



**Knouen OfficeSync Architecture – White Paper**

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### Executive Summary:

Getting business users the right information at the right time is a never-ending challenge. Knouen has a dedicated focus to enhance user productivity at all levels by providing software which significantly enhances user productivity. Our flagship offering; Knouen OfficeSync for Siebel provides significant advances over most software on the market. Giving users full access to their information no matter where they are; moving common functionality into common applications; and simplifying common actions all combine to enhance the daily user experience.

Knouen OfficeSync was architected to meet these needs from the ground up. Using a Smart Client architecture for client communication allows Knouen OfficeSync to scale to a very large number of users. In addition, using an asynchronous processing mechanism allows the Knouen OfficeSync product to scale to a large number of users without adding significant additional resources. The client data store allows clients to keep a light-weight copy of their information with them at all times.

This document describes this architecture in detail and shows how the components fit together.

### Architecture Overview

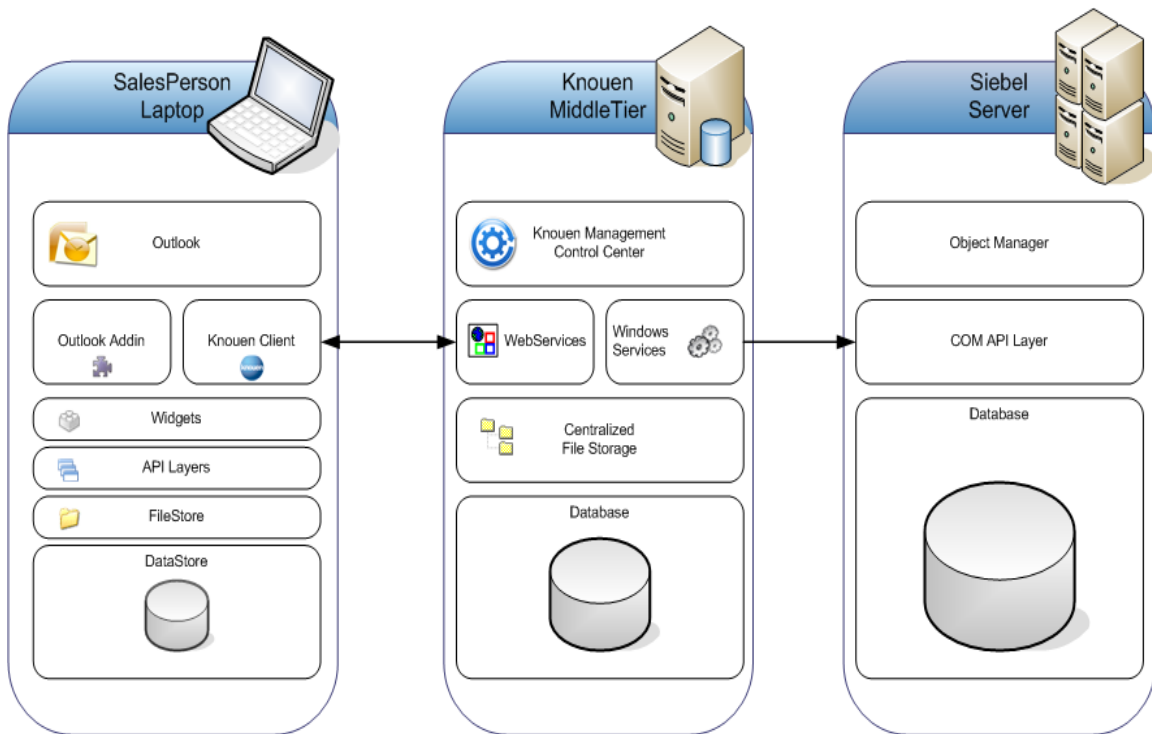
Knouen OfficeSync v2.1 consists of a distributed multi-tier architecture. Logically it is structured the same as most other n-tier architectures. Knouen OfficeSync consists of a Client Tier, Business Logic Tier, and Data Tier. For Knouen OfficeSync the Data Tier actually consists of the interactions with the target Siebel system.

The architecture is segmented to the point where the client is almost completely abstracted from the Data/Target System tier by the Business Logic tier. The only exception is when the client needs to refresh the local data store with new or updated items.



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### Client Tier

The client tier consists of all the client user interface components and allows the clients to interact with their Siebel information from within their local machine. The main components of this tier are the following components:

- Client Database
- Outlook Add-In
- Knouen Client Polling Application
- Framework API Layer

These components are described in more detail in the following sections.

### Outlook Add-In

This provides the main client interface for the Knouen OfficeSync application. The add-in runs inside Outlook and supplies the user with controls necessary to interact with the Knouen OfficeSync data from within Outlook. This interaction includes providing buttons and menu controls that allow items to be added to the Knouen OfficeSync system from within Outlook. This includes associating e-mail with Accounts or Opportunities; setting up automatic synchronization between a Contact in Outlook and the same contact contained in the Siebel CRM system; setting up associations between activities and other items.

