

SIZING GUIDE



Sizing SAP BusinessObjects Explorer

Applies to the following software solutions:

SAP BusinessObjects Explorer XI 3.1 Service Pack 1

SAP BusinessObjects Explorer, accelerated version for
SAP NetWeaver Business Warehouse

Released for SAP Customers and Partners

Document Version 1.0, July 2009

© Copyright 2009 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft, Windows, Outlook, and PowerPoint are registered trademarks of Microsoft Corporation.

IBM, DB2, DB2 Universal Database, OS/2, Parallel Sysplex, MVS/ESA, AIX, S/390, AS/400, OS/390, OS/400, iSeries, pSeries, xSeries, zSeries, z/OS, AFP, Intelligent Miner, WebSphere, Netfinity, Tivoli, and Informix are trademarks or registered trademarks of IBM Corporation in the United States and/or other countries.

Oracle is a registered trademark of Oracle Corporation.

UNIX, X/Open, OSF/1, and Motif are registered trademarks of the Open Group.

Citrix, ICA, Program Neighborhood, MetaFrame, WinFrame, VideoFrame, and MultiWin are trademarks or registered trademarks of Citrix Systems, Inc.

HTML, XML, XHTML and W3C are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

Java is a registered trademark of Sun Microsystems, Inc.

JavaScript is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

MaxDB is a trademark of MySQL AB, Sweden.

SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data

contained in this document serves informational purposes only. National product specifications may vary.

These materials are subject to change without notice. These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

© 2009 SAP® BusinessObjects™. All rights reserved. SAP BusinessObjects and its logos, BusinessObjects, Crystal Reports®, SAP BusinessObjects Rapid Mart™, Copyright SAP BusinessObjects Data Insight™, SAP BusinessObjects Desktop Intelligence™, SAP BusinessObjects Rapid Marts®, SAP BusinessObjects Watchlist Security™, SAP BusinessObjects Web Intelligence®, and Xcelsius® are trademarks or registered trademarks of Business Objects, an SAP company and/or affiliated companies in the United States and/or other countries. SAP® is a registered trademark of SAP AG in Germany and/or other countries. All other names mentioned herein may be trademarks of their respective owners.

Disclaimer

Some components of this product are based on Java™. Any code change in these components may cause unpredictable and severe malfunctions and is therefore expressly prohibited, as is any decompilation of these components.

SAP Library document classification: CUSTOMERS & PARTNERS

Documentation in the SAP Service Marketplace

You can find this documentation at the following address:
<http://service.sap.com/sizing>

TABLE OF CONTENTS

1	INTRODUCTION.....	1
1.1	ARCHITECTURE OF SAP BUSINESSOBJECTS EXPLORER.....	2
1.2	FACTORS THAT INFLUENCE THE PERFORMANCE	2
2	SIZING FUNDAMENTALS AND TERMINOLOGY	3
3	INITIAL SIZING FOR SAP BUSINESSOBJECTS EXPLORER	4
3.1	TECHNICAL COMPONENTS TO BE SIZED	4
3.2	ASSUMPTIONS	4
3.2.1	<i>Typical User Profiles</i>	4
3.2.2	<i>Other Assumptions</i>	5
3.3	SIZING GUIDELINE FOR BUSINESS EXPLORER STANDALONE SCENARIO.....	5
3.4	SIZING GUIDELINE FOR BUSINESS EXPLORER ON SAP NETWEAVER BW ACCELERATOR	6
3.4.1	<i>CPU Sizing</i>	6
3.4.2	<i>Memory Sizing of the BWA component</i>	6
3.4.3	<i>Disk Sizing for the BWA component</i>	7
4	MISCELLANEOUS.....	7
5	COMMENTS AND FEEDBACK	7

1 Introduction

SAP BusinessObjects Explorer delivers intuitive search and exploration capabilities to business users who want to analyze corporate data without needing to build reports or format charts.

Note: SAP BusinessObjects Explorer replaces SAP BusinessObjects Polestar. Some product documentation uses the previous name.

SAP BusinessObjects Explorer can be deployed with two scenarios:

▪ **Scenario 1:** SAP BusinessObjects Explorer XI 3.1 Service Pack 1.

This “standalone” solution requires SAP BusinessObjects Enterprise XI 3.1; and leverages BusinessObjects universes as the data providers. It is entirely based on the Lucene search engine.

