

# Federated Search between SAP NetWeaver Enterprise Search and Microsoft Search Server 2008 using OpenSearch and SSO



## Applies to:

SAP NetWeaver Enterprise Search 7.0 SP3

Microsoft Windows Server 2000 or 2003 Active Directory

Microsoft Search Server 2008

For more information, visit the [Portal and Collaboration homepage](#).

For more information, visit the [Search homepage](#).

## Summary

As of SP3 SAP NetWeaver Enterprise Search provides an OpenSearch interface that lets you use results from Enterprise Search within any OpenSearch Client.

As a result Enterprise Search can be configured as a federated search location within Microsoft Search Server 2008 based on the Open Search standard. Since SAP NetWeaver Enterprise Search 7.0 supports Integrated Windows Authentication it is possible to achieve SSO using Kerberos Tickets for this integration scenario as well.

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## Author Bio



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Pedro Arrontes works at SAP AG in the department Knowledge Productization Services. Pedro has established and set up the SAP Help Portal in 2002. He gathered expertise in areas of Knowledge Management and Transfer. In the last four years Pedro specialized in the areas of Information Retrieval and Search technologies.



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## Introduction

In modern global enterprises access to the right information at the right time is the key to success. When searching for data that is stored in websites solutions like Google, Yahoo or Live Search are used. When searching for data on the desktop solutions like Windows Desktop Search are the method of choice. But what if the data resides in SAP enterprise applications such as SAP R/3, SAP ERP, SAP CRM, SAP PLM, SAP SCM, SAP NetWeaver BI and SAP NetWeaver Portal? It turns out that valuable business information is still hard to find. This is where SAP NetWeaver Enterprise Search comes into play. Based on the users business role SAP NetWeaver Enterprise Search provides a secure search across a large amount of SAP business objects by restricting users to only the data they are allowed to see. On the other hand it allows them to take related actions or perform related searches from the search results found in Enterprise Search.

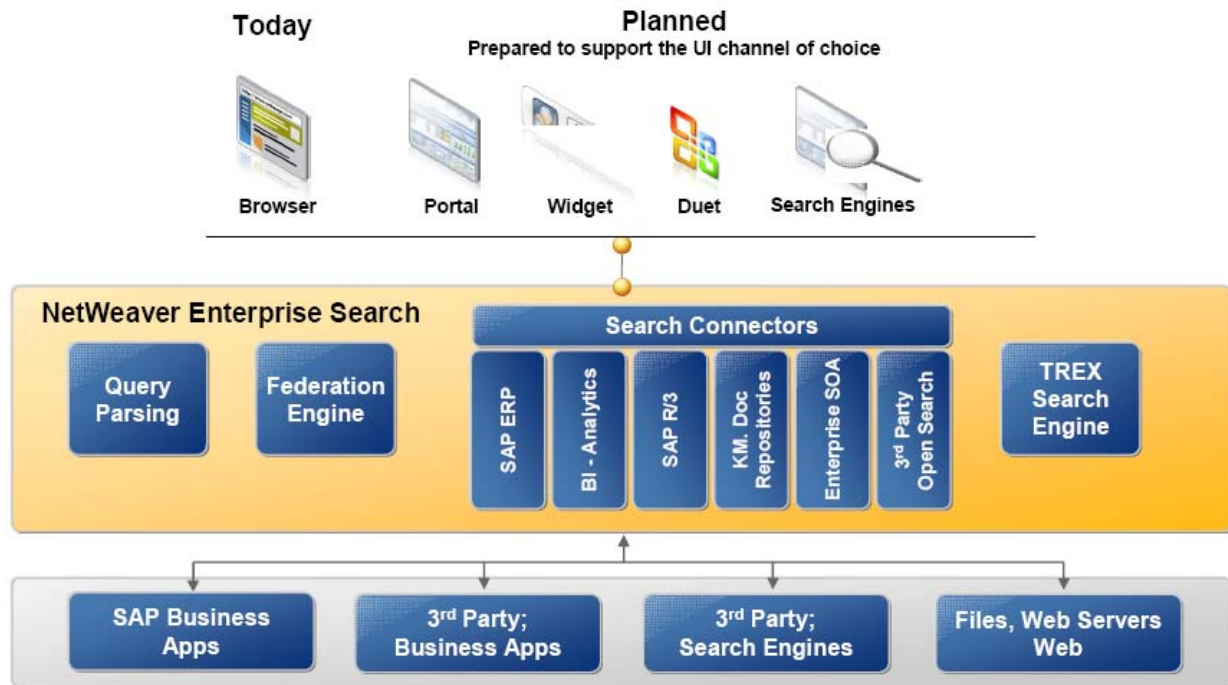
The screenshot shows the SAP NetWeaver Enterprise Search interface. The search results are filtered by 'Marketing (4)'. Annotations highlight the following features:

- Administrator Configurable Metadata based Filters:** Points to the 'Filter By' section showing 'Marketing (4)' selected.
- Administrator configured Related actions make the search results action able:** Points to the 'Related Actions' column for search results.
- Administrator can configure the Role based details displayed in-line with search results:** Points to the detailed information shown for the user 'Matthew Weaver'.

