SAP S/4HANA Cookbook
Customer/Vendor Integration

CUSTOMER
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1. PURPOSE AND SCOPE OF THE DOCUMENT

This document is intended as guidance on the topic of Customer/Vendor Integration (CVI). Customer/Vendor Integration is one of the key simplifications in SAP S/4HANA that affects most SAP customers.

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2. CONTEXT AND MOTIVATION FOR CUSTOMER/VENDOR INTEGRATION

There are redundant object models in the traditional ERP system. Here the Vendor master and Customer master are used which are having several limitations. Limitations of the Customer/Vendor Object Model:

- Only one single address
- No relation between a Vendor and a Customer for the same real-world entity (no role concept)
- No persons (B2C)
- No time-depending

The strategic object model in SAP S/4HANA is the Business Partner (BP). Business Partner is capable of centrally managing master data for Business Partners, Customers, and Vendors. With current development, BP is the single point of entry to create, edit and display master data for Business Partners, Customers, and Vendors.

In terms of SAP Business Partner the definition for Customer and Vendor is the following:

**Customer**
A Customer is a Business Partner to which goods and services are sold and/or delivered. A Business Partner can be a Customer and a Vendor at the same time if, for example, your Customer also supplies goods to you.

A Customer master holds information about the Customer such as their name, address, bank details, tax details and delivery and billing preferences. This Customer information is used and stored in transactions such as sales orders, deliveries and invoices.

Some Customer information is specific to a company (known as company code) or sales unit (known as sales area) within your organization.

**Vendor**
A Vendor (or Supplier) is a Business Partner which delivers and sells goods and services to your organization. A Business Partner can be a Vendor and a Customer at the same time if, for example, your Vendor also buys goods from you.

A Vendor master holds information about the Vendor such as their name, address, bank details, tax details and billing preferences. This Vendor information is used and stored in transactions such as purchase orders, goods receipts and Vendor invoices.

Some Vendor information is specific to a company (known as company code) or purchasing unit (known as purchasing organization) within your organization.

Using the Business Partner has the following advantages:

- A legal entity is represented with one Business Partner
- One Business Partner can perform multiple roles, e.g., Customer and Vendor (Supplier)
- General data is available for all different Business Partner roles, specific data is stored for each role
- Maximal data sharing and reuse of data which leads to an easier data consolidation
- Different Business Partner Categories – Organization, Person, Group
- Flexible Business Partner Relationships possible like “has contact person”, “is married with” etc.
- One Business Partner can have multiple addresses
- Time-dependency on different sub-entities e.g. role, address, relationship, bank data etc.
- Provide harmonized architecture across applications

To use the SAP Business Partner as leading object in SAP S/HANA, the Customer/Vendor Integration (CVI) must be used. The CVI component ensures the synchronization between the Business Partner object and the Customer/Vendor objects.
CVI is an automated procedure supported by the Master Data Synchronization Cockpit tool. It is used to synchronize Customer Master and Vendor Master objects with SAP Business Partner objects. CVI assigns every Customer and Vendor master data object to a newly created SAP Business Partner object and vice versa.

The diagram below illustrates the context.

A Business Partner is always created when a Customer or Vendor is created.

The complex interface of the CVI (Customer/Vendor Integration) contains Business Partner specific data as well as Customer and Vendor specific data.

Partially, the data of the Business Partner and Customer/Vendor are redundant (BUT000 against KNA1 & LFA1 data). For instance, ‘Name and Address specific attributes are available in both sets of tables.

Customer or Vendor specific data is routed through the Customer/Vendor specific interface and mixed up with the Business Partner central data.

On commit, the Business Partner and corresponding Customer and/or Vendor is maintained/created.

SAP supports the conversion of existing Customer and Vendor data to Business Partner via guided procedure reports.
3. BUSINESS IMPACT

Only SAP Business Suite customer with Customer/Vendor integration in place can move to SAP S/4HANA, On-Premise edition 1511, 1610, 1709 and onwards (conversion approach). CVI is not mandatory for SAP S/4HANA Finance and On-Premise 1503.

To ensure a successful upgrade all Customers, Vendors and all contacts which relate to Customer or Vendor must be converted to a Business Partner including Customers, Vendors and assigned contacts with the deletion flag.

CVI requires high quality master data to be converted. The quality checks cannot be switched off on the cockpit level. This way the customer is forced to run a high-quality master data project for Customer and Vendor master. If not started in advance, this can be a serious roadblock for the conversion.

Before you execute the CVI conversion, SAP recommends archiving the Customers/Vendors with the deletion flag.

It is recommended (but not mandatory) that Business Partner ID and Customer-ID / Vendor ID are the same. This approach is feasible for new implementation of S/4HANA: all numbers for BP, customer and vendor master can be designed freely. In case of conversion of existing SAP ERP to S/4HANA the number ranges for customer and vendor master are already established. When setting up number equality for BP in this case it might end up in

• additional customizing settings just to safeguard number equality: e.g. additional BP Groupings 1:1 to Account Groups
• limitations
  o as usually customer and vendor master have (partially) overlapping number ranges: so only one object can have same number with BP
  o when merging same legal entity of certain customer and vendor to one BP when both having not the same number
  o for future applications that might use BP as well and now restricted to “artificial” BP-numbering
  o when HCM employee master will be converted to BP: employee master very often consumes numbers from a broad number range (5 to 8 digits) that overlaps almost all considerable number ranges from customer and vendor master. Very often they request also same numbering for employee master and BP (e.g. usage of employees as resources in projects)

Note: In case of overlapping number ranges for Customer and Vendor in the start system an additional number range alignment is required for equal numbering!

The user interface for SAP S/4HANA to create and maintain Customer and Vendor master data is transaction BP. The specific transaction codes to maintain Customer/Vendor (as in SAP Business Suite), are not available within SAP S/4HANA. The BP transaction is the single point of entry to create, edit and display master data for Business Partners, Customers, and Vendors.

The following SAP Business Suite transactions are no longer available or redirect to transaction BP:

• FD01, FD02, FD03, FD05, FD06, FD08 (Create, Change, Display, Block, Deletion mark, Confirm Customer (Accounting))
• FK01, FK02, FK03, FK05, FK06, FK08 (Create, Change, Display, Block, Deletion mark, Confirm Vendor (Accounting))
• MAP1, MAP2, MAP3 (Create, Change, Display Contact Person)
• MK01, MK02, MK03, MK05, MK06, MK12, MK18, MK19 (Create, Change, Display, Block, Deletion mark Vendor (Purchasing))
• V-03, V-04, V-05, V-06, V-07, V-08, V-09, V-11, V+21, V+22, V+23 (Create invoice recipient, payer, consignee, one-time Customer, ordering party, carrier, sales prospect, competitor, Business Partner (Sales/Centrally))
• **VAP1, VAP2, VAP3**  
  (Create, Change, Display Contact Person)
• **VD01, VD02, VD03, VD05, VD06**  
  (Create, Change, Display, Block, Deletion mark Customer (Sales))
• **XD01, XD02, XD03, XD05, XD06, XD07**  
  (Customer: Create, Change, Display, Block, Deletion mark, Change Account Group (Centrally))
• **XK01, XK02, XK03, XK05, XK06, XK07**  
  (Vendor: Create, Change, Display, Block, Deletion mark, Change Account Group (Centrally))

Mass maintenance for Business Partner fields via transaction MASS is available via object “Business Partner”.

To update customer/vendor fields in S/4HANA 1511, SAP Note [2346269 – Mass Maintenance Functionality of Customers/Suppliers using XD99 and XK99](https://support.sap.com) is required.

SAP Business Suite Customer and Vendor numbers are still used as input to those former SAP Business Suite transactions, e.g., VA01, ME21N, or standard reports. In case a new BP number is assigned to Customer or Vendor, the SAP Business Suite Customer or Vendor number must be used in those transaction or reports.

CVI ensures that Customer and Vendor master data tables are updated automatically after a BP is created/changed. All KNxx and LFxx Customer/Vendor master data table are still populated as previously in SAP Business Suite.

In SAP S/4HANA BP transaction covers almost all Customer/Vendor master data fields. One example for exception is that the CVI of the Vendor text in BP master will be covered in SAP S/4HANA 1610 SPS01, i.e., 02/2017. Using single BP transaction in SAP Business Suite, the customer might not be able to maintain all the data needed. There are no plans to implement additional fields here since the xD0x- and xK0x-transactions continue to exist.

All the SAP Business Suite help documents refers to Customer and Vendor rather than Business Partner for these transactions.
4. SOLUTION IMPACT

4.1. Fiori App: Manage Customer Master Data

With this app, you can manage Customer master data centrally for departments involved with sales. You can create, change, search, display, and copy Customer master data with the role SAP_BR_BUPA_MASTER_SPECIALIST.

Please note that the copy function for Sales Org. and Company Code data of the same Customer master is only available in FIORI.

Key Features

- Create Customer Master Data.
  Use Create Person or Create Organization buttons to create new Customer master data. Enter values in the relevant fields such as Basic Data, Roles, Address and so on. Save the entries.
- Edit Customer Master Data.
  Open a Customer master data record from the List Report page. You can also use the Search field and click Go button to find the Customer master data to change. Click Edit button. This opens the Customer data in draft mode for you to change the values. Save the changes.
- Copy Customer Master Data.
  Select a Customer master from the List Report page. Click Copy button. The new Customer master data record page is displayed with all the details of the Customer that you selected previously, except the Business Partner number, in draft mode. Edit the values as per your requirement. Save the entries. The Customer master data record is saved with a new Business Partner number.
- Time Dependency.
  If Time Dependency is enabled, you can set validity start date and validity end date for the fields such as Roles, Address, Address Usage, Bank Accounts, and Contacts. If Time Dependency is not enabled, the system considers the default values. The default values are current date (validity start date) and 31.12.9999 (validity end date)
- Address Usage.
  You can manage different addresses (for example, Home Address, Business Address, Holiday Home) according to your preference. Standard Address (XXDEFAULT) is mandatory for Customer and Vendor roles.
- Attachments.
  This feature enables you to provide related attachments for Customer master data records. The app supports only General Object Services (GOS) type attachments.

For more details see the Fiori Apps Library:
https://fioriappslibrary.hana.ondemand.com/sap/fix/externalViewer/#/detail/Apps('F0850A')/S6OP

4.2. Fiori App: Manage Vendor Master Data

With this app, you can manage Vendor master data centrally for all consuming departments (for example, purchasing department). You can create, change, search, display, and copy Vendor master data with the role SAP_BR_BUPA_MASTER_SPECIALIST.

Please note that the copy function for Purchasing Org. and Company Code data of the same Vendor master is only available in FIORI.

Key Features

- Create Vendor Master Data.
  Use Create Person or Create Organization button to create new Vendor master data. Enter values in the relevant fields such as Basic Data, Roles, Address and so on. Save the entries.
- Edit Vendor Master Data.
  Open a Vendor master data from the List Report page. You can also use the Search field and click Go button to find the Vendor master data to change. Click Edit button. This opens the Vendor data in draft mode for you to change the values. Save the changes.
- Copy Vendor Master Data.
  Select a Vendor master from the List Report page. Click Copy button. The new Vendor master data page is displayed with all the details of the Vendor that you have selected previously, except the Business
Partner Number, in draft mode. Edit the values as per your requirement. Save the entries. The Vendor master data record is saved with a new Business Partner Number.

- **Time Dependency.**
  If time dependency is enabled, you can set validity start date and validity end date for the fields such as Roles, Address, Address Usage, Bank Accounts, and Contacts. If time dependency is not enabled, the system considers the default values. The default values are current date (validity start date) and 31.12.9999 (validity end date).

- **Address Usage.**
  You can manage different addresses (for example, Home Address, Business Address, Holiday Home), according to your preference. Standard Address (XXDEFAULT) is mandatory for Customer and Vendor roles.

- **Attachments.**
  This feature enables you to provide related attachments for Vendor master data records. The app supports only General Object Services (GOS) type attachments.

For more details see the Fiori Apps Library:
https://fioriappslibrary.hana.ondemand.com/sap/fixed/externalViewer/#/detail/Apps('F1053A')/S6OP

### 4.3. Business Partner Authorizations

For the concept of segregation of duty in the Business Partner there is already a field called “Authorization Group” in BP master which is also present as an authorization field which can be used to group business users & restrict the authorization based on the authorization group value of a business user.

In addition to the “traditional” authorization objects for Customer and Vendor that will be checked, there are other authorization objects in the BP area. Go to transaction SU21 and search for authorization objects ‘B_BUPA*’ and ‘B_BUPR*’.

See below a short description of the most common authorization objects for SAP Business Partner.

