This technical overview describes concepts and features of the integration framework, including the user interface. This information will enable you to start using the integration scenarios from SAP.
At the end of this technical overview course, you will be able to:

- Describe the components, structure and processing of the integration framework
- Explain the integration scenarios supplied by SAP for SAP Business One integration
- Deploy an out-of-box scenario package
Integration Platform Basics and Positioning

This first topic describes the purpose and capabilities of the integration framework.
The Integration Framework of SAP Business One is the official name for the middleware that enables SAP Business One to publish or send data to external systems, and to consume or access data from external data providers across different system environments using standard protocols.

The integration framework is the common infrastructure platform for running all SAP Business One integration products including:

- Intercompany integration solution
- SAP Business One integration for SAP NetWeaver

Needed for operation of SAP Business One with:

- Mobile devices
- SAP Crystal Dashboards
- Ariba Network

Includes built-in development tools for partners to extend and integrate SAP Business One with external applications, Web services, databases and files.

The Integration Framework of SAP Business One is the official name for the middleware that enables SAP Business One to publish or send data to external systems, and to consume or access data from external data providers across different system environments using standard protocols.

The integration framework is the common infrastructure platform for running all integration products for SAP Business One including:

- Intercompany integration solution for integrating to other SAP Business One systems as a subsidiary or headquarters system
- SAP Business One integration for SAP NetWeaver for integrating SAP Business One as a subsidiary to SAP ERP

The integration framework is also the underlying platform for connecting mobile devices, for using SAP Crystal dashboards in SAP Business One, and for connecting a company to the Ariba Network as a buyer or seller.

Additionally, the integration framework includes built-in development tools that partners can use to extend and integrate SAP Business One with external applications, Web services, other SQL databases and file systems.
Scenario packages implement the end-to-end business logic on top of the integration framework.

They can be plugged into the integration framework to take advantage of the flow control and error-handling functions of the integration model as well as transactional control and security.

Partners can leverage the integration framework by:

- Running out-of-box scenario packages delivered by SAP and other partners.
- Creating new scenario packages tailored for a customer.

Scenario packages implement the end-to-end business logic on top of the integration framework middleware. They are easily plugged into the integration framework where they can take advantage of the flow control and error-handling functions of the integration model as well as the transactional control and security provided by the platform.

Partners can leverage the integration framework in different ways depending on their skills:

- Implementation partners can run the out-of-box scenario packages provided by SAP or another partner, thereby providing integration solutions for a low entry point with minimal configuration required.
- Development partners can create new scenario packages tailored to address a customer’s integration requirements.
Here you can see a list of scenario packages that are included when you install the integration framework. These packages require minimal setup to deploy them out-of-the-box. No additional licenses are required to run or extend these scenarios. The current scenario packages include:

- **SAP Business One mobile application connectivity for tablets and phones.** This package provides Web services connectivity for mobile devices.
- **SAP Crystal Dashboards**, required for using dashboards in the SAP Business One cockpit.
- **Request for Online Quotation (RFQ)**
- **Ariba Network**
- **SAP Customer Checkout** (Integrating a SAP Business One company database with SAP Customer Checkout applications)
- **Datev-HR for Germany**
- **Electronic invoicing for Mexico**
- **Document approval for Portugal**

Documentation is provided with each scenario, and you should consult this before you use these scenarios.
Other scenario packages are provided by SAP for headquarters to subsidiary integration. To access these scenarios, you need to download the SAP Business One Integration for SAP NetWeaver (B1iSN) component from the software download center. These preconfigured scenarios integrate SAP Business One as a subsidiary or franchisee to a headquarters’ system running SAP ERP:

- **Master Data Integration**: loading and updating product and customer master data from headquarters to subsidiaries
- **Customizing Data Distribution**: distribution of information related to item and customer data from headquarters to subsidiaries
- **Intercompany Purchasing**: between SAP Business One and SAP ERP (Sales from Local Stock and Sales from Central Stock)
- **Liquidity Forecasting**: rollup of cash management data to central SAP ERP
- **In-House Cash**: sales transaction payments processing through the headquarters cash center
- **Management Reporting for Sales Analysis**

The **Management Reporting for Sales Analysis** scenario transfers sales documents from SAP Business One to a headquarters running SAP Business Warehouse (SAP BW).