Name	User ID	Office	Mobile	Org Unit	Manager	Location	Assistant	In-House Mail	Room	Assistant Phone
Jane Miller	i003532	1-555-67589	1-650-2835421	Consulting US						
Amanda Smith	i014355	1-555-67456	1-650-34447							
Jennifer Meyers	i022013	1-555-689700	1-650-34556	Product Management US						
Matthew Weaver	i000121	49-30-315787	49-151-368904	Marketing EMEA	Andrew Bing	Berlin	Judith Merkel	MA-EM	4.01	49-30-315785
Greg Banks	i024244	1-555-456789	1-650-343678	Field Marketing EMEA						
Paula Miller	i014827	1-555-653412	1-650-34557	Marketing US						

## Federated Search

While SAP NetWeaver Enterprise Search offers a browser based frontend as part of the standard it is planned to support also different UI channels of choice and even 3<sup>rd</sup> party Search Engines. These integration scenarios are or will be based on the OpenSearch standard.



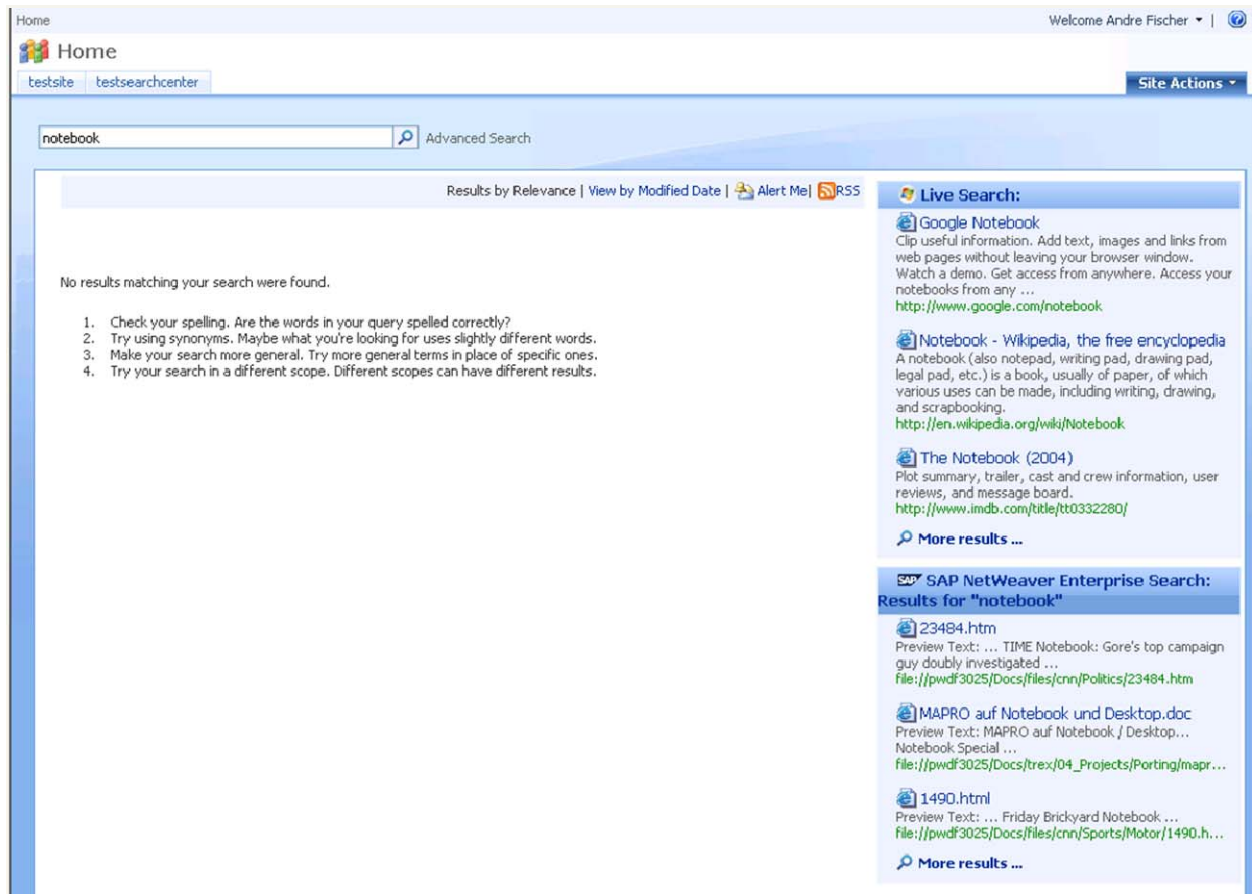
As the OpenSearch standard (<http://www.opensearch.org/>) has evolved and became popular, SAP NetWeaver Enterprise Search SP3 provides an interface for its search functionality in accordance with the OpenSearch standard. With the OpenSearch support SAP offers a simple search integration technology that can be used in several integration scenarios.