If this is your scenario, you need to size the following components (additional software components only play a negligible role):

- SAP BusinessObjects Explorer
- SAP BusinessObjects Enterprise (“backend”)

▪ **Scenario 2:** SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver Business Warehouse (BW) solution.

This solution requires SAP BusinessObjects Explorer blade edition 1.0, SAP NetWeaver Business Warehouse Accelerator 7.0 Revision 50 or higher and SAP NetWeaver Business Warehouse (as part of SAP NetWeaver 7.0 Enhancement Package 1 Support Package Stack); and leverages Explorer-enabled BW Accelerator indexes as the data providers.

If this is your scenario, you need to size the following components:

- Gateway server
- SAP BusinessObjects Explorer
- SAP NetWeaver BW Accelerator

1.1 Architecture of SAP BusinessObjects Explorer

The architecture of SAP BusinessObjects Explorer is structured into the following layers:

- Clients
- Web tier/gateway - this includes the web server(s) and Web Application Server(s)
- Backend - this includes the Explorer servers and the BusinessObjects Enterprise servers. If you are deploying the SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver Business Warehouse solution, the backend also includes the BW Accelerator (BWA).

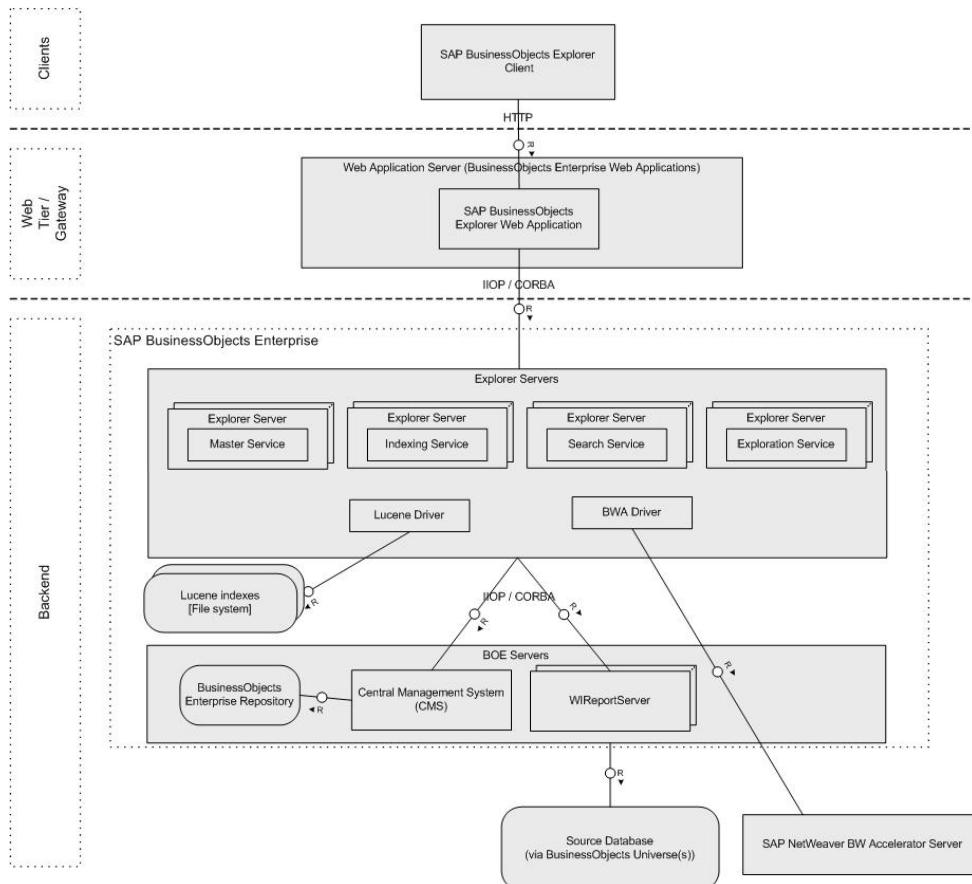


Figure 1: Architecture overview of SAP BusinessObjects Explorer

1.2 Factors that influence the performance

The main capabilities of SAP Business Objects Explorer that impact performance are:

- On the client
 - The size of the Information Space(s) opened by the end user
 - The number of exploration actions (clicks) that the end user performs within the same user session increases the amount of memory consumed by the browser (ensuring 1 GB free RAM per client is estimated to be sufficient to cover this memory consumption increase)
- On the Web Tier/Gateway
 - User sessions - stress the Explorer Web Application Server. The number of active user sessions and the intensity of user activity per active session impacts the load on the Explorer Web Application Server.