**Authorization Object: B_BUPA_GRP - Authorization Groups**
Use this authorization to define which Business Partners can be edited based on the authorization group mentioned above.

**Authorization Object: B_BUPA_ATT - Authorization Types**
With this authorization object, you can define authorizations for any number of input fields in Business Partner maintenance. You determine which Business Partners may be maintained, depending on the field values. In Customizing you define an authorization type and specify the names of the fields that should be checked.

**Authorization Object: B_BUPA_FDG - Field Groups**
With this authorization object, you can define authorizations for individual field groups in Business Partner maintenance. You thereby define which fields in Business Partner maintenance can be maintained or viewed by a user.

**Authorization Object: B_BUPA_RLT - BP Roles**
With this authorization object, you define which BP roles can be edited.

### 4.4. Conversion Process Authorizations

To prepare the conversion and start the BP synchronization you need (amongst others) the authorizations for CVI customizing, the synchronization cockpit and the Postprocessing Office (PPO).

**Authorization Object: CVI_CUST - Process Assignment Customizing and Synchronization Reports**
You use this authorization object to determine whether the assignment customizing for the attributes belonging to the object pair Business Partner-Customer/Vendor and the corresponding synchronization reports can be processed.
Authorization Object: MDS_LOAD - Synchronization (Individual and Mass Maintenance)
This authorization object checks which source objects a user can synchronize with the Synchronization Cockpit and Postprocessing Office (PPO). The Synchronization Cockpit and PPO use this authorization object for mass and individual synchronization. This authorization object does not determine whether you can edit master data.

4.5. Customer Hierarchies
The Customer/Vendor Hierarchy function remains the same. There is no simplification in SAP S/4HANA On-Premise.

4.6. Customer Classifications
Customer Classification is available as of SAP S/4HANA 1610, and 1511 FPS02 with SAP Note 2326148 - Classification Functionality on Business Partner Customer / Supplier side.
5. CVI CONVERSION SCENARIOS

Based on the SAP S/4HANA implementation scenario, New Install or System Conversion, different CVI process scenarios must be considered. For a New Install scenario, the central configuration for Business Partners including CVI setup and test steps are required. For a System Conversion scenario, several preparation steps are necessary to first convert the Customer/Vendor data into an SAP Business Partner.

The diagram below shows the two different process scenarios.

![Diagram of CVI Conversion Scenarios]

Each scenario has its own challenges but some general considerations and preparations are relevant for both.

**Skillsets**
- Functional and customizing knowledge of Customer/Vendor and BP master data is necessary.
- Technical knowledge is necessary especially for enhancements.
- Business process knowledge is required for BP number range determination.

**Documentation**
Business Partner Conversion Document, Simplification List and Enhancement cookbook should be known. Also for a new installed system the Business Partner Conversion Document and Simplification List is useful to understand the CVI settings for the direction BP -> Customer/Vendor. Please refer to SAP Note 2265093 - S4TWL - Business Partner Approach to get the latest versions of the Conversion Document and the Simplification List Item "Business Partner Approach".

General information for Customer Vendor Integration can be found in SAP Help: SAP Help: Customer Vendor Integration.
For the Enhancement Cookbook see section below.

**Enhancements**
BP/CVI enhancement can be complex and time-consuming. Download the latest versions of the following SAP Notes. They contain documentation and template source codes.
- SAP Note 2309153 - BP_CVI: Guideline Version 1.10 for customer enhancements in CVI (customer/vendor integration) in S4HANA releases
- SAP Note 2295823 - BP_CVI: Transfer of customer / vendor fields to the Business Partner - template source code

For further information on enhancements see also chapter 7.1.6. Check and integrate Customer/Vendor enhancements.
Tools
SAP provides reports to perform CVI related configuration checks, to find out missing customizing entries and to support the creation/correction of these entries. They can be used in both scenarios. See chapter 7.1.7. Implement Check Reports.

SAP Notes
Chapter 10.1 SAP Notes provides an overview of all SAP Notes mentioned in this document (plus some additional notes which can be useful). To search for more CVI related SAP Notes use the search term ‘BP_CVI’.

Further documentation
Chapter 10.2 Documentation provides links to further documentation.
6. CVI CONVERSION ON PREMISE NEW INSTALL

6.1. Configuration

As a prerequisite to configure CVI in a new installed SAP S/4HANA system, the configuration for Business Partners must be completed. Best Practice Building Blocks BN4 and J61 describe the relevant steps and configuration parameters for setting up Business Partner functionality as well as CVI settings. If a project is not based on Best Practice, use those parameters as reference only. Check, if the existing Business Partner settings meet your requirements and adjust and complete where necessary.

**Building Block BN4 (use link for latest version): Basic Settings for Business Partners**

This building block provides main configuration settings for the SAP Business Partner (BP) object focusing on those settings which are mandatory to create BP-Employees as part of IAM (Identity & Access Management) users.

Additional settings for the Business Partners are provided with further building blocks (e.g. J61) for which BN4 is a mandatory prerequisite.

**Function list:**
- BP Roles
- Number Ranges
- BP Groupings and assignment of Number Ranges
- Field Attributes per Client
- Field Attributes per BP Role
- Academic Titles
- Name Affixes
- Name Prefixes
- Marital Status
- Forms of Address
- Name Formatting Rules
- Define Address Types
- Identification Types

**Building Block J61 (use link for latest version): Central Configuration for Business Partners**

This building block provides main configuration settings for the SAP Business Partner (BP) object focusing on the use of BPs as BP-Customer, BP-Vendors, BP-Contacts etc. In addition, it provides settings for the "ERP" objects "Customer" and "Vendor".

Technical settings to make use of the SAP Business Partner are provided with building block BN4. BN4 is a mandatory prerequisite for building block J61 to use the Business Partner functionality.

**Function list**

Building Block J61 provides many configuration settings from different areas. The overview shown below is not a complete view on all settings, but a representative extract:
- Partner Determination settings for "ERP" Customer/Vendor objects
- Settings for "ERP" Customer and Vendor Account Groups
- Value table content for "ERP" Customer and Vendor fields
- Value table content for SAP Business Partner fields
- Settings for the CVI (Customer / Vendor Interface)

**Building Block JA2 (use link for latest version): Sample Master Data Business Partners**

This building block provides sample Business Partners (BP-Customers and BP-Contacts, BP-Vendors) for being used in a variety of scenarios like "Sell from Stock" or "Procure to Stock".
Most of the SAP Best Practices scenarios use Business Partners from this building block as sample master data for use in process scripts. Additional Business Partners for specialized scenarios are provided with other sample master data building blocks.

6.2. Migration / BP update

In a new installed system (Greenfield Approach), the upload of Business Partner data is only one of many tasks of a typical migration project. Find below an overview of available tools and interfaces.

**SAP Rapid Data Migration to S/4HANA**

For further information on SAP Rapid Data Migration for S/4HANA on premise use the following links:
- SAP Best Practices Explorer
- SAP Note 2239701 - SAP Rapid Data Migration for SAP S/4HANA, on premise edition

**Legacy System Migration Workbench (LSMW)**

LSMW is not the recommended approach to migrate data into S/4HANA.

For further information on LSMW use the following links:
- SAP note 2287723 - LSMW in SAP S/4HANA on-premise

Note: This LSMW and the Data Services tools cover 26 main Customer/Vendor data structures. Vendor partner functions will be available in 1610 release. To get 9 more Customer/Vendor data structures, implement the below listed SAP notes:
- SAP Note 2324208 - Permitted Payee : DDIC changes
- SAP Note 2331298 - S/4 HANA Option to Load RFC Functions not available in BP Load program

and then run the report "NOTE_2324208_DDIC" and "NOTE_2331298" to activate the DDIC structure changes. The LSMW program must be modified to include the input data structure.

**IDOC**

IDOCs DEBMAS and CREMAS are available in SAP S/4HANA OP 1511. Please see SAP Note 2312529 - Error in ALE inbound while receiving the data for DEBMAS.

**RFC and SOA Services**

Any external application creating or updating the Business Partner Master Data must use the available API (CL_MD_BP_MAINTAIN), IDOC or BP SOA Service as described in SAP Note 2417298 - Creation of Business Partner with Customer and Supplier Roles.
7. CVI CONVERSION ON PREMISE SYSTEM CONVERSION

To ensure a successful conversion, all Customers, Vendors and Contacts in all clients in the respective system must be converted to Business Partners. This is also true for the Business Partners that are already in use. When the Customer/Vendor transformation process is triggered, the system posts all required fields into the Business Partner. The BP transaction is the single point of entry to create, edit, and display master data for Business Partners, Customers, and Vendors.

The entire Business Partner data transfer including conversion and Business Partner post processing activities usually takes place in four phases, which are illustrated in the following diagram.

![Diagram of conversion process](image)

The transformation steps Preparation and Synchronization are described in detail in this document and must be executed in the defined sequence and must be repeated in case of errors. The conversion Process must be triggered following to the SAP S/4HANA Conversion guide. The activities in the Post Processing step are also described in the beforementioned document.

Master data for Vendor and Customer is widely used within ERP. Therefore, it is critical to ensure that customizing settings are maintained correctly to transform data completely during conversion without additional settings. The keys for a smooth synchronization of the ERP Customer/Vendor into the SAP S/4HANA system with the Business Partner as the leading object are not only Business Partner Know-How, but also consistent Customer/Vendor data and valid and consistent Customer/Vendor and Business Partner customizing entries. For this reason, the Customer/Vendor data must be cleansed before it can be converted into the SAP S/4HANA Business Partner (see also chapter 7.2.5 Configuration and Master Data Issues for possible issues based on wrong or missing customizing and master data quality).

7.1. Preparation

7.1.1. Implement S/4HANA Pre-Checks

SAP supports your conversion project by providing pre-checks that identify the steps you need to take to ensure your system is compatible with the conversion process.

The SAP S/4HANA Transition Checks are intended for mandatory checks and its use is enforced by the upgrade tool. The upgrade tool will ensure that the SAP S/4HANA Transition Checks are executed and that the transition is performed only when all checks have been completed successfully.

The precheck-functionality for the Business Partner conversion is provided by the following SAP notes:

- SAP Note 2211312 - S4TC SAP_APL - Pre-Conversion check for Business Partner
- SAP Note 2210486 - Documentation for conversion checks and Z-report to create list of error messages
7.1.2. Archive Customer/Vendor data with deletion flag

Before you execute the transformation for all Customer/Vendor data without restrictions, SAP recommends to archive the Customer/Vendor with the deletion flag. Also, Customer/Vendors with deletion flag which are not archived must be transferred.

Archiving is an optional step. It can be skipped if no added value is provided by the process. Archiving could simplify CVI conversion if Customer or Vendor objects settings were removed from the IMG, e.g., obsolete number range. If you plan to archive, it is recommended to mark deletion flag for archive before activate Customer/Vendor-to-BP synchronization. Marking deletion flag with Customer/Vendor-to-BP synchronization on will also convert the Customer/Vendor to Business Partners with archiving flag set. The Customers and Vendors with deletion flags could be converted to Business Partners.

Archiving Customer Data
Use the following link to reach the SAP Help Portal: Archiving Customer Master Data (FI-AR, SD)

Path:

Archiving Vendor Data
Use the following link to reach the SAP Help Portal: Archiving Vendor Master Data (FI-AP)

Path:
SAP Help Portal > HCM > HR Renewal > HR Renewal 2.0 > Feature Pack 4 > Application Help > SAP ERP Cross Application Functions > Scenarios in Applications > Data Archiving (CA-ARC) > Financial Accounting (FI) > Archiving Financial Accounting Data (FI) > Vendor Master Data

Archiving in Customer/Vendor Integration
The impact of archiving in environments where CVI is activated is described in SAP Help. Use link to reach the relevant section: Archiving in Customer/Vendor Integration

Path:
Enterprise Management > SAP ERP > Application Help > SAP ERP Cross Application Functions > Cross Application Components > Master Data Synchronization > Customer/Vendor Integration > Archiving in Customer/Vendor Integration

7.1.3. Check dependencies with SAP CRM

If you are using SAP CRM and planning to convert from SAP ERP to SAP S/4HANA you need to perform the pre-conversion actions described in SAP Note 2285062 - S4TWL: Business partner data exchange between SAPCRM and S/4 HANA, on-premise edition before activating the CVI and starting mass synchronization.

For more details see chapter 9.4 CRM.

