

# **Integration Add-On 3.0 SP04 for SAP ERP HCM and SuccessFactors HCM Suite**

## **Integration Scenario for Variable Pay**



# Document History



## Caution

Before you start the implementation, make sure you have the latest version of this document from SAP Help Portal at [help.sap.com/erp\\_sfi\\_addon30](https://help.sap.com/erp_sfi_addon30) ↗.

The following table provides an overview of the most important document changes.

Table 1

| Version | Date       | Description                                                                                                                                                                                                                        |
|---------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.0     | 2015-06-12 | Initial version<br><br>For the integration of variable pay data, you can now use SAP HANA Cloud Integration as the middleware. This is as an alternative to SAP Process Integration which you could already use as the middleware. |

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# 1 Introduction

The integration scenario for variable pay enables you to integrate SAP ERP HCM and variable pay in SuccessFactors. The employee history data can be extracted from SAP ERP HCM and transferred to variable pay in SuccessFactors, where the variable pay for your employees can be processed. The variable pay per employee that is calculated in SuccessFactors can then be imported to SAP ERP HCM, where it can be paid through payroll.

## 1.1 About This Document

This document describes only the installation, operation, security, and upgrade of the integration scenario for variable pay. If you plan to use the other integration scenarios that are available for the integration add-on, be sure to read the respective administration guides together with this guide. You can find them on SAP Help Portal at [help.sap.com/erp\\_sfi\\_addon30](https://help.sap.com/erp_sfi_addon30) .

### Prerequisites

You are familiar with the following:

- ABAP  
For example, modifying the mapping of SuccessFactors fields to SAP ERP fields
- SAP Process Integration  
For example, using middleware to transfer customer-specific fields from SAP ERP to SuccessFactors, or vice versa
- SAP HANA Cloud Integration

## 1.2 Further Information

### Application Help

For detailed information about the integration add-on (for example, about the available integration scenarios, the prerequisites for using the scenarios, concepts and processes), see SAP Library at [help.sap.com/erp\\_sfi](https://help.sap.com/erp_sfi)  [Application Help](#) .

### Implementation Information

The following table is a list of information about implementation topics that are not covered in this administrator guide.

Table 2

| Content                                                                                         | Storage Location                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sizing and calculation of hardware requirements using Quick Sizer                               | <a href="https://service.sap.com/quicksizer">service.sap.com/quicksizer</a> ➔                                                                                                                                                                                        |
| Released platforms and technology topics such as maintenance strategies and supported languages | <a href="https://service.sap.com/platforms">service.sap.com/platforms</a> ➔<br><div> <b>i</b> <b>Note</b><br/>           To access the Platform Availability Matrix directly, enter <a href="https://service.sap.com/pam">service.sap.com/pam</a> ➔ .         </div> |
| Network security                                                                                | <a href="https://service.sap.com/securityguide">service.sap.com/securityguide</a> ➔                                                                                                                                                                                  |
| High availability                                                                               | <a href="https://service.sap.com/ha">service.sap.com/ha</a> ➔                                                                                                                                                                                                        |
| Performance                                                                                     | <a href="https://service.sap.com/performance">service.sap.com/performance</a> ➔                                                                                                                                                                                      |
| Support Package Stacks, current software versions, and patch statuses                           | <a href="https://service.sap.com/sp-stacks">service.sap.com/sp-stacks</a> ➔                                                                                                                                                                                          |
| Unicode                                                                                         | <a href="https://service.sap.com/unicode">service.sap.com/unicode</a> ➔                                                                                                                                                                                              |

## Underlying Guides

The following table is a list of guides on which this administrator guide is based.

### **i** Note

Ensure that you have implemented the content of these guides for your SAP ERP 6.0 system. This guide contains only additional information that is specific to the integration add-on for SAP ERP HCM and SuccessFactors HCM Suite.

Table 3

| Guide                                     | Storage                                                                                                                                                                                |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Master Guide for SAP ERP 6.0              | ▶ <a href="https://service.sap.com/instguides">service.sap.com/instguides</a> ➔ ▶ <i>SAP Business Suite Applications</i> ▶ <i>SAP ERP</i> ▶ <i>SAP ERP 6.0</i> ▶ <i>Installation</i> ▢ |
| Installation Guide for SAP ERP 6.0        | ▶ <a href="https://service.sap.com/instguides">service.sap.com/instguides</a> ➔ ▶ <i>SAP Business Suite Applications</i> ▶ <i>SAP ERP</i> ▶ <i>SAP ERP 6.0</i> ▶ <i>Installation</i> ▢ |
| Solution Operations Guide for SAP ERP 6.0 | ▶ <a href="https://service.sap.com/instguides">service.sap.com/instguides</a> ➔ ▶ <i>SAP Business Suite Applications</i> ▶ <i>SAP ERP</i> ▶ <i>SAP ERP 6.0</i> ▶ <i>Operations</i> ▢   |
| Security Guide for SAP ERP 6.0            | ▶ <a href="https://service.sap.com/securityguide">service.sap.com/securityguide</a> ➔ ▶ <i>SAP Business Suite Applications</i> ▶ <i>SAP ERP 6.0</i> ▢                                  |

### **i** Note

SAP ERP 6.0 is the lowest version in which you can install the integration add-on. You can also install the integration add-on in higher versions of SAP ERP. Use the relevant guides for your SAP ERP version. For more information about the required SAP ERP versions, see *Software Units* in the next chapter.

## Additional Information

The following table is a list of other additional information.

Table 4

| Content                                                        | Storage                                                                 |
|----------------------------------------------------------------|-------------------------------------------------------------------------|
| General information about SAP ERP Human Capital Management     | <a href="https://service.sap.com/erp-hcm">service.sap.com/erp-hcm</a> ➔ |
| Create customer messages                                       | <a href="https://service.sap.com/message">service.sap.com/message</a> ➔ |
| Search for SAP Notes                                           | <a href="https://service.sap.com/notes">service.sap.com/notes</a> ➔     |
| SAP Software Distribution Center (download and order software) | <a href="https://service.sap.com/swdc">service.sap.com/swdc</a> ➔       |

## 1.3 Important SAP Notes

Read the following SAP Notes before you start to implement the integration scenario for variable pay.

Table 5

| SAP Note Number           | Title                                                     | Description                                                                                                         |
|---------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <a href="#">1841471</a> ➔ | Release Strategy for ABAP Add-On SFIHCM03 600             | Describes the prerequisites, installation process, and follow-up for installing the integration add-on              |
| <a href="#">2017123</a> ➔ | Prerequisite Corrections in SFIHCM02 600 for Variable Pay | Includes corrections for package interface and enhancements to domain fixed values used by variable pay integration |

## 2 Overview

In the following figure, the employee history data is extracted from SAP ERP HCM and transferred to variable pay in SuccessFactors. The employees' variable pay is processed in SuccessFactors. After the variable pay process is successfully completed, the employees' variable pay is calculated and sent back to the SAP ERP HCM system so that it is paid out in payroll.