- On the backend
 - Search - stresses the Search server(s)
The load on the Search server(s) is the same whether users use the search feature on the Home tab to search across all available Information Spaces or whether users open a single Information Space and search across the values within it.
 - Filtering and drill analysis - stresses the Exploration server(s)
The number of filtering and drill actions performed by users per hour significantly increases the load on the Exploration server(s).
- Indexing - stresses the Indexing server(s)
Only one Indexing job can be processed per Indexing server at any given time, so Indexing requests are queued up until an Indexing server is available.

2 Sizing Fundamentals and Terminology

SAP provides general sizing information on the SAP Service Marketplace. For the purpose of this guide, we assume that you are familiar with sizing fundamentals. You can find more information at <http://service.sap.com/sizing> → *Sizing* → *General Sizing Procedures*.

This section explains the most important sizing terms, as these terms are used extensively in this document.

Sizing

Sizing means determining the hardware requirements of an SAP application, such as the network bandwidth, physical memory, CPU processing power, and I/O capacity. The size of the hardware and database is influenced by both business aspects and technological aspects. This means that the number of users using the various application components and the data load they put on the server must be taken into account.

Benchmarking

Sizing information can be determined using **SAP Standard Application Benchmarks** and scalability tests (www.sap.com/benchmark). Released for technology partners, benchmarks provide basic sizing recommendations to customers by placing a substantial load upon a system during the testing of new hardware, system software components, and relational database management systems (RDBMS). All performance data relevant to the system, user, and business applications are monitored during a benchmark run and can be used to compare platforms.

SAPS

The SAP Application Performance Standard (SAPS) is a hardware-independent unit that describes the performance of a system configuration in the SAP environment. It is derived from the Sales and Distribution (SD) Benchmark, where 100 SAPS is defined as the computing power to handle 2,000 fully business processed order line items per hour. (For more information about SAPS, see <http://www.sap.com/benchmark> ➤SAPS).

Initial Sizing

Initial sizing refers to the sizing approach that provides statements about platform-independent requirements of the hardware resources necessary for representative, standard delivery SAP applications. The initial sizing guidelines assume optimal system parameter settings, standard business scenarios, and so on.

Expert Sizing

This term refers to a sizing exercise where customer-specific data is being analyzed and used to put more detail on the sizing result. The main objective is to determine the resource consumption of customized content and applications (not SAP standard delivery) by comprehensive measurements. For more information, see <http://service.sap.com/sizing> → *Sizing Guidelines* → *General Sizing Procedures* → *Expert Sizing*.

Configuration and System Landscaping

Hardware resource and optimal system configuration greatly depend on the requirements of the customer-specific project. This includes the implementation of distribution, security, and high availability solutions by different approaches using various third-party tools. In the case of high availability through redundant resources, for example, the final resource requirements must be adjusted accordingly.

There are some "best practices" which may be valid for a specific combination of operating system and database. To provide guidance, SAP created the NetWeaver configuration guides (<http://service.sap.com/instguides> → SAP NetWeaver).

Hardware Minimum Requirements

Unless otherwise indicated, the sizing guidelines specify the net requirements of the business application. The minimum requirements for installing an "empty" system are specified in the respective implementation guides (<http://service.sap.com/instguides>, in the section for hardware and software requirements). The same applies for front-end PC minimum and optimal requirements.

3 Initial Sizing for SAP BusinessObjects Explorer

There are two sizing guidelines, one for each scenario described in the introduction (standalone and using SAP NetWeaver Business Accelerator as a search engine).

3.1 Technical components to be sized

The following components need to be sized:

- SAP Business Objects Explorer (Explorer)
- Business Explorer backend (consisting of CMS and WebI)
- CMS database (in general will not exceed a maximum usage)
- Gateway server (in general will not exceed a maximum usage)
- SAP NetWeaver Business Warehouse Accelerator (only for scenario 2)

3.2 Assumptions

3.2.1 Typical User Profiles

Based on the typical usage patterns of individual users, we have defined three different usage profiles associated with specific load patterns.