7.1.4. Contact Person mapping

If you are using Vendors with Contact Persons and planning to convert from a release below SAP ERP 6.0 EHP 5 (SAP_APL 605) you need to ensure to update to the following minimum SP levels upfront:

- SAP ERP 6.0 SP20
- EHP2 for SAP ERP 6.0 SP10
- EHP3 for SAP ERP 6.0 SP09
- EHP4 for SAP ERP 6.0 SP11

Additionally, you need to implement the corrective SAP Note 2383051 - Development of vendor contact person mapping to business partner. This ensures a proper mapping from Contact Person to Business Partner. Therefore, this is not relevant for systems which do not have vendors with assigned contacts. You can check the existence of such vendors in table KNVK where LIFNR has non-initial values (KNVK-LIFNR <> '').
7.1.5. Activate Business Functions

For the transformation, the Business Functions CA_BP_SOA must be active. As a prerequisite Business Function CA_SUPPLIER_SOAC must be activated first.

CA_BP_SOAC contains the switches 'VENDOR_SFWS_SC1' and 'VENDOR_SFWS_SC2' which must be active for the Vendor contact person data to be synchronized with Business Partner contact person data.

Should the Business Function CA_BP_SOAC not yet exist in the system, you must create a new Business Function in the Customer namespace with the switches VENDOR_SFWS_SC1 and VENDOR_SFWS_SC2. The new customer-specific Business Function must be of type Enterprise Business Function (G). See SAP Note 1454441 - Development of contact person for vendors.

You can check this with transaction SFW5. In case of the transformation, the business functions activation leads to the selection of the table KNVK with the WHERE condition LIFNR <> SPACE.

You can activate the business function in transaction SFW5. Set Planned Status to True and activate the changes.

Make sure that both switches have “Global status” as On after activation.

![Switch Framework Browser](image)

Figure 4: Activate Business Functions.

7.1.6. Check and integrate Customer/Vendor enhancements

If you need to include customer-specific Customer/Vendor fields in transaction BP, it is necessary to integrate these additional fields in the Business Partner and CVI. Check the following SAP Note to get an overview on the Customer/Vendor fields which are included in the SAP Business Partner:

- SAP Note 2214213 - SAP S/4HANA, on-premise edition 1511: Restriction Note

The SAP note 2309153 provides a document that explains how to make customer enhancements to the Customer/Vendor integration in order to integrate additional Customer/Vendor fields in the Business Partner and to use CVI synchronization to update them in the Customer/Vendor.

The guide of SAP Note 2309153 refers to example classes that are delivered with SAP Note 2295823. It’s also possible to create and use these classes in an SAP ERP Suite system as of Enhancement Package 6.

Use the links below to access the above-mentioned SAP notes:

- **SAP Note 2309153 - BP_CVI: Guideline Version 1.13 for customer enhancements in CVI (customer/vendor integration) in S/4HANA releases**
- **SAP Note 2295823 - BP_CVI: Transfer of customer / vendor fields to the business partner - template source code**

The general mechanism (idea in a nutshell) to include customer enhancements in Business Partner and CVI is the following.

The BDT (Business Data Toolset) is used to enhance the existing screens in transaction BP with the additional required fields, tables and/or checkboxes. The XO (Extensible Objects) framework is used to validate and to store the data in the memory. BAdI implementations within the CVI synchronization collect...
the data from XO memory and save it to the database, in case additional data is not part of the complex interface structure.

The document provided with SAP Note 2309153 contains further references to documentation describing the technical requirements and processes to include customer enhancements in Business Partner and CVI. You can also access these sources by using the links below.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>XO Framework (Extensible Objects)</td>
<td>SAP Note 1623809 - Developer documentation for the XO framework</td>
</tr>
</tbody>
</table>

### 7.1.7. Implement Check Reports

SAP provides reports to perform configuration checks, to find out missing customizing entries and to support the creation/correction of these entries. Additionally, the reports can be used to perform post checks after initial load. For a description of the reports see also Chapter 7.1.11 Configuration and Master Data Checks (Pre-Conversion Checks)

Implement the following SAP Notes:

- **SAP Note 2216176 - Precheck report from business partner**
  
  This note delivers the pre-conversion checks for Business Partner which must be executed before the conversion to SAP S/4HANA as well as post-conversion checks.
  
  Report name: PRECHECK_UPGRADATION_REPORT
  
  - Pre-conversion check is done to ensure all the necessary CVI Link and CVI mappings are done for both Customer and Vendor.
  
  - As a preliminary step CVI-Link check is carried out in the direction Customer/Vendor to BP. This check determines Customer/Vendor to BP link is established.
  
  - Post-conversion checks are done to check whether all CVI mappings are done for Business partner which belong to Customer or Vendor role.

- **SAP Note 2344034 - SAP S/4HANA Automation for Master Data Migration**
  
  This report checks the necessary CVI and Business Partner Customizing for each client and proposes a solution for missing or wrong Customizing entries.
  
  Report name: CVI_UPGRADE_CHECK_RESOLVE
  
  As a prerequisite to implement SAP Note 2344034 you need to implement the following SAP Notes:
- **SAP Note 2336018 - BP S4HANA: Suppress Mandatory BP field groups checks via MDS_LOAD_COCKPIT transaction**

- **SAP Note 2345087 - BP_BAP: Missing values in required entry fields cause posting termination in mass processing**

All 3 notes must be applied even you only need part of the functions. For example: you only need to suppress mandatory Business Partner field groups check during CVI conversion (SAP Note 2336018) but not to use the automation feature provided with SAP Note 2344034 (see also chapter 7.2.1 Synchronization Cockpit).

- **SAP Note 1623677 - BP_CVI: Check report for checking CVI Customizing**

  The report CVI_FS_CHECK_CUSTOMIZING provided with this SAP Note can be used to display and check the Customizing for the Customer Vendor integration (CVI) that has been made for the Business Partner. The results of the checks return information about possible causes of error in the Customizing settings.

- **SAP Note 974504 - Inconsistencies in link tables of master data sync**

  Inconsistent links in CVI link tables can exist. These inconsistencies may be caused by various reasons like deleting the objects without archiving by running reports like BUPA_TEST_DELETE. The SAP Note provides 3 reports to check and remove these inconsistencies (see also chapter 7.2.4 Check Completion of Synchronization).

  Report names:

  - ZCUSTOMER_LINK_CHECK_REPORT
  - ZCUSTCONTACT_LINK_CHECK_REPORT
  - ZVENDOR_LINK_CHECK_REPORT

### 7.1.8. Check and adjust CVI/BP Customizing

**Remark**

The screenshot field values in the following chapters are for reference ONLY.

#### 7.1.8.1. Master Data Synchronization

##### 7.1.8.1.1. Function Modules for Data Distribution

Before you can synchronize the data between Business Partners and Customers/Vendors, you must make sure that the following SAP function modules are available and have been activated in table CRMC_BUT_CALL_FU.

For reference, please check also the latest version of the following SAP notes:

- **SAP Note 1968132 - Business partner replication between CRM and ECC with active CVI**

  ECC 617 only. For lower releases please apply SAP Note 2545498 - Incorrect Business partner GUIDs between ERP and CRM with Active CVI (currently for ECC 600 only, if not available for respective release at customer, raise an incident).

- **SAP Note 2283810 - Customizing settings for Business Partner data exchange between SAP S/4 HANA, on-premise edition and SAP CRM**

Use the following path to check the settings.

**IMG -> Cross-Application-Components -> SAP Business Partner -> Data Distribution -> Activate Function Modules**

#### 7.1.8.1.2. Activate Creation of Post Processing Orders

In the standard system, creation of post processing orders is deactivated for all business processes. For this reason, before you can use the *Post processing Office*, you must carry out this IMG activity.

**IMG -> Cross-Application Components -> General Application Functions -> Post processing Office -> Business Processes -> Activate Creation of Post processing Orders**
Activate Creation of Postprocessing Orders for component **AP-MD** and Business Processes **CVI_01** (Customer > Business Partner) and **CVI_02** (Vendor > Business Partner). Mark the checkbox to activate the entries.

You can already insert the entries for the business processes CVI_03 (Business Partner > Customer) and CVI_04 (Business Partner > Vendor) without activation checkbox marked.

After the successful synchronization of data, you must activate CVI_03 and CVI_04. See paragraph 7.4 Post Processing

![Activate Creation of Postprocessing Orders](image)

**Figure 5:** Activate Creation of Postprocessing Orders.

7.1.8.1.3. **Activate PPO requests for Platform Objects**

Use this IMG activity to define for which platform objects a post-processing request (PPO request) is to be written in the event of a synchronization error. This definition is not direction-specific, meaning a request should always be written when the platform object is used either as a source or as a target object in the synchronization.

**IMG -> Cross-Application Components -> Master Data Synchronization -> Synchronization Control -> Synchronization Control -> Activate PPO Requests for Platform Objects in the Dialog**

Create a new entry for the synchronization object **BP** (Business Partner) and mark the checkbox **“PPO Active”**.

![Activation of the PPO's in the Dialog for Platform Objects](image)

**Figure 6:** Activation of the PPO's in the Dialog for Platform Objects.

**Remark**

You can display synchronization objects provided by SAP for the master data synchronization with the following:

**IMG -> Cross-Application Components -> Master Data Synchronization -> Synchronization Control -> Synchronization Control -> Synchronisation Objects**

For Business Partner, Customer and Vendor the following entries must exist
### 7.1.8.1.4. Activate Synchronization Options

Using this IMG activity, you can configure the direction in which data is synchronized between the Customer/Vendor and the Business Partner. Data can be synchronized in both directions. This means that you can update data from the Business Partner to the Customer/Vendor and from the Customer/Vendor to the Business Partner.

#### IMG -> Cross-Application Components -> Master Data Synchronization -> Synchronization Control -> Synchronization Control -> Activate Synchronization Options

Insert new entries for
- Source Object Customer and Target Object BP
- Source Object Vendor and Target Object BP

Activate both entries by marking the activation indicator checkbox.

You can already insert the entries for
- Source Object BP and Target Object Customer
- Source Object BP and Target Object Vendor without activation checkbox marked.

After the successful synchronization of data, you must activate these entries. See paragraph 7.4 Post Processing

![Change View "Active Synchronization Options": Overview](image)

*Figure 7: Active Synchronization Options.*
Remark
A synchronization option is a combination of source synchronization object and target synchronization object. It shows which source synchronization object is to be synchronized with which target synchronization object. Synchronization options can be maintained with transaction SM30, view MDSV_CTRL_OPT. The following entries must exist (predefined):

<table>
<thead>
<tr>
<th>Source Object</th>
<th>Target Object</th>
<th>Strategy Implementation</th>
<th>Queue Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>CUSTOMER</td>
<td>CVI_STRATEGY_BP_CUSTOMER</td>
<td>MDS_BUPA_CUST</td>
</tr>
<tr>
<td>BP</td>
<td>VENDOR</td>
<td>CVI_STRATEGY_BP_VENDOR</td>
<td>MDS_BUPA_VEND</td>
</tr>
<tr>
<td>CUSTOMER</td>
<td>BP</td>
<td>CVI_STRATEGY_CUSTOMER_BP</td>
<td>MDS_CUST_BUPA</td>
</tr>
<tr>
<td>VENDOR</td>
<td>BP</td>
<td>CVI_STRATEGY_VENDOR_BP</td>
<td>MDS_VEND_BUPA</td>
</tr>
</tbody>
</table>

7.1.8.2. Number Ranges and Groupings

7.1.8.2.1. Overview

A central task for Customer/Vendor integration is the definition and assignment of number ranges for Business Partners.

SAP recommends that you keep the Customer/Vendor number the same when converting to Business Partner (BP). When deciding for this approach please consider following remarks:

When the same number is used for a different Customer and Vendor, you must then give one of them a different BP number. Additionally, you should allocate identical numbers to new Business Partners when assigning numbers to Customer/Vendor and Business Partners. If you assign identical numbers, this avoids confusion at the application level (when two different numbers appear for the Business Partner within a transaction). This is not possible in every case, for example, if SAP Business Partners already exist in the system prior to conversion and the number ranges overlap.

The following principles should be considered:

- If your currently used number ranges for Customers and Vendors are disjoint, the Business Partner number range should be defined as a mirror image of the Customer/Vendor number ranges.
- If your currently used number ranges for Customers and Vendors are not disjoint, the Business Partner number range should be defined in such a way that most numbers from Customer/Vendor can be reused.
- Customer/Vendor numeric numbers should be taken over Business Partner
  - To allow the Customer/Vendor numeric numbers to be taken over to the Business Partner the numeric intervals of the Business Partner number ranges must be set to external.
  - After the successful data synchronization, the numeric intervals of the Business Partner must be changed back to internal. Additionally, the Customer/Vendor numeric number range must be set to external to allow identical numbers for Customer/Vendor and Business Partner.

