Slide 1

Capgemini

HR Part II

Lesson 05: Connectors

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Slide 2

SuccessFactors Learning - Connectors

Agenda

- Overview
- The Configuration Workshop & Workbook
- Creating the Input File
- Configuring the Connectors
- Viewing Reports & Errors

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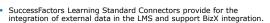
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Slide 3

Overview

What are the Connectors in the LMS and for what we use it for?

- Connectors are used to import data into the LMS.
- Each connector has it's own specific data structure, so each input data file must match a predefined format.
- There are different types of connectors offered.
- Requires license – All are Free except OLSA Connector that it was substitute by the standard Skillsoft connector in b1508.
- Competency Connector SF has his own connector workbook and it is not found in the standard connector workbook.
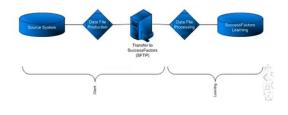
Connectors
Admin Connector
Alternate Job Code Connector
Competency Connector - SF
Curriculum Connector
Domain Connector
Item Connector
Skillsoft Connector
Job Code Connector
Learning History Connector
Organization Connector
Organization Owner Connector
Position Connector
Registration Connector
Scheduled Offering Connector
User Connector
User Connector - Federal
User Connector - SF
User Compensation Connector

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Slide 4

Standard Connectors

- SuccessFactors Learning Standard Connectors provide for the integration of external data in the LMS and support BizX integration.
- Standard Connectors are based on a standard producer-consumer model.

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Slide 5

Standard Learning Connectors

These are the standard Connectors, then the customers could have their own custom connectors made by Professional Services.

Following Standard Connectors are part of the learning product.

- Admin
- Alternate Job Code
- Competency – SF
- Curriculum
- Domain
- Item
- Job Code
- Learning History

- Organization
- Organization Owner
- Position
- Registration
- Scheduled Offering
- User
- User - Federal
- User - SF

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Slide 6

Different connectors types inside LMS

Connector	Description
SF - User Connector	Loads and updates users in an integrated environment from the BizX suite. This connector is used solely for integrated environments.
User Connector	Loads new users and updates existing records. Capable of creating references, such as domains.
Federal User Connector	Contains all values as the standard user connector, but adds additional fields required for Federal agencies.
Organization Connector	Creates organization references and updates to existing organization references. This connector has to be populated manually or by a third party solution, there is no standard integration with BizX.
Organization Dashboard Owner Connector	This connector ads organization owners to an organization
Job Code Connector	Formerly known as job position, the job code connector creates new and updates existing job code values, such as domain, if curricula should be automatically assigned, and more

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Different connectors types inside LMS

Connector	Description
Alternate Job Code Connector	This connector adds or removes additional Job Code reference to users
Account Code Connector	This connector adds or removes fully identified Account Code references. In addition to keeping basic account code references updated, a fully identified account code also enables posting chargebacks to SAP Financials. A fully identified account code contains an ID, the account code type, and the company code
Learning History Connector	Records item-based completions for existing users' completion of existing item records. Both the user and the item record must exist within the system for the record to be accepted. The learning history connector is most commonly used for one-time data migrations.
Item Connector	Creates new items in SuccessFactors Learning and updates existing records. It is most common for the item connector to be used for one-time data migrations, rather than an ongoing feed.
Curriculum Connector	Similar to Item Connector, this connector adds new curricula and updates to existing curricula.

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Different connectors types inside LMS

Connector	Description
Scheduled Offering Connector	Schedules instances of existing item records and is typically used for one-time data migrations.
Scheduled Registration Connector	Updates user registrations in existing scheduled offerings. Both the user and scheduled offering must already exist in the system. This connector is typically used for one-time data migrations.
Administrator Connector	Adds Administrators to the LMS.
Domain Connector	Loads new domains, updates existing records, and manages the hierarchical relationship of domains
Competency Connector	Creates competencies and associated rating scales in in the LMS. Records are created in the BizX environment and loaded to the LMS using the connector.
Skillsoft Connector	For customers who are using Skillsoft knowledge center, the Skillsoft connector will bring those courses into SAP SuccessFactors Learning as learning items. By migrating to the Skillsoft connector you gain the support of the product itself, including enhancements and bug fixes.

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User Connectors

- There are three types of User Connectors – Standard, BizX and Federal
- HRIS data is used to create and update user accounts.
- Federal User Connector used in US Federal space to load PII required by Federal reporting.
- Mandatory Fields
- NOTACTIVE
- USER_ID
- User to both migrate and update data.

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Domain Connector

- Maintains Domain Relationships
- Large deployments may require
- When used to maintain structure, must be sequenced in advance of User Connector

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Organization Connector

- Updates organizational data and hierarchical structure
- Data traditionally loaded from HRIS
- Organizational Account Data and Contact Information Updated
- Also used for Organizational Ownership

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Learning Connectors

- Item
  - Normally used for migration
  - Often used for integration with a document management system
- Scheduled Offering
  - Normally used for migration
  - Items must exist first
- Registration
  - Normally used for migration
  - Items and Scheduled Offerings must exist first
- Learning History
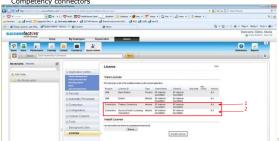 - Normally used for migration
  - Items must exist first

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BizX Connectors

- BizX User and BizX Competency

- Used to load user and competency data from BizX

- Input file are created by scheduled jobs in SuccessFactors Provisioning

- Additional fields can be configured for LMS use in SuccessFactors XML

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Connector Process

- 1. Complete configuration workshop and documentation
  - Ensure appropriate licenses are installed in learning

- 2. Configure staging environment
  - Connector Properties
  - Provisioning
  - Schedule Connectors

- 3. Obtain data file, place on FTP, test in staging
  - Review testing reports and logs
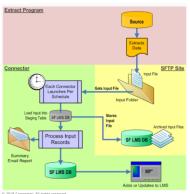 - Review with client results of connectors

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Licenses

- The customer's instance should have the SuccessFactors Learning Connectors license which needs to be installed in order to run and schedule Connectors.
- Reach out to Support Engineers with authorization to generate and provide the license which needs to be installed in the instance by the customer.
- 1- For the Standard Connectors
- 2- For the SF Connectors, those that are integrated, i.e.; SF User and Competency connectors

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Connector Processing

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Learning Connector Setup

Workshop and Workbook

- Connector Workbooks are documents that capture overall connector behavior. They contain a list of mandatory and optional fields to include in the connector input files.
- Connector Workbooks provide all the necessary details needed to properly configure the input data file. If an exception is being reported in the detail summary report after the connector has ran, the best option is to reference the Workbook to see what values are allowed. Connector Workbooks can be found on the SAP Marketplace and SAP Help HR.
- Workbooks contain:
  - Connector Overview
  - Detailed Field Listing
  - Sample File Format
  - Business Rules
- Connector workshop(s) is run separate from the overall workshop – technical resources required
- A draft configuration workbook is the output of the workshop

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Creating Data Input Files

- Customer Responsibility

- Work with systems managers to develop appropriate export and automate placement on FTP

- Never use Excel to view or create input files

- All connector input files are pipe (|) delimited text files, with the row delimiter of !##! by default

- Connectors are position based with additional support for header-based input.

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Input File Format

The input file produced by customers must have the following characteristics in order to be processed correctly by the SuccessFactors Connector:

- Character Set: SuccessFactors supports only the UTF-8 Character Set in the input file.
- Column delimiter character: Will always be a pipe ("|") character out-of-the-box but is configurable via appropriate connector property.
- Row delimiter character: !##!
- Column Headers: Must be included as the first row of the input file.
- Order of columns: The connector will be set to "header" method for processing the input file. This means that the order of the headers can vary since the connector reads this header row and uses it to map data to the connector fields.
- Null values (empty fields): All columns indicated in the header row must be supplied in the input file data. You can indicate null values by using two consecutive pipes.

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- Record Rejections

The standard connector and imports will reject a record (not the entire input file) if any of the following conditions occur:

The input file contains a null value for a field that cannot be null. Check the 'Req' column in the data mapping tables which indicates whether a value for a field is required.

The input file contains a value that does not comply with the data type for that input file column.
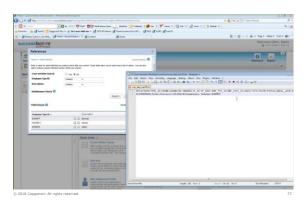
The field input value is a reference but the value does not match the reference table.

- Null Values

Null values in the input file are accepted by a standard connector unless the field is a required field. The connectors do not update fields when the input file passes a null value.

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Connector Licensing and Control

- Connectors require a non-cost license to ensure that the appropriate services are acquired.
- BizX Connectors require an additional, separate license
- Scheduling of connectors requires the ALL_CONNECTOR role and should only be assigned to consultants and partners
- Admins without the ALL_CONNECTOR workflows can still see scheduling and report information

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Building a Sample Input File

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Sample Input File:

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Upload Sample User Connector Input File

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Upload Sample User Connector Input File

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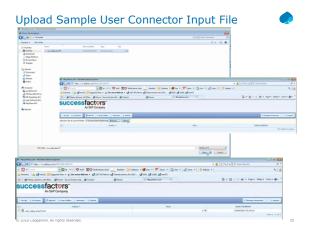
Standard Connector Properties
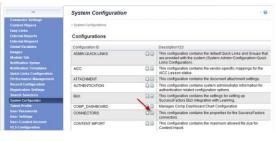
- Properties file contains basic connector setting that are global, as well as connector specific settings
- Basic Settings:
  - File/data format
  - FTP
  - Reporting options
  - PGP keys
  - Connector Specific business rules and data mapping

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Connectors Configuration

Standard Connectors Configuration

Once you're in the LMS Admin site, navigate to System Admin>Configuration>System Configuration>Connectors
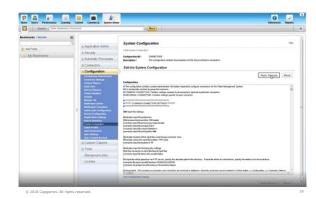
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Connectors Configuration

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Connectors Configuration

For Integrated connectors, /FEED/UPLOAD is the default upload directory.

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Connectors Configuration

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Connectors Mapping

Connectors Mapping is covered in this lesson later.

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Connector File Locations and Encryption Settings

When you implement connectors to import data to SAP SuccessFactors Learning, you set the locations where the connector can find its input file and you set the encryption.

Set the file locations and encryption setting in **CONNECTORS**. Go to **System Administration-> Configuration-> System Configuration** to edit it.

Connector Data File Properties

Data files are the delimited files that contain the data for the connector. Except for the tenant suffix (described in the table below), the names of the files are fixed and described in each connector definition. For example, the organization connector data file is organization_data_<tenant suffix>.txt. Check the connector definition documentation for the exact name for your connector.

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Connector Data File Properties

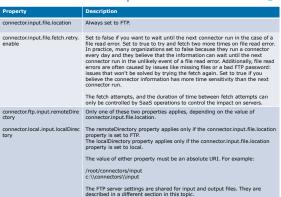| Property	Description
connector.input.file.location	Always set to FTP.
connector.input.file.fetch.retry.enable	Set to false if you want to wait until the next connector run in the case of a file read error. Set to true to try and fetch two more times on file read error. In practice, many organizations set to false because they run a connector every day and they believe that the information can wait until the next connector run in the unlikely event of a file read error. Additionally, file read errors are often caused by issues like missing files or a bad FTP password: issues that won't be solved by trying the fetch again. Set to true if you believe the connector information has more time sensitivity than the next connector run. The fetch attempts, and the duration of time between fetch attempts can only be controlled by SaaS operations to control the impact on servers.
connector.ftp.input.remoteDirectory	Only one of these two properties applies, depending on the value of connector.input.file.location.
connector.local.input.localDirectory	The remoteDirectory property applies only if the connector.input.file.location property is set to FTP. The localDirectory property applies only if the connector.input.file.location property is set to local. The value of either property must be an absolute URI. For example: /root/connectors/input c:\\connectors\\input The FTP server settings are shared for input and output files. They are described in a different section in this topic.