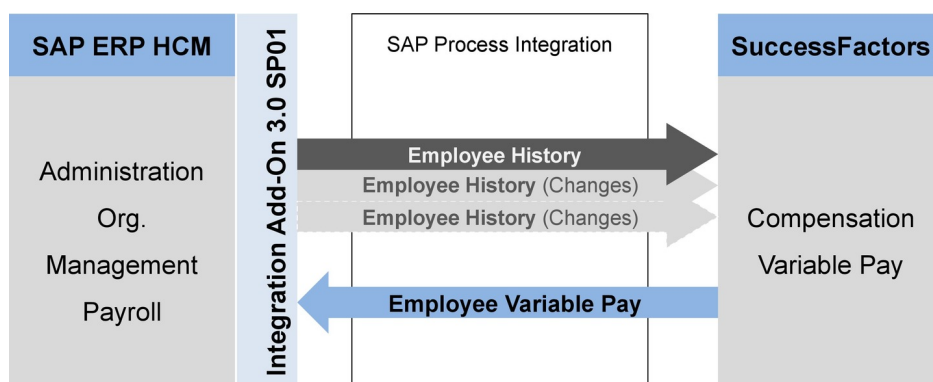


Figure 1: Overview

### Prerequisites

Please see the application help for the integration add-on on SAP Help Portal at [help.sap.com/erp\\_sfi](https://help.sap.com/erp_sfi).

### Sequence

Be sure to transfer the data in the following sequence:

Table 6

| Sequence | Integration Scenario | Comments                                                                    |
|----------|----------------------|-----------------------------------------------------------------------------|
| 1        | Employee data        |                                                                             |
| 2        | Variable pay         | Requires the employees to already be available in the SuccessFactors system |

### Middleware

The integration add-on supports the integration scenario using middleware. Content in SAP Process Integration and SAP HANA Cloud Integration is available.

## 2.1 Software Units

The following table show which components are mandatory:

Table 7

| Component                                                                                                                                                                                                                       | Mandatory | Optional | Additional Information                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integration add-on 3.0 SP04 for SAP ERP HCM and SuccessFactors HCM Suite<br>(Product version SUCCESSFACTORS HCM INTEGR 3.0, software component versions SFIHCM01 600 with SP09, SFIHCM02 600 with SP04, SFIHCM03 600 with SP02) | X         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SAP ERP 6.0 SPS15 or above (with version 600 of the SAP ERP software components; SAP ERP 6.0 SPS15 comprises SP38 for software component version EA-HR 600)                                                                     | X         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SAP Process Integration 7.11 SP12 or above and SAP Process Integration connectivity add-on 1.0 SP02 or above<br><br><b>or</b><br>SAP HANA Cloud Integration infrastructure configured by SAP Cloud Managed Services             | X         |          | Your SAP Process Integration system must have the support package level stated in SAP Note <a href="#">1838921</a> . In your SAP ERP system, you must also define the access data for the System Landscape Directory (SLD) in <a href="#">Maintain SLD Access Data</a> (transaction SLDAPICUST). For more information, see <i>Connecting to the System Landscape Directory</i> in SAP Library for SAP NetWeaver at <a href="http://help.sap.com">help.sap.com</a> . |
| ESR Content for software component versions SFIHCM01 600, SFIHCM02 600, SFIHCM03 600<br><br><b>or</b><br>Integration content for SAP HANA Cloud Integration configured by SAP Cloud Professional Services                       | X         |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Component                                                                                    | Mandatory  | Optional        | Additional Information                                                                                                                                 |
|----------------------------------------------------------------------------------------------|------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAP Gateway 2.0 SP07 or above (and in the back end software component IW_BEP SP07 or above). | X (IW_BEP) | X (SAP Gateway) | For more information about SAP Gateway 2.0, see SAP Community Network at <a href="https://scn.sap.com/docs/DOC-28526">scn.sap.com/docs/DOC-28526</a> ➔ |

## 2.2 System Landscape

### Integration Using SAP Process Integration

The following figure shows how the integration add-on is embedded in the system landscape if you use SAP Process Integration as the middleware.

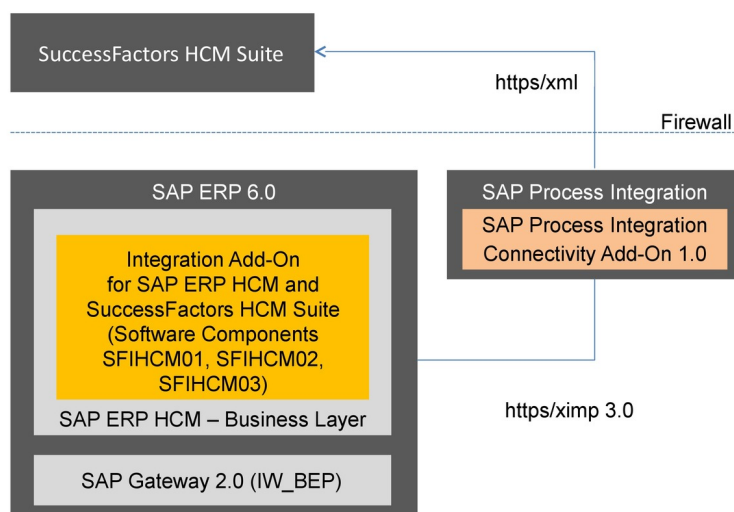


Figure 2: System Landscape Using SAP Process Integration

### Integration Using SAP HANA Cloud Integration

The following figure shows how the integration add-on is embedded in the system landscape if you use SAP HANA Cloud Integration as the middleware.

