



**Duet for Microsoft Office and SAP**

# **BRINGING TOGETHER DESKTOP PRODUCTIVITY AND ENTERPRISE APPLICATIONS**

**A Technical Overview**

**Duet™** | for Microsoft® Office  
and SAP®

THE BEST-RUN BUSINESSES RUN SAP™



Duet™ software for Microsoft® Office and SAP® applications brings together world-leading desktop productivity and enterprise applications in a way that's consistent with today's service-oriented enterprise technology. Duet software, designed, developed, and supported by Microsoft and SAP AG, gives information workers a level of access to information and business processes never before possible. These capabilities are available because the mySAP™ ERP application supports enterprise services architecture, which allows for rapid and flexible reuse of preconfigured business processes.

Duet™ software for Microsoft® Office and SAP® applications – designed, developed, and supported by Microsoft and SAP AG – brings together the software of these two market-leading companies to give information workers a level of information access and utility never before possible. In effect, Duet turns every Microsoft Office desktop into a personal window onto SAP enterprise applications.

In creating Duet, Microsoft and SAP developers used the Microsoft .NET framework and SAP NetWeaver® platform, with enterprise services architecture (ESA). The result of the combined use of .NET and SAP NetWeaver is a seamless connection between the user's desktop and SAP software. At the same time, the architecture insulates the Microsoft Office application on the front end from SAP applications on the back end to protect each one from any excesses of the other – whether performance- or security-related.

Duet creates tremendous value for both end users and IT organizations. For millions of end users around the world, it delivers new productivity, convenience, and decision-making abilities. For IT organizations, Duet links the solutions and architectures of the worldwide leaders in desktop productivity and enterprise business process. The result is sustained financial benefits, increased data accuracy and reduced redundancy, and greater IT efficiency through the use of service-oriented processes.

#### **At First Glance: Duet Scenarios**

In its initial release, Duet software supports four scenarios, all of which are accessible without leaving Microsoft Office.

**Time management** – Lets employees schedule, record, and review project and billable hours using their Microsoft Office Outlook® calendar, which automatically interfaces with and updates the SAP enterprise system.

**Budget monitoring** – Gives managers seamless access to the financial data they need to make better decisions as well as to fulfill their cost and budget responsibilities, including budget monitoring, variance alerts, posting alerts, budget transfers, and correction of postings.

**Organization management** – Allows employees and managers to access and initiate updates to useful and time-saving HR-related employee information while remaining in the familiar Office Outlook environment.

**Leave management** – Lets employees request personal leaves and handle management approvals via e-mail with records of the approvals, process compliance, and time scheduled automatically entered into the SAP back-end software.

The scenarios outlined above are well suited to Duet because they are tightly focused on specific business processes related to the Microsoft Office application. Typically, enterprise applications that require higher levels of user involvement, such as financial accounting and inventory management, will call for the more task-specific graphical user interface (GUI) tools of the SAP NetWeaver Portal component.

### **Duet Architecture Overview**

The basic architecture consists of the following major components:

- A client add-on module for the Microsoft Office environment
- An SAP add-on for the back-end enterprise resource planning (ERP) software
- The Duet server, which facilitates deployment and communication between the two

Duet is designed to take advantage of the open, Web services-based enterprise services architecture of the SAP NetWeaver platform. The services-based architecture of Duet allows direct calls from the client to the Web services. Microsoft Exchange is used as an asynchronous message router, which eliminates the possibility of the Exchange Server becoming a system bottleneck. Moreover, no installations or modifications to the Exchange Server are required because of the use of a services-based architecture.

### **The Client Add-On**

This module houses several important components to support integration with the Microsoft Office suite, including the following:

- A runtime engine
- A secure cache storage for data, query assembly, and metadata
- An output queue

The runtime engine serves several purposes. It interprets user-interface metadata, using that metadata to represent the Duet components – toolbars and task panes – on the user's action pane in Office. The secure cache stores metadata and application data. This way, frequently used application data, such as drop-down list values, remain local. A persistence feature permits the cache to be used as offline storage and automatically triggers updates via the output queue when the user comes back online.

The client add-on is installed as a typical “plug-in” with standard remote installation tools, such as Microsoft Systems Management Server (SMS). Once installed, the applications, such as leave management, time management, and so forth, are automatically delivered to each client, based on the user role. Also, any subsequent application modifications will be propagated in the same way and become automatically available on the client desktops.

### **The SAP Add-On**

The SAP add-on encompasses the following:

- An engine for bundling service requests to mySAP™ Business Suite applications
- Configuration tools and metadata repository

The add-on consists of functions that are consistent with the ESA framework of SAP NetWeaver. These functions include a Web-services adapter for connecting to underlying SAP applications, a service-bundling component for handling service calls directly from the client, application metadata storage, and several others.

The service-bundling component is designed principally to support asynchronous service calls. ESA services are exposed through this interface, which serves the client calls sent by the client message queue. The component bundles several services as needed.