- **Profile 1: Information Consumer**

The Information Consumer is a business user who uses SAP BusinessObjects Explorer **occasionally** to obtain very specific information via a well defined search path. These users access a limited number of Information Spaces via bookmarks to specific exploration views. Their business need is to view the updated values on familiar data sets.

The number of navigations (clicks) for this type of user is low; we assume an average total of 10 clicks per hour.

The predominant type of navigation performed by this user is adding filters and drilling down on values. (On a typical user base, 70% active users fit this profile.)

- **Profile 2: Executive User**

The Executive User is a business user who uses SAP BusinessObjects Explorer **frequently** to perform basic analysis. These users access a small number of distinct Information Spaces via Search. Their business need is to obtain a personalized view of the overall data set.

For this reason, these users perform significantly more navigations per hour than the Information Consumer; we assume an average total of 150 clicks per hour.

The predominant type of navigation action performed by this user is searching for values, applying filters and performing drill analysis. (On a typical user base, 25% active users fit this profile).

▪ **Profile 3: Expert User**

The Expert User is a business user who uses SAP BusinessObjects Explorer **daily** to perform advanced analysis. These users access a high number of distinct Information Spaces via Search. Their business need is to provide deep analytical insight into a wide range of corporate data and to share their analyses with business collaborators.

The number of navigations (clicks) for this type of user is high; we assume an average total of 300 clicks per hour.

The predominant type of navigation action performed by this user is searching for Information Spaces and values, applying multiple filters and performing extensive drill analysis. (On a typical user base, 5% active users fit this profile).

Note:

These profiles are provided as an example and may differ from the specific usage patterns across your deployment.

We assume that a typical distribution of active users is

- 70% Information Consumer
- 25% Executive User
- 5% Expert User

3.2.2 Other Assumptions

- For an SAP BusinessObjects Explorer deployed on top of SAP BusinessObjects Enterprise setup (referred to as “Scenario 1” above) we assume a medium sized Explorer system with a basis of 1,000,000 cells.
- For an SAP BusinessObjects Explorer blade edition deployed as part of the SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver Business Warehouse (BW) solution setup (referred to as “Scenario 2” above) we assume a large Explorer system with a basis of 100,000,000 records with 16 facets each (1,600,000,000 cells).
- Sizing focuses on the SAP BusinessObjects Explorer and the SAP NetWeaver BWA, as the CPU consumption on the Gateway server is fairly stable at 300 SAPS per 100 users.

3.3 Sizing Guideline for Business Explorer Standalone Scenario

In the standalone scenario SAP Business Objects Explorer performs all functions, including search.

The below sizing guideline shows the number of SAPS and memory needed for an InfoSpace with 10 million cells. The components sized are the Business Explorer backend and the Business Explorer.

The gateway server has a fairly stable resource consumption of 300 SAPS, the CMS database needs 250 SAPS. These numbers are independent on the number of users.

# active users	SAPS		Memory in GB	
	Backend	Explorer	Backend ¹	Explorer
50	700	6000	4	8
100	700	12.000	4	14
200	1400	24.000	4	24
300	2100	36.000	4	32
If you plan for more active users, please contact your hardware vendor or SAP				

¹ Since the backend consists of two servers, CMS and WebIntelligence, the memory is the sum of 2 GB per server.

3.4 Sizing guideline for Business Explorer on SAP NetWeaver BW Accelerator

In this scenario, the search is performed by SAP Business Warehouse Accelerator.

3.4.1 CPU Sizing

- We assume the same user profile for these users as for the Explorer users
- For CPU sizing you have to determine the CPU requirements for the BWA component of SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver Business Warehouse. The result is to be taken as additional CPU requirement (that is, additional blade servers), to an existing BWA landscape. Please note that if you use the SAP Business Warehouse you need to size the CPU time consumed by the BWA on the BW server additionally.
- The Business Explorer backend has a stable resource consumption of 600 SAPS, the CMS database will need roughly 600 SAPS. You can allocate 2-4 GB of memory for the backend

# active users	SAPS ²			Memory in GB		
	Gateway	Explorer	BWA	Gateway	Explorer	BWA
50	150	600	25.000	2	8	See chapter 3.4.2. for BWA memory sizing
100	300	1200	50.000	2	8	
200	600	2400	100.000	4	8	
300	900	3600	150.000	4	10	
If you plan for more active users, please contact your hardware vendor or SAP						

For larger user numbers or different Information Space sizes we strongly recommend to contact SAP or your hardware vendor for more detailed information.