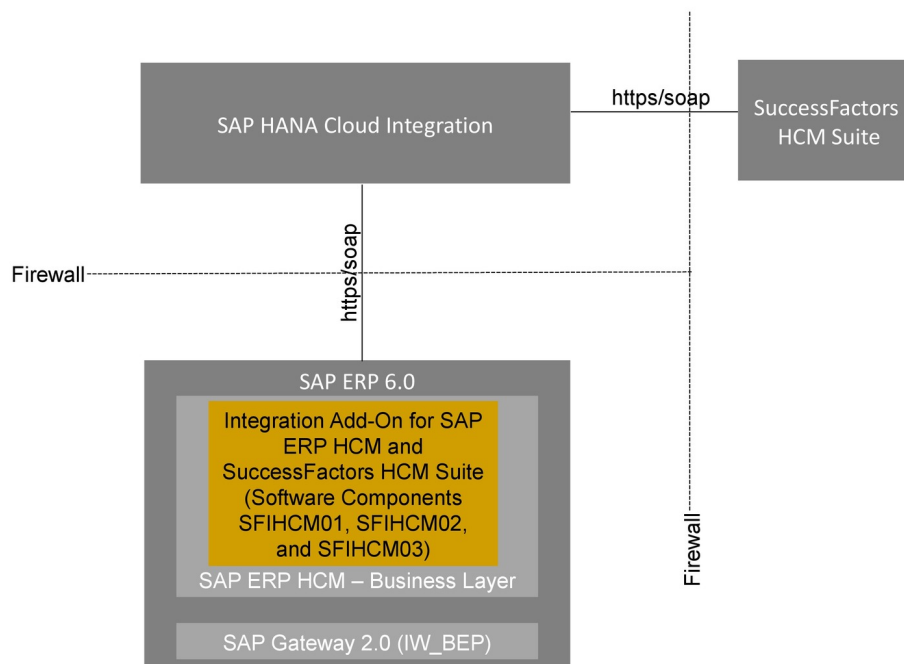


Figure 3: System Landscape Using SAP HANA Cloud Integration

## 3 Installation

### 3.1 Installation Sequence

#### SAP ERP

Table 8

| Sequence | Step                                 | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Install SAP ERP 6.0 – SAP ECC server | <p>SAP ERP 6.0 is the lowest version in which you can install the integration add-on. You can also install the integration add-on in higher versions of SAP ERP.</p> <p>To install the SAP ECC server, use the relevant installation guide for your SAP ERP version.</p> <p>For more information, see SAP Service Marketplace at <a href="https://service.sap.com/erp-inst">service.sap.com/erp-inst</a> ➤ <a href="#">SAP ERP 6.0</a> ➤ <a href="#">Planning</a> ➤.</p> |
| 2        | Install the integration add-on       | <p>For more information, see SAP Note <a href="https://support.sap.com/en/notes/1841471">1841471</a> ➤.</p>                                                                                                                                                                                                                                                                                                                                                              |

#### Middleware

Choose either SAP Process Integration or SAP HANA Cloud Integration.

Table 9: SAP Process Integration

| Sequence | Step                                                | Comments                                                                                                                                                                                                                                                                                                                                        |
|----------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Install SAP Process Integration                     | <p>For more information, see SAP Help Portal at <a href="https://help.sap.com/nwpi">help.sap.com/nwpi</a> ➤ <a href="#">Installation and Upgrade Information</a> ➤.</p>                                                                                                                                                                         |
| 2        | Install SAP Process Integration connectivity add-on | <p>The integration content uses the SFSF adapter contained in the connectivity add-on. For more information, see SAP Help Portal at <a href="https://help.sap.com/nwpi-addon">help.sap.com/nwpi-addon</a> ➤ <a href="#">SAP Process Integration, connectivity add-on 1.0 SP02</a> ➤ <a href="#">Installation and Upgrade Information</a> ➤.</p> |
| 3        | Install ESR content for integration add-on          | <p>For information about installing the ESR content, see SAP Help Portal at</p>                                                                                                                                                                                                                                                                 |

| Sequence | Step | Comments                                                                                                                                                                                                                                                                       |
|----------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |      | <a href="https://help.sap.com/nwpi">help.sap.com/nwpi</a> ➔ ▶ <i>Application Help</i> ➤ <i>Importing ESR Content</i> ▾.<br>For information about the services used for the integration add-on, see <a href="#">Integration Content for SAP Process Integration [page 14]</a> . |

Table 10: SAP HANA Cloud Integration

| Sequence | Step                                                                                       | Comments                                                                                                                                                                                             |
|----------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Access SAP HANA Cloud Integration                                                          | To receive a customer-specific tenant in SAP HANA Cloud Integration, you need to run through the onboarding process. To do so, contact SAP Cloud Managed Services.                                   |
| 2        | Provide the integration content for the integration add-on in the customer-specific tenant | Contact SAP Cloud Managed Services. For more information about the services used for the integration add-on, see <a href="#">Integration Content for SAP HANA Cloud Integration [page 14]</a> .      |
| 3        | Modify the integration content in the customer-specific tenant                             | Contact SAP Cloud Professional Services. For more information about the services used for the integration add-on, see <a href="#">Integration Content for SAP HANA Cloud Integration [page 14]</a> . |

## SuccessFactors

Table 11

| Sequence | Step                                                     | Comments                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Access SuccessFactors with the Q1 2015 release or higher | The integration add-on uses SFAPI to read and write to SuccessFactors objects as follows: <ul style="list-style-type: none"> <li>• USER object is read to get the attributes of the user.</li> <li>• Background_* objects (which store inbound employee history) are read and written to.</li> <li>• Ad hoc report domain ADHOC_VARPAY_BONUS_PAYOUT is queried to get the variable pay for employees.</li> </ul> |

## 3.2 Integration Content

### Integration Content for SAP Process Integration

The integration scenario for variable pay uses the following general services:

- SFSFSessionHandlingLoginQueryResult\_Out
- SFSFSessionHandlingLoginQueryResult\_In
- SFSFAPIDictionaryListSFObjetsResult\_Out
- SFSFAPIDictionaryListSFObjetsResult\_In
- SFSFAPIDictionaryDescribeSFObjetsExResult\_Out
- SFSFAPIDictionaryDescribeSFObjetsExResult\_In
- SFSFGenericUpdateRequestConfirmation\_Out
- SFSFGenericUpdateRequestConfirmation\_In
- SFSFGenericDeleteRequestConfirmation\_In (new)
- SFSFGenericDeleteRequestConfirmation\_Out (new)
- SFSFGenericInsertRequestConfirmation\_In (new)
- SFSFGenericInsertRequestConfirmation\_Out (new)
- SFSFUserQueryRequest\_In (new)
- SFSFUserQueryRequest\_Out (new)
- SFSFSessionHandlingLogoutQueryResult\_Out
- SFSFSessionHandlingLogoutQueryResult\_In

### Integration Content for SAP HANA Cloud Integration

The integration scenario for variable pay uses the following general services:

- com.sap.SFIHCM01.hcm2bizx.SFSFSessionHandlingLoginQueryResult
- com.sap.SFIHCM01.hcm2bizx.SFSFAPIDictionaryListSFObjetsResult
- com.sap.SFIHCM01.hcm2bizx.SFSFAPIDictionaryDescribeSFObjetsExResult
- com.sap.SFIHCM02.hcm2bizx.SFSFGenericUpdateRequestConfirmation
- com.sap.SFIHCM03.hcm2bizx.SFSFGenericDeleteRequestConfirmation (new)
- com.sap.SFIHCM03.hcm2bizx.SFSFGenericInsertRequestConfirmation (new)
- com.sap.SFIHCM03.hcm2bizx.SFSFUserQueryRequest (new)
- com.sap.SFIHCM01.hcm2bizx.SFSFSessionHandlingLogoutQueryResult

## 3.3 Installation Follow-Up

See SAP Note [1841471](#) .

## 4 Security

### 4.1 Security Aspects of Data, Data Flow, and Processes

#### Security Aspects of Data Flow Using SAP Process Integration

The following figure provides an overview of the data flow.