The SAP add-on architecture is designed to leverage the metadata storage in all Duet components to ensure that Duet delivers not only the user's query response but also the SAP-resident process logic, business rules, and configuration parameters. This ensures that there is no adverse impact on the underlying SAP applications and no need to recreate the upper-level process logic. The metadata repository provides tools to configure the Duet applications' metadata and map them to Web services, as well as to the existing configuration tables of the underlying SAP components that Duet relies on.

### **The Duet Server**

This component serves as the deployment and communication facilitator for the client and the SAP applications. The server contains the following:

- A runtime metadata repository
- A module for formatting and routing information to the Microsoft Exchange Servers
- A deployment module for propagating updates to client systems

The runtime metadata repository contains the metadata that describes the application user interface, configuration, and routing information for each Duet role. This component enhances scalability for growing numbers of users, since it off-loads the processing load that would otherwise go to the Microsoft Exchange Server.

At the same time, the client add-on is capable of bypassing the Duet server with certain direct services calls to the back-end SAP software, so the Duet server itself doesn't become a bottleneck in high-user or high-volume situations. The Duet server supports deployment in a high-availability, clustered environment, with connections to multiple Microsoft Exchange Servers and multiple back-end systems.

The deployment module automates metadata propagation from the Duet server to each client system as metadata updates are made. The deployment mechanism depends on the user's role as it is defined in the Duet system. The deployment mechanism is also used to deploy logic (.NET components) and forms (Microsoft InfoPath® forms and other documents) to the client machines upon client request.

## Duet Components

See Figure 1 for a closer look at the architecture components.

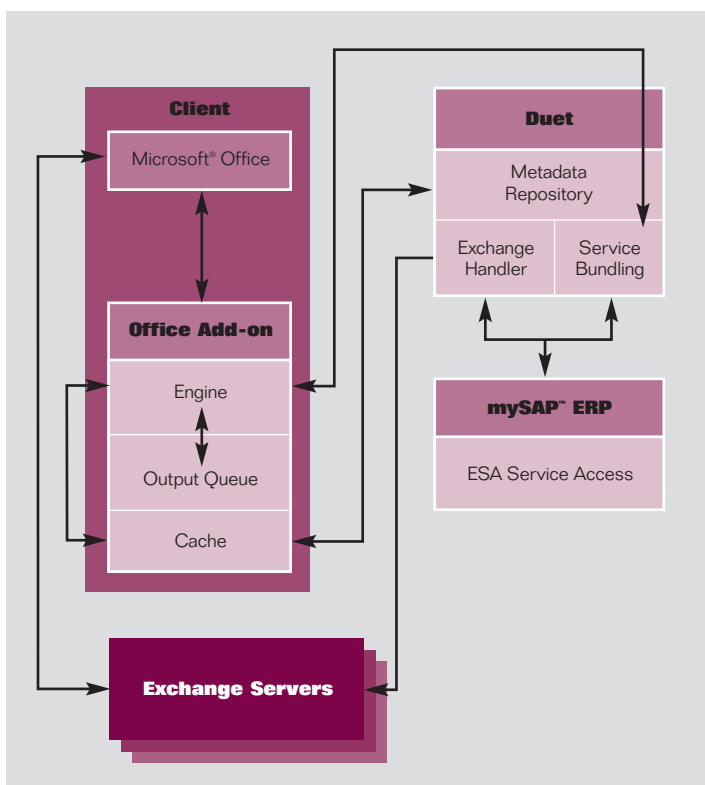


Figure 1: Duet™ Software High-Level Architecture

## Key Advantages of the Duet Architecture

The architecture provides several strategic benefits: multilayered security with single sign-on, synchronized role management, and offline Web services functionality.

### Multilayered Security with Single Sign-On

The architecture is ideal for maximizing security among the various system components. Duet features a single sign-on authentication model that maintains the full safeguards of both Microsoft Windows® and SAP security.

For client authentication, a user signs in and is authenticated at the regular desktop – typically through either a Microsoft Windows NT® LAN manager or Microsoft Active directory® service. Duet then maps the user token to that user’s profile in the SAP software. From here, the user is able to use his or her own credentials for the SAP software, and access is granted based on the user’s current authentication privileges. For instance, a user might be associated with only certain cost centers. An employee might have access to only his or her own personal information, while a manager would typically have access to information for an organizational unit.

### Synchronized Role Management

Duet leverages the customer’s existing investment in user role management either in the mySAP ERP application or in SAP NetWeaver Portal. Duet allows administrators to synchronize roles from either system to reduce the effort required to map single users again during Duet implementation. The Duet roles are mapped into the authorization management module (“AZ man”) of the Microsoft Windows Server System™, thus ensuring that the system administrator does not have to manually remap tokens.

### Offline Web Services Functionality

Finally, the architecture makes it possible for Duet to support offline Web-service calls, a powerful and unique capability. The Duet client add-on has a secured caching capability to store data sets available through Web services calls for both offline and online use (similar to Microsoft’s “cached mode” in the Outlook environment). The benefits of secured caching are the ability to work offline, increased system performance when online, and reduced network traffic. Sensitive information, such as employee compensation, can be configured for online access only.

