decisionfirst™ technologies

A PROTIVITI ENTERPRISE

Salesforce® Connect for SAP Analytics™

Architecture & Security Overview

1 Executive Summary

Decision First Technologies (DFT) has developed a custom integration between Salesforce.com and the SAP BusinessObjects Enterprise Reporting Platform using a combination of the Salesforce Canvas Application API and the BusinessObjects Enterprise API. The integration allows for the seamless passing of Session Identity from Salesforce into BusinessObjects, allowing users to access BusinessObjects content from within the Salesforce user interface (UI) without having to re-enter any credential information.

In addition to allowing the embedding of BusinessObjects content into the Salesforce UI, the solution also provides a ready-made BusinessObjects Universe that leverages the SAP-provided OEM database driver for accessing Salesforce data in BusinessObjects. This solution allows for a complete round trip and bi-directional integration. Specifically you can build reports in BusinessObjects using tools such as SAP Lumira®, SAP ® Crystal Reports®, SAP BusinessObjects Dashboards, SAP ®Business Objects™ Web Intelligence® and more directly against your Salesforce data with real time connectivity, and subsequently embed those reports into the Salesforce UI so that end users receive a seamless experience.

Using the data mashup capabilities of the BusinessObjects tool set you can additionally mix your Salesforce data with other on premise data sources, like traditional data warehouses or SAP Business Warehouse, and provide broader insights than the data can express on its own.

2 System Overview

As discussed, the solution relies on several key pieces of technology. Some are provided by Salesforce, some are provided by SAP BusinessObjects, and the glue bringing all the pieces together is provided by DFT.

The major components are:

- Salesforce Canvas API
- SAP BusinessObjects Enterprise SDK
- DFT's Salesforce® Connect for SAP Analytics™ and Deployment
- SAP BusinessObjects Salesforce Database Driver and DFT's Salesforce Universe

2.1 Salesforce Canvas API

The Canvas API from Salesforce provides the integration point into the Salesforce development environment. Salesforce developed Canvas with the explicit purpose of integrating third party applications into the Salesforce ecosystem. Using this SDK, we can embed our third-party application, in this case SAP BusinessObjects Enterprise, into Salesforce Chatter Pages and Visual Force Pages, including standalone tabs, or into existing page layouts.

One of the key benefits of integrating BusinessObjects into the Salesforce system using Canvas is that we are only integrating the user interface of BusinessObjects into the Salesforce environment. All of the reporting data and back-end systems from which BusinessObjects is pulling information remain on premise behind the BusinessObjects UI. This means there is no need to replicate data into the cloud and pay for expensive cloud storage.

The primary function of the Canvas API is to pass an authenticated Salesforce session along with information about the currently logged in user to our third-party application. This information is secured by several different mechanisms.

First, the connection from Salesforce to Salesforce Connect is encrypted with SSL/TLS. This ensures that no one is sniffing the information about the user that is sent in transit to DFT's Salesforce Connect from Salesforce. Additionally, no long-lived credentials are passed over this channel like passwords, only temporary authentication tokens. It is important to note that the Implementation of SSL/TLS is outside the scope of our application and is provided by the network infrastructure/web application hosting environment, i.e. SSL Implemented in Apache Tomcat or offloaded upstream using a network device.

Second, the information sent to our application is passed as a digitally signed data structure. When the Canvas application is initially configured, it generates a secret key that is used to generate the digital signatures of the data structure. That secret key is never transmitted with the packet, it is manually stored within our third-party application. Using the secret key, we can validate the authenticity of incoming messages to our application, verifying that they come from Salesforce and are not tampered with by a malicious third party.

In figure 2.1 on the following page, you can see the process flow of information from the Salesforce application to DFT's Salesforce Connect and on to the BusinessObjects Document for which the user has requested access.