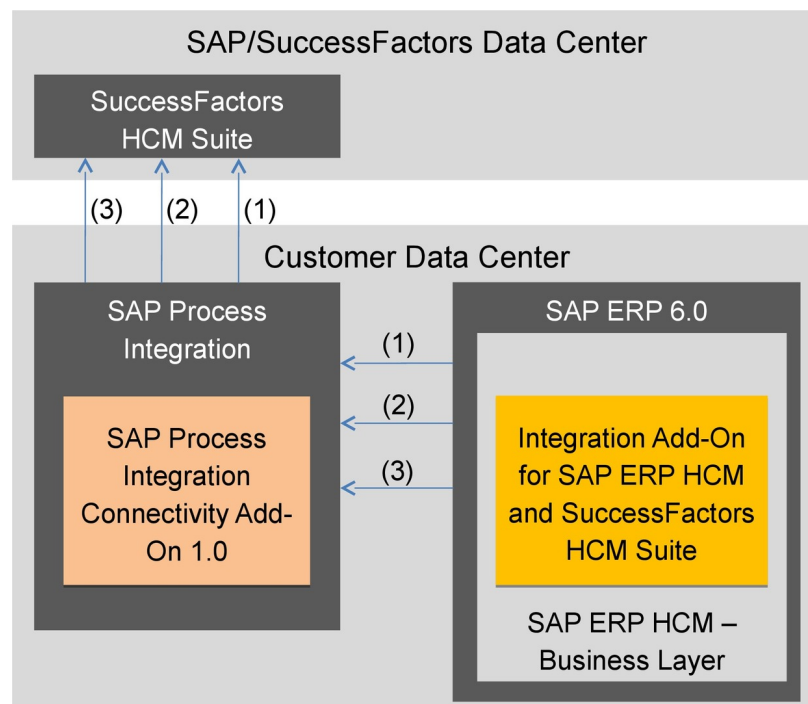


Figure 4: Data Flow Using SAP Process Integration

The following table shows which security aspect to consider for each process step, and which security measure applies.

Table 12

| Step | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Security Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <p>The data extraction reports for employee history extract the data and generate the relevant data packages.</p> <p>The SAP ERP system sends the credentials information (enterprise ID, user ID and password) to SuccessFactors to open a session there.</p> <p>SuccessFactors sends a session ID as a synchronous response. This ID is used for subsequent communication.</p>                                                                                                                      | <p>Customizing for <i>Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite</i> ► <i>Basic Settings</i> ► <i>Settings for Middleware</i> ►</p>                                                                                                                                                                                                                                                                                                                                                                                      |
| 2    | <p>The SAP ERP system sends the session ID and data to be transferred to SuccessFactors, package by package.</p> <p>SuccessFactors sends a synchronous response confirming whether the data transfer was successful. If technical or business errors occurred, SuccessFactors sends relevant error codes and error messages, as well as information on which employee is affected.</p>                                                                                                                | <p>Because the payload of SOAP messages is not encrypted, you can use monitoring tools to display the transferred data. Therefore, prevent the logging and tracing of SOAP messages in the SAP ERP system and in SAP Process Integration, or restrict the authorizations for the process integration monitoring tools accordingly. For more information, see <i>Protection of Sensitive Message Data</i> in the SAP Process Integration security guide on SAP Help Portal at <a href="https://help.sap.com/nwpi">help.sap.com/nwpi</a> ➔.</p> |
| 3    | <p>If all data packages are transferred, the SAP ERP system sends to SuccessFactors the session ID of the session to be ended.</p> <p>SuccessFactors sends a synchronous response confirming whether the session could be ended successfully.</p>                                                                                                                                                                                                                                                     | See step 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4    | <p>The SAP ERP system triggers a job to use an ad hoc report to retrieve the variable pay data from SuccessFactors.</p> <p>In a multiple step procedure, the SAP ERP system first sends a request. The synchronous response from SuccessFactors contains a task ID. The SAP ERP system then uses this task ID to periodically query the status of the request. When the request has been processed, the SAP ERP system asks for the result. The synchronous response from SuccessFactors consists</p> | See step 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Step | Description                                                                     | Security Measure |
|------|---------------------------------------------------------------------------------|------------------|
|      | of a binary character string that contains the result as a compressed CSV file. |                  |

## Security Aspects of Data Flow Using SAP HANA Cloud Integration

The following figure provides an overview of the data flow.

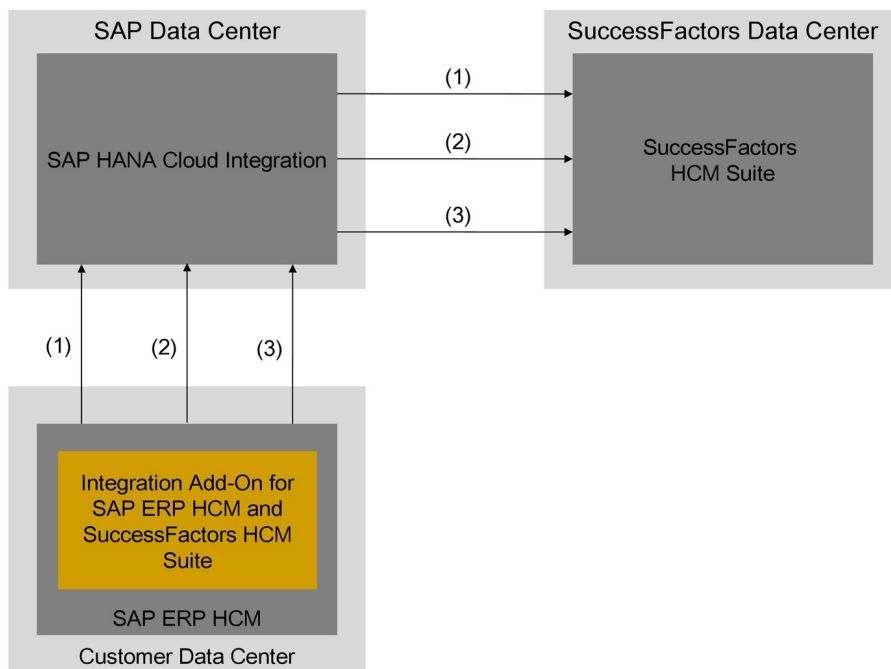


Figure 5: Data Flow Using SAP HANA Cloud Integration

The following table shows which security aspect to consider for each process step, and which security measure applies.

Table 13

| Step | Description                                                                                                                                                                                                                                                                                                                                                                      | Security Measure                                                                                                                                         |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | <p>The data extraction reports for employee history extract the data and generate the relevant data packages.</p> <p>The SAP ERP system sends the credentials information (enterprise ID, user ID and password) to SuccessFactors to open a session there.</p> <p>SuccessFactors sends a session ID as a synchronous response. This ID is used for subsequent communication.</p> | <p>Customizing for <i>Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite</i> ► <i>Basic Settings</i> ► <i>Settings for Middleware</i> ►</p> |

| Step | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Security Measure                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2    | <p>The SAP ERP system sends the session ID and data to be transferred to SuccessFactors, package by package.</p> <p>SuccessFactors sends a synchronous response confirming whether the data transfer was successful. If technical or business errors occurred, SuccessFactors sends relevant error codes and error messages, as well as information on which employee is affected.</p>                                                                                                                                                                                                | <p>SAP HANA Cloud Integration uses authentication and authorization mechanisms that are based on corresponding certificates. For more information, see SAP Library for SAP HANA Cloud Integration at <a href="https://help.sap.com/cloudintegration">help.sap.com/cloudintegration</a> .</p> <p>► <a href="#">Product Overview</a> ► <a href="#">Security</a> ►</p> |
| 3    | <p>If all data packages are transferred, the SAP ERP system sends to SuccessFactors the session ID of the session to be ended.</p> <p>SuccessFactors sends a synchronous response confirming whether the session could be ended successfully.</p>                                                                                                                                                                                                                                                                                                                                     | See step 2.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4    | <p>The SAP ERP system triggers a job to use an ad hoc report to retrieve the variable pay data from SuccessFactors.</p> <p>In a multiple step procedure, the SAP ERP system first sends a request. The synchronous response from SuccessFactors contains a task ID. The SAP ERP system then uses this task ID to periodically query the status of the request. When the request has been processed, the SAP ERP system asks for the result. The synchronous response from SuccessFactors consists of a binary character string that contains the result as a compressed CSV file.</p> | See step 2.                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 4.2 Authorizations

### Role and Authorization Concept

The integration add-on uses the authorization concept provided by SAP NetWeaver Application Server for ABAP. Therefore, the security recommendations and guidelines for authorizations in the following security guides also apply to the integration add-on:

- Security guide for SAP NetWeaver Application Server for ABAP

See SAP Help Portal at [help.sap.com/nw](https://help.sap.com/nw) .

- Security guide for SAP ERP

See SAP Help Portal at [help.sap.com/erp](https://help.sap.com/erp) .

## Standard Roles

The following table shows the security-relevant standard role that the integration add-on uses in the SAP ERP system. Use this role as a template for your own roles to assign the relevant authorizations to users in the SAP ERP system.

Table 14

| Single Role             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAP_HR_SFI_VARIABLE_PAY | <p>Comprises the authorization that the user requires to run the following applications:</p> <ul style="list-style-type: none"><li>• Extract Variable Pay Data from SAP ERP to SuccessFactors HCM Suite (transaction HRSFI_VARPAY_DATA)</li><li>• Import Metadata for Variable Pay from SuccessFactors HCM Suite (transaction HRSFI_VP_METADATA)</li><li>• Clean Up Internal Tables After Exporting Variable Pay Data (transaction HRSFI_VP_CLN_REPL)</li><li>• Clean Up Internal Tables After Importing and Activating Variable Pay Data (transaction HRSFI_VP_CLN_IMP)</li><li>• Web Dynpro application HRSFI_MONITORING_VARPAY</li></ul> |

For your own version of role SAP\_HR\_SFI\_VARIABLE\_PAY, also define the following infotype authorization for the authorization objects P\_ORGIN and P\_ORGINCON:

Read authorization for infotypes *Actions* (0000) and *Organizational Assignment* (0001)

## Business Add-In: Authorization Check for SuccessFactors Integration

You can use the Business Add-In *BAdI: Authorization Check for SFSF Integration* (HRSFI\_B\_AUTHORITY\_CHECK) to perform authorization checks for the data transferred from SuccessFactors to the SAP ERP system. For more information, navigate to Customizing for *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite* in your SAP ERP system and choose ► *Basic Settings* ► *BAdI: Authorization Check for SFSF Integration* .

## 4.3 Communication Channel Security

### Communication Channels for SAP Process Integration

The following table shows the communication channels that are used if you use SAP Process Integration.

Table 15

| Communication Path        | Protocol Used | Type of Data Transferred                      | Security Measure                                              |
|---------------------------|---------------|-----------------------------------------------|---------------------------------------------------------------|
| SAP ERP to SuccessFactors | SOAP messages | Credentials information for logging on to the | The credentials information is encrypted by storing it in the |

| Communication Path        | Protocol Used | Type of Data Transferred                                                       | Security Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|---------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |               | SuccessFactors system (enterprise ID, user and password)                       | secure storage of SAP NetWeaver Application Server for ABAP. For more information, see Customizing for the <i>Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite</i> ► <i>Basic Settings</i> ► <i>Settings for Middleware</i> ►.                                                                                                                                                                                                                                                                                                 |
| SAP ERP to SuccessFactors | SOAP messages | Employee history required for variable pay planning, variable pay for employee | Because the payload of SOAP messages is not encrypted, you can use monitoring tools to display the transferred data. Therefore, prevent the logging and tracing of SOAP messages in the SAP ERP system and in SAP Process Integration, or restrict the authorizations for the SAP Process Integration monitoring tools accordingly. For more information, see <i>Protection of Sensitive Message Data</i> in the security guide for SAP Process Integration on SAP Help Portal at <a href="http://help.sap.com/nwpi">help.sap.com/nwpi</a> ►. |

Communication with SuccessFactors must use HTTPS. SOAP connections are protected with Web services security. For more information, see the security guide for SAP NetWeaver on SAP Help Portal at [help.sap.com/nw\\_platform](http://help.sap.com/nw_platform) ► ► *<Release>* ►.

## Communication Channels for SAP HANA Cloud Integration

The following table shows the communication channels that are used if you use SAP HANA Cloud Integration.

Table 16

| Communication Path        | Protocol Used | Type of Data Transferred                                                                               | Security Measure                                                                                                                                                                                                                                |
|---------------------------|---------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SAP ERP to SuccessFactors | SOAP messages | Credentials information for logging on to the SuccessFactors system (enterprise ID, user and password) | The credentials information is encrypted by storing it in the secure storage of SAP NetWeaver Application Server for ABAP. For more information, see Customizing for the <i>Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite</i> |

| Communication Path        | Protocol Used | Type of Data Transferred                                                       | Security Measure                                                                                                                                                                                                                                        |
|---------------------------|---------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |               |                                                                                | ► <a href="#">Basic Settings</a> ► <a href="#">Settings for Middleware</a> ►                                                                                                                                                                            |
| SAP ERP to SuccessFactors | SOAP messages | Employee history required for variable pay planning, variable pay for employee | The communication uses HTTPS. For more information, see SAP Library for SAP HANA Cloud Integration at <a href="https://help.sap.com/cloudintegration">help.sap.com/cloudintegration</a> ► <a href="#">Product Overview</a> ► <a href="#">Security</a> ► |

Communication with SuccessFactors must use HTTPS. SOAP connections are protected with Web services security. For more information, see SAP Library for SAP HANA Cloud Integration at [help.sap.com/cloudintegration](https://help.sap.com/cloudintegration) ► [Product Overview](#) ► [Security](#) ►.

## 4.4 Enterprise Services Security

See the sections on enterprise services security in the following security guides:

- SAP NetWeaver Security Guide on SAP Help Portal at ► [help.sap.com/nw\\_platform](https://help.sap.com/nw_platform) ► [<Release>](#) ► [Security Information](#) ►
- SAP Process Integration Security Guide on SAP Help Portal at ► [help.sap.com/nwpi](https://help.sap.com/nwpi) ► [<Release>](#) ► [Security Information](#) ►

## 4.5 SFAPI/OData/SOAP User Access to SuccessFactors

Restrict the access of the technical users that SAP Process Integration uses to log on to the productive system of SuccessFactors (SFAPI/OData/SOAP users) as follows:

- Ensure that the SFAPI/OData/SOAP users **cannot** log on to the SuccessFactors system through the user interface.
- Assign the SFAPI/OData/SOAP users only the access rights that they actually need.
- Restrict the access of the SFAPI/OData/SOAP users to a particular IP address or a particular range of IP addresses.
- Ensure that the password for the SFAPI/OData/SOAP users does not expire.

For the specific authorization required in the SuccessFactors system for SuccessFactors APIs, see the SuccessFactors documentation on SAP Help Portal at [help.sap.com/cloud4hr](https://help.sap.com/cloud4hr) ►.

## 4.6 Deletion of Personnel Numbers and Extracted Employee Data

### Deletion of Personnel Numbers

You can use the report *Delete Personnel Numbers Completely* (report `RPUDELP`) to delete the personnel numbers of employees who have left the company if the retention periods for the employees' data have been reached. This report facilitates the deletion of personnel numbers in live systems. It uses the authorization object *Deletion of Personnel Numbers in Live Systems* (authorization object `P_DEL_PERN`). This authorization object is used by two roles: One role for requesting the deletion, and a second role for performing the deletion. These roles must be assigned to two different users (dual control principle). Report `RPUDELP` performs the actual deletion. However, you cannot run this report in the live system directly.

### Deletion of Extracted Employee Data

Report `RPUDELP` calls the Business Add-In (BAI) implementation *Delete Personnel Number from Variable Pay Integration Logs* (BAI implementation `HRSFI_DEL_VARPAY_LOG`) of *BAI for Personnel Number Delete Reports* (BAI `HRPAYXX_DELETE_PERNR`). BAI implementation `HRSFI_DEL_VARPAY_LOG` deletes the entries that are stored in the following log tables for the relevant personnel number:

- SuccessFactors: Variable Pay Log Table for Errors (table `HRSFI_D_VARPY_ER`)
- SuccessFactors: Variable Pay Log Table for Transferred Data (table `HRSFI_D_VARPY_EX`)
- Imported Variable Pay Data (table `HRSFI_D_VARPY_IM`)
- Variable Pay Log Table for Status Information (table `HRSFI_D_VARPY_ST`)

## 5 Configuration

### 5.1 Configuration of Session Handling for SAP Process Integration

For the integration using middleware, information that is not contained in the payload of the SOAP messages needs to be transferred using a cookie. SAP Process Integration receives the cookies on login, reads them, processes them, and sends them to the back-end system. For each following service call, the back-end system resends this content. SAP Process Integration turns this back into cookies. The cookies run in HyperText Transfer Protocol (HTTP). To facilitate access to the HTTP header, the integration add-on uses communication adapters with the SOAP engine Apache eXtensible Interaction System (Apache Axis). Therefore, you need to configure a session handling using an axis adapter for the services involved.



#### Example

The SAP ERP system sends the credentials information (enterprise ID, user ID, and password) through SAP Process Integration to SuccessFactors to open a session there. SuccessFactors uses a cookie to send a session ID that is used for subsequent communication as a synchronous response. In the following calls, this session ID also needs to be transferred with a cookie. Therefore, to access the HTTP header, these calls need a corresponding session handling.



#### Note

For more information about the axis framework, see SAP Note [1039369](#) and look for *Using the Axis Framework in the SOAP Adapter* in the SAP NetWeaver documentation at [help.sap.com](http://help.sap.com).

### Procedure

The following procedure describes the configuration of the session handling using the session ID as an example:

1. In Enterprise Services Repository, make the following settings for the ESR Content of the integration add-on (software component version SFIHCM01 600):
  1. In the outbound service interfaces, include an element for the session ID, for example, `sessionid` of the type `string`.
  2. Create a message mapping and make the following settings for this:
    1. Create a user-defined function (UDF) with the following code (also see the graphic):



#### Syntax

```
public String setHTTPHeaderCookies(String contentString, Container
container) throws StreamTransformationException{
String namespace = "http://sap.com/xi/System/HTTP";
String dynConfKeyString = "Cookie";
DynamicConfiguration dynConf;
DynamicConfigurationKey dynConfKey;
```

```

/* Write cookie content to dynamic configuration */
dynConf =(DynamicConfiguration)
container.getTransformationParameters().get(StreamTransformationConstants.D
YNAMIC_CONFIGURATION);
if (dynConf != null) {
dynConfKey = DynamicConfigurationKey.create(namespace, dynConfKeyString);
dynConf.put(dynConfKey, contentString);
}
return "ok";
}

```

```

public String setHeaderParameter(String paramValue, String paramName, String paramNamespace, Container container) throws StreamTransformationException {
    DynamicConfiguration conf =(DynamicConfiguration) container.getTransformationParameters().get(StreamTransformationConstants.DYNAMIC_CONFIGURATION);
    if (conf != null) {
        DynamicConfigurationKey key =DynamicConfigurationKey.create(paramNamespace, paramName);
        conf.put(key, paramValue);
    }
    return paramValue;
}

```

Figure 6: Code for User-Defined Function

2. For the highest node in the message mapping structure, define a mapping as follows:
  - Mapping for services with more than one node in the target message:  
Field (for example, sessionId) > function Local .setHTTPHeaderCookies > field (for example, getJobResultEmbedded)

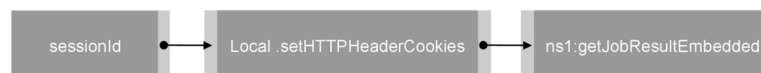


Figure 7: Example: Mapping for Services with More Than One Node in the Target Message

- Mapping for services with one node in the target message  
Field (for example, sessionId) > function Local .setHTTPHeaderCookies > function FixValues > function createtIf > field (for example, logout)  
The function FixValues must have the following properties:
  - Default value: *true*
  - Response to failed lookup: *Use Default Value*
 The function createtIf ensures that a message is generated.

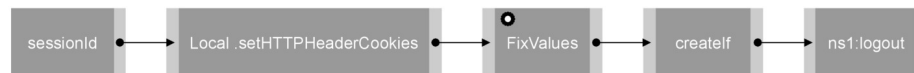


Figure 8: Example: Mapping for Services with One Node in the Target Message

3. Create an operation mapping with this message mapping.
2. In the Integration Builder, make the following settings for the calls that use the configuration defined in step 1 for the session ID:
  1. For your business system or your business component or business service, create a communication channel.
  2. Make the following settings for the communication channel:
    - *Parameter* tab:
      - *Adaptor Type*: SOAP / <Release of your SAP Process Integration system, for example, SAP BASIS 702>
      - *Transport Log*: HTTP (Axis)
      - *URL*: According to your requirements
      - *Keep XI Header*: Indicator must be set
    - *Module* tab:
      - Add the following entries under *Processing Sequence*:

Table 17

| Number | Module Name                  | Type                  | Module Key |
|--------|------------------------------|-----------------------|------------|
| 3      | AF_Adapters/axis/HandlerBean | Local Enterprise Bean | dcreq      |
| 4      | AF_Adapters/axis/HandlerBean | Local Enterprise Bean | rem        |

### **i** Note

Adhere to this exact sequence.

- Use the following communication channel templates to make the settings under *Module Configuration*:
  - Configure the communication channel for the login service: Template *SFSF\_Soap\_Adapter\_Axis\_Login\_Response*
  - Configure the communication channel for all other services: Template *SFSF\_Soap\_Adapter\_Axis*

If you use a proxy, enter values for the following parameters for both communication channels to suit your requirements:

Table 18

| Module Key | Parameter Name |
|------------|----------------|
| trp        | http.proxyHost |
| trp        | http.proxyPort |

In the standard system, the parameters are contained in the communication channel template. If you do not use a proxy, remove this parameter.



### Caution

If you want to use this parameter, you need to ensure that SAP Note [1578675](#) is installed in your SAP Process Integration system.

The communication channel templates are in the namespace `http://sap.com/xi/SFIHCM01/IC`.

## 5.2 Mapping of SuccessFactors Fields for Variable Pay to SAP ERP Employee Data

You define which employee history data you want to extract from the SAP ERP system in Customizing for the *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite* under *Integration Scenario for Compensation Data*.

## 5.3 Customizing for Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite

You make the Customizing settings for the integration add-on in the SAP ERP system in ► *Customizing for Personnel Management* ► *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite* ►.

## 5.4 Settings for Employees in Concurrent or Global Employment

For employees who are in concurrent or global employment and therefore have more than one personnel assignment (that is, personnel number), we recommend specifying one of these personnel numbers as the main assignment. To do so, create a record of infotype *Main Personnel Assignment* (0712) with subtype *SuccessFactors* (SFSF) for the relevant employee. If an employee has more than one personnel number, but **no** main assignment has been defined for this employee, the following reports select one of the personnel numbers for the extraction of data:

- Sync Employee Data with SuccessFactors with Delta and Inactive Logic (report RH\_SFI\_SYNCHRONIZE\_EMPL\_DATA)

- 
- Extract Employee Data for SuccessFactors (report RH\_SFI\_TRIGGER\_EMPL\_DATA\_REPL)
  - Sync Employee Data with SuccessFactors in Pre-Hire Period (report RH\_SFI\_PREHIRE\_EMPL\_DATA)

Alternatively, you can use the Business Add-In (BAI) *Determine the Leading Assignment for a Central Person* (BAI HRSFI\_B\_LEADING\_CONTRACT) to define the main personnel assignment. For more information, see Customizing for the *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite* ► *Basic Settings* ► *BAI: Determine the Leading Assignment for a Central Person* ►.

## 6 Operation

### 6.1 Data Consistency

To ensure data consistency between SAP ERP HCM and SuccessFactors, please note the following:

- Be sure to use the same language for each data extraction.
- Do not change any data in the SuccessFactors staging area for variable pay. The data is overwritten with incoming data from SAP ERP HCM.

### 6.2 Periodic Tasks

#### Importing Metadata from SuccessFactors

Whenever you create or change background objects for variable pay in SuccessFactors, you must import them to the SAP ERP system. In the SAP ERP system, you assign the imported objects to field sets, which you use to map SuccessFactors fields to SAP ERP fields. You use this mapping to specify which field sets you want to use for which SuccessFactors data.

In the **Customizing system**, carry out the following activities in Customizing for the *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite*:

1. In the Customizing activity *Maintain Variable Pay Program Information*, store the details related to the variable pay program.
2. In the Customizing activity *Import Metadata from SuccessFactors HCM Suite*, transfer the background element field list for the variable pay program from SuccessFactors to SAP ERP HCM.
3. Carry out the Customizing activity *Map SuccessFactors HCM Suite Fields and SAP ERP HCM Fields*.

#### **i** Note

Only the field sets and field mappings are transported. The mappings of SuccessFactors objects to field sets are not transported.

In the **follow-on systems**, carry out the following Customizing activity to transfer the background element field list for the variable pay program from SuccessFactors to SAP ERP HCM:

► *Integration Add-On for SAP ERP HCM and SuccessFactors HCM Suite* ► *Integration Scenario for Variable Pay* ► *Basic Settings* ► *Import Metadata from SuccessFactors HCM Suite* ►

#### Data Extraction in SAP ERP HCM

Schedule the following report as a regular background job:

Report *Extract Variable Pay Data from SAP ERP to SuccessFactors HCM Suite* (transaction HRSFI\_VARPAY\_DATA)

#### Importing Variable Pay Data to SAP ERP HCM

After the variable pay process is completed in SuccessFactors, run the report *Import Variable Pay Data for Employee* (transaction HRSFI\_VP\_IMP\_DATA). This data is stored in the staging area in SAP ERP HCM. You must

---

explicitly activate this data using report *Activate Variable Pay Data for Employee* (transaction HRSFI\_VP\_ACT\_DATA). Once activated, this data is saved to the employee master data.

### Error Monitoring and Correction

Using the Web Dynpro application HRSFI\_MONITORING\_VARPAY for monitoring the transfer of data between SAP ERP HCM and variable pay in SuccessFactors, regularly check for and resolve any errors during the integration. The personnel numbers concerned are automatically selected and processed again the next time the data extraction report is run with the same variant.

Using transaction SLG1, analyze the application log for object SFSF\_INTEGR\_BIZX and subobject VARPAY-EXPORT and check the messages created by the reports.

## 6.3 Problem Messages

When creating a customer message for the integration add-on, use the component PA-SFI-TM.

## 7 Upgrade

The following table shows the recommended sequence of steps to upgrade the integration add-on from 2.0 to 3.0 SP02 for the integration of variable pay.

Table 19

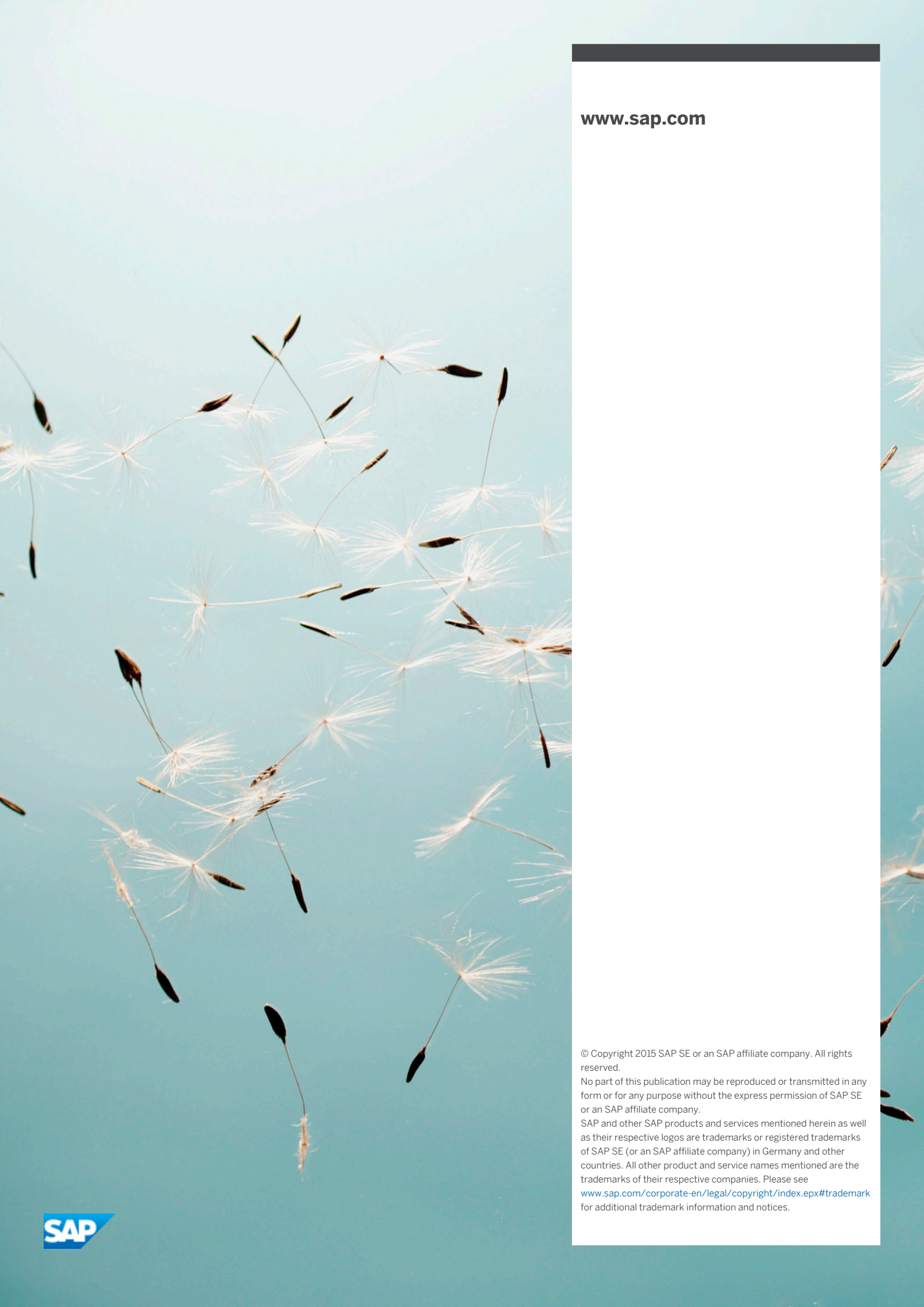
| Step                                                        | Action                                                                                                                                                                                   | Comments                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System Instance 1 (SAP ERP)                                 |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                           |
| 1                                                           | Install the following software components and their support packs: <ul style="list-style-type: none"><li>SFIHCM01 600 SP09</li><li>SFIHCM02 600 SP04</li><li>SFIHCM03 600 SP02</li></ul> |                                                                                                                                                                                                                                                                                                                                                                           |
| System Instance 2 (SAP Process Integration)                 |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                           |
| 2                                                           | Make sure that SAP Process Integration 7.11 SP12 or above is integrated into your system landscape.<br>Install SAP Process Integration connectivity add-on 1.0 SP02.                     | Your SAP Process Integration system must have the support pack level stated in SAP Note <a href="#">1838921</a>  .<br>As an alternative to SAP Process Integration, you can use SAP HANA Cloud Integration (see system instance 4). In this case, you do not need system instance 2. |
| 3                                                           | Install the ESR Content package for the following software component versions: <ul style="list-style-type: none"><li>SFIHCM01 600</li><li>SFIHCM02 600</li><li>SFIHCM03 600</li></ul>    |                                                                                                                                                                                                                                                                                                                                                                           |
| System Instance 3 (External SAP Process Integration in DMZ) |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                           |
| 4                                                           | Make sure that SAP Process Integration 7.11 SP12 or above is installed in the DMZ.<br>Install SAP Process Integration connectivity add-on 1.0 SP02.                                      | This step is optional. You only need it if you use a process integration system in the DMZ.<br>Your SAP Process Integration system must have the support pack level stated in SAP Note <a href="#">1838921</a>  .                                                                    |
| 5                                                           | Install the ESR Content package for the following software component versions: <ul style="list-style-type: none"><li>SFIHCM01 600</li><li>SFIHCM02 600</li><li>SFIHCM03 600</li></ul>    |                                                                                                                                                                                                                                                                                                                                                                           |
| System Instance 4 (SAP HANA Cloud Integration)              |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                           |

| Step                               | Action                                                                                                                                                           | Comments                                                                                                                                                       |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6                                  | Ask SAP Cloud Managed Services to configure the SAP HANA Cloud Integration infrastructure                                                                        | As an alternative to SAP HANA Cloud Integration, you can use SAP Process Integration (see system instance 2). In this case, you do not need system instance 4. |
| 7                                  | SAP Cloud Managed Services provides the integration content for SAP HANA Cloud Integration in your customer-specific tenant.                                     |                                                                                                                                                                |
| 8                                  | Ask SAP Cloud Professional Services to modify the integration content for SAP HANA Cloud Integration in your customer-specific tenant to suit your requirements. |                                                                                                                                                                |
| System Instance 5 (SuccessFactors) |                                                                                                                                                                  |                                                                                                                                                                |
| 9                                  | Ensure that SuccessFactors HCM Suite is the Q1 2015 release or higher.                                                                                           | The APIs for the following objects are available as of the November 2014 release: USER, background objects.                                                    |

# Typographic Conventions

Table 20

| Example                                                                                                                        | Description                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <Example>                                                                                                                      | Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, "Enter your <User Name>".                                                                                                                                                                |
| ► Example ► Example ▢                                                                                                          | Arrows separating the parts of a navigation path, for example, menu options                                                                                                                                                                                                                                                      |
| <b>Example</b>                                                                                                                 | Emphasized words or expressions                                                                                                                                                                                                                                                                                                  |
| <b>Example</b>                                                                                                                 | Words or characters that you enter in the system exactly as they appear in the documentation                                                                                                                                                                                                                                     |
| <a href="http://www.sap.com">www.sap.com</a>  | Textual cross-references to an internet address                                                                                                                                                                                                                                                                                  |
| <a href="#">/example</a>                                                                                                       | Quicklinks added to the internet address of a homepage to enable quick access to specific content on the Web                                                                                                                                                                                                                     |
| <a href="#">123456</a>                       | Hyperlink to an SAP Note, for example, SAP Note <a href="#">123456</a>                                                                                                                                                                       |
| <i>Example</i>                                                                                                                 | <ul style="list-style-type: none"> <li>Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options.</li> <li>Cross-references to other documentation or published works</li> </ul>                                                                    |
| Example                                                                                                                        | <ul style="list-style-type: none"> <li>Output on the screen following a user action, for example, messages</li> <li>Source code or syntax quoted directly from a program</li> <li>File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools</li> </ul> |
| EXAMPLE                                                                                                                        | Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE                                                                                         |
| <span>EXAMPLE</span>                                                                                                           | Keys on the keyboard                                                                                                                                                                                                                                                                                                             |



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