In this white paper you will learn how to integrate SAP NetWeaver Enterprise Search with a different search engine through the OpenSearch standard. More specifically we will show you how to use results from SAP NetWeaver Enterprise Search within Microsoft Search Server 2008 based on federated search using the Open Search standard and Single-Sign On.

To achieve this integration the following steps have to be performed:

- Configuration of the SPNego Login Module in SAP NetWeaver Enterprise Search
- Configuration of Kerberos Constrained Delegation in Active Directory for the Microsoft Search Server 2008
- Configuration of a Federated Location in the Microsoft Search Server 2008

An example of this integration scenario is shown in the following screen shot. The result set that is retrieved from SAP NetWeaver Enterprise Search using the OpenSearch standard is rendered in a federated search Web Part.



## SAP NetWeaver Enterprise Search

### The OpenSearch Interface

As of SP3, an OpenSearch compatible search interface is provided by SAP NetWeaver Enterprise Search. This allows the use of SAP NetWeaver Enterprise Search as a search service provider in applications that support the OpenSearch standard. One example is the usage of SAP NetWeaver Enterprise Search by the search boxes of modern browsers like Internet Explorer 7.0 and Firefox 2.0 as shown in a recent blog from Michael Kronfeld [Adding Enterprise Search into Internet Explorer 7 and Firefox](#).

The bottom line is that a generic OpenSearch request to SAP NW ES looks like follows:

[http://<SAP\\_NW\\_ES\\_Host>:<Port>/es/api/openserach/search?query={searchTerms}&format=rss2.0](http://<SAP_NW_ES_Host>:<Port>/es/api/openserach/search?query={searchTerms}&format=rss2.0)

Since the communication with the OpenSearch interface is based on simple Http GET requests rather than using SOAP based communication OpenSearch clients can leverage all authentication options that are provided by the underlying SAP Netweaver AS Java for browser based communication. As a result Integrated Windows Authentication can be used for the OpenSearch Interface of SAP NetWeaver Enterprise Search.

### Integrated Windows Authentication - The SPNego Login Module

Integrated Windows Authentication for the JAVA Web AS is provided by the SPNego Login Module. The usage of the SPNego Wizard is described in detail in the [SAP Online Help](#) and in videos that are attached to [SAP Note 994791 – SPNego Wizard](#). There is also a series of [blogs](#) by Holger Bruchelt available in SDN that describes the handling of the SPNego Wizard in detail.

Therefore we would like to concentrate on those settings and configuration steps that are special to the setup of a SAP NetWeaver Enterprise Search 7.0 system.