For more details on these scenarios refer to the documentation provided with the installation files. Note that the B1iSN component includes the integration framework as well as the scenarios, therefore you should install this on a separate machine, so that it acts as a bridge between the headquarters and the integration framework running on the subsidiary systems.
The SAP Business One Integration for SAP NetWeaver (B1iSN) component also delivers preconfigured scenario packages for data synchronization of SAP Business One companies as subsidiaries to a headquarters' system that also runs SAP Business One.

The scenarios are:

- **SAP Business One – Master Data Distribution**: distributes new and updated customer master data and item master data from a central SAP Business One headquarters to subsidiaries.

- **SAP Business One – Intercompany Purchasing**: the scenario is intended for subsidiaries selling goods that the headquarters produces and stores centrally. The headquarters central warehouse distributes the items either to the subsidiary location (sales from local stock) or directly to the customer of the subsidiary (sales from central stock). The headquarters invoices the delivered items to the subsidiary.

- **SAP Business One – Financial Consolidation for Journal Entries**: journal entries from subsidiary companies are consolidated in a central consolidation company database.
The Intercompany Integration Solution provides comprehensive out-of-box scenarios to integrate an SAP Business One system with another SAP Business One system as a subsidiary.

To access these scenarios, you need to separately license and install the Intercompany Integration Solution add-on. The scenarios run on top of the integration framework and the solution includes a built-in interface for configuration. The scenarios cover more than data synchronization and include:

- Item and business partner master data replication
- Service contract and customer equipment card replication
- UDF and UDT replication
- Intercompany trade
- Centralized payments
- Multi-level financial consolidation
- Intercompany reports
- Business transaction notifications.

Note that these scenarios cannot be edited or adapted by partners.
The integration framework is also a development environment for:

- Creating new integration scenarios
- Copying and extending out-of-box scenarios from SAP

Development tools include:

- BizFlow graphical flow designer for scenario process design
- Test and debug mode
- Internal XML editor
- Import and export tools for transporting scenarios

Note: When you create your own scenarios you need to license the sender and receiver system instances.

The integration framework is also a development environment for creating new integration scenarios and for copying and extending the SAP provided out-of-box scenarios.

Development tools are built into the integration framework and include:

- The BizFlow graphical flow designer and language for scenario process design. The BizFlow control structures enable you to easily design scenarios for typical integration patterns. An example of a graphical process flow is shown in the slide. You can use branches and loops in the process design.
- A test and debug mode which allows you to test a new scenario without involving the actual sender and receiver systems.
- An internal XML editor for editing the XML documents provided in the integration framework.
- Import and export utilities for distributing solutions.

Note that when you create your own scenarios you need to license the sender and receiver system instances. Once a license is purchased, the instance can be used for multiple scenarios.
The integration framework is the common middleware runtime platform for:

- Connecting to mobile devices
- Using Crystal dashboards
- Running out-of-box scenario packages delivered by SAP
- Integrating SAP Business One with SAP ERP, SAP BW, or other SAP Business One systems using preconfigured B1iSN scenarios
- Integrating to other SAP Business One systems using the Intercompany Integration Solution add-on

It is also a development environment for:

- Adapting out-of-box scenarios from SAP
- Building and testing new scenario packages for tailored integration projects

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- Adapting out-of-box scenarios from SAP
- Building and testing new scenario packages for tailored integration projects
Integration Platform Components

This topic provides an overview of the components of the integration framework.
Integration Framework Components - 1

Integration framework automatically installed with SAP Business One:

- Runs on SAP HANA and Microsoft SQL Server
- Can also be used in cloud environments

Services:

- **SAP Business One Integration service** is main service
- **SAP Business One DI Proxy** enables data exchange with SAP Business One using DI API
- **SAP Business One EventSender** listens for and hands over events from SAP Business One

The framework is automatically installed with SAP Business One on the SAP Business One server. It runs on SAP HANA and Microsoft SQL server and can also be used in cloud environments.

The integration framework is implemented as a Microsoft Windows service called *SAP Business One Integration Service*. The service starts automatically after successful installation. After installation, you can immediately start working with the integration framework.

The integration framework also installs the following services:

- The *DI Proxy service* which is the data channel between SAP Business One databases and the integration framework, using the DI API.
- The *EventSender service* which listens for and responds to events generated from SAP Business One. An event might be the creation of a sales order or other document by a user which triggers a scenario. SAP Business One writes event data to a table. Based on filter definitions, the event sender hands over the events to the integration framework for processing.
The *System Landscape Directory* (SLD) area of the integration framework maintains a list of *systems* that connect at runtime to the integration framework scenarios. Each system entry contains specific connectivity parameters that are used by the integration framework.