Impact of InfoCube size on the BWA sizing

The InfoCube size has significant impact on the resource requirements of a navigation step. In extensive performance tests it was observed that resource consumption increases linearly with the size of an InfoCube, i.e. for InfoCubes with an average size of 200 million records twice the CPU resources are required.

Note:

MultiProviders have to be considered as well for the average size of InfoCubes. In general, the number of records in MultiProvider can be estimated as the sum of the number of records of all its part providers.

3.4.2 Memory Sizing of the BWA component

Memory sizing for BWA is based on the size and structure of InfoCubes. For a memory sizing you have to be aware that BWA indexes for all InfoCubes (no matter if they are used for BWA for BW only or for BWA for SAP BusinessObjects Explorer, accelerated version for BW) are spread across all blades of the BWA component. So to determine the overall memory requirements, you have to consider all these InfoCubes to obtain a global memory sizing.

² SAP Business Objects Explorer is designed for running on blade servers. Current blade servers are estimated at a capacity of 25,000 SAPS per server. Note that the target utilization is calculated against 80% CPU utilization.

Memory sizing of the BWA component for SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver BW is based on the memory sizing for the BW Accelerator for SAP NetWeaver Business Warehouse itself.

More Information:

Refer to [SAP note 917803: Estimating the memory consumption of a BIA index](#) for a detailed description of the sizing of SAP NetWeaver BW Accelerator for SAP NetWeaver Business Warehouse.

Note:

As in the case of SAP NetWeaver BW Accelerator for SAP NetWeaver Business Warehouse, the cumulated sizes of the InfoCubes (including uplifts) constitute the amount of memory that is required for the (static) BW indexes. The total amount of memory which needs to be provided by the blade servers is twice as much in order to accommodate the BWA runtime objects during query execution, as described in note 917803.

Memory sizing for InfoCubes

In order to determine the additional memory requirements of the BWA component for the solution SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver BW add 20% of the memory requirements of all InfoCubes that have already been stored in BWA. For each additional InfoCube that is to be loaded into SAP BusinessObjects Explorer, obtain its size according to note 917803 and add another 20% of its size.

Memory sizing for MultiProviders

MultiProviders defined in an SAP NetWeaver BW system actually are only metadata structures, so they do not affect sizing. In contrast, MultiProviders in the BWA component of SAP BusinessObjects Explorer, accelerated version for BW contain materialized data, so they have to be taken into account for memory sizing. For each MultiProvider which is loaded into the SAP BusinessExplorer, you have to add the sum of the sizes of all its part providers to the overall sizing. Note that if a part provider is contained in more than one MultiPorvider, its size has to be added separately for each of these MultiProviders since there is no sharing of part provider data.

3.4.3 Disk Sizing for the BWA component

Disk Sizing for the BWA component of SAP BusinessObjects Explorer, accelerated version for SAP NetWeaver BW is identical to the disk sizing of BWA for SAP NetWeaver BW. The amount of memory which has been calculated based on the InfoCube sizes (including uplifts) has to be tripled to get the storage requirements.

4 Miscellaneous

- For details of the supported software versions, see the Master Guide - SAP BusinessObjects Explorer, Accelerated Version for SAP NetWeaver Business Warehouse document available at: <http://service.sap.com/netweaver>
- For details of the supported software versions, see the SAP BusinessObjects Explorer XI 3.1 Service Pack 1 Installation, Deployment and Administration Guide available at: <http://service.sap.com/bosap-support> > Documentation > Installation/Upgrade Guides
- Refer to SAP note 917803 “Estimating the memory consumption of a BWA index” for a detailed description of the sizing of SAP NetWeaver BW Accelerator for SAP NetWeaver Business Warehouse.

More detailed instructions for sizing, performance and configuration of SAP BusinessObjects Explorer refer to the “SAP BusinessObjects Explorer Performance and Reliability” White Paper document attached to the SAP Note 1366180. (See: <https://service.sap.com/sap/support/notes/1366180>)

5 Comments and Feedback

Both are very welcome; please send them to Raphael Geoffroy, Ad Hoc Query & Analysis, raphael.geoffroy@sap.com.