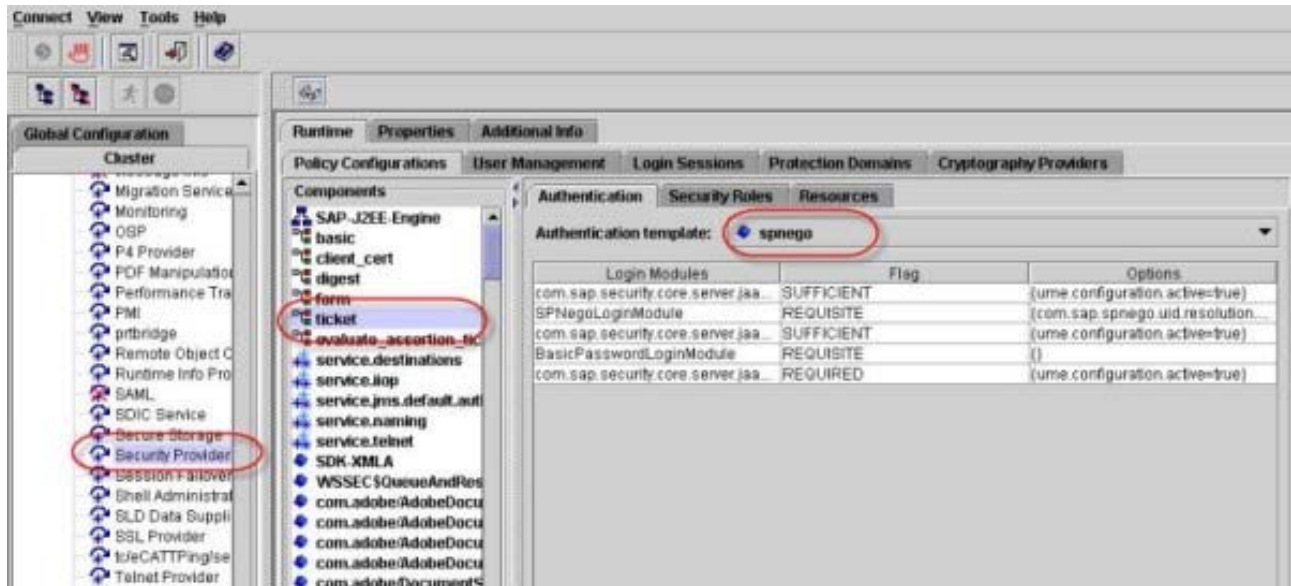
## Assigning Templates

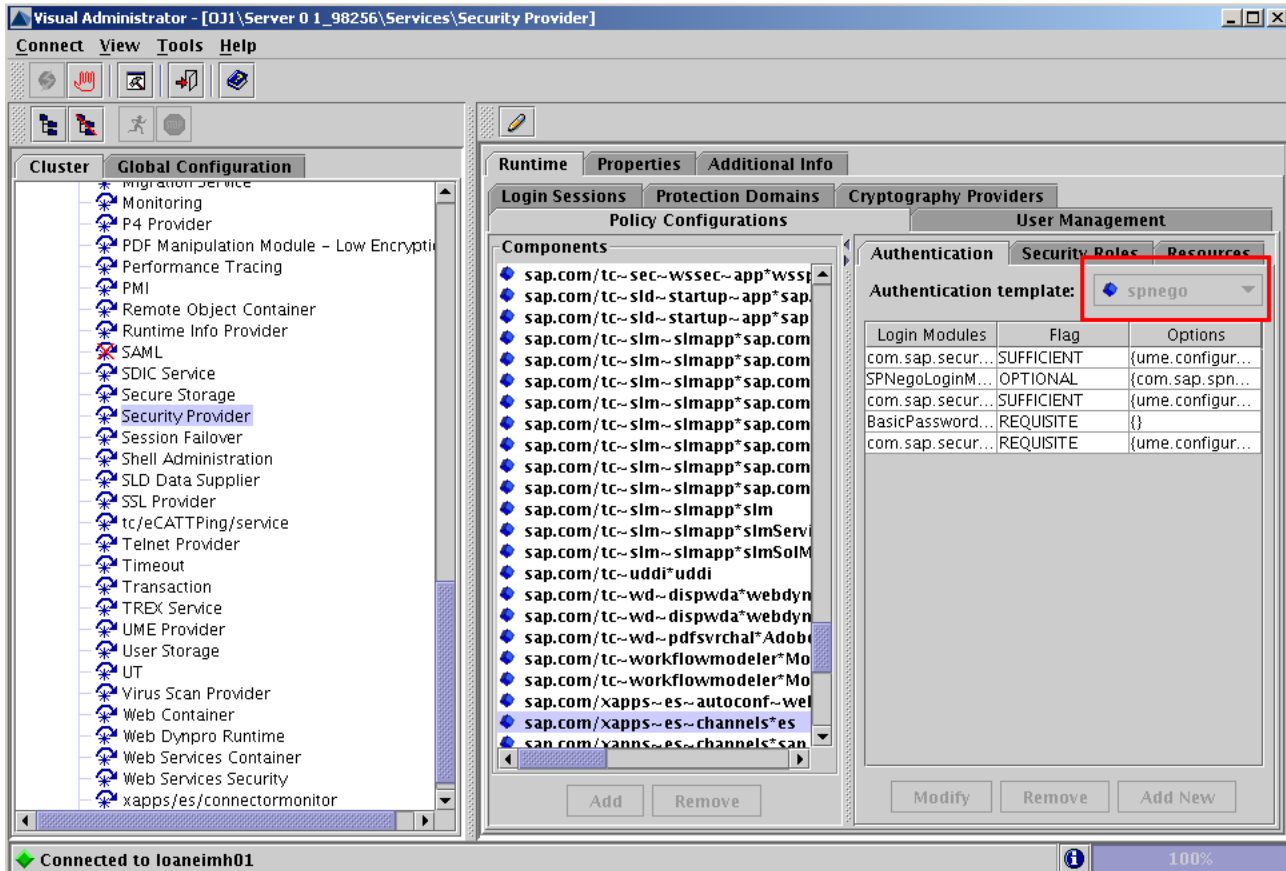
After the SPNego Login Module has been configured and a template called *spnego* has been created this template has to be assigned to the components of the J2EE engine that should support Integrated Windows Authentication. While most applications such as the browser based UI of SAP NetWeaver Enterprise Search or the portal are using the *ticket* component there are exceptions like Duet that is using the *osp\_TicketIssuserComponent*. Another exception to the rule is the OpenSearch interface of Enterprise Search.

Therefore you have to assign the *spnego* authentication template to the following components

- ticket (for browser based access)
- sap.com/xapps~es~channels\*es (for access to the OpenSearch API)

as shown in the following screen shots:





### UME settings

In the dual stack system setup of SAP NetWeaver Enterprise Search 7.0 the recommended approach to configure the UME is to use the ABAP AS as its user store. Since we are using the ABAP AS as the data source for UME rather than Active Directory the recommend approach is to use the resolution mode *simple* as described in [Configuring the UME when Using Non-ADS Data Sources](#). When using the resolution mode simple you have to specify which UME user attribute matches the KPN. This can be any existing UME attribute or a new one.

