

Enabling Full-Text Search for Business Objects in mySAP ERP

Applies to:

SAP NetWeaver 2004s, mySAP ERP 2005

Summary

The SAP NetWeaver Search Engine Service (SES) for business objects is a simple generic interface to enable indexing and searching of business objects with TREX, SAP NetWeaver's engine for search and classification. Any business object in the sense of the Business Object Repository (BOR) can implement the SES methods and is then subject to the SES features, including simple full text and fuzzy search as well as advanced attribute search. The SES is part of the SAP NetWeaver Application Server (AS) ABAP.

Created on: 07 Apr 2006

Author Bios



Karsten Hohage earned an MSc. in Germany in 1996 and his BSc. in Canada in 1992. From 1996 to 1998, he lent his talents to software journalism in Germany. He has been with SAP since 1999, and is now a Senior Product Specialist for knowledge management in SAP NetWeaver. He also specializes in SAP NetWeaver Enterprise Search and the search and classification engine TREX.



and **Klaus Irlé** was born in Germany in 1956. He got a master in chemical engineering and an MBA. After 5 years in the chemical and pharmaceutical industry he joined SAP in 1989. For many years Klaus worked as a developer on master data objects for technical applications. Today he is the architect in the Enterprise Search (ES) team.

Table of Contents

Introduction	4
Enabled business objects in mySAP ERP 2005.....	4
Master Data Operations	5
Master Data Financials.....	5
Master Data HCM.....	5
Master Data Corporate Services	5
Master Data Public Sector.....	5
Configuring, Administrating and Using the SES	6
Maintain a TREX RFC destination	6
Check and configure the object types for indexing	6
Start initial indexing of chosen object types and Indexing.....	7
Monitor the indexing process	7
Searching in SAP GUI	7
Extending the Search Engine Service	9
Steps to enable an additional business object type for indexing and searching.....	9
Connecting a user interface to the SES Search API.....	10
Related Content.....	12

Introduction

The search engine service is installed with the SAP NetWeaver Application Server ABAP (NW AS ABAP) as part of the usage type “AS (Application Server)”. It allows users of business applications in mySAP to retrieve business objects in a simple, Web-search-like manner by providing an easy-to-use full text search interface as well as fuzzy algorithms for a fault-tolerant behavior.

To achieve this, the SES replicates the business objects to the SAP NetWeaver search engine, TREX, for indexing. Part of the SES is a slim administration user interface to administrate initial and delta indexing of the different enabled business object types. After initial indexing, TREX search functionality is applicable to the indexed business objects – either through the included default user interface or through self-designed ABAP applications. Search queries using the SES, receive their results from the TREX server, not the database of the mySAP ERP or other ABAP application.

This has the following benefits:

You do not require knowledge of the technical implementation of the business objects to perform searches. You can also search for known attribute characteristic values (field contents) even if you do not know the attribute schema of the business object being searched.

With mySAP ERP 2005 a substantial number of business object types are enabled for indexing and searching through the SES out of the box. Additional business object types can be enabled by implementing the SES methods rather easily. Both aspects – pre-integrated object types and enabling of further object types – will be dealt with in the rest of this article on an introductory level.

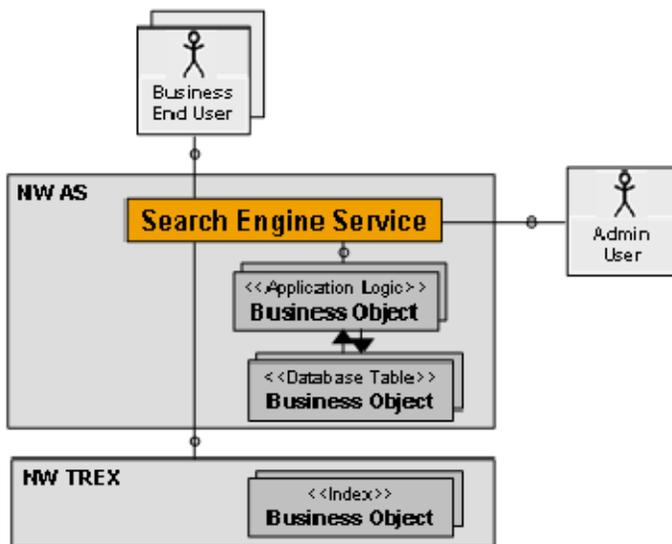


Fig 1: A simplified architecture of the search engine service (SES) as delivered with SAP NetWeaver 2004s.