The selected account group of the Customer/Vendor master record determines the number assignment of the Business Partner to be created.

If you create the Customer/Vendor and the Business Partner, the following combinations and necessary activities can result relating to the selected account group of the Customer/Vendor and the number assignment of the Business Partner:

<table>
<thead>
<tr>
<th>Selected Account Group</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have selected an account group with internal number assignment to which a Business Partner grouping with internal number assignment is assigned.</td>
<td>The system automatically generates the Customer/Vendor number and the Business Partner number.</td>
</tr>
<tr>
<td>You have selected an account group with internal number assignment to which a Business Partner grouping with external</td>
<td>The system specifies the automatically selected Customer/Vendor number as the Business Partner number for Business Partner processing.</td>
</tr>
</tbody>
</table>
Selected Account Group | Activity
---|---
You have selected an account group with external number assignment to which a Business Partner grouping with internal number assignment is assigned. | You manually enter the Customer/Vendor number to be used in Customer/Vendor processing. The system automatically generates the Business Partner number.
You have selected an account group with external number assignment to which a Business Partner grouping with external number assignment is assigned. | You manually enter the Customer/Vendor number to be used in Customer/Vendor processing. The system automatically specifies the selected Customer/Vendor number as the Business Partner number for Business Partner processing.

Background information and example
The Business Partner in table BUT000, the Customer in table KNA1 and the Vendor in table LFA1 have independent number ranges.

For the sake of simplification, we are focusing in this example on the Business Partner and Customer. You create each Business Partner in a specific Business Partner group. The account group defines the number range of the Customer master record. Both groups determine the number range in which a Business Partner and a Customer are created. The link between these objects must be configured in the Customer/Vendor Integration (CVI). Before you can assign identical numbers, you have to make sure that the number ranges fit into each other.

The following example shows existing Business Partners created with internal numbers and Customer created with internal numbers with overlapping number range 01.

BP Groupings
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Short Name</th>
<th>Description</th>
<th>Number range</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Int.No.Assignment</td>
<td>Internal Number Assignment</td>
<td>01</td>
<td></td>
</tr>
</tbody>
</table>

Intervals Business Partner
<table>
<thead>
<tr>
<th>NR</th>
<th>From No.</th>
<th>To No.</th>
<th>Nr Status</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0000000001</td>
<td>0999999999</td>
<td>5000</td>
<td></td>
</tr>
</tbody>
</table>

Account Groups (Customer)
<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Number Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBI</td>
<td>Customer (general)</td>
<td>01</td>
</tr>
</tbody>
</table>

Intervals Customer
<table>
<thead>
<tr>
<th>NR</th>
<th>From No.</th>
<th>To Number</th>
<th>Nr Status</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0000100000</td>
<td>0000199999</td>
<td>100010</td>
<td></td>
</tr>
</tbody>
</table>

Since only To Number can be changed for an internal number range you must:
1. Change the “To Number” for the Business Partner interval to e.g. 0000099999.
2. Create a new Range 02 and mark for external
3. Change the BP grouping number range to 02

Intervals Business Partner
<table>
<thead>
<tr>
<th>NR</th>
<th>From No.</th>
<th>To No.</th>
<th>Nr Status</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0000000001</td>
<td>0000099999</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>0000100000</td>
<td>0000199999</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

BP Groupings
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Short Name</th>
<th>Description</th>
<th>Number range</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Int.No.Assignment</td>
<td>Internal Number Assignment</td>
<td>02</td>
<td></td>
</tr>
</tbody>
</table>
Configure CVI to assign the Customer/Vendor numbers to the BP.

**Number Assignment for Direction Customer to BP**

<table>
<thead>
<tr>
<th>Group</th>
<th>Grp.</th>
<th>Same numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBI</td>
<td>001</td>
<td></td>
</tr>
</tbody>
</table>

During the transformation, the new Business Partners are now created from the Customer with the same numbers (External flag marked for the number range).

After the initial load, you should change the number range again in such a way that new identical numbers are created for Business Partner and Customers by defining a new range for Business Partner and Customer.

1. Create a new BP range 03
2. Change the BP groupings number range to 03
3. Create new Customer number range 02 (external)
4. Change the account groups range to 02

**Intervals Business Partner**

<table>
<thead>
<tr>
<th>NR</th>
<th>From No.</th>
<th>To No.</th>
<th>Nr Status</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0000000001</td>
<td>0000999999</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>0001000000</td>
<td>0001999999</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>03</td>
<td>0002000000</td>
<td>0003000000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BP Groupings**

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Short Name</th>
<th>Description</th>
<th>Number range</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Int.No.Assignment</td>
<td>Internal Number Assignment</td>
<td>03</td>
<td></td>
</tr>
</tbody>
</table>

**Intervals Customer**

<table>
<thead>
<tr>
<th>NR</th>
<th>From No.</th>
<th>To Number</th>
<th>Nr Status</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>0001000000</td>
<td>0001999999</td>
<td>100010</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>0002000000</td>
<td>0003000000</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Account Groups (Customer)**

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Number Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBI</td>
<td>Customer (general)</td>
<td>02</td>
</tr>
</tbody>
</table>

Configure CVI to use same numbers for direction BP to Customer.

**Number Assignment for Direction BP to Customer**

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Short Name</th>
<th>Account Group</th>
<th>Name</th>
<th>Same numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Int.No.Assignment</td>
<td>DEBI</td>
<td>Customer (general)</td>
<td>X</td>
</tr>
</tbody>
</table>

You can use the Excel format below to document the existing settings and your changes.

![Excel format](image)

**Figure 8: Excel format for documenting settings.**

The following paragraphs explain the configuration settings used in the example above more in detail.
7.1.8.2.2. Define Number Ranges for Customer Master Records

In this IMG activity, you define the number intervals of the number ranges for Customer master records. When creating a Customer master record, a unique number which identifies the master record is assigned. The number comes from the number range that is provided for the account group.

**Define Number Ranges for Customer Master**

| IMG -> Logistics - General -> Business Partner -> Customers -> Control -> Define and Assign Customer Number Ranges -> Define Number Ranges for Customer Master |

![Maintain Intervals: Customer](image1.png)

Figure 9: Maintain Customer Number Ranges.

**Assign Number Ranges to Account Groups (Customer)**

| IMG -> Logistics - General -> Business Partner -> Customers -> Control -> Define and Assign Customer Number Ranges -> Assign Number Ranges to Account Groups |

![Change View "Assign Customer Acct Groups->Number Range": Overview](image2.png)

Figure 10: Assign Customer Account Group Number Range.

7.1.8.2.3. Define Number Ranges for Vendor Master Records

In this IMG activity, you define the number intervals of the number ranges for Vendor master records. When creating a Vendor master record, a unique number which identifies the master record is assigned. The number comes from the number range that is provided for the account group.

**Define Number Ranges for Vendor Master**

| IMG -> Logistics - General -> Business Partner -> Vendors -> Control -> Define Number Ranges for Vendor Master Records -> Intervals |

![Maintain Intervals: Vendor](image3.png)

Figure 11: Maintain Vendor Number Ranges.
**Assign Number Ranges to Account Groups (Vendor)**

IMG -> Logistics - General -> Business Partner -> Vendors -> Control -> Define Number Ranges for Vendor Master Records -> Intervals

---

**7.1.8.2.4. Define Number Ranges and Grouping for Business Partner**

In this IMG activity, you define number ranges for Business Partners. The defined number ranges are assigned to groupings in the Define groupings and assign number ranges activity.

**Define Number Ranges for Business Partner**

IMG -> Cross-Application Components -> SAP BusinessPartner -> Business Partner -> Basic Settings -> Number Ranges and Groupings -> Define Number Ranges

---

**Figure 12: Assign Vendor Account Group Number Range.**

**Figure 13: Maintain Business Partner Number Ranges.**

For at least one number range which you are using for Customers, the External Assignment checkbox may not be selected as the Define groupings and assign number ranges view (see following chapter) requires one number range as the standard range for internal number assignment and one as the standard range for external number assignment. Otherwise the Business Partner will not be created. This means that you must define at least 2 number ranges, if you want to take over the actual Customer numbers to Business Partner numbers: one where the External Assignment checkbox is not selected and another one where the checkbox is selected.

See the example in the Overview chapter above for explanations how to adjust the Business Partner number ranges dependent on the Customer and Vendor number ranges.

Each Business Partner must be assigned to a grouping. It determines how an entry is made in the Business Partner Number field. If you want to take over the numbers of your Customers from your current system, you must define at least 2 groupings:

- For the 1st grouping, the Internal Standard Grouping radio button must be selected.
- For the 2nd grouping the External Standard Grouping radio button must be selected. To this grouping, you must assign the number range which you are using for your actual Customer numbers (which is assigned to the Customer account group).

**Define Groupings and Assign Number Ranges**

IMG -> Cross-Application Components -> SAP BusinessPartner -> Business Partner -> Basic Settings -> Number Ranges and Groupings -> Define Groupings and Assign Number Ranges
It is recommended to create a BP grouping for each account group. For simplification use the same identifiers. See also the example in chapter 7.1.8.2.8. Example of a typical business requirement

**Important**

CVI conversion report MDS_LOAD_COCKPIT will assign an internal Business Partner number to contact persons during conversion. The internal number range is the number range assigned to the internal standard grouping. If the assigned internal number range overlaps with the targeted Customer or Vendor number ranges, the number range for contact person must be changed to a new range outside the targeted Business Partner numbers for the Customers and Vendors. Do not share the same number range with other Business Partner groupings. The overlap of the contact person number could cause error – R1124 "Business partner with GUID xxxxx does not exist".

**7.1.8.2.5. Define Number Range for Relationships**

For internal administration of BP relationships and BP role definitions an internal number is required from the number range interval "01". Respective number range object is "BU_RELNR".

Note: The number range interval "01" does not need to be assigned to anything (e.g. to any relationship type).

**Define Number Ranges (for Relationships)**

Usually number range interval "01" is shipped with SAP Standard. If it not exists it has to be maintained, e.g.

If number range interval is missing error message R1 735 (R1735 - Number range interval BU_RELNR for number range object 01 incorrectly maintain.) appears.
7.1.8.2.6. Assign Business Partner Roles to Account Groups

In this IMG activity, you assign BP roles to the account group for the Customer or Vendor master record in which the Business Partner is to be created when processing the Customer or Vendor.

When you process the Customer or Vendor as part of Customer/Vendor Integration, the system creates a Business Partner with the relevant account group in the BP roles that are assigned to this account group.

To ensure application scenarios are working with new Business Partner master data, it is necessary to convert the Customers/Vendors to Business Partners assigning all necessary roles like General Vendor / General Customer, FI Vendor / FI Customer, Purchasing Firm etc.

For Customer enter at least BP Roles FLCU00 (company data) and FLCU01 (sales data). For Vendor enter at least FLVN00 (company data) and FLVN01 (Purchasing data).

You can assign more than one BP role to an account group.

**Important:**
If you are planning to use SAP Credit Management after system conversion, you can directly assign the Business Partner Role for Credit Management to the relevant Business Partners by assigning the role to the relevant account groups. As a prerequisite, you need to activate the role first. See chapter 9.3 Credit Management for further information. Otherwise you need to manually assign the role to each Business Partner after system conversion.

**Customer to BP**

| IMG -> Cross-Application Components -> Master Data Synchronization -> Customer/Vendor Integration -> Business Partner Settings -> Settings for Customer Integration -> Define BP Role for Direction Customer to BP |

**Vendor to BP**

| IMG -> Cross-Application Components -> Master Data Synchronization -> Customer/Vendor Integration -> Business Partner Settings -> Settings for Vendor Integration -> Define BP Role for Direction Vendor to BP |
7.1.8.2.7. Number assignments (CVI-Target: Business Partner)

In this IMG activity, you assign the groupings for the Business Partner to the account groups for the Customer/Vendor master records to ensure that when you process Customers/Vendors as part of Customer/Vendor Integration the system also updates the Business Partner at the same time. With this assignment, you choose whether the Business Partner is to be created with a grouping with internal or external number assignment or with identical numbers.

**Number Assignment (Customer to BP)**

![Change View "Number Assignment for Direction Customer to BP"](image)

**Number Assignment (Vendor to BP)**

![Change View "Number Assignment for Direction Vendor to Business Partner"](image)
7.1.8.2.8. Example of a typical business requirement

The following example describes a typical business requirement which can be solved by configuring number ranges and groupings.

**Scenario**

Current sold-to, ship-to, bill-to and payer Customers have different number ranges and reduced data input fields, and we want to keep the same number ranges in Business Partner.