### **Rapid Configuration Using Existing Business Conventions**

Configuring the Duet server to run according to enterprise-standard conventions requires adjustments to the SAP add-on component via standard SAP tools. Importantly, such configurations take advantage of the business rules and conventions already in place, so there is little need for new configuration.

As an example, the Duet leave management scenario includes a number of preconfigured templates for typical business leave requests. At installation time, the administrator can configure Duet to select a set of preconfigured leave types from the underlying SAP software, thereby significantly reducing the time required for configuring Duet.

### **Expedited Deployment and Metadata Propagation**

Upon completion of Duet configuration, the administrator can propagate the application metadata across the installation landscape. This process will read the SAP add-on's configuration tables and generate the runtime metadata to be propagated to the Duet server's runtime metadata repository. This instance of the metadata will then be available for all client machines through the Duet deployment mechanism depending on each user's role. This process can be redone as needed to propagate newer versions of the metadata in the event of configuration changes.

### **Duet: Enterprise Services Architecture Delivered to the Desktop**

Duet software brings value to enterprise computing in a number of ways. It empowers information workers, including employees and managers, as never before. It ties together the two major models of enterprise computing – the desktop PC and the core ERP system. And it demonstrates that two of the industry's largest companies can work together on behalf of a larger goal – their joint customer interest.

But Duet also serves as a model for how enterprise applications will act in the new age of service-based computing powered by enterprise services architecture. It does this by joining the services functionality of Microsoft and SAP applications, and by producing results – in utility, performance, and improved return on existing investments.

So not only is Duet demonstrating a new level of enterprise computing functionality. It is also revealing the philosophy behind the functions – and proving that service-based computing works, and works very well.

### **Microsoft and SAP:**

#### **Taking Partnership to a New Level**

Partners for more than 15 years, Microsoft and SAP have collaborated on a variety of projects – from SAP® enterprise software running on Microsoft® Windows® in 1993 to comprehensive Microsoft .NET and enterprise services architecture interoperability in 2004, for instance.

Duet™ software for Microsoft Office and SAP applications is different, however: it is the first joint product to be developed, delivered, and supported by the two companies. Also, Duet holds the promise of a continuing stream of codevelopment innovation, since it is designed to grow well beyond its initial implementation.

## Powered by SAP NetWeaver

SAP applications are powered by the SAP NetWeaver platform. SAP NetWeaver unifies technology components into a single platform, allowing organizations to reduce IT complexity and obtain more business value from their IT investments. It provides the best way to integrate all systems running SAP or non-SAP software.

SAP NetWeaver also helps organizations align IT with their business. With SAP NetWeaver, organizations can compose and enhance business solutions rapidly using enterprise services. As the foundation for enterprise services architecture, SAP NetWeaver allows organizations to evolve their current IT landscapes into a strategic environment that drives business change.

Duet takes advantage of the SAP NetWeaver platform by building on the same business processes and components, resulting in rapid implementation and maximum reuse for lower total cost of ownership.

## APPENDIX: HARDWARE AND SOFTWARE REQUIREMENTS

### Client System

- Microsoft Office 2003 Professional Enterprise Edition SP2 or higher
- Microsoft Windows XP SP2 or higher

### Embedded Components

The following components are installed as a part of client setup:

- Microsoft Windows .NET framework 2.0 or higher
- Microsoft SQL Express 2005

### Sizing

- CPU: 1.5 GHz
- RAM: 512 MB
- Hard disk: ~2 GB free space

### Duet Server

- Microsoft Windows Server 2003 SP2 or higher
- SAP NetWeaver 04 Java Web Application Server 6.40 SPS17 or higher
- SAP GUI 6.40

### Embedded Components

The following components are installed as a part of server setup:

- Microsoft Windows .NET framework 2.0 or higher
- Microsoft SQL Express 2005

### Sizing

- CPU: Dual 3.0 GHz
- RAM: 2 GB
- Hard disk: ~20 GB free space

### SAP Add-On

- mySAP ERP 2004 SPS12 or higher (with SAP ERP Central Component 5.0 add-on)
- SAP ESA add-on for mySAP ERP 2004
- Duet ABAP™ programming language add-on
- Duet Java add-on (located on separate instance of SAP NetWeaver 04 Java Web Application Server SPS17 or higher; can be installed on another machine or on Duet server itself) with SAP GUI 6.40

### Sizing

- Refer to the SAP Developer Network site at [sdn.sap.com](http://sdn.sap.com) for details on SAP base server requirements
- Minimum 1,000 MB free disk space for installation

### Microsoft Exchange Server

- No additional installation, software, or hardware requirements for existing Microsoft Exchange Server landscapes
- Microsoft Windows Server 2003 SP1 or higher
- Microsoft Exchange Server 2003 or higher including Microsoft Active directory server 2000

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