An SAP Business One company database is considered a system. The SLD is synchronized with the SLD of the local SAP Business One server so that systems for company databases are automatically registered in the SLD of the integration framework.
Scenario packages are easily transportable because they do not reference the actual sender or receiver system in the SLD directly, but instead reference an *inbound or outbound channel type*.

The integration framework uses standard APIs and protocols to communicate to sender and receiver systems. Some examples of the *channel types* supported by the integration framework include SAP Business One, Web service calls, HTTP calls, flat file and database. The inbound or outbound channel type is associated with a specific API or protocol. For example, the SAP Business One inbound or outbound channel type uses either the DI API or JDBC.

Only when the scenario package is deployed is the actual sender or receiver system defined in the SLD subscribed to the scenario. This enables you as a partner to create and test a scenario in one environment and then deploy it in the customer’s environment.
When you deploy a scenario, you need to define a new system in the SLD for each sender or receiver. Note that system entries for the out-of-box scenarios shipped with the integration framework are automatically created for you in the SLD. For new scenarios, including other scenarios from SAP, you will need to define system entries for each sender or receiver system.

The SLD provides a set of system types containing the necessary connectivity parameters:
- B1.x.x
- H.AnySystem
- J.AnySystem
- W.AnySystem
- F.AnySystem
- ...

Select a system type as a base, then complete the network connectivity details when you deploy the scenario. Complete the system definition by adding specific connectivity details, such as the host name, IP address or login information for databases.

### SLD System Types

<table>
<thead>
<tr>
<th>System Type (template)</th>
<th>Inbound/Outbound Channel Type</th>
<th>API or Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1.x.x</td>
<td>SAP Business One</td>
<td>DI API or JDBC</td>
</tr>
<tr>
<td>H.AnySystem</td>
<td>HTTP Call</td>
<td>HTTP</td>
</tr>
<tr>
<td>J.AnySystem</td>
<td>Database</td>
<td>JDBC</td>
</tr>
<tr>
<td>W.AnySystem</td>
<td>Web Service Call</td>
<td>Web services (HTTP)</td>
</tr>
<tr>
<td>F.AnySystem</td>
<td>Flat File</td>
<td>File system</td>
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</tbody>
</table>

System entries for out-of-box scenarios shipped with the integration framework are automatically created in the SLD.
The components of the integration framework are:

- SAP Business One Integration service - the main service
- SAP Business One DI Proxy - data exchange with SAP Business One using DI API
- SAP Business One EventSender - listens for and hands over events from SAP Business One
- System Landscape Directory (SLD) - maintains an entry with connectivity details for each system that will connect to the integration framework

The system entries for SAP Business One company databases are automatically created in the SLD, as are the entries required by out-of-box scenario packages.

Scenario packages are transportable because they do not reference the actual sender or receiver system. When you deploy a scenario, you define a new system entry in the SLD based on a predefined system type, and associate with the package.
This topic will look at the internal processing of the integration framework.
Integrations solutions for SAP Business One are distributed as scenario packages.

A scenario package (vPac) contains one or more scenario steps. The package pulls together the individual steps needed to model a business integration requirement and is the unit for import, export, and activation. You can import and test the scenario package on your computer, then export the package and import it at the customer site. Custom integration solutions are also created as scenario packages and can be exported then imported and activated on a customer system.

A scenario step (business integration unit or vBiu) implements a specific integration flow of data between a sender and receiver system. A step has a defined trigger, which may be an SAP Business One event, a call from a remote system, or a timer. A step can also be triggered from another scenario step.
As mentioned previously, a step transfers and converts data from a sender to a receiver system. A sender system provides data to the integration framework, and the integration framework hands over the transformed message to the receiver system.

When the integration framework executes a step, there are three separate phases:

- **Inbound** – retrieves data from sender system and hands over to processing phase
- **Processing** – transforms data and can execute other functions
- **Outbound** – hands over transformed data to receiver system

As mentioned previously, a step transfers and converts data from a sender to a receiver system. A sender system provides data to the integration framework, and the integration framework hands over the transformed message to the receiver system.

When the integration framework executes a step, there are three separate phases:

- **The inbound phase** identifies and retrieves the incoming data from the sender system. In the example, the step is triggered by an event in SAP Business One such as the creation of a new sales order. This is handled by the EventSender service. The sales order object is retrieved by the integration framework using a DI API call.

- **The processing phase** converts the incoming data to the format required by the receiver system. For example, in this example the object fields would be converted to flat file fields. The processing phase can also execute functions that are not related to data transformation, such as sending an email to inform a user that the file has been transmitted.

- **The outbound phase** hands over the transformed data to the receiver system. In this example it would write a file with delimiter-separated values.
Scenario steps can be asynchronous flows between sender and receiver systems, or synchronous flows, triggered by a caller, with the response returned back to the caller. A scenario can contain a mix of asynchronous and synchronous steps.

In an *asynchronous* step, a sender system sends a message or trigger (for example a SAP Business One event) to the integration framework that starts the step processing. Alternately, you can define a timer in the scenario step. When the time is reached the integration framework starts the step. The inbound phase of a step retrieves the data from the sender and the step processing includes transformation of the data and optionally calls to other systems. The outbound phase of the step hands over the message to the receiver system or systems.

In a *synchronous* step you will see `void` in the Outbound step definition. The inbound phase receives a request call from a sender system. The inbound phase hands over the message to processing. The process flow calls another system to process the data. The response or result from the called system is instantaneous and goes back to the original sender system. An example of a synchronous step is an HTTP call from SAP Business One to a Web service that calculates a currency exchange rate for the day. The calculation result is returned to the sender and updates a table in SAP Business One.
The integration framework always processes the data internally as XML messages, whatever the inbound data format:

- The inbound phase of a step retrieves the data or message from the sender and translates this data to XML. It then hands over the XML document to the processing phase.
- The processing phase transforms the data in the XML document into the format required by the receiver system. The data is still in XML format and the data transformation is commonly accomplished by manipulating the XML document using XSLT (eXtensible Stylesheet Language Transformations). The processing phase may perform other functions in addition to transforming the data. This depends on the business scenario.
- The outbound phase receives the final XML from the processing phase, converts the data to the receiver system format if it is different to XML and transmits the data over the network to the receiver system.
The processing phase for the step is assembled using the BizFlow designer tool. Predefined processing units called atoms can be strung together to create the process flow. Inbound phase passes an XML document to the first atom. A simple process flow consists of just a single transformation atom (final) which performs the transformation of the incoming message to the receiver format.
A more complex process flow can have many atoms strung together, and can include conditional branching and loops.

Each atom receives the XML data from the previous atom and further transforms the data for the next atom.

Atoms can also perform functions, such as calling an external application or sending email.

In addition to transforming the XML data, atoms can also perform functions, such as calling an external application or sending an email. The example on the slide shows an email atom which sends an email to an SMTP server. This atom also has a transformation atom in front of it which provides the data for the email.
Scenario packages implement the business logic and contain one or more steps. Each step models a single data transmission flow between a sender and a receiver system.

Steps can be asynchronous or synchronous (call response).

Each step has three phases:

- **Inbound** phase is called by the sender or by a timer, retrieves and converts the data from the sender to XML format.

- **Processing** phase which transforms the data to the outbound format. The process flow is built using predefined units called atoms. All processing within the integration framework is handled as XML documents. Processing atoms can also perform other functions and call external systems.

- **Outbound** phase which receives the converted XML from the processing phase and hands over the data in the receiver format. For synchronous steps, the response or result goes back to the original sender system.
Deploying Out-of-Box Scenario Packages

This topic covers the basic steps for deploying one of the predefined scenario packages from SAP.
When deploying the out-of-box scenario packages, you will work with the Web-based user interface of the integration framework. This interface allows you as a partner to deploy and monitor scenario packages and also to create and test new scenario packages.

The user interface for the integration framework is opened using the path shown in the slide.

The B1iadmin password (runtime user) is required to access the administrative interface. When you installed the integration framework, you set the initial value of this password. You can change this password from the user interface.
The integration framework has two types of users – administration and runtime users. When you set the default *B1iadmin* user password during installation, you actually define the password for the two users:

- The admin user for accessing the integration framework user interface
- The runtime user that is an internal service user for the integration framework. The integration framework step that listens to incoming SAP Business One events runs with this user.

If you change the password for this user, you need to also change it in the event sender setup, or the integration framework will not receive SAP Business One events.

To change the B1iadmin user password, use the *Admin User* button. To display the users currently logged in, click the *Session Control* button.

Note: SAP Business One creates a user with B1i user code for each company database. You should set the same password for each company database. The integration framework uses the B1i user to connect to SAP Business One, for example for authentication when using the mobile solution.
Your starting point for deploying an out-of-box scenario is the Control screen. Select the Scenarios tab then choose Control from the list on the left side.

Here you can see an overview of all the scenarios installed on your system. The ones marked with a checkbox are active. If you have imported any additional scenarios they will also show here.
Before you deploy an out-of-box scenario package, you should review the documentation provided by the vendor to see if there are any specific configuration requirements for the package.

In the slide the sap.B1RFQ package is highlighted. This scenario allows SAP Business One users to send purchase quotations to one or more business partners electronically.

You can open the configuration documentation by choosing the *Docu* button. For the sap.B1RFQ scenario, the documentation will guide you through the process of defining an SMTP email server in order to use this scenario package.
To deploy a scenario you need to define system entries for the actual sender and receiver systems in the SLD.

From the user interface, choose the SLD tab to see the list of systems that are currently defined. Select a system to view the connectivity information and to test the connection.

System entries in the SLD are automatically created for:
• All SAP Business One company databases on the server.
• The out-of-box scenarios that are installed with the integration framework on an SAP Business One system. The sender and receiver systems for the out-of-box scenarios are automatically created with the correct connectivity protocols, for example:
  • WSforMobile for the SAP Mobile scenario
  • HAnyforXcelsius for running dashboards in SAP Business One
  • HAnyforRFQ for the Request for Online Quotation scenario
To deploy scenarios not shipped with the integration framework, you need to define new systems in the SLD.

Use the Create System option and select one of the predefined system types as a base.

To deploy scenarios not shipped with the integration framework, including other scenarios from SAP, you need to define new systems in the SLD. To do this, select the Create System option and select one of the predefined system types as a base. These predefined system types were described earlier in this course. After you select the system type, complete the connectivity details.
Deploying an Out-of-Box Scenario Package

Path: Scenarios → Setup

1. Perform any required configuration as documented by the vendor.
2. In the scenario package setup screen, either:
   - Select the manual setup buttons for Sender and Receiver or
   - Run the Scenario Setup Wizard
3. Activate the package

To deploy one of the out-of-box scenario packages, you do not have to manipulate any XML documents. To see the scenario setup screen, select the Scenarios tab and choose the scenario name, then choose Setup. Make sure the scenario is in design mode. If the scenario is in active mode, you should deactivate it first.

Follow these basic steps:
1. Perform any required configuration as documented by the vendor.
2. To deploy the scenario, you can either select the manual setup buttons in the scenario package setup screen, or select the icon to run the Scenario Setup Wizard, which guides you through the process.
3. Activate the scenario package from the Scenario Package Setup screen.
At runtime, all systems defined in the SLD that match the system types used in the scenario are by default subscribed for deployment. For example, all SAP Business One databases are automatically selected if the scenario step uses the B1 system type.

- All systems in the SLD that match the system types used in the scenario are by default subscribed for deployment.
- For example, all SAP Business One databases are selected if the scenario step uses system type B1.
- When you deploy the scenario you have the option to deselect databases from the scenario.

In the slide you can see the Scenario Setup Wizard and in step 2 it shows that all company databases are subscribed for the sap.B1RFQ scenario. Additionally a system called HAnyforRFQ with the system type H.AnySystem is subscribed. These systems have been selected because they match the system types used in the steps for this scenario.

When you deploy the scenario you have the option to deselect company databases from the scenario. The subsequent steps in the wizard allow you to define filters, properties, value mappings and scheduler settings for timer-triggered steps. You should only make these changes if instructed by the scenario documentation.
The integration framework has a Web-based user interface that you can use to deploy the out-of-box scenarios from SAP.

You can also create new scenarios using this interface.

The out-of-box scenarios shipped with the integration are ready to use. To deploy an out-of-box scenario package from SAP:

- Check the documentation to see any required configuration steps
- Deselect company databases as needed using the manual setup buttons or the Scenario Setup Wizard
- Activate the package

The integration framework has a Web-based user interface that you can use to deploy the out-of-box scenarios from SAP.

You can also create new scenarios using this interface.

The out-of-box scenarios shipped with the integration framework are ready to use. To deploy an out-of-box scenario package from SAP: check the documentation to see any required configuration steps, deselect company databases as appropriate using the manual setup buttons or the Scenario Setup Wizard, and then activate the scenario package.
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