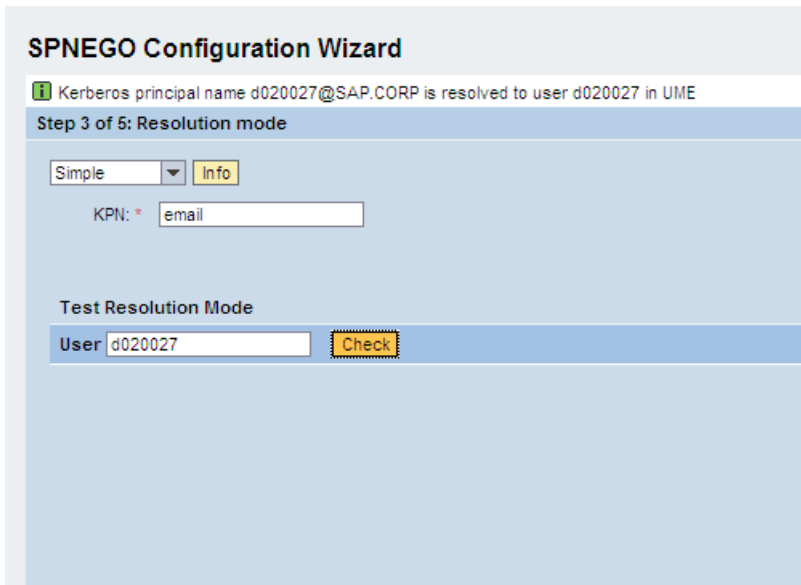
Technically there are two options how this can be achieved.

1. Store the KPN in the Portal database.  
The advantage of this approach is that the portal database provides flexible means of how to configure this. It requires however that user attributes have to be maintained in the portal db as well as in the ABAP user management.
2. Store the KPN in the ABAP data store.  
The advantage of this scenario is that all customer settings can be performed using ABAP user management (SU01).

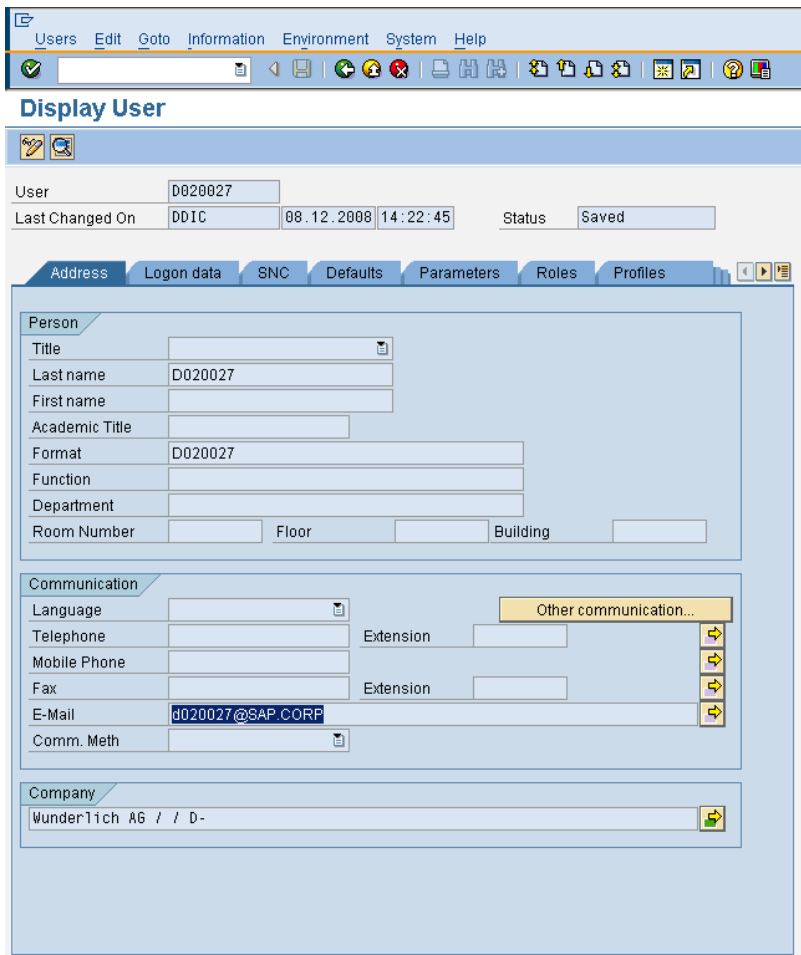
Both options are easy to manage if one uses *SAP NetWeaver Identity Management*.

While option 1 is described in videos attached to [SAP Note 994791 - SPNEGO Wizard](#) option 2 has not been described in detail so far which is why show the following screen shots.

In step 3 of the SPNego Wizard the value email can be chosen as the UME field that contains the KPN.



If the field email is chosen to host the value of the KPN in a dual stack system this value has to be maintained in ABAP user management using transaction SU01.





## Microsoft Search Server 2008

### Federated Locations in Microsoft Search Server 2008

Microsoft Search Server supports a lightweight integration for repositories that support the OpenSearch standard. Repositories that support the OpenSearch standard can be connected through a OpenSearch 1.0/1.1 location type. To leverage the role based access offered by SAP NetWeaver Enterprise Search User-level Authentication has to be chosen when configuring the federated location. This way federated search results in the associated location are displayed based on the authentication using individual user credentials. Since SAP NetWeaver Enterprise Search supports Integrated Windows Authentication Kerberos can be chosen as the authentication protocol.

#### How to create a federated location in Microsoft Search Server 2008

Please replace the following place holders with the appropriate technical information of your infrastructure:

<SAP\_NW\_ES\_Host>                      Hostname of the SAP NetWeaver Enterprise Search Server  
<Port>                                    Portnumber that has to be used to access the SAP NW ES Host

Log on locally to the Search Server 2008 and click **Start → Programs → Microsoft Search Server → Search Server 2008 Administration** to access the **Search Administration** page.

The screenshot shows the 'Manage Federated Locations' page in the Search Server 2008 Administration console. The page title is 'Manage Federated Locations' and the breadcrumb trail is 'Search Server > Search Administration > Federated Locations'. The page content includes instructions on how to add a new location and a table of existing locations.

Location Display Name	Number of Queries (last 30 days)	Clickthrough (last 30 days)	Trigger	Creation Date
Internet Search Results	7	0	Always	12/9/2008 6:11
Internet Search Suggestions	5	0	Always	12/9/2008 6:11
Local Search Results	0	0	Always	12/9/2008 6:11
SAP NW ES	7	0	Always	12/9/2008 6:13

To create the federated location

1. On the Search Server 2008 Administration page, click **Federated Locations**, and then click **New Location**.
2. In the **Location Name** field type **SAPNWES**.
3. In the **Display Name** field, type **SAP NW ES**.
4. In the **Description** field, type text to describe the location, such as **SAP NetWeaver Enterprise Search**.
5. In the **Version** field, type **1.0**.
6. For the **Location type** field, click **OpenSearch 1.0/1.1**.
7. In the **Query Template** field, type **http://<SAP\_NW\_ES\_Host>:<Port>/es/api/opensearch/search?query={searchTerms}&format=ss2.0**

Hint:

The search can be limited to a certain scope by adding the parameter **scope**. When for example adding the parameter *scope=BusinessPartners* the scope of the search would be limited to Business Partners.

8. In the "**More Results**" **Link Template** field, type **http://<SAP\_NW\_ES\_Host>:<Port>/es/search?query={searchTerms}**  
This will open the HTML interface of SAP NetWeaver Enterprise Search that will offer the user the option to leverage related actions and the option to drill down into the search results of SAP NetWeaver Enterprise Search.
9. In **Specify Credentials**, select the authentication type **User** and the authentication protocol **Kerberos**.  
In this case the credentials of the user who submitted the search query are used to connect to the federated location.
10. Click **OK**.

#### Create a Federated Results WebPart in the SearchCenter Site

The **Federated Results Web Part** displays the results from a specified federated location. You can specify only one location in a Federated Results Web Part. You will now create a Federated Results Web Part that will display the results found by the SAP NetWeaver Enterprise Search .

Open the SearchCenter site on <http://<Microsoft Search Server Host>> and enter an arbitrary query to enter the search results page or select directly <http://<Microsoft Search Server Host>:<Port>/results.aspx> .

On the search results page, on the **Site Actions** menu, click **Edit Page**.

In the **right zone** select the **Federated Results [1]** Web Part and click **edit** and click **Modify Shared Web Part**.

1. In **Location Properties**, click **SAP\_NW\_ES** on the **Location** list.
2. In **Appearance**, click enter *SAP NetWeaver Enterprise Search* for the **title**.
3. Expand the **More Results Link Options** node.
4. Check the option **Show More Results Link**.
5. Then click **OK**.
6. Click **Site Actions**, and then click **Exit Edit Mode** to close the Edit page.

#### Configure Proxy Settings

Since the Search Server searches in internal as well as external federated locations one usually has to configure Proxy Server Settings.

On the Search Administration page, in the **Crawling section**, click **Proxy and Timeouts**. The **Manage Farm-Level Search Settings** page appears.

In the **Proxy Server Settings** section, click **Use the proxy server specified**, and then do the following steps:

In the Address box, type the URL of the proxy server, for example **http://proxy.,mycompany.corp**.

In the Port box, type the port number <portnumber> that is used by the proxy server.

Select the **Use these proxy settings for access to federated sites** check box.

Select the **Bypass proxy server for local (intranet) addresses** check box.

In the **Do not use proxy server for addresses beginning with** text box enter the same strings that you find in your browser settings, for example: **\*.mycompany.corp**

Result:

The Federated Location [2] that points to Windows Live Search will use the proxy while the Federated Location [1] that points to SAP NW ES will not use the proxy.