**Resolution**

1. Define the same number ranges in BP.
2. Create BP Grouping for each Customer account group, and assign the corresponding number range. The same name could be used as BP grouping names if they are available.
3. Map the Customer account groups to the BP groupings between Customer and BP.
4. For taking into account the field modifications of customer and vendor in transaction BP please refer to SAP Note 2516606 - BP_CVI: Taking into account the FI-specific field modification of customer and vendor in transaction BP.
5. The partner function display in BP screen will be controlled by the existing partner function determination.

7.1.8.3. **Customer Value Mapping (Contact Person)**

Attribute value mapping must be maintained and must be equal for every existing Customer instance.

7.1.8.3.1. **Activate Assignment of Contact Persons**

In this IMG activity, you activate the assignment of contact persons.

You activate the assignment if both of the following statements are true:

- Contact person attributes are to be processed in the Business Partner or in the Customer master record.
- You want to assign attributes to ensure that the contact person is synchronized as part of Customer integration.

See also the information regarding contact person number ranges and grouping in chapter 7.1.8.2.4 Define Number Ranges and Grouping for Business Partner.
7.1.8.3.2. Assign Department Numbers for Contact Person

In this IMG activity, you assign the department numbers for the Business Partner to the department numbers for the contact person in the Customer master record.

The values in column Dept (CVI) are the values used in Customer master data for contact persons. The values in column Department (BP) are used in Business Partner master data for contact persons. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.

7.1.8.3.3. Assign Functions of Contact Person

In this IMG activity, you assign the functions for the Business Partner to the contact person functions in the Customer master record.

The values in column Function (CVI) are the values used in Customer master data for contact persons. The values in column Function (BP) are used in Business Partner master data for contact persons. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.
7.1.8.3.4. Assign Authority of Contact Person

In this IMG activity, you assign the partner's authority for the Business Partner to the partner's authority for the contact person in the Customer master record.

The values in column **PoAtt (CVI)** are the values used in Customer master data for contact persons. The values in column **Pwr of Att. (BP)** are used in Business Partner master data for contact persons. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.

7.1.8.3.5. Assign VIP indicator for Contact Person

In this IMG activity, you assign the VIP Indicator for the Business Partner to the VIP Indicator for the contact person in the Customer master record.
The values in column **VIP (CVI)** are the values used in Customer master data for contact persons. The values in column **VIP (BP)** are used in Business Partner master data for contact persons. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.

![Image of Assign VIP Indicator for Contact Person](image-url)

Figure 25. Assign VIP Indicator for Contact Person.

### 7.1.8.4. Customer Value Mapping

Attribute value mapping must be maintained and must be equal for every existing Customer instance.

#### 7.1.8.4.1. Assign Marital Statuses

In this IMG activity, you assign the marital statuses for the Business Partner to the marital statuses for the contact person in the Customer master record.

The values in column **Marital Status (CVI)** are the values used for Customer master data. The values in column **Mar. Sts (BP)** are used in Business Partner master data. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.
7.1.8.4.2. Assign Legal Form to Legal Status

In this IMG activity, you assign the legal forms for the Business Partner to the legal statuses for the Customer/Vendor master record.

The values in column **Legal Sts (CVI)** are the values used for Customer/Vendor master data. The values in column **LForm (BP)** are used in Business Partner master data. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.

7.1.8.4.3. Assign Payment Cards

In this IMG activity, you assign the card types of payment cards for the Customer master records to the payment card types for the Business Partner.
The values in column **Card Type (CVI)** are the values used for Customer master data. The values in column **Card Type (BP)** are used in Business Partner master data. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer master to values for Business Partner and vice versa.

**Figure 28: Assign Payment Card Type.**

7.1.8.4.4. **Assign Industries**

In this IMG activity, you assign industry keys for the Customer and Vendor master records to industries for the Business Partner (and vice versa), to ensure that both industry fields are updated correctly in the context of Customer/Vendor Integration.

In Business Partner processing you can store several industries from different industry systems in Business Partners belonging to the category *Organization*. You can name one industry as the standard industry for each industry system.

You can store just one industry in the Customer and Vendor master records.

In this IMG activity, you determine how the corresponding industry in the Customer/Vendor master record is derived from the standard industry for the standard industry system when you process a Business Partner. You also determine from which industry in the Customer/Vendor master record the corresponding industry is created for the Business Partner.

**Figure 29: Select Industry System.**

Select on the right the Industry System which is marked as *Standard System.*
Select the options on the left to maintain the industry values for direction Customer to BP and BP to Customer.

**Industry mapping for direction Customer/Vendor to Business Partner**
Select on the left Define Incoming Industry Mapping (double-click) and maintain the corresponding values.

![Image of Define Incoming Industry Mapping](image)

**Figure 30: Define Incoming Industry Mapping.**

The values in column **Indus.** are the values used for Customer/Vendor master data. The values in column **Industry** are used in Business Partner master data. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer/Vendor master to values for Business Partner and vice versa.

**Industry mapping for direction Business Partner to Customer/Vendor**
Select on the left Define Outgoing Industry Mapping (double-click) and maintain the corresponding values.

![Image of Define Outgoing Industry Mapping](image)

**Figure 31: Define Outgoing Industry Mapping.**

The values in column **Indus.** are the values used for Customer/Vendor master data. The values in column **Industry** are used in Business Partner master data. Ensure that you have maintained the corresponding values in both areas and that you assigned all values for Customer/Vendor master to values for Business Partner and vice versa.
Tool Support

Using report `FSBP_IND_SECTOR_MAPPING_CHECK` (Check and Set Up Industry Mapping), you can generate Customizing entries for industry assignment in the context of Customer/Vendor Integration, and evaluate existing or missing assignment entries.

![Synchronize Customizing for Industry Sectors](image)

Figure 32: Synchronize Customizing for Industry Sectors.

If the number of Industry values are low, this report is not required, but useful to get an overview of missing entries.

### 7.1.8.5. Vendor Value Mapping

#### 7.1.8.5.1. Contact Person

There are no specific settings for Vendor contact person mapping. If the Vendor contact person is used in EHP versions below 5, apply SAP Note 2383051 – Development of vendor contact person mapping to Business Partner.

#### 7.1.8.5.2. Assign Industries

Industry value mapping must be maintained and must be equal for every existing Vendor instance.

The Vendor specific transaction in IMG leads to the same configuration as already described in the previous chapter for Customer configuration (Customer and Vendor share the same IMG table, see chapter 7.1.8.4.4 Assign Industries).

Ensure, that the configured values are also valid for Vendors.

### 7.1.8.6. Business Add-Ins (BAdIs) for development of own mappings

You can implement Customer-specific mappings like Form of Address from Customer/Vendor to Business Partner using the available BAdIs. Here it would also be possible to create a Business Partner in a different category, for example, person instead of organization. In this case, you must deactivate the enhancement `CVI_MAP_TITLE_DIRECT` and activate the enhancement implementation `CVI_MAP_BP_CATEGORY` in the IMG. The implementation is already available.

The table below shows the existing BADI’s and the names of the BAdI definitions.

<table>
<thead>
<tr>
<th>IMG tree node</th>
<th>BAdI Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAdI: Data Assignment BP &lt;-&gt; Customer/Vendor/Contact Person</td>
<td>CVI_CUSTOM_MAPPER</td>
</tr>
<tr>
<td>BAdI: Data Assignment of Bank Details BP -&gt; Customer/Vendor</td>
<td>CVI_MAP_BANKDETAILS</td>
</tr>
<tr>
<td>BAdI: Data Assignment of Payment Cards BP &lt;-&gt; Customer</td>
<td>CVI_MAP_CREDIT_CARDS</td>
</tr>
<tr>
<td>BAdI: Data Assignment of Form of Address from Customer/Vendor to BP</td>
<td>CVI_MAP_TITLE</td>
</tr>
<tr>
<td>BAdI: Defaults for Creating Data from BP to Customer/Vendor</td>
<td>CVI_DEFAULT_VALUES</td>
</tr>
</tbody>
</table>
7.1.8.7. Check Business Partner Address Types

In this activity, you check the existing address types that you need for certain business transactions. The address type and the standard address type are relevant for address determination. The address type XXDEFAULT is supplied by SAP. Ensure that this entry exists. If not, create a new entry with name XXDEFAULT.

FIGURE 33: Check Business Partner Address Types.

7.1.9. Preparation for linking of Customer and Vendor to a single Business Partner

Currently, even if there is a Customer and a Vendor which refer the same business entity, they are linked to separate Business Partners. Implement the following SAP Note before initial load. After implementation of the SAP Note, the Customer and Vendor will be linked to one Business Partner if they are the same business entity.

- **SAP Note 2363892** - Linking Customer and Vendor to a single Business Partner during initial load before upgrade to S/4

As a prerequisite, the following must be given:
The Customer and Vendor must not already be linked to separate Business Partners (that is, either Customer or Vendor should have a Business Partner linked to it, or neither should be linked to a Business Partner, but not both). This solution is applicable only when there is already a link table entry for either Customer or Vendor.

During the process of creating a Business Partner for a Customer or Vendor, it checks whether a Business Partner already exists for that business entity. If yes, then it links to the same Business Partner if the prerequisites above are met.

Technically, it’s a new BAdI implementation (CVI_MAP_LEGAL_ENTITY) for BAdI CVI_CUSTOM_MAPPER.

Check also SAP Note 954816 - BP_CVI: Transactions for creating/linking BPs. This note provides information for the transactions for manual assignment of Customer/Vendor and Business Partner. The note explains how you can solve the problem, if synchronization fails with message ‘Business Partner xxxx already exists’ due to a Customer and Vendor with same number representing the same legal entity.

Transactions:
- FLBPD1 - Create BP from Customer
- FLBPD2 - Link BP to Customer
- FLBPC1 - Create BP from Vendor
- FLBPC2 - Link BP to Vendor
7.1.10. Preparation for converting HCM Employees to Business Partners

To achieve that the Business Partner is a person and not an organization, you need to implement the following coding in BADI CVI_MAP_TITLE. Please be aware of the fact that there is no multiple usage allowed for this BADI. Therefore you have to ensure that any existing coding is executed as well.

```
data: lv_ktokk type ktokk.
select single ktokk into lv_ktokk
  from lfa1
  where lifnr = i_vendor_id.
if sy-subrc = 0 and lv_ktokk = 'ZEMP'.
  c_partner_category = bp_as_person.
endif.
```

In case you want to influence the Business Partner Number or you have to implement it in BADI CVI_CUSTOM_MAPPER.

Example for setting the BP Number for Employees like EN concatenated with the employee personal number (LFB1-PERNR) and group BPAB, Prerequisite is that BP has external numbering in number range.

```
MAP_VENDOR_TO_BP

  data: lt_company type VMDS_EI_COMPANY_T,
        ls_company type VMDS_EI_COMPANY.
  if i_vendor-CENTRAL_DATA-CENTRAL-DATA-KTOKK = 'ZEMP'.
    lt_company = i_vendor-COMPANY_DATA-COMPANY.
    loop at lt_company into ls_company where data-pernr ne space.
      concatenate 'EN' ls_company-data-pernr into c_PARTNER-HEADER-OBJECT_INSTANCE-BPARTNER. "What if more than one Company Code?"
      c_PARTNER-CENTRAL_DATA-COMMON-DATA-BP_CONTROL-GROUPING = 'BPAB'.
      exit.
    endloop.
  endif.
```

For more information please check these SAP Notes
2539457 CVI & employee vendors in wrong BP category
2542175 CVI and reuse of existing employee business partner

7.1.11. Configuration and Master Data Checks (Pre-Conversion Checks)

Before starting the synchronization, carry out different checks on customizing and master data. These checks are described in the following paragraphs.

7.1.11.1. PRECHECK_UPGRADATION_REPORT

This report performs the necessary checks for Business Partner before upgrading to SAP S/4HANA. See paragraph 7.1.7 Implement Check Reports for details how to implement the report. The following pre-checks are executed by the report:

- BP roles are Assigned to Account Groups (chapter 7.1.8.2.6 Assign Business Partner Roles to Account Groups)
- Every Account Group BP Grouping Must be Available (chapter 7.1.8.2.7 Number assignments (CVI-Target: Business Partner))
- Customer Value Mapping (chapter 7.1.8.3 Customer Value Mapping (Contact Person) and 7.1.8.4 Customer Value Mapping)
- Vendor Value Mapping (chapter 7.1.8.5 Vendor Value Mapping)
• Customer and Vendor Value mapping (BP -> C/V) (chapter 7.1.8.4 Customer Value Mapping and 7.1.8.5 Vendor Value Mapping)
• CVI-Link
• CVI Mapping
• Contact Person Mapping
• Checking Direction from Customer to BP
• Checking Direction from Vendor to BP

Note that CVI-Link, CVI Mapping and Contact Person Mapping are mandatory checks that you need to perform. These checks are relevant to perform a post check after conversion (see chapter 7.2.4 Check Completion of Synchronization).