Enabled business objects in mySAP ERP 2005

The following list of business object types is enabled for out-of-the-box indexing in mySAP ERP 2005. You will find that these are almost exclusively master data objects. Nevertheless, transactional object types can be enabled for indexing and searching all the same. Any enabled object shows up in the administration UI of the search engine service (*SES_ADMIN*) to be initially indexed from there. After that, quick search as well as advanced search is enabled for these objects – by default as two additional tabs in the F4-Help when called from a transaction dealing with the respective object type. You will find more details on user interfaces for end users and administrators in the next section of this article.

Master Data Operations

- Business Partners
- Business Partner
- Customer Master
- Vendor Master
- Product & Material Master
- Product Master Data
- Material Master Data
- Quality Management
- Master Inspection Characteristic
- Inspection Method
- Quality Info Record
- Certificate Profile
- EH&S
- Specifications
- PLM Master Data
- Change Number
- Document Info Records
- Classes
- Characteristics
- Enterprise Asset Management
- Equipment
- Functional Location

Master Data Financials

- Financial Accounting
- Accounts Payable
- Accounts Receivable
- Vendor Master
- Controlling
- Cost Center
- Internal Order
- Asset Accounting
- Asset

Master Data HCM

- Course
- Course Type
- eTraining

Master Data Corporate Services

- Real Estate
- Business Entity
- Property
- Building
- Rental Object
- Real Estate Contract
- Architectural Object
- Settlement Unit
- Participation Group
- Comparative Group

Master Data Public Sector

- Funds Management
- Fund
- Funds center
- Commitment item

Configuring, Administrating and Using the SES

Prerequisite for using the search engine service is a Web Application Server ABAP of release SAP NetWeaver 2004s or higher and an installed TREX engine, which is also part of SAP NetWeaver. From here, the following steps are necessary to start indexing your business objects:

Maintain a TREX RFC destination

Check and configure the object types for indexing

Start initial indexing of chosen object types

Delta indexing (performed by a periodical batch job)

Monitor the indexing process

The following paragraphs provide an overview what has to be done in these steps. The link "Administration of the Search Engine Service" below provides the details.

Maintain a TREX RFC destination

As with any RFC connection, you use the *RFC destination (SM59)* function in the *Landscape RFC window*. The details are linked at the end of the article. Do check the section "Configuring More Than One RFC Connection..." as it may be important to ensure high performance of indexing and searching.

Check and configure the object types for indexing

You should be assigned to the role *SAP_BC_SES_ADMIN* to have the authorization to use the transaction *SES_ADMIN*. In *SES_ADMIN* you choose *Menu -> Index -> Create/Activate Indexes*. A rather self-explanatory list of all indexable object types – those that are available in your system and have implemented the SES methods – appears. Here, you only have to select the object types you want to index. On *ENTER* the required indexes are created in TREX for all the selected object types.

Bus Object	Obj. Type	Description	A	Last Indexing	Start Time	End Time	Status	Number of Objects	Queue: In Process	Queue: Errors	Optimized
BUS0010	1	Functional Location	X	16.04.2006	08:32:37	08:33:15	3 - Comple	3319			20682
BUS0012	1	Cost Center - TREX	X	16.04.2006	08:33:15	08:33:32	3 - Comple	1999			4203
BUS0023	1	Functional Area	X		00:00:00	00:00:00	0 - Initial				56
BUS0032	1	Commitment Item	X		00:00:00	00:00:00	0 - Initial				3976
BUS0033	1	Funds Center	X		00:00:00	00:00:00	0 - Initial				
BUS0034	1	Fund	X		00:00:00	00:00:00	0 - Initial				
BUS0035	1	Grant	X		00:00:00	00:00:00	0 - Initial				
BUS0038	1	Funded Program	X		00:00:00	00:00:00	0 - Initial				
BUS100100E	1	Standard material	X		00:00:00	00:00:00	0 - Initial		9213		75315
BUS1003	1	Class	X		00:00:00	00:00:00	0 - Initial		45576		
BUS1006	1	Business Partner	X	16.04.2006	08:33:32	08:34:00	3 - Comple	869			4785
BUS1022	1	Fixed asset	X	16.04.2006	08:34:00	08:34:03	1 - Cancell				
BUS1077	1	Specification / Substance	X	16.04.2006	08:34:03	08:34:07	3 - Comple	222			222
BUS1077	2	Specification / Agent	X	16.04.2006	08:34:07	08:34:11	3 - Comple	141			141
BUS1088	1	Characteristic	X	16.04.2006	08:34:11	08:34:40	1 - Cancell				23000
BUS1151	1	Arch. Object (RE-FX) / Identifi	X		00:00:00	00:00:00	0 - Initial				138
BUS1176	N	Component (PPE) / SES Cal	X	16.04.2006	08:37:05	08:37:30	3 - Comple	797			802
BUS1178	1	Product	X		00:00:00	00:00:00	0 - Initial				
BUS1501	1	Site Number	X		00:00:00	00:00:00	0 - Initial				71
BUS1502	1	Land / Number of Land	X		00:00:00	00:00:00	0 - Initial				2
BUS1503	1	Buildings / Number of Buildir	X		00:00:00	00:00:00	0 - Initial				95
BUS1504	1	Rental Object / Number of Re	X		00:00:00	00:00:00	0 - Initial				2185
BUS1505	1	Real Estate Contract / Contra	X		00:00:00	00:00:00	0 - Initial				563
BUS1506	1	Settlement Unit	X		00:00:00	00:00:00	0 - Initial				20
BUS1507	1	Participation Group	X		00:00:00	00:00:00	0 - Initial				17
BUS1508	1	Comparative Group / Numbe	X		00:00:00	00:00:00	0 - Initial				
BUS1516	1	Contract Offer Number	X		00:00:00	00:00:00	0 - Initial				
BUS1517	1	Offered Object Number	X		00:00:00	00:00:00	0 - Initial				
BUS1518	1	RE Search Request Number	X		00:00:00	00:00:00	0 - Initial				
BUS2075	1	Internal order / Order - TREX	X	16.04.2006	08:37:31	08:37:52	3 - Comple	5122			5139
BUS2101	1	Q-Info procurement	X		00:00:00	00:00:00	0 - Initial				
BUS3007	1	Customer account / Custom	X		00:00:00	00:00:00	0 - Initial				7805
BUS3008	1	Vendor account / Account Nu	X		00:00:00	00:00:00	0 - Initial				1564

Fig 2: The SES' main administration table for the creation of indexes per business object type and for monitoring the indexing progress

Start initial indexing of chosen object types and Indexing

You can now start initial indexing for a selected object type by clicking the push button *Index Immediately* -> *Full*.

In the documentation, you will also find a section about periodic indexing, which you will schedule as a background job to keep the search indexes up to date.

Monitor the indexing process

You can monitor the progress of as well the initial indexing as the periodic updates in *SES_ADMIN*. There is an abundance of monitoring options as well as an integrated trouble shooting tool, the "TREX Admin Tool in the SAP System", available. Again, please find details in the documentation and in the TREX Admin Tool itself.

Searching in SAP GUI

The SES comes with an out-of-the-box integration into the search help UI of the SAP GUI (the F4-Help). After initial indexing this integrated UI is ready to be used by SAP GUI and Web Dynpro ABAP users. If you need a more specific UI within SAP GUI, it can be developed against the API of the SES (see next section).

The SES adds two different search modes to the tab strips in the F4-Help:

Material Number (1) 184 Entries Found

Quick Search for Material Using Search Engine Advanced Search for Material Using Search Engine

Full Text Search:

Fuzzy Mode:

Maximum no. of hits:

Material Numb...	MTyp	Ct	Material Description	Product hierarchy	Matl Gro...
100-130	ROH		Hexagon head screw M10		001
100-250	HAWA		Hexagon Nut 1.5" Acme Thread		001
102-130	ROH		Hexagon head screw M10		001
107-130	ROH		Hexagon head screw M10		001
400-130	ROH		Hexagon head screw M10		001
400-433	ROH		Hexagon nut		001
647	HALB		Hexagon Socket Head Cap Screw - 1/4 - 20		
648	HALB		Hexagon Socket Set Screw - Flat Point -		
900-011	HAWA		Hexagon screw M 10 X 25	001000010500000125	001
900-012	HAWA		Hexagon nut M 20	001000010500000125	001

184 Entries Found

Fig 3: "Quick Search for Material" is the one that brings the most significant improvement to search in the SAP GUI. It consists of one free text search field only. Anything entered here will produce hits on any object that contains the search string in any of its fields. The users do not need to know the field name they are looking for a result in and they are not confronted with confusing multi-field selection screens.

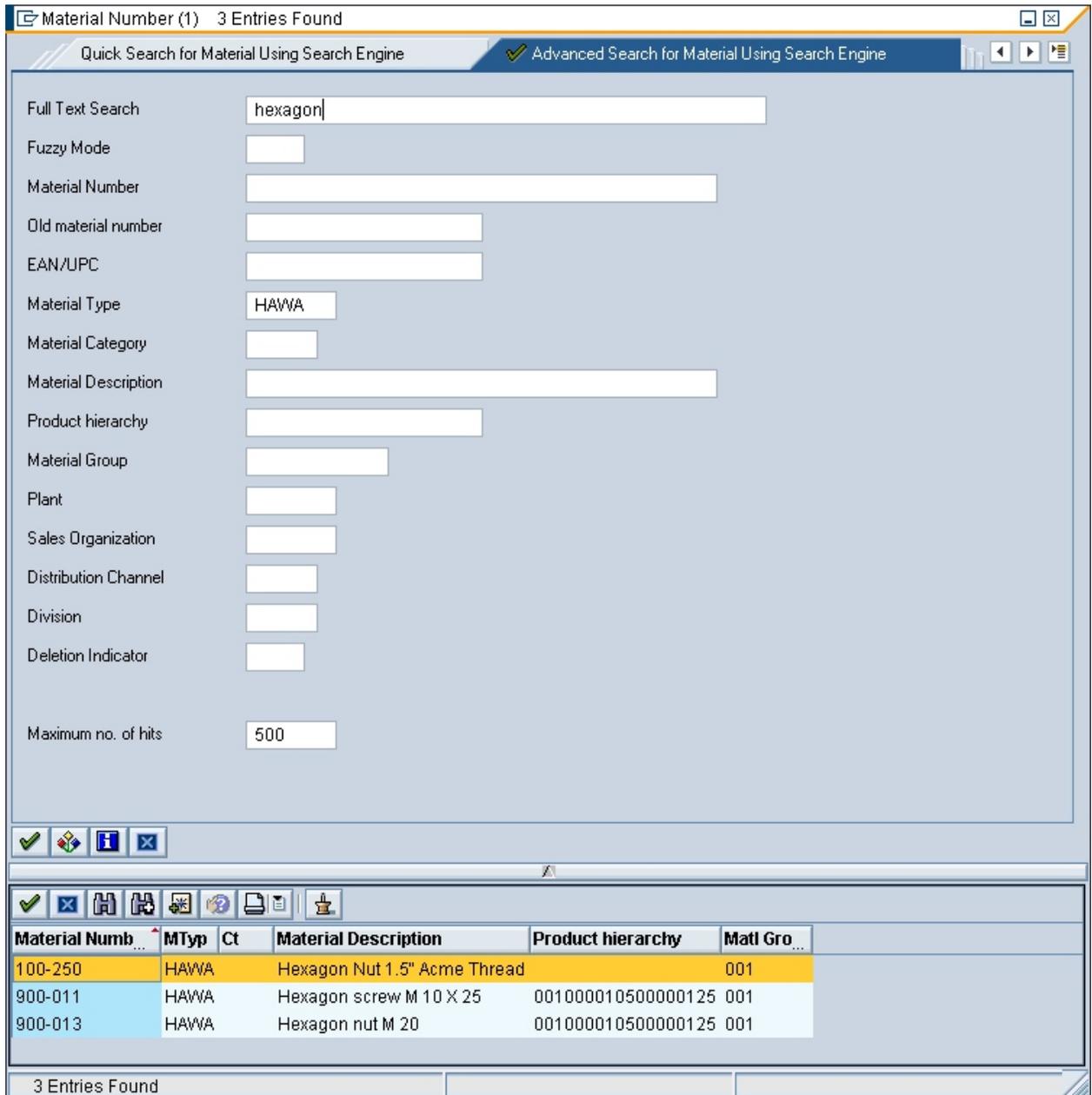


Fig 4: “Advanced Search for [business object type]” is more similar to the well known multi-field selection screens, letting users specify in which field of an object they are looking for a certain value. But as TREX instead of the database is queried, results return much quicker – especially when large numbers of objects are kept in the system.

Extending the Search Engine Service

The complete documentation for developers who want to enable an additional business object type is linked at the bottom of this article and/or is accessible in the system directly. There are two basic types of extensions to the search engine service you can make in a mySAP ERP system. You can enable additional business object types for indexing and searching through the SES or you can build an own user interface on top of the SES. Again, this article gives an overview of available methods, while the details are found in the documentation or in the system itself.

Steps to enable an additional business object type for indexing and searching

If you have some experience in ABAP programming, it will probably not take you any longer than two days to enable an additional business object type. The basic steps to do this are:

To Create an indexing class, i.e. enable a new object type for indexing, this object has to implement the SES Interface IF_COM_SE_BUSOBJ. To add attributes to be indexed for a new object or for an already existing one, you can implement your own ABAP classes for the interface IF_COM_SE_BUSOBJ.

For more information, see the documentation of the interface IF_COM_SE_BUSOBJ and its methods in the SAP system.

To enable the periodic indexing to pick up only the changed objects (delta indexing), you must create change pointers in the application transaction and provide the change pointers to SES using predefined methods. Either CL_COM_SE_CPOINTER_UPDATE~CP_INSERT_ARRAY or CL_COM_SE_CPOINTER_UPDATE~CP_INSERT_SINGLE.

For more information, see the documentation on the method CP_INSERT_SINGLE in the SAP system.

[Connecting a user interface to the SES Search API](#)

To use the F4-Help UI for searching, define COM_SE_F4_HELP_EXIT as search help exit

Any other UI should be based on the SES internal search interface CL_COM_SE_SEARCH_IIF=>SEARCH_OBJECTS.

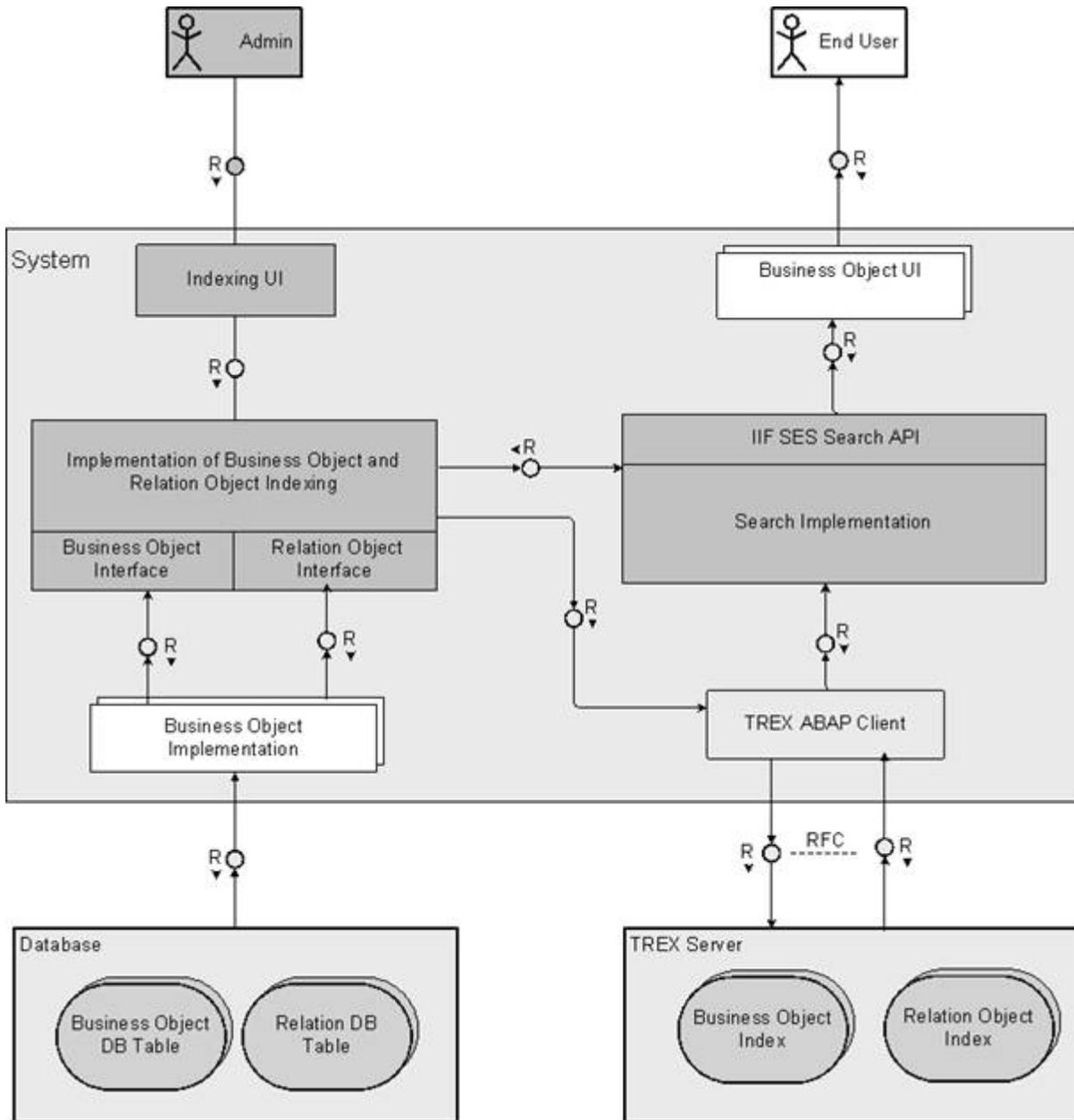


Fig 5: The detailed architecture of the SES (dark grey) and other involved engines and components. After having read the article the graphic should be self-explanatory.

Related Content

Complete documentation of Business Object Search with SES for developers, including a demo example (*SFLIGHT_SES*)

http://help.sap.com/saphelp_nw04s/helpdata/en/6a/9d9d427cab0831e10000000a1550b0/frameset.htm

Administration of the Search Engine Service

http://help.sap.com/saphelp_erp2005/helpdata/en/27/08ef417fc65f24e10000000a1550b0/frameset.htm

TREX RFC connection

http://help.sap.com/saphelp_erp2005/helpdata/en/19/752e4241f51a2ae10000000a1550b0/frameset.htm [Reference 2](#)

[Reference 3](#)

Copyright

© Copyright 2006 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 information 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.

These materials are provided "as is" without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. SAP shall not be liable for damages of any kind including without limitation direct, special, indirect, or consequential damages that may result from the use of these materials.

SAP does not warrant the accuracy or completeness of the information, text, graphics, links or other items contained within these materials. SAP has no control over the information that you may access through the use of hot links contained in these materials and does not endorse your use of third party web pages nor provide any warranty whatsoever relating to third party web pages.

Any software coding and/or code lines / strings ("Code") included in this documentation are only examples and are not intended to be used in a productive system environment. The Code is only intended better explain and visualize the syntax and phrasing rules of certain coding. SAP does not warrant the correctness and completeness of the Code given herein, and SAP shall not be liable for errors or damages caused by the usage of the Code, except if such damages were caused by SAP intentionally or grossly negligent.