In addition to the standard controls the add-in also places a special folder in the users' inbox which provides a more robust interface into the data exposed by Knouen OfficeSync. This interface provides a mechanism for adding and editing the information and to perform some basic information searches.

### Outlook Dashboard

The Outlook Dashboard is a component that runs within Outlook and provides users a robust, configurable view of their important information. The dashboard consists of a number of "pages". The first page displays a set of information "widgets" that show



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various pieces of information (KPI values, New/Changed items, web feeds, etc.). This is completely configurable by the individual users so they can customize this as they desire.

The second page is a window into their CRM information. The user has the capability to view, add, and change this information locally and have those changes posted to the target CRM system.

### **Client Database**

The client database provides off-line data access to the users' Siebel information which is exposed through Knouen OfficeSync. When the user is working on the client interface they are working exclusively against the client database.

In addition to the exposed data the client database contains all the metadata which controls the user interface. This includes the list of available types that are exposed, the fields for those types, user privileges for the information (add, edit, read, write, etc.), which fields are exposed in the various interface, and additional settings related to the individual user.

### **Knouen Client Polling Application**

This is a client application which runs at start-up and provides the interactions with the middle-tier web service. The application runs as a tray application sets up the data flows between the client and the Knouen OfficeSync middle tier. The polling application executes cycles that pull updates from the middle-tier and data tier, post local changes to the middle tier for processing, post any e-mail that has been added to the system, polls for alerts, and a number of other data flows.

In addition to processing data in the system the polling application is also responsible for pulling down metadata versions and applying those to the local database.



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### Framework API Layer

This is an API layer which wraps the interaction with the local database as well as providing much of the non-Outlook user interface elements. The API layer controls all client interactions with the local database from both the Outlook interface items as well as the polling application interactions.

In addition to wrapping data access the API layer provides a set of building blocks that allow for new client items to be created. New widgets, customized polling pipelines, even customized interfaces can be built off the API layer. All the Knouen OfficeSync widgets and polling components are built directly on top of the API layer.

### Business Logic Tier

The business logic tier is the joining point between the clients and the target Siebel system. The Knouen OfficeSync middle tier serves as an abstraction layer between the clients and Siebel which allows the solution to scale considerably higher than is possible when making direct connections to the Siebel system from the clients.

The components of the Business Logic tier include the following:

- Knouen OfficeSync Web Services
- Knouen OfficeSync Host Service and Service Activities
- Knouen OfficeSync Management Database
- Knouen OfficeSync Framework API Layer

Each of these components is described in the following sections.

### Knouen OfficeSync Web Services

The web services are the sole point of contact from the clients into the Knouen OfficeSync middle tier. The clients execute all middle tier operations against the web services. These actions include:

- polling for new/changed items
- posting changes for Siebel
- pulling alerts



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- posting errors to the management database
- creating/changing the client database configuration
- checking the status of posted items

The web services wrap all client communication with the Knouen OfficeSync management database and with the Siebel system itself.

The Knouen OfficeSync web services are broken into two separate modules:

- Knouen OfficeSyncDataService– provides the mechanism to transfer information changes between the client and the Knouen OfficeSync middle tier.
- Knouen OfficeSyncMetadataService – provides access to the necessary metadata structures on the clients including data structures and field access privileges.

When clients attempt to access the Knouen OfficeSync web services they are immediately authenticated using NT Authentication for the web site. Their passed in credentials are compared to the user list in the Knouen OfficeSync management database to verify they are a legitimate user of the system. This verification is performed in all web service methods.

### **Knouen OfficeSync Host Service and Service Activities**

The Knouen OfficeSync Host Service is a generic windows service module that hosts individual Service Activity modules. Each Host Service can host one or more Service Activities. A Service Activity is a focused unit of work. Examples of Service activities are:

- Monitor the CRM system for additions/updates
- Updating user visibility settings in Knouen OfficeSync
- Writing user submitted information into the target CRM system

A single server can hold multiple instances of the Knouen OfficeSync Host Service or these can be spread across multiple servers. In addition, each host service can run the same Service Activity. With this flexible combination it makes it very easy to spread load between multiple servers and provides very granular control over activity execution.



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Each activity can be controlled individually, so their polling frequency can be controlled individually; they can be started/stopped individually; and monitoring can be applied to each function at a granular level.

In addition, the Server-side API allows custom Service Activities to be written and added to the Knouen OfficeSync server environment.

### **Knouen OfficeSync Management Database**

The Knouen OfficeSync Management Database is the central repository for all the master information used in the Knouen OfficeSync solution. This includes the metadata configuration settings, the system identifier mappings, user visibility settings, posted item queues, privilege settings, error information, and a host of other information.