Based on your requirements, select the checks that you want the report to perform. Then, execute the report.

Figure 34: Pre-Upgrade Checks.

The report checks client-independent. Activate the checkbox 'Display Results for Current Client' to get the results only for your current client.

The report generates an ALV output containing the status of each check that it performs. If the status is green, this indicates that check is successful. If the status is red, click on the status icon to get more information on what caused the error and resolve the errors by maintaining the Customizing entries as described in the previous chapters.
7.1.11.2. **CVI_UPGRADE_CHECK_RESOLVE**

You use this report to perform customizing checks per client. It also provides a customizing resolution program, where you can find out missing customizing entries and the solution to create/correct these entries for each client. See chapter 7.1.7 Implement Check Reports for details how to implement the report. The checks that the report executes are:

- **General Settings**
  - Tax Classification
  - Address Number Range
- **Customer/Vendor to Business Partner**
  - Account Groups
  - Business Partner Grouping
  - Customer Value Mapping
  - Industry Key
- **Business Partner to Customer/Vendor**
  - Customer Value Mapping
  - Industry System

SAP Note 2344034 - SAP S/4HANA Automation for Master Data Migration provides comprehensive documentation for report CVI_UPGRADE_CHECK_RESOLVE.

7.2. **Synchronization**

Master data synchronization replicates master data objects in an SAP system that are similar from a business, but not from a technical, point of view, and allows you to integrate different SAP applications seamlessly in your business processes.

There are two synchronization scenarios in master data synchronization:

- **Synchronization from the master data maintenance**
  
  When you create and save new master data, the system carries out initial synchronization with the master data object types for which synchronization processes have been activated in the SAP system, and creates the corresponding master data.

  If you change existing master data that has already been synchronized, the system locks this master data.
and all the corresponding master data of the source object type and the target object type during maintenance. When you save the changed master data, the system generally carries out a delta synchronization with the master data object types for which synchronization processes have been activated in the SAP system, and changes the corresponding master data. In some cases, changing existing master data can lead to a delta synchronization having to be carried out.

- **Synchronization using the synchronization cockpit**
  You use the synchronization cockpit to prepare, perform and check the initial synchronization of master data objects in an SAP system.

As prerequisite you have checked and adapted the customizing, and created the Customer/Vendor Integration (CVI) and contact person mapping as described in the previous chapters.

The following chapters describe the initial synchronization of Customer and Vendor master data using the synchronization cockpit.

For more information on master data synchronization see [Master Data Synchronization](#) in SAP Help.

### 7.2.1. Synchronization Cockpit

Using the synchronization cockpit, you can carry out all the steps for master data synchronization in an SAP system, especially:

- **Selection**, preparation and starting of synchronization runs.
- **Monitoring** of synchronization runs
- **Postprocessing** of synchronization errors

To start the Synchronization Cockpit, you can use the following IMG-path or call transaction `MDS_LOAD_COCKPIT`.

**IMG -> Cross-Application Components -> Master Data Synchronization -> Synchronization of Mass Data -> Execute Synchronization Cockpit**

![Figure 36: Synchronization Cockpit - Processing.](image)

The screen of MDS_LOAD_COCKPIT is divided in several areas.

1. **Synchronization Process**
• This subscreen shows the synchronization processes which are available (active). This are the options configured in chapter 7.1.8.1.4, Activate Synchronization Options. You can use the toggle button to switch between the view of activated processes and the view of all synchronization processes available (activated and not activated).
• Select the desired synchronization Process by double-clicking (Customer -> Business Partner or Vendor -> Business Partner)

2. Control Parameters
• Check the queue settings (block size, queue name, max. number of processes). Note, that you need to enter values in this section only if you want to change the default values.
• Customer Example for block size and number of processes: Synchronization (after master data cleansing and solving configuration issues) with 14 Mio. Customer. A block size of 50,000 in combination with 60 dialog tasks for CVI has proved to be a good size in order to optimize the usage of available processes.
• IMPORTANT: Queue processing (Checkbox Background Processing is activated) triggers Dialog tasks and no batch jobs. Explanation in F1-Help of field Max. Processes is not correct.

3. Selection Criteria for Source Object
• Input parameters can be any combination of account group, Customer/Vendor number and deletion flag.
• To facilitate error analysis, run small batch or even single Customer/Vendor initially, e.g., select 10 to 50 Customers or Vendors.

After providing your input parameters press F8 to start synchronization.

4. Monitor
• To view the results, select the monitor tab.

5. Status information per Synchronization Run
• Prior to Business Partner creation, MDS cockpit checks the quality of the master data and applies the configured CVI value mappings. For records with quality issues or missing customizing no Business Partner is created until the issues are fixed. Status of run is marked with red light.

Remark
Some of the mandatory BP field group checks processed by Synchronization Cockpit can be disabled. To do this, implement the following SAP Notes:
- SAP Note 2336018 - BP S4HANA: Suppress Mandatory BP field groups checks via MDS_LOAD_COCKPIT transaction.
- SAP Note 2345087 - BP_BAP: Missing values in required entry fields cause posting termination in mass processing
- SAP Note 2344034 - S/4HANA Automation for Master Data Migration

All 3 notes must be applied even you only need part of the functions, e.g., you only need to suppress
mandatory BP field groups check during CVI conversion but not to use the automation feature provided with SAP Note 2344034 (see also chapter 7.1.7 Implement Check Reports). To disable the mandatory field suppression feature, deactivate the implementation

`CVI_MIGRATION_SUPPRESS_CHK` of BAadi definition `CVI_CUSTOM_MAPPER`.

The following checks can be bypassed by implementing the SAP Notes:

- Postal Code check
- Address Regional check
- Mandatory field check

7.2.1.1. Prerequisites

Following notes and settings must be applied before starting `MDS_LOAD_COCKPIT`:

- Check and implement these notes to retrieve correct Address-GUIDs from CRM for existing customers:
  - 2283695 - Synchronization cockpit generates business partners with wrong GUIDs by ignoring CRM mapping tables
  - 2420959 - Adress-GUID-RFC-BAadi für CVI_MAPPER
- Deactivate CRM-replication
  
  Please consider RFC-connection to CRM is still required.
- To prevent from unnecessary fetches from table GEOCUST always check and implement latest version of note 2344034 - SAP S/4HANA Automation for Master Data Migration
- Set table GEOCUST to X

7.2.1.2. Enable Test Run Capability

On the Processing tab of Synchronization Cockpit, you find the checkbox ‘Test Run’ which is greyed in standard. You can enable the test run functionality by implementing SAP Note 2326024 - Enablement of test run for customer/supplier to BP in `MDS_LOAD_COCKPIT` transaction.

When the test run mode is set from Customer to Business partner or from Vendor to Business partner, transaction MDS_PPO2 will show the logs, but the Business Partner will not be committed to databases.

Attention

Running in test run mode will lead to number range being exhausted because once the internal number is generated it cannot be reverted again and cannot be used again.

Typically, if you run Customer/Vendor to Business Partner for millions of records in test run mode, this may lead to exhausting of number range of objects like Business Partner, Address, Business Partner relationship and possibly some other application number range objects too.

So be cautious when executing test run and be aware of the Customer/Vendor range that you will be providing in the `MDS_LOAD_COCKPIT` transaction to migrate to Business Partner (preferably run `MDS_LOAD_COCKPIT` in test run mode for small Customer/Vendor ranges only).

A workaround is described in note 2326024 - Enablement of test run for customer/supplier to BP in `MDS_LOAD_COCKPIT` transaction. Please consider status of note is “Pilot Release”. DO NOT suggest this note without consulting Business Partner Synchronization development support team.

7.2.1.3. Example: Sequence of Runs of MDS_LOAD_COCKPIT

Environment:

Objects to synchronize

- Customers
- Vendors
- Contact Person assigned to customer
- Contact Person assigned to vendor

System landscape
• ERP (ECC to be converted to S/4HANA)
  Customer master created here, to be replicated to CRM

• CRM
  Contact Person created here, to be replicated to ERP (ECC -> S/4HANA)

Target after CVI-sync
• Customers linked to BP
• Vendors linked to BP
• Customer and Vendor are merged to one BP, if same legal entity
• Contact Person (customer) linked to BP
• Contact Person (vendor) linked to BP
• At merged customer and vendor contact person of customer available as Contact Person at vendor (and vice versa)
  (as this would be standard behavior when a BP (contact person) will be linked to a BP (organization) that is linked to a customer and a vendor)
• As only BP with customer role are replicated to CRM all the Contact Person coming from merged vendor have to be replicated to CRM

Situation before CVI
ECC

Target Situation after CVI Synchronization
ECC
Target Situation after CVI Synchronization

Steps to Achieve Target Situation

1. Switch off CRM-Replication (recommendation)
2. MDS_LOAD_COCKPIT:
   - Convert all customers to BP
   - All assigned Contact Person will be converted in BP as well.

ECC:
3. MDS_LOAD_COCKPIT: Vendor -> BP  
Convert all vendors to BP. All assigned Contact Person will be converted in BP as well. In this step same vendor of legal entity as customer will be assigned to existing BP from step 2

4. MDS_LOAD_COCKPIT: BP -> Vendor  
Select only BP where customer and vendor are merged into. This step is to link the previous customer contact Person to vendor.
5. MDS_LOAD_COCKPIT: BP ->
   Customer
   Select only BP where customer
   and vendor are merged into.
   This step is to link the previous
   vendor contact Person to
   customer.

6. Switch on CRM-Replication
7. BUPA_SEND: replicate all
   Contact Person with their
   relationships from BP with
   merged customer and vendor

---

**7.2.2. Post Processing Office (PPO)**

After having executed the above steps, it should be checked if post-processing orders have been created,
which should be processed. Therefore, use transaction MDS_PPO2 to get the error messages which
occurred during the master data synchronization run.

Errors which happen during synchronization are logged and can be displayed and resolved using the
Postprocessing Office PPO. In MDS Cockpit select the Monitor tab.
Figure 38: Resolve PPO Error.

To resolve the error, select the line with error status and click the button *Call PPO*. This will navigate to transaction **MDS_PPO2** which displays the corresponding error details.

Alternatively, you can directly call transaction MDS_PPO2 as well as transaction /N/SAPPO/PPO3 (with selection criteria ‘Software Component’ = ‘AP-MD’).

On the Overview screen, double-click the Business Partner or Customer/Vendor number to view the corresponding error messages.

*Postprocessing Desktop - Display Order: Overview*

<table>
<thead>
<tr>
<th>Main Object / Key</th>
<th>Process</th>
<th>Process Description</th>
<th>Main Message</th>
<th>Raise Obj.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Customer &gt; Business Partner Non-permitted overcall</td>
<td></td>
<td>199300</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Customer &gt; Business Partner Non-permitted overcall</td>
<td></td>
<td>199300</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Customer &gt; Business Partner Non-permitted overcall</td>
<td></td>
<td>199300</td>
</tr>
</tbody>
</table>

Figure 39: Display PPO Error Message.

If it is a data error (see 1 in figure below),
- Select the source object tab (Customer or Vendor).
- Choose Display or Change option. It opens the corresponding transaction page so that you can view or edit the data.
- Save the changes. The data automatically get synchronized to the target object.

If it is a Customizing error (see 2 in figure below),
- Manually navigate to the corresponding Customizing table/activity and resolve the error.
- Come back to the error entry
- Start synchronization. You have two synchronization options:
  - Individual Synchronization - Synchronizes the selected source and target objects
  - Mass Synchronization - Synchronizes all source and target objects based on the selected error code
Once the errors are resolved, come back to MDS_PPO2, and manually set the error status by using the **Complete** button.

After resolving synchronization errors, to know if any other errors have occurred, re-execute the MDS_PPO2 report using the date on which you corrected synchronization errors, as the selection criteria.

Go to chapter 7.2.5 Configuration and Master Data Issues to get an overview of common synchronization issues and their resolution.

