	4 CPUs, 2600Mhz / 4GB RAM enabled
Testing Tool	QALoad 5.2