The management database is accessed by the Knouen OfficeSync web service and the other Knouen OfficeSync services to store and access information. The services themselves do not store any state information; the management database is used for all storage.

For this version of the Knouen OfficeSync management database we use SQL Server 2000 for the database server.

### **Knouen OfficeSync Framework API Layer**

The Framework API Layer is a set of .NET components which provide a set of common functionality shared by the Knouen OfficeSync middle-tier services. One of the main pieces of functionality provided by the API layer is access to the information in the management database. Other functionality includes shared functions for processing information and formatting information.

### **Target System Tier**

The target system tier acts as the final data layer for the information used in Knouen OfficeSync. The business layer contains the information necessary to access the



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information stored in this layer. From the Knouen OfficeSync perspective we do not impact this layer at all. One of our design principles is to not impact this layer.

Knouen OfficeSync interacts with Siebel through this layer in two ways. The majority of the interactions occur through direct data reads against the Siebel database. These reads are executed when the services query for information and when the users request updated or added data items to be brought down to their client database.

The second mechanism used to access Siebel is to use the Siebel COM API to perform data writes into the Siebel system. We use the supplied COM API in order to integrate with Siebel through a supported mechanism. The COM layer also executes any scripts or workflow which would typically be used by the Siebel user interface.

### Key Advantages of Knouen OfficeSync as reported by the customers

- **No Exchange Requirement:** Knouen OfficeSync is tightly integrated into Outlook, but there is no requirement for Exchange Server. All information is stored in the local data store, not the Outlook data store so Knouen OfficeSync has no impact on the Enterprise Exchange servers.
- **Scalable Architecture:** Knouen OfficeSync's smart client solution allows Knouen OfficeSync to scale up and out as user demand grows.
- **Microsoft Outlook Email integration:** Email has become more pervasive than ever before and is one of the most prominent, daily means of communicating with customers. Knouen OfficeSync's email integration with Siebel CRM allows users to link an email to a specific Siebel item such as an Opportunity, Account, Activity, etc. which can be automatically shared amongst the account team. The email can then automatically create a Siebel Activity item to be shared with the broader team members and the management team.
- **Secure by design:** Knouen OfficeSync is secure by design. Information stored on the client can be stored encrypted; communication between the various layers



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can utilize existing, tested security protocols such as SSL and IPSEC. All communication with the data stores utilizes common Windows authentication mechanisms.

- **Create and edit Siebel items inside Outlook:** One of the most recognized features of Knouen OfficeSync by Siebel users has been their ability to create Siebel items from with Microsoft Outlook. Knouen OfficeSync allows users to create Siebel items such as Opportunity, Service Requests, Activities, etc. directly from the Microsoft Outlook environment. This greatly simplifies very common user interactions with the CRM system.
- **Robust alerting infrastructure:** The Knouen OfficeSync alerting mechanism provides users with immediate notification whenever their information changes. These alerts can be configured so they show any change to information that is important to the user.
- **360 degree customer view:** As CRM users don't distinguish between CRM and non-CRM data. Knouen OfficeSync allows users to have access to CRM and non-CRM data in one place at one time providing a true holistic view of the customer.
- **Enterprise ready:** Knouen OfficeSync was designed with IT in mind. Knouen OfficeSync has robust features such as granular control, centralized management, robust reporting, logging and audit trails.
- **No upgrade to Siebel system:** Knouen OfficeSync will preserve the customer's existing investment in Siebel by requiring no upgrade to the Siebel CRM application to get full Synchronization functionality with Microsoft Outlook.



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### Conclusion:

Understanding the detailed features, direct and indirect costs of deploying and managing an enterprise solution allows customers to make a more informed decision when considering which synchronization product is best for their organization. Knowing all components of the features, architecture and overall impact of the technology and how these influence the overall cost is a crucial step in understanding TCO.

For those who have done the critical analysis, Knouen OfficeSync for Siebel has proven repeatedly to provide a feature rich, robust, secure and cost-effective solution that is well able to meet users' high service-level expectations and ROI demands. With savings across hardware, software, operations, and maintenance the benefits of Knouen OfficeSync are substantial.

- Robust features
- Secure by design
- Flexible architecture
- Lower hardware costs
- Lower software licensing costs
- Reduced support and maintenance costs
- Ability to meet business/user requirements

This paper demonstrates that, Knouen OfficeSync features robust user centric features, significantly stronger data security, lower hardware costs, decreased software licensing fees, and significantly reduced support and maintenance costs. A better architected solution starts with a better understanding of usability.

For discerning Siebel CRM customers that require true bi-directional synchronization of both Outlook items with Siebel items and the ability to create Siebel items from within Outlook with the assurance that their data is always encrypted and secure, then Knouen OfficeSync for Siebel is the only commercially available solution that can accomplish both.