### 7.2.2.1. Download PPO messages

For error analysis and documentation, it can be useful to download the list of error messages from PPO. There is no built-in-functionality to download the messages as spreadsheet as in other ALV-views. You can get the messages as spreadsheet by executing the following steps:

1. Go to transaction MDS_PPO2. Enter the selection criteria and press Execute(F8).
2. To change the layout of the output according to your needs (e.g. insert fields Message Class and Message Number), press the small triangle right from the ‘Select layout…’ button and select ‘Change layout…’.  
3. Open the print menu by pressing the small triangle right from the ‘Print view’-button and select ‘Print preview of entire hierarchy’. 
4. In the preview window select ‘System -> List -> Save -> Local File’ and save the file as text file.  
5. Import the txt-file in Excel

### 7.2.2.2. Technical Background

The following objects can be useful as starting point to understand more in detail the functionality of the synchronization cockpit from a technical perspective.

#### Function Modules
- **MDS_LOAD_START**  
  Start of mass synchronization  
- **MDS_LOAD_RESTART**  
  Restart mass synchronization
Tables
- /SAPPO/ORDER_DAT
  Additional Data for Postprocessing Order
- /SAPPO/ORDER_HDR
  Postprocessing Order - Header Data
- /SAPPO/ORDER_MSG
  Messages for Postprocessing Order
- /SAPPO/ORDER_OBJ
  Related Objects for Postprocessing Order

7.2.3. Example - Resolve Synchronization Errors Using PPO

The following example shows the step by step resolution of synchronization errors for a single Customer. For the Customer example, two different errors are in place:
1. Customizing error
2. Master data error

After synchronization run we get an error message in the monitor of MDS cockpit. We select the entry and choose Call PPO which shows us the error message ‘Form of address 0002 not designated for organizations’.

This is a typical customizing error. CVI creates new Business Partners of type organization. The form of address is not allowed for organizations. We need to adjust the customizing. Open the customizing for address forms.

For Customer/Vendor the differentiation between Person, Organization and Group is not necessary. For Business Partner creation, we need to specify for which types the form of address is valid.

![Figure 41: Display PPO Orders for Business Process ID.](image1)

![Figure 42: Maintain Form of Address.](image2)
After changing the configuration settings, we return to the error entry in PPO and restart the synchronization by choosing *Individual Synchronization* or *Mass Synchronization*. We decide to start Mass Synchronization, because several entries exist in PPO for this Customer. Obviously, it has been included in several synchronization runs. Remark: Only the latest run will be processed further.

![Figure 44: Mass Synchronization - Object Selection.](image)
We select all entries and start processing. Go back to MDS cockpit and refresh the monitor tab. We get a second error line in the monitor tab.

We choose the new entry and open PPO. A new error message is shown: *Email address thats_not_a_correct_email is invalid.* The customizing error has been resolved, but a master data error...
appears. The synchronization process checks if the format of the email-address is valid. If it is not valid, a PPO-order is created.

We start editing the Customer master data directly from the PPO-order by double-clicking **Change** as processing method from the Customer tab.

![Change Customer: General Data](image)

**Figure 47**: Change Customer: General Data.

After changing the email address and saving the Customer, the data gets automatically synchronized to the target object.

The entries in PPO and the MDS cockpit monitor are not updated. Selecting all entries for this Customer in **MDS_PPO2** still shows three error messages.

![Postprocessing Desktop - Edit Order: Overview](image)

**Figure 48**: PPO Desktop - Edit Order: Overview.

Manually set the error status by using the **Complete** button (after opening the PPO order).
To validate, that the Business Partner has been created successfully, check the CVI link table CVI_CUST_LINK with transaction SE16. An entry for the Customer has been added.

Alternatively use transaction MDS_LINKS (= Report CVI_MAPPING_BP_CUST_VEND) to check, that a valid link exists.

To avoid post processing effort, the customizing settings as well as the master data quality should be checked carefully before starting the synchronization. See chapter 7.1.9 Preparation for linking of Customer and Vendor to a single Business Partner.

**7.2.4. Check Completion of Synchronization**

Run transaction CVI_PRECHECK_UPGRADE (Report PRECHECK_UPGRADATION_REPORT) to check the completion of the conversion. Execute the report with the default selections.
CVI Mapping checks if all the Customers/Vendors are converted to Business Partners. This means that the number of entries in tables:
- CVI_CUST_LINK equals KNA1
- CVI_VEND_LINK equals LFA1

Contact Person Mapping checks if all contact persons have been converted to Business Partners. This means that the number of entries in tables:
- CVI_CUST_CT_LINK equals KNVK with condition KUNNR <> SPACE
- CVI_VEND_CT_LINK equals KNVK with condition LIFNR <> SPACE

Figure 52: Precheck Status Results.

In case of errors, click on the status icon to get a list of detailed messages. Resolve any errors and run report MDS_LOAD_COCKPIT until all Customers/Vendors/contact persons are converted to Business Partners.

To check that the link tables are consistent, run the check programs implemented with SAP Note 974504 - Inconsistencies in link tables of master data sync (see chapter 7.1.7 Implement Check Reports). This ensures, that for each entry in tables CVI_CUST_LINK, CVI_VEND_LINK and CVI_CUST_CT_LINK an entry in the Business Partner tables (BUT000) exists.

7.2.5. Configuration and Master Data Issues

In the following, configuration and master data issues which may occur during the synchronization of Customer and Vendor master data are described. Check your configuration and master data carefully and adjust if necessary. Ensure, you have made all settings described in the previous chapters and you have maintained missing values in the Customer/Vendor or Business Partner Customizing.

Errors may occur due to missing configuration settings, specific master data constellations, or other causes. The non-exhaustive list of possible issues is based on customer project experience and will be updated frequently. Perform CVI conversion in a sandbox with production data at an early stage of the SAPS/4HANA project to identify and resolve possible issues (see also chapter 7.3.2, CVI Conversion Approach: Example).

7.2.5.1. CVI Customizing Issues

7.2.5.1.1. Tax number category does not exist

The root cause for this error is a missing tax number category in view V_TFKTAXNUMTYPEC. You must maintain in view V_TFKTAXNUMTYPEC the entries for the countries relevant for your system.

The standard settings follow a naming convention of two letters and a number:
- The two letters are the ISO code of the country for which the tax number is used.
- The number is a sequential number.

The number controls which *Tax Number* field in the Customer or Vendor master this tax number is used.

For creation of new entries in `V_TFKTAXNUMTYPEC` you need to select one of the predefined tax types as key. If the tax type does not exist in the system, you must first create a new entry in view `V_TFKTAXNUMTYPE` using transaction SM30.

![Change View "Maintain Tax Number Categories": Overview](image)

*Figure 53: Maintain Tax Number Categories.*

See also SAP Note [1006160 - New tax number types for new EU members as of 01.01.2007.](https://launchpad.support.sap.com/#/notes/1006160)

### 7.2.5.1.2. Specify an industry

Root cause for the error message *Specify an industry* is that the industry of the Customer (KNA1-BRSCH) or Vendor (LFA1-BRSCH) has not been configured in the industry system. Please see chapter 7.1.8.4.4 Assign Industries for details.

You must maintain all industries which are used for Customer/Vendor also for Business Partner and vice versa.

To view and maintain industries in Customer/Vendor customizing:

```
IMG -> Sales and Distribution -> Master Data -> Business Partners -> Customers -> Marketing -> Define Industry Sector For Customers
```

To view and maintain industries in BP customizing:

```
IMG -> Cross-Application Components -> SAP Business Partner -> Business Partner -> Organizations -> Maintain Industry Systems and Industries
```

To assign Customer/Vendor industries to BP industries and vice versa

```
IMG -> Cross-Application Components -> Master Data Synchronization -> Customer/Vendor Integration -> Business Partner Settings -> Settings for Customer Integration -> Field Assignment for Customer Integration -> Assign Attributes -> Assign Industries
```

### 7.2.5.1.3. Address form is not configured for organizations

Root cause for the error message *Form of address xxx not designated for organizations* is incomplete customizing of address forms.

Customer/Vendor does not use different Business Partner categories. In SAP Business Partner, it is necessary to distinguish between the Business Partner categories person, organization, and group. For more details on forms of address see [SAP Help Business Address Services.](https://help.sap.com)
CVI creates new Business Partners of type Organization. Maintain the address forms valid for organizations and groups.

**IMG -> Cross-Application Components -> SAP Business Partner -> Business Partner -> Organizations -> Maintain Industry Systems and Industries**

![Image](image.png)

**Figure 54**: Maintain Industry Systems and Industries.

7.2.5.1.4. Telephone/fax code for country code XX is not maintained

Root cause for error message *Telephone/fax code for country code XX is not maintained* is missing customizing for the country settings.

Maintain the country specific phone numbers.

**IMG -> SAP Netweaver -> General settings -> Set Countries -> Define Country Codes**

![Image](image.png)

**Figure 55**: Define Country Codes.

7.2.5.1.5. Business partner with GUID xxxxx does not exist

Root cause for error *Business partner with GUID xxxxx does not exist* is a wrong number range setting for contact persons.

Do not share the number range for contact persons with other BP groupings. The contact person number range is the internal standard grouping number range. For more details see chapter 7.1.8.2.4 Define Number Ranges and Grouping for Business Partner.

7.2.5.2. Master Data Issues

Master data issues are often based on master data uploads using wrong data formats, disabled standard checks or using customer reports to maintain/update master data. Other sources are changed configuration settings without adjusting the dependent master data records (e.g. change of transport zones).
7.2.5.2.1. Trading partner xxx assigned to customer yyy doesn’t exist

Root cause for error message *Trading partner xxx assigned to customer yyy doesn’t exist* is that the trading partner specified in field KNA1-VBUND doesn’t exist in table T880 (Similarly for Vendors, LFA1-VBUND).

![Image](image.png)

*Figure 56: Change Customer General Data – Trading Partner.*

This error can happen, for example, if the master data has been uploaded as table dumps and field VBUND has been transferred using a wrong format. Format of the field must be 6-digit numeric (field definition is CHAR 6, but only 6-digit numeric values are allowed).

If the values in field VBUND are wrong change them manually using transactions XD02/XK02 or create a report to automate the correction.

**Remark**

If IDOCs are used for the master data replication, the master data record will not be posted with the VBUND value in wrong format.

If the format of the values in field Trading Partner is correct but the ID is missing in table T880 maintain the missing entry.

**Customizing path:**

```
IMG -> Enterprise Structure -> Definition -> Financial Accounting -> Define Company
```

7.2.5.2.2. Specify bank Account Number with length xx

Root cause for error message regarding invalid bank account number is that the bank account number (Customer: KNBK-BANKN, Vendor: LFBK-BANKN) is defined with a length different than specified in the country settings.

![Image](image.png)

*Figure 57: Change Customer General Data – Bank Account.*

To ensure the correct posting, length of bank account number must comply with the country-specific settings for bank accounts.
To check the country settings

| IMG | SAP Netweaver | General settings | Set Countries | Set Country-Specific Checks |

Change the values manually using transactions XD02/XK02 or create a report to automate the correction.

7.2.5.2.3.  Bank control key must be 2 characters long

Root cause for error message regarding invalid bank control key is that the bank control key (Customer: KNBK-BKONT, Vendor: LFBK-BKONT) is defined in a wrong format. It must be two character in length.

![Change Customer: General Data – Bank Control Key.](image)

Change the values manually using transactions XD02/XK02 or create a report to automate the correction.

7.2.5.2.4.  Bank key xxx doesn’t exist for country yy

Root cause for error message regarding missing bank key is that the bank key (Customer: KNBK-BANKL, Vendor: LFBK-BANL) is not defined in bank master data.

![Change Customer: General Data – Bank Key.](image)

Reason can also be that either the bank key in Customer/Vendor master data is wrong or the key is missing in bank master.

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

To change the bank master data use transaction **FI01** (Create) or **FI02** (Change).

7.2.5.2.5.  Missing account holder

Root cause for error message regarding missing account holder is that the account holder information (Customer: KNBK-KOINH, Vendor: LFBK-KOINH) is not provided, but necessary for the country of the bank.
Figure 60: Change Customer General Data – Account Holder.

To ensure the correct posting, an additional check to ensure account holder information exists for every account needs to be performed before master data replication.

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

7.2.5.2.6. Postal Code (PO Box) must have length xx or yy

Root cause for error message regarding postal code length and PO Box is that postal code (PO Box) format is different from the format defined in the country settings.

Wrong postal code information can be present in tables KNA1/LFA1 as well as in table ADRC.

In tables KNA1/LFA1 the following fields are used:
- PSTLZ Postal Code
- PSTL2 PO Box Postal Code
- PFACH PO Box

In table ADRC the following fields are used:
- POST_CODE1 Postal Code
- POST_CODE2 PO Box Postal Code
- PO_BOX PO Box

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

7.2.5.2.7. Tax Code n is not valid

Root cause for message Tax Code n is not valid (n=1 or n=2) are invalid tax numbers in fields STCD1 or STCD2 of either customer (table KNA1) or Vendor (table LFA1) master data.