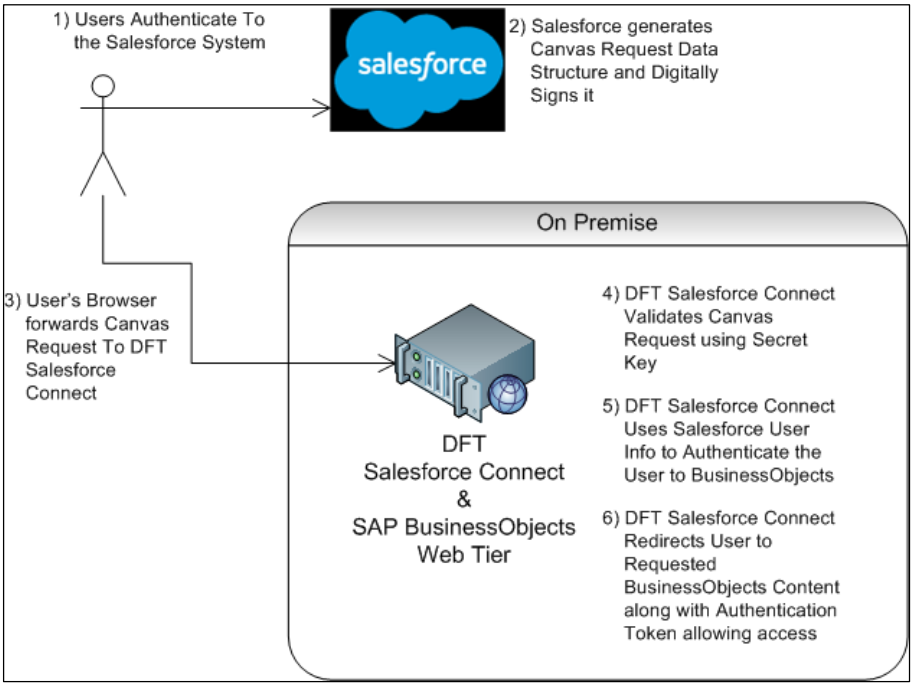

Figure 2.1: Connection Process Flow

2.2 SAP BusinessObjects Enterprise SDK

During Step 5 of the connection process flow outlined in Figure 2.1, DFT's Salesforce Connect leverages the SAP BusinessObjects Enterprise SDK to establish an authenticated session with the BusinessObjects Enterprise server environment. This SDK is the standard communication mechanism for client code to communicate with the BusinessObjects system. It is the same SDK, and uses the same communication channels the standard BusinessObjects Web User Interface is constructed with.

In the default installation scenario, DFT's Salesforce Connect is deployed on the same web application server as the standard BusinessObjects Web Tier. This ensures that it is communicating with the BusinessObjects backend services on the same IP's and Ports as the default Web Tier, thus minimizing any additional network configuration.

Authentication into the BusinessObjects backend is achieved with a feature in the BusinessObjects SDK known as *Trusted Authentication.* Trusted Authentication allows a "Trusted" application, in this case DFT's Salesforce Connect, to authenticate a session with just a User Name, as long as the application can prove it is trusted by also providing a Secret Key. The key is a long, random hex string generated by the BusinessObjects system and provided to

the application at deployment time. This Secret Key never traverses the network outside the backend communication channel between BusinessObjects Web Tier and BusinessObjects Central Management Server (CMS).

Once an authenticated session has been established on the incoming Salesforce user's behalf, a BusinessObjects authentication token is generated that is used by the user's browser to access the rest of the content in the BusinessObjects system using that session. The token is short-lived and is only good for the life of the current session, typically set to a 20 minute timeout.

2.3 Decision First Salesforce Connect for SAP Analytics

As has been described so far, Salesforce Connect for SAP Analytics acts as a mediator between the Salesforce Canvas API and the BusinessObjects Enterprise SDK, bridging the gap between the two systems. Salesforce Connect is deployed in the form of a Java J2EE Web Application Archive (WAR) file to a supported Java Web Application Container. In typical deployment scenarios this is the same Tomcat server BusinessObjects Enterprise provides. The advantage to using this server is that it is already configured for communication with the BusinessObjects backend, and it already has all the necessary BusinessObjects SDK components installed on it.

Salesforce Connect is very lightweight and should have nearly zero impact on the performance consideration for your web tier other than the load the users would normally place on BusinessObjects themselves.

As the interface from Salesforce to DFT's Salesforce Connect is entirely based on HTTP Web-based technologies, you can easily deploy reverse proxies in a DMZ to protect both BusinessObjects and the Integration application from malicious traffic. This is our recommended deployment approach. Additionally, as Salesforce is essentially directing the user's browser to access DFT's Salesforce Connect from the web, the application, and thus BusinessObjects, must be accessible from an external public DNS name. This means if you have not already implemented the required network configuration to expose the BusinessObjects web tier to external traffic, you will need to undertake that task as part of this deployment. Doing so has the added benefit of also enabling access to the BusinessObjects Mobile application for easy access to your BusinessObjects content on the go.

As previously mentioned, the ideal deployment mechanism is to place a reverse proxy server, such as Apache Web Server or possibly a dedicated proxy device like an F5 BIG-IP, in the your network DMZ and allow that system to mediate traffic that flows to the back end. Figure 2.3 shows an example network architecture for a typical deployment scenario. Remember that you must have SSL for your web traffic coming in from Salesforce, which you could terminate at the BusinessObjects Tomcat layer or at a Reverse Proxy layer upstream from there. Our solution places no constraints on your SSL architecture.