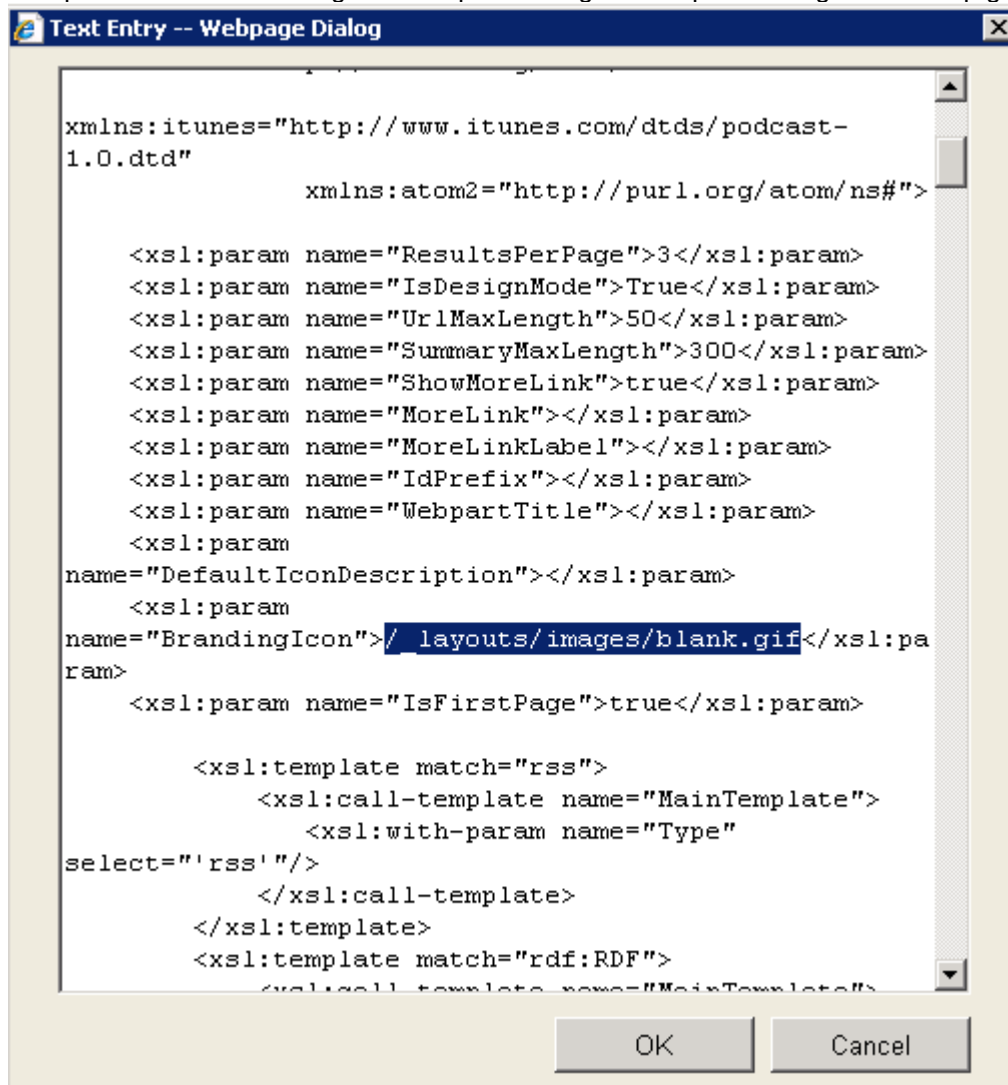
## Customize the Branding Icon for Federated Search Results

Results from Live Search are highlighted with an Icon. We want to achieve the same for the results that are retrieved from SAP NetWeaver Enterprise Search . The result set shown in the Federated Search Results Web Part should contain an SAP Icon to show the source of the data.

Click **Start → All Programs → Microsoft Search Server → Search Server 2008 Administration** to access the **Search Administration** page.

To add the SAP Logo to the title of a federated search results set proceed as follows:

1. On the Search Administration page, click **Federated Locations**.
2. Under **Location Display Name**, click the name of your location **SAP\_NW\_ES**.
3. Expand the **Display Information** node.
4. Under **Federated Search Results Metadata**, clear the **Use Default Formatting** check box.
5. Click the ellipsis (...) button to open the Text Entry window for the location's **XSL** property.
6. Locate the following tag in the XSLT:  
`<xsl:param name="BrandingIcon"></xsl:param>`
7. Add the URL to the image you want to use to the `xsl` parameter tag for the `BrandingIcon` parameter.  
`<xsl:param name="BrandingIcon"> https://weblogs.sdn.sap.com/images/icons/sap.gif </xsl:param>`



8. Click **OK** to close the Text Entry window.
9. On the **Edit Federated Location** page, click **OK** to save the changes to the federated location.
10. Execute a query that returns results from the location. Verify that the new title appears as you expect.

The customized branding image appears in the title bar of the Federated Results Web Part.

Tipp:

Instead of loading the SAP logo from the SDN you would rather upload the image to the Microsoft Search Server to access it locally.



Troubleshooting:

If you update the federated location's XSL property, you must ensure that the Federated Results Web Part is configured to use the location's display information.

### Configuration steps in Microsoft Active Directory

Single-Sign On to SAP NetWeaver Enterprise Search configured as a federated location using Integrated Windows Authentication does not work out the box.

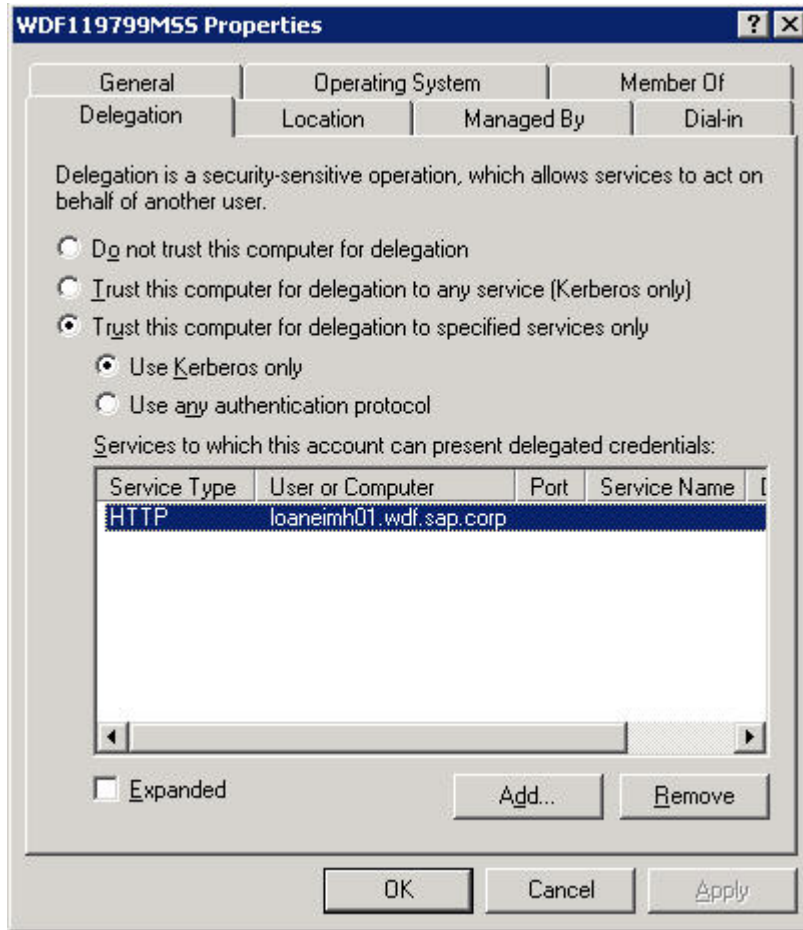
It turned out that it is necessary to configure delegation in Active Directory for the computer account (here WDF119799MSS) the Microsoft Search Server 2008 is running on. The service for which delegation is to be configured is the Service Principal Name (SPN) of the service user that has been registered in Active Directory for the J2EE Engine. You can check which SPN has been registered using the command-line tool setspn.exe which is part of the support tools.

```
setspn -L j2ee-oj1-loaneimh01
Registered ServicePrincipalNames for CN=j2ee-oj1-loaneimh01,OU=NWES,OU=NOIT,
OU=Resources,DC=sap,DC=corp:
HTTP/loaneimh01.wdf.sap.corp
```

Configure the **Trusted-to-Authenticate-for-Delegation** flag for the service that has been registered for your J2EE engine

- a. Open *Active directory Users and Computers*.
- b. Locate the computer account of the server the Microsoft Search Server 2008 is running on.
- c. Right-click *<Microsoft\_Search\_Server\_2008 >* and choose *Properties*.
- d. Select *Delegation* and *Trust this computer for delegation to specified services Only*.
- e. Select *Use Kerberos only* and choose *Add*.

- f. Select *Users or Computers* and enter the sAMAccountName of the service user for the J2EE Engine as object name. (here: j2ee-oj1-loaneimh01)
- g. Choose *Check Names* and *OK*.
- h. Add the SPN for the HTTP service type for the service user for the J2EE Engine which was determined above using setspn (here: HTTP/loaneimh01.wdf.sap.corp).



## **Related Content**

[SAP Note 994791 - SPNEGO Wizard](#)

[SAP Online Help: Constraints for UME with ABAP Data Source](#)

[SAP Online Help: Configuring the UME when Using Non-ADS Data Sources](#)

[Federated Search Overview \[Search Server 2008\]](#)

For more information, visit the [Portal and Collaboration homepage](#).

For more information, visit the [Search homepage](#).

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