Figure 61: Tax Number.

Change the values manually using transactions XD02/XK02 or create a report to automate the correction.
7.2.5.2.8. Tax Jurisdiction Code is not valid

Root cause for error message regarding tax jurisdiction code is that the jurisdiction code stored in Customer/Vendor master data (Customer: KNA1-TXJCD, Vendor: LFA1-TXJCD) is different from the format defined in customizing.

To check the customizing


To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

7.2.5.2.9. The tax number for tax number category XXX is already maintained

Root cause for error message regarding already existing tax number is double maintenance of VAT registration number.

The VAT registration number is maintained in Customer/Vendor master in field KNA1-STCEG (Customer) or LFA1-STCEG (Vendor) and additionally in the section ‘Other’ in field KNAS-STCEG (Customer) or LFAS-STCEG (Vendor).

Figure 62: Change Customer General Data – VAT Info.

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

See also SAP Note 2232604 - Error BUPA_TAX200 when replicate vendor or customer to Business Partner.

7.2.5.2.10. Entry in field Tax code n is longer than XX characters

In the mapping methods for Vendor executed in the conversion, the tax number 1 of the Vendor (field LFA1-STCD1) in ECC is mapped to tax code 2 (field LFA1-STCD2) of the Business Partner, if the tax country of the Vendor is Germany (DE).

The field STCD1 is defined with 16 characters and STCD2 with 11 characters. The Function Module BUPA_TAX_NUMBER_CHECK checks the length of these two fields.

If the tax code has more than 11 characters, the error AR103 occurs, because it is possible to enter a tax code with more than 11 characters in the tax code 1 of the Customer/Vendor in ECC.

See SAP Note 2098239 - Entry in field tax code 2 is longer than 11 characters for details.

Change the error message AR103 to a Warning or Info message.
Switch off the error message using transaction **OBA5** to define a new user specific message control. Select Application Area **AR**. In the maintenance view, press **New Entries**. Select message number 103 and select 'W' (or 'I') as message type for Online- and Batch Input processing. Save the new entry.

![Image](image_url)

**Figure 63: Tax Code Too Long.**

**Remark**
See SAP Note 958424 - BP:Error message for tax code 2 customized for a description how to make messages customizable.

7.2.5.2.11. References to non-existing Customers/Vendors

Root cause for error message regarding non-existing Customers/Vendors are referenced Vendors in Customer master data (KNA1-LIFNR) or referenced Customers in Vendor master data (LFA1-KUNNR) which do not exist.

If IDOCs are used for the master data replication, the master data record will not be posted.

To ensure the correct posting, an additional check for existence of referenced Customer/Vendor should be performed in the source system before master data replication.

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.

7.2.5.2.12. Incorrect Credit Card Numbers assigned

Root cause for error message regarding incorrect credit card numbers is a credit card number which does not fit to the settings made in customizing for the credit card type.

Credit cards are stored in table VCNUM. Assignment of credit cards to Customers is stored in table VCKUN. In both tables the field CCNUM is used to store the credit card number.

To check and adjust the customizing of credit card types use Customizing path

| IMG | Sales and Distribution | Billing | Payment Cards | Maintain Card Types |

To change the values in Customer/Vendor master use transaction XD02/XK02 or create a report to automate the correction.
7.2.5.2.13. Inconsistent visiting hours in KNVK table (Non permitted overflow)

Root cause for this error message (Message BC428) is that as soon as visiting hours are used for contact person, a begin and end time has to be defined for the morning and the afternoon time intervals. This error appears if only begin time or end time is maintained.

Fields:
- KNVK-MOAB1
  Morning Interval Begin
- KNVK-MOBI1
  Morning Interval End
- KNVK-MOAB2
  Afternoon Interval Begin
- KNVK-MOBI2
  Afternoon Interval End

7.2.5.2.14. Missing web address in Customer master

Root cause for error message regarding missing web address in Customer/Vendor master is a communication entry of type HPG (Homepage) without valid URL-address. In general, this error occurs when a communication type has been maintained without identifier.
The communication types and identifiers are stored in table ADR12 using mainly the following fields:

- **ADR12-URI_TYPE**
  Identifier
- **ADR12-URI_SRCH**
  Short form
- **ADR12-URI_ADDR**
  Address

![Image](image.png)

*Figure 66: Change Customer General Data – Web Address.*

To change the values in Customer/Vendor master, use transaction XD02/XK02 or create a report to automate the correction (e.g. delete all entries without URI-address).

7.2.5.2.15. Business Partner country not defined

Root cause for error message related to an undefined Business Partner country is, that country has not been maintained in Customer/Vendor master, but is a mandatory entry in Business Partner.

To change the values in Customer/Vendor master use transaction XD02/XK02, or create a report to automate the correction.

7.2.5.2.16. The transport zone XX is not defined for country XX

Root cause for error regarding undefined transport zone is that the country does not have the transport zone anymore which was maintained in Customer/Vendor data.
Maintenance of transportation zones

| IMG -> SAP Netweaver -> Application Server -> Basis Services -> Address Management -> Maintain Transport Zones |

To change the values in Customer/Vendor master use transaction XD02/XK02, or create a report to automate the correction.

7.2.5.2.17. The use of the last X characters in field XYZ is restricted (XX of YY)

Root cause for this message are Customer/Vendor name and address data which could cause the fields to be truncated in some scenarios. These scenarios are data transfers with ALE, EDI or printing of the address. In these cases the system only uses the first 35 characters of name fields, of the fields Street, City, District and the first 10 characters of the field ‘Search Term 1’.

If you do not want the address data to be truncated in these scenarios, only use the first 35 characters of the address fields or the first 10 characters of the field ‘Search Term 1’ during maintenance, or abbreviate the texts, if necessary.
To change the values in Customer/Vendor master use transaction XD02/XK02, or create a report to automate the correction.

The message (AM228) can be suppressed via Customizing. Use following path:

```
IMG -> Cross-Application Components -> Bank Directory -> Change Message Control
```

Alternatively call transaction OBAS. Select Application Area AM. In the maintenance view press New Entries. Select message number 228 and select '-' as message type for Online- and Batch Input processing. Save the new entry.

![Message Control By User](image)

**Figure 69: Message Control By User.**

### 7.2.5.3. Miscellaneous Issues

#### 7.2.5.3.1. Lock table overflow

It's possible to get a lock table overflow during synchronization process. This is due a technical restriction, caused by parameter enqueue/table_size. If necessary, increase the value of parameter enqueue/table_size significantly (e.g. 4 - 10 GB, dependent on system configuration and master data volume). Please note: lock table overflows can cause inconsistencies in link tables of master data as mentioned in “7.1.7 - Implement Check Reports” (ref. to note 974504 - Inconsistencies in link tables of master data sync).

#### 7.2.5.3.2. Update termination error (ADRNR)

The synchronization process can terminate due to the exhausted number range object ADRNR. The creation of new Business Partners also creates a lot of new addresses. Before starting the CVI mass run check the current number object and change it if needed.

Customizing path:

```
IMG -> SAP Netweaver -> Application Server -> Basis Services -> Address Management -> Maintain Address and Person Number Range
```

Alternatively call transaction SNRO with number range object ADRNR or use transaction SA01.

#### 7.2.5.3.3. Bank XXX marked for deletion in country YY

The bank key used in Customer/Vendor master data (Customer: KNBK-BANKL, Vendor: LFBK-BANL) is marked for deletion (e.g. with transaction FI06).

The message with message number BF00210 is defined by default as an error, therefore synchronization fails.

Switch off the error message using transaction OBAS to define a new user specific message control. Select Application Area BF00. In the maintenance view press New Entries. Select message number 210 and select '-' as message type for Online- and Batch Input processing. Save the new entry.
7.2.5.3.4. Not all address numbers have been defined

It has been reported, that in some cases no address from ADRC table has been linked to a Customer/Vendor. At the same time, transactions XD02/XK02 try to read address data from ADRC and fail.

To ensure the correct posting, an additional check needs to be performed before master data replication to ensure the assignment of the address number.

Create a report to automate the check and correction.

7.2.5.3.5. Others

The (non-exhaustive) list below shows some other customizing and master data errors not described in the previous chapters. These errors have appeared during previous Customer conversion projects and are listed here for convenience.

To solve the issues, change master data manually or via tools. If the customer accepts the existing data quality due to time or resource constraints, and the check of the error is configuration, bypass check via configuration could be considered as a short-term remedy so that the SAP S/4HANA conversion may start according to schedule. The data errors must be fixed and the data error check should be restored before go-live.

<table>
<thead>
<tr>
<th>Message Class / Number</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR/102</td>
<td>VAT Reg.No. XXXXXXXXXX must have length 12</td>
</tr>
<tr>
<td>AR/103</td>
<td>VAT Reg.No. XXXXXXXXXX is longer than 12 characters</td>
</tr>
<tr>
<td>AR/104</td>
<td>Bank Key AAA must contain only numbers</td>
</tr>
<tr>
<td>AR/191</td>
<td>ISO code XX is not correct in the VAT registration number</td>
</tr>
<tr>
<td>AR/196</td>
<td>VAT registration number contains invalid characters</td>
</tr>
<tr>
<td>BF00/211</td>
<td>Bank XXX does not exist</td>
</tr>
<tr>
<td>FSBP FS ATTRIBUTES/015</td>
<td>Company XXX does not exist</td>
</tr>
<tr>
<td>GEOCODING/002</td>
<td>Geocoder SAP0: Country specification is incomplete (Customizing)</td>
</tr>
<tr>
<td>R1/286</td>
<td>Business partner xxx already exists (see also chapter 7.1.9)</td>
</tr>
</tbody>
</table>

7.2.5.4. Switch-Off country specific checks

For all countries with which your company maintains business relationships, you must include rules for checking the following data:

- Bank data
- Postal data
- Control data
This data is then checked during master data maintenance. These checks are also carried out during synchronization of Customer/Vendor and poor data quality may often be the root cause for some of the errors mentioned in previous chapters. For those customers who might not have enough time and resources to fix the data errors, and/or they have been using the data AS-IS for many years, they could decide not to fix the errors in the SAP S/4HANA conversion. Therefore, it could be helpful to have an option to bypass the country specific check in the SUM process.

The checks can be switched off by client and by country.

<table>
<thead>
<tr>
<th>IMG -&gt; SAP Netweaver -&gt; General Settings -&gt; Set Countries -&gt; Set Country-Specific Checks</th>
</tr>
</thead>
</table>

After the CVI conversion, the original settings have to be restored.

![Change View “Country Field Checks”: Details](image)

**Figure 71: Country Field Checks.**

### 7.3. Conversion Process

The Conversion Process to upgrade the ECC system to SAP S/4HANA must be triggered following the S/4HANA Conversion Guide. The Conversion step to be executed by the technical team is part of the system conversion from the ECC system to SAP S/4HANA On-Premise. No additional CVI action is required.

As a prerequisite for the system conversion, the configuration of CVI must be in place and must have been tested. Dependent on the necessary CVI conversion time, the conversion of all Customer/Vendor master data to Business Partner should have been done before system conversion or can be done as part of the system conversion.

#### 7.3.1. CVI Conversion Approach: Targets

Targets for the CVI Conversion (Business Partner synchronization) are:

- No Downtime
• Not in critical path in the SAP S/4HANA conversion process
• No last-minute surprise in effort or time

CVI requires high quality master data to be converted. The quality checks cannot be switched off on the cockpit level. This way the customer is forced to run a master data quality project for Customer and Vendor master. If not started in advance, that can be a serious roadblock for upgrade.

There are other factors influencing the time and effort for CVI Conversion and which can conflict with the targets mentioned above.
• BP/CVI/Pre-Check Know-How
• Customer/Vendor/BP number ranges
• BP Customizing consistency including field attributes
• Customer/Vendor/Business Partner Data consistency
• Customer/Vendor Enhancements (Extensions – can be complex and time consuming)
• Data volume

Customers should start immediately to run CVI in current system to avoid any delay in the SAP S/4HANA Conversion project.

7.3.2. CVI Conversion Approach: Example
1. Perform CVI conversion in a sandbox with production data in an early stage of the SAP S/4HANA project.
   - Identify all data errors before the production CVI conversion and decide the error resolution. Certain master data errors could need a custom program to correct existing master data. If the errors have no impact on the business process, workaround measures could be implemented via configuration to relax the data validation. For example, title Mr. is used for a Customer and the system expects Company.
   - Assess the CVI conversion process runtime in the production environment. If the required conversion time is long enough to impact the SAP S/4HANA conversion schedule, the CVI conