IBM Lotus Integration with SAP Enterprise Portal – An Overview

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Summary

Lotus Notes/Domino, as well as adjacent products Lotus Sametime (Lotus Instant Messaging) and Lotus Quickplace (Lotus Team Collaboration) play a major role in the groupware and collaboration market. Based on the reliable Lotus Domino Enterprise Application server, they all share basic but efficient technological concepts. Typical installations include a distributed environment with hundreds or thousands of Lotus Notes databases and self-developed applications.

Users of the SAP Enterprise Portal can now take advantage of an integrated Lotus experience by leveraging existing Lotus systems, services, and data resources. Moreover, the SAP Enterprise Portal adds value by combining Lotus data and applications with integrated, role-based portal applications and services. As a result, SAP Enterprise Portal offers rich and integrated content that leads to gains in productivity – in comparison to separate, disconnected stand-alone applications.

One main characteristic of Lotus integration is that integration efforts should be optimized for maximum efficiency, e.g. to rely on standards instead of integrating proprietary interfaces. Therefore, it makes sense to enable advancing standards like SOAP web services on the Lotus side so that communication between SAP and Lotus can leverage this standard. An additional benefit of such integration is that existing personnel resources (e.g. LotusScript/Lotus developers) can be actively integrated in an SAP NetWeaver/SAP Enterprise Portal implementation.

Applies to:

- SAP Enterprise Portal 6.0 SP2 and higher
- SAP Web Application Server 6.20 & 6.40
- Lotus Domino R5 (5.0.10 and higher) and Lotus 6.x (not Lotus Workplace)

Keywords

Lotus Notes, Lotus Domino, Groupware, Lotus applications, application integration

Level of difficulty

Medium
# Contents

Summary ........................................................................................................................................1  
Applies to: ....................................................................................................................................1  
Keywords....................................................................................................................................1  
Level of difficulty .........................................................................................................................1  
Contents .......................................................................................................................................3  
Introduction ..................................................................................................................................4  
Technology ....................................................................................................................................4  
Scenarios ......................................................................................................................................4  
SAP Enterprise Portal – Lotus Integration Scenarios .................................................................5  
  Unified User Management and Single Sign-on (SSO) ...............................................................5  
  Common Groupware Scenarios and Collaboration .................................................................6  
  Documents ..................................................................................................................................9  
    SAP Knowledge Management ...............................................................................................9  
    Lotus Teamrooms and DocLibs ..............................................................................................10  
  Composite Applications .........................................................................................................11  
    Data Integration in Composite Applications with SOAP Web Services ............................12  
    Visual Integration in Composite Applications .................................................................14  
SAP R/3, Lotus, and SAP Enterprise Portal Integration Scenario ........................................15  
  SAP R/3, SAP Enterprise Portal, and Lotus workflow ...........................................................15  
SAP Partners ...............................................................................................................................17  
Conclusion ....................................................................................................................................18  
References .....................................................................................................................................18
Introduction

Many SAP Enterprise Portal, SAP NetWeaver, and also mySAP ERP projects include the integration of Lotus Notes/Domino. Lotus is thereby leveraged in different scenarios, e.g. documents, applications, data, or groupware. SAP offers the possibility of integrating all of them, as well as the possibility of including Lotus Toolkits in SAP NetWeaver Developer Studio – the powerful Java development environment – to develop custom, demand-tailored portal and infrastructure components.

This paper outlines a variety of feasible approaches. Not all scenarios are covered by the integration components that SAP ships – instead, some rely also on the integration components that Lotus ships. It is key to this integration paradigm that both SAP and Lotus systems “approach each other,” e.g., by the application of connectivity components to ease communication.

Technology

A technologically central role plays the communication protocol HTTP. Since HTTP as well as its extensions (e.g. Web Server interfaces) and application protocols (like SOAP Web Services) can be provided by SAP and Lotus application servers this way of communication is often the case. In addition, SAP as well as IBM participate in the organizations to advance standards based on HTTP, like SOAP Web Services. This is especially important for implementing SAP’s Enterprise Services Architecture (ESA) which is SAP’s strategic and innovative evolution of the traditional Client-Server architecture.

Scenarios

The challenge in Lotus integration projects is to move from product and connectivity-based thinking towards scenarios. Lotus productivity iViews are intended to immediately generate value for the end user. Therefore, this brief includes scenarios that cover the most typical requirements of:

- Unified User Management and Single Sign-on (SSO)
- Common groupware scenarios and collaboration
- Documents
- Composite Applications
- Unified Lotus – SAP R/3 and SAP Enterprise Portal workflows

The foundation of all described scenarios rests on the ability to integrate the installed base of the Lotus products, e.g. Lotus R5 and Lotus R6. This means that the outlined scenarios can typically be implemented and used right away, without the need of upgrading the Lotus landscape.

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1 SAP Enterprise Services Architecture (ESA) is a superset of services-oriented architectures (SOAs) that integrate the business model and the business solution with a SOA-based technology.
SAP Enterprise Portal – Lotus Integration Scenarios

Unified User Management and Single Sign-on (SSO)

User Management plays a central and vital role in SAP NetWeaver, infrastructure, and SAP Enterprise Portal projects. User management typically relies on an LDAP Directory, which is different from the Lotus Domino Directory, e.g. Microsoft Active Directory or Novell eDirectory.2

The goal of unified user management is to give the interactive portal user access to all integrated systems with SSO. SAP Logon Tickets can serve as authentication tokens against Lotus Systems. Alternatively, SAP Enterprise Portal users can directly authenticate against Lotus Systems with user name and password.

The SAP Enterprise Portal issues an SAP Logon Ticket to a user after successful initial authentication at the portal against a user persistence specified in the SAP Web Application Server User Management Engine (UME). The SAP Logon Ticket that contains the portal user id of the authenticated user is stored as per session cookie on the client browser. The authenticity and integrity is protected using digital signatures whereas the confidentiality of the token is protected through the use of the SSL protocol while in transport. As a third measure the SAP Logon Ticket contains a validity period that can be configured in the security settings of the SAP Enterprise Portal.

All SAP applications and various non-SAP applications like Lotus Domino support SAP Logon Tickets as an SSO mechanism. The user credentials of a valid SAP Logon Ticket can be used by any Lotus application using SAP’s Lotus Domino Web Server Filter (SAP

2 The Lotus Domino Directory (LDAP task on Domino) can be integrated with the SAP Web Application Server User Management Engine (UME) on project basis.
Common Groupware Scenarios and Collaboration

The mission of SAP business applications and technology is to integrate groupware systems and groupware-related data. SAP products like SAP Enterprise Portal therefore feature a groupware framework. As a rule of thumb, one can state that SAP Enterprise Portal does not implement a secondary storage for any groupware-related data. Instead the groupware framework provides an abstraction layer that enables data being written through from the portal application to Lotus Notes/Domino.

Featured SAP Enterprise Portal use cases are sending eMail and creating appointments (including free/busy time check scheduler) within SAP Collaboration Rooms. The resulting Notes Mails and Notes Documents for appointments are kept in Lotus. In addition, if an appointment has been created through an SAP Collaboration Room Calendar, the appointment also shows up in this portal-based calendar.

Those distinct groupware scenarios enrich the SAP Collaboration room with groupware functionality. Being based on portal technology, any additional functionality needed can be added to an SAP Collaboration Room as iViews – for example application iViews, web services iViews, and drag & relate. SAP Collaboration rooms thereby fully leverage the portal platform.

Besides those distinct groupware scenarios, SAP relies on the native web client, e.g. Domino iNotes Web Access, to provide the portal users with a full-featured webmail user interface.
It is important to note the ability of SAP to integrate a distributed Lotus Mail landscape with a central SAP Enterprise Portal. WebMail-Redirect (WMR) is an excellent example to show how those two systems efficiently work together. WMR is a Lotus Domino database application and resides on Domino, because only the Domino directory stores the information about a user’s mail server, mail file path, and mail filename.
Collaboration in the form of instant messaging is an essential part of the SAP Enterprise Portal product. Even though the product shipment includes an IM product of SAP, it is possible to include Lotus Sametime (Lotus instant messaging) in SAP Enterprise Portal iViews as well. The technology leveraged is the Sametime Links toolkit.

In addition to chat, Lotus Sametime also provides meeting services and the buddy list known from the Sametime client application. It can be re-used in the portal.

Figure 5: Domino Directory iView with Sametime-enabled People

Figure 6: Lotus Sametime Connect and Sametime Meeting Center in SAP EP
Documents

SAP Knowledge Management

The SAP Knowledge Management platform (KM) manages documents. The KM features a repository manager framework that serves as an abstraction layer for accessing documents in different kinds of physical persistence stores:

- File servers
- SAP CM store, SAP UME, and SAP Portal Content Directory (PCD)
- Lotus Domino R5
- Lotus Domino R6.5 and higher
- And others (please check feature list on [http://service.sap.com](http://service.sap.com))

The KM platform thereby harmonizes the different document storage characteristics so that they are all accessible via the same set of iViews and actions (repository services). The KM connectivity delivers documents only – that means it treats Lotus as a storage facility. Therefore, the result is a list of documents, whether the Lotus database is a mail db, doclib, teamroom, or self-developed DB:

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3 A Lotus Repository Manager for Lotus Domino R5 is part of the SAP product standard.
4 A Lotus Repository Manager for Lotus Domino R6 (6.5 or higher) will is available by SAP partners within H1/2005. Please contact the SAP-IBM CTSC to find out more about those offerings (see Chapter references for contact details).
By clicking on a document, it opens in the web browser. This means it is mandatory that the forms are web-enabled – the database application does not have to be web-enabled.

Lotus Teamrooms and DocLibs

In addition to the KM integration, there is also the possibility to integrate Lotus documents from Lotus Teamrooms with an SAP Enterprise Portal user interface. The resulting integration offers the end user a full UI to their teamroom or doclib documents and views; however, the integration does not touch the SAP KM platform.

Figure 8: Custom Teamroom iView for NotesViews and Calendar

This form of integration varies in the choice of technology and can therefore only be offered on a project base. Technology access to Lotus Domino includes XML/XSL Translations, LotusScript Web Agents, SOAP web services, or DIIOP depending on the restrictions of the Lotus Domino configuration.5

5 This form of integration can be delivered on a project basis by SAP Consulting Germany or SAP Partners. Please contact the SAP-IBM CTSC to find out more about those offerings (see Chapter references for contact details).
Composite Applications

SAP NetWeaver is the premier platform for composite applications. The standard offering is delivered through SAP xAPPs. Moreover, the extensible SAP NetWeaver platform allows custom composite applications as well, e.g. applications that integrate with two or more backend systems, like Lotus and others.

Figure 9: SAP Composite Applications Can Integrate Various Facets of Lotus

The goal of such a scenario could be to streamline user guidance/ease of use of a certain end user process. It is often the case that working with the Lotus system is only one step in the fulfillment of a more complex task (e.g. product catalog in Lotus and stock/financial data in SAP). The next example demonstrates one option of how to integrate Lotus in a composite application.
Data Integration in Composite Applications with SOAP Web Services

An efficient way to achieve such scenarios is to enable Lotus Web Services for data integration. By using HTTP, the communication to Lotus is very flexible, and since Lotus also supports SOAP Web Services in the form of LotusScript or Java web agents (e.g. by the application of Lotus or Microsoft Toolkits), this way of integration has many advantages:

- Web Services WSDL description can directly be imported and processed by SAP NetWeaver Developer Studio or SAP Exchange Infrastructure (SAP XI).
- HTTP communication can easily be secured via SSL.
- SOAP web services are standardized.

Figure 10: Simple Lotus SOAP Web Service Implemented in LotusScript

As a result, SAP products (SAP Web Application Server, SAP Enterprise Portal, or SAP Exchange Infrastructure) can send and receive messages from Lotus Domino and thereby exchange data.\(^6\) Moreover, existing in-house Lotus development headcount can be leveraged for implementation.

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\(^6\) This form of integration can be delivered on a project basis by SAP Consulting Germany or SAP Partners. Please contact the SAP-IBM CTSC to find out more about those offerings (see Chapter references for contact details).
In addition to the visual interaction with Lotus Domino-based SOAP web services, one can also consider integrating those services with a message broker like SAP Exchange Infrastructure:
Visual Integration in Composite Applications

Another example of a composite application scenario is to integrate the Lotus user interface of a Lotus application via iViews in SAP collaboration rooms (visual integration). Recall the groupware services iViews against Lotus. SAP collaboration room templates are customizable, and any iView can be integrated into SAP collaboration rooms. Effectively, the whole Portal Content Catalog iView offering can be re-used in a Collaboration Room.