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Connector Data File Properties

Property	Description
connector.input.file.name.tenant.suffix.enable	Together, these properties control how the system identifies a SaaS customer's connector data file, so they apply only to SaaS customer.
connector.input.file.name.tenant.suffix.override	If you are a SaaS customer, set the enable property to true. connector.input.file.name.tenant.suffix.enable=true connector.input.file.name.tenant.suffix.override=
	You then end the connector file as _<your tenant ID>.txt. For example, if your tenant ID is t1, then you set your file name to something like organization_data_t1.txt: The text "organization_data" is specified as the name for the organization connector. You add "_t1" to the name because that is your tenant ID. Finally, the file type is text, so the name ends with ".txt" for all connector data files.
	If you set a value for the override property, then you use that value instead of your tenant ID. For example, if you supply the value ABC: connector.input.file.name.tenant.suffix.enable=true connector.input.file.name.tenant.suffix.override=ABC
	In this scenario, you add _ABC.txt instead of your tenant ID. We recommend that you use a tenant ID to make troubleshooting easier through a more consistent cross-customer approach in the SaaS environment.

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Connector Data File Properties

Property	Description
connector.pgp.enabled	If you encrypt the data file, set to true so that the system can decrypt the files. If this setting is set to true, it will impact all connectors. If the connector does not find a .pgp file, it will still process other file types such as .csv, .txt., and .zip. Encrypted files are common when they contain sensitive information, like user identification numbers.
connector.pgp.public.keyring	The connector.pgp.public.keyring property value is the public keyring used by the system to decrypt the encrypted files. The keyring must be provided to the party that is generating the PGP encrypted file so that the encryption and decryption match. The keyring value is a base64 encoding of the binary keyring file. Use the Linux base64 command or other tool for decoding the property value to obtain the public keyring file that needs to be provided to both ends of the transaction. The secret keyring, passphrase, and extension are standard PGP encryption properties. The extension is usually .pgp.
connector.pgp.secret.keyring	
connector.pgp.passphrase	
connector.pgp.file.extension	

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Connector FTP Properties

These properties are shared by both the data and log files: they are where the connector gets the data file and where (when enabled) it delivers a log file.

Property	Description
connector.ftp.protocol	The protocol used by the FTP server. Valid values are ftpand sftp.
connector.ftp.server	The name of the FTP server. For example, ftp.acme.internal.
connector.ftp.port	The port that the FTP server listens to. For example, 22.
connector.ftp.userID	The user ID on the FTP server that owns this process. When specifying the user, make sure that the user has access to the directors where the system reads data files and writes log files.
connector.ftp.password	The password for the user. The password is clear text until you save the CONNECTOR file. On save, the system encrypts the value.

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FTP Connection Test for Learning Connectors

Objectives:

Configure FTP connection test for SAP SuccessFactorsLearning connectors

FTP Connection Test –Learning Connectors
With this feature, admins will be able to test:

- FTP connectivity
- Username/password
- Input file read access
- Report write access from any connector APM page

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FTP Connection Test –Configuration

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FTP Connection Test –Configuration

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FTP Connection Test –Learning Connectors

Configuration Type: Admin Opt-In

Set up FTP parameters:
1. Navigate to **System Admin**.
2. Select the **Configuration** tab.
3. Select the **System Configuration** menu option
4. Select **CONNECTORS**.
5. Configure FTP Connection Settings.
6. Click [Test FTP Connection] on any page under **System Admin > Connectors**.

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Scheduling Connectors

How to set up or edit connector scheduling ?

1. In the Admin side:
2. Go to System Admin->Connector
3. Choose the relevant connector you wish to schedule or edit the scheduling
4. Check the option "Schedule this process" if it is not yet checked
5. You can select for the connector to run:
   - every number of hours
   - daily (setting the time of the day)
   - weekly (setting the day of the week)
   - monthly (setting the day of the month)
6. Configure also the time of the day and the timezone for the job to be scheduled
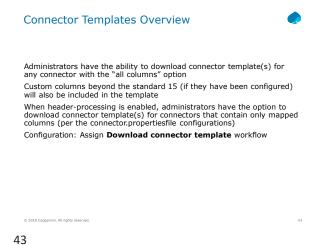7. Click on Apply Changes

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SAP SuccessFactors Learning Connector Templates

Objectives

- Explain the connector template feature
- Assign connector template permissions
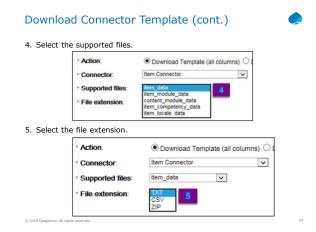- Identify the steps necessary to download connector templates

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Connector Templates Overview

Administrators have the ability to download connector template(s) for any connector with the "all columns" option

Custom columns beyond the standard 15 (if they have been configured) will also be included in the template

When header-processing is enabled, administrators have the option to download connector template(s) for connectors that contain only mapped columns (per the connector.propertiesfile configurations)

Configuration: Assign **Download connector template** workflow

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Download Connector Template

1. Navigate to **System Admin > Tools > Download Connector Template**.
2. Select the template type for download.
3. Select the connector.

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Download Connector Template (cont.)

4. Select the supported files.

5. Select the file extension.

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User and Competency Connectors

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SAP SuccessFactors Learning Connectors – Mappings and Transformations

Connectors: What is the process?

High Level Overview of Connector Process

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SAP SuccessFactors Learning Connectors – Mappings and Transformations

Detail view of a connector overview:

Notes:
1 - File will be remove from FTP drive once LMS picks it up.
2 - *Must be configured in connector properties in LMS System Configuration

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Mapping and Transforming Columns
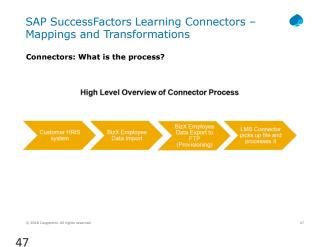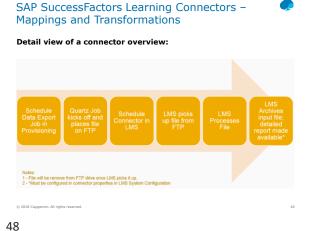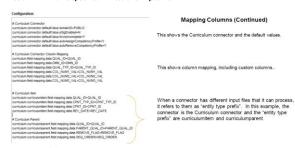
Connectors: Mapping Columns

All mapping follows this format:

<Connector Prefix>.<Entity Type Prefix (if any)>.field.mapping.data. <LMS DB column>=<name specified in header of input file>

Mapping Columns (Continued)

This shows the Curriculum connector and the default values.

This shows column mapping, including custom columns..

When a connector has different input files that it can process, it refers to them as "entity type prefix". In this example, the connector is the Curriculum connector and the "entity type prefix" are curriculumitem and curriculumparent

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Connectors: Mapping Columns

<Connector Prefix>.<EntityTypePrefix (if any)>.field.mapping.data.<LMS DB column>=<input file header>

Example of column mapping:

curriculum.curriculumitem.field.mapping.data.QUAL_ID=QUAL_ID

curriculum.curriculumparent.field.mapping.data.QUAL_ID=QUAL_ID

sfuser.field.mapping.data.FULLTIME=IS-FULLTIME-EMPLOYEE

So basically when a connector has different input files that it can process, it refers to them as "entity type prefix". In this case, the connector is the Curriculum connector.

Note: Curriculum used to be called Qualification, hence "QUAL_ID" is the Curriculum ID

Example of column mapping:

curriculum.curriculumitem.field.mapping.data.QUAL_ID=QUAL_ID

<connector prefix> <entity type prefix> field.mapping.data <LMS DB Column>=<name specified in header of input file>

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Connectors: Mapping Columns

Each connector contains 15 Standard custom columns. They follow the same mapping structure:

<Connector Prefix>.field.mapping.data.<LMS DB column>=<customer's DB value; specified in first row of headers in input file>

sfuser.field.mapping.data.COL_NUM6_VAL=<customer's DB value>, which would be in the first row of headers in the input file.

```
sfuser.field.mapping.data.COL_NUM1_VAL=FAVORITESONG
sfuser.field.mapping.data.COL_NUM2_VAL=FAVORITEMOVIE
sfuser.field.mapping.data.COL_NUM3_VAL=TSHIRTSIZE
```

To add **additional** custom columns, you can use this mapping format:

<connector prefix>.field.customcolumn.<field>=<column_number>

where *field* is the header value that will appear in the input file and *column_number* is the user custom column where the value will be stored.

A secondary file called "Extended User File" can be ran to specify custom columns to feed.

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Connectors: Transformation Rules

There are advanced configurations that are not covered in this guide (ie., Transform rules that allow the data that the customer submits to be transformed to something that the LMS will accept/understand), this is covered on this document. However, below is an example.

The LMS Connector has what we call "transformation properties" that essentially help address mismatches. Locale is one example. The out-of-the-box configuration, transforms incoming "en" and "en_US" (from BizX–Input file) values to English (corresponding locale value in the LMS):

sfuser.field.transform.data.LOCALE.**English=en,en_US**

Similarly, if you want to transform a BizX"EST" timezonevalue to "America/New_York" (corresponding LMS value), you would specify a setting such as:

sfuser.field.transform.data.TIMEZONE.America/New_York=EST

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User Data Feed from BizX

SAP SuccessFactors Learning Integrated User Connector

Objectives

Schedule a recurring employee export in Provisioning

Schedule the SAP SuccessFactors Learning *User Connector - SF*

Verify users were added into SAP SuccessFactors Learning from SAP SuccessFactors HCM

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SAP SuccessFactors HCM (BizX) Employee Export

Create a new job:

1. Log in to Provisioning.
2. Select the Company ID.
3. Navigate to **Manage Scheduled Jobs**
4. Click **Create New Job**

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SAP SuccessFactors HCM (BizX) Employee Export

Job Definition

1. Enter a Job Name
2. Select a Job Owner (e.g., admin)
3. Select Employee Export Job Type
4. Select **UTF-8 Character Encoding**, as appropriate

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SAP SuccessFactors HCM Employee Export

Server Access

1. Enter Host Address of the FTP Server
2. Enter FTP Login name and password
3. Check SFTP Protocol

Test Connection and Test File Put Permission –this confirms the Provisioning can assess the FTP server and write to it

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SAP SuccessFactors HCM Employee Export

File Access

1. Enter the FTP File Path
- This is the directory to save the Employee Export test file
- This path is case sensitive
2. Enter the file name
- The suffix must match the Connector Properties configuration in SF Learning
3. Do not select a Date Format
4. Choose File Encryption

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SAP SuccessFactors HCM Employee Export

Job Occurrence & Notification

1. Select Recurring
2. Select Daily and the time to run the job
3. Choose a Start Date (must be in the future)
4. Choose an End Date (if applicable)
5. Select any additional e-mail recipients and whether to send an email when the job starts
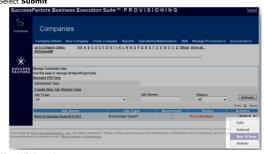6. Save the recurring job

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SAP SuccessFactors HCM Employee Export

Manage Scheduled Job

Actions drop-down menu
- Select **Run Job Now**
- Select **Submit**

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SAP SuccessFactors HCM Employee Export

Verify the Employee Export File

1. Open an FTP Client (you can also use Internet Explorer)
2. Log in to the FTP site
3. Open the File Path

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SAP SuccessFactors HCM Employee Export

Verify the Employee Export File

1. Open an FTP Client (you can also use Internet Explorer)
2. Log in to the FTP site
3. Open the File Path
4. Download the file
5. Open it NotePad++ or Excel and verify it contains employee data

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Learning User Connector - SF

Updating the Learning User Connector -SF

1. Log in to SAP SuccessFactorsLearning.
2. Navigate to **System Admin -> Configuration -> System Configuration -> Connectors**.
3. Scroll down to **SF User Connector**.
4. Make any necessary default value or field mapping updates.

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Learning User Connector - SF

Scheduling the Learning User Connector -SF

1. Log in to SAP SuccessFactors Learning
2. Navigate to **System Admin -> Connectors -> User Connector –SF**.
3. Enter the job schedule info (make sure it runs <u>after</u> the BizX employee export).
4. Click **Apply Changes**.

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Verifying Employee Import

Search for users

1. Log into SAP SuccessFactors Learning
2. Navigate to users
3. Search for BizX users

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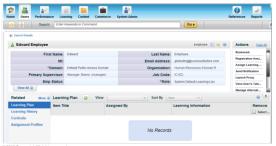
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Verifying Employee Import

Verify user data

1. Open a BizX user record
2. Confirm that the User Data is correct

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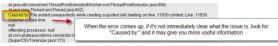
65

Common Known Issues

System Admin>Connectors
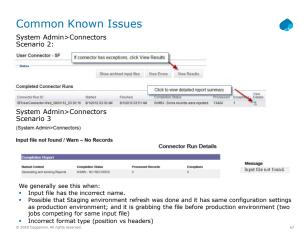
Scenario 1:

In this example, we see that the issue is pointing to the file ending "unexpectedly" and it gives you a line number. If we look at the archive file, we see that the input file has long gaps of blank line spaces, starting at line 11930. This caused the connector to fail. In this case, a DCOPS JIRA is in order since the Quartz job failed to produce a correct input file.
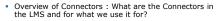
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Common Known Issues

System Admin>Connectors
Scenario 2:

User Connector - SF

If connector has exceptions, click View Results

Status

Show archived input files | View Errors | View Results

Completed Connector Runs

Click to view detailed report summary

Connector Run ID	Started	Finished	Completion Status	Processed	Exceptions	View Details
SFUserConnector-Wed_08/01/12_03:30:16	8/1/2012 03:30 AM	8/1/2012 03:51 AM	WARN - Some records were rejected.	13424	1	

System Admin>Connectors
Scenario 3

(System Admin>Connectors)

Input file not found / Warn – No Records

Connector Run Details

Completion Report

Named Context	Completion Status	Processed Records	Exceptions	Message
Generating and sending Reports	WARN - NO RECORDS	0	0	Input file not found

We generally see this when:
- Input file has the incorrect name.
- Possible that Staging environment refresh was done and it has same configuration settings as production environment; and it is grabbing the file before production environment (two jobs competing for same input file)
- Incorrect format type (position vs headers)

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Known Issues: KBA created for connectors LMS

Error/Issue	Possible Cause
"No Headers" error/File is 0 bytes	2 Provisioning Data Export jobs running at the same time
Inactivating users on BizX does not inactivate them on LMS	"Valid Users Only" is checked on Provisioning Scheduled Job
FTP connection failed	Incorrect FTP credentials/Ops issue
Accented Characters not showing up correctly on LMS UI	If Provisioning Quartz job has UTF-8 character encoding, this maybe a Defect.
"File has no content" error	PGP Encryption may be misconfigured. LMS processes file but cannot understand it due to encryption.
Locale on input file is being rejected	Locale may not be an actual BizX locale. Go to Provisioning>Company Settings; confirm locale on input is listed AND checked.

Something to keep in mind: The BizX data validation is different than the LMS. It's possible that the when importing data to BizX, some records are not rejected because they are not required, so when these records are imported to LMS, it will reject if not according to Workbook specifications.

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Summary

In this lesson, you have learnt:

- Overview of Connectors : What are the Connectors in the LMS and for what we use it for?
- Different connectors types inside LMS
- The Configuration Workshop & Workbook
- Creating the Input File
- Configuring the Connectors
- User Data Feed from BizX
- Viewing Reports & Errors

Summary

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