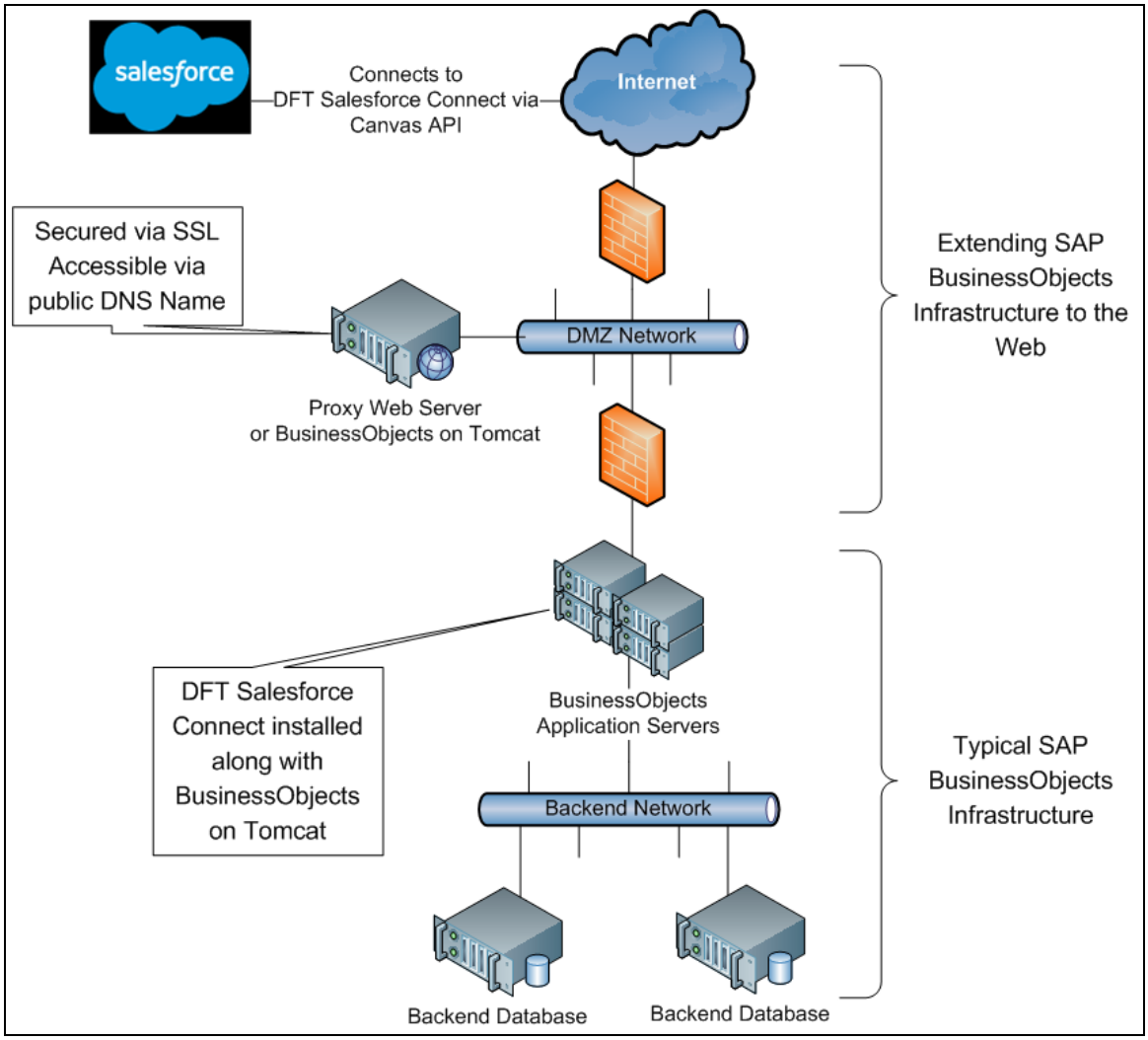

Figure 2.2: Example Network Architecture

2.4 SAP BusinessObjects Salesforce Database Driver and Decision First Salesforce Universe

The final component of DFT's Salesforce Connect is somewhat standalone. SAP provides a Salesforce database driver out of the box with BusinessObjects Enterprise. This driver is OEM'ed from Simba Technologies. You can leverage this driver on your own to access Salesforce data from within BusinessObjects, but you will not have the integrated user experience of deploying the developed content into the Salesforce UI. You also will not have a pre-delivered Universe constructed on top of the database driver that jumpstarts your reporting on Salesforce data.

DFT Salesforce Connect offers a custom Universe that provides access to reports on standard Salesforce objects, including Accounts, Opportunities, Leads, Campaigns, and more. The Universe does not, out of the box, provide access to custom Salesforce objects or fields. You can, however, use our Universe as a starting point to build a customized version that incorporates additional custom content not found in standard Salesforce systems.

Key points to keep in mind when using this driver include:

- The Driver leverages the Salesforce SOAP API when retrieving data from Salesforce. You will use at least one API call per Report Data source invoked.
- No Data is permanently stored in BusinessObjects or DFT's Salesforce Connect.
- You are free to leverage the data mashup capabilities of tools like Web Intelligence or Lumira to bring together data from Salesforce and other back end reporting databases in a single visualization. Doing so does not push or replicate any backend data to Salesforce, only the final rendered user interface of the report is displayed to the user's browser.

3 Summary

A key goal of the design of DFT's Salesforce Connect for SAP Analytics was to keep the footprint of the application and its integration touch points as small as possible. This resulted in an easy-to-implement and secure solution with little opportunity for issues to arise.