![SAP Collaboration Room with Three BI iViews](image)

This enables a much broader form of collaboration than just collaboration on documents. A room now contains all information needed by an end user or community to fulfill its tasks. The following chapter deepens this form of integration regarding rooms, tasks, and workflows.
**SAP R/3, Lotus, and SAP Enterprise Portal Integration Scenario**

Lotus is already well-integrated with SAP products that rely on the ABAP stack, like SAP R/3 and SAP CRM. The integration features data connectivity (e.g. synchronization of business partners in SAP CRM) as well as email connectivity.

Since mySAP ERP as well as ECC5.0 are based on SAP NetWeaver, it is planned to harmonize groupware (Lotus and Microsoft Exchange) integration of the J2EE and ABAP stack:

![Architecture of mySAP ERP](image)

SAP NetWeaver is the technological basis for all SAP products, especially SAP business applications. With the advent of the SAP NetWeaver Java Developer Infrastructure (NWDI), SAP now offers a full technology environment for developing, deploying, and executing both JAVA and ABAP-based software.

**SAP R/3, SAP Enterprise Portal, and Lotus workflow**

This example puts the pieces together. The assumed setup is quite common, as it can be found at many SAP customers:

- Lotus/Lotus-based workflows are integrated with SAP R/3.
- SAP Enterprise Portal serves as the company’s portal solution.
- SAP Collaboration Rooms are currently implemented.
- Goal: Achieve a central Worklist in SAP Enterprise Portal.
The idea of the solution is to avoid creating another interface between Lotus and SAP Enterprise Portal for workflow. Instead, the existing integration with SAP R/3 can be leveraged.

The SAP Universal worklist is part of the SAP Enterprise Portal product and integrates with multiple SAP R/3 systems as well as with the Knowledge Management Platform and the SAP collaboration rooms. As a result, the portal user receives a comprehensive aggregated ToDo list and can perform all actions at a central place – in SAP Enterprise Portal. And the Lotus tasks are “piped” through SAP R/3 by the means of the SAP R/3 – Lotus interface.
In addition to the standard RFC Interface to SAP R/3, there exists various partner solutions delivering managed Lotus – SAP R/3 communication. Please see the next section for more information.

**SAP Partners**

As outlined, SAP ships powerful Lotus integration capabilities with their products. The SAP development environment, SAP NetWeaver Java Developer Infrastructure (NWDI), allows for the development of custom connectivity based on individual requirements.

In addition, SAP partners feature a rich offering for Lotus integration with both the SAP J2EE and SAP ABAP stack. This means there exists SAP partner products for Portal Integration, Process Integration, and SAP R/3 integration.

Please contact the SAP – IBM CTSC Collaboration Technology Support Center\(^7\) or SAP Consulting Germany to find out more about those offerings.

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\(^7\) See Chapter “References” at the end of this paper for contact details
**Conclusion**

SAP Enterprise Portal serves as an open integration platform for non-SAP technologies like Lotus Notes/Domino. SAP thereby ensures that the investments in a Lotus infrastructure can be preserved. Lotus content, applications and data can be made available in backend (data), frontend (user interface) and services of portal applications. Lotus comes into play in a wide set of scenarios – integrated with even SAP R/3. And there exist many more scenarios which will subsequently be covered in-depth in additional documents, collaboration briefs and blogs on SAP SDN.

SAP ships the most important standard components (e.g. single sign-on, groupware adapters) as part of the SAP products (SAP R/3 as well as SAP NetWeaver products).

SAP NetWeaver Developer Studio enables J2EE developers to leverage existing Lotus toolkits, like the Domino Toolkit for Java and the Sametime Links toolkit. In addition, SAP R/3 features Lotus integration which can be leveraged transitively by integration SAP R/3 into SAP Enterprise Portal. So you are free to choose either SAP J2EE, SAP ABAP or Lotus (or all systems together) for custom integration development.

Composite application create added value for the enduser and open standards ensure that todays and future SAP and Lotus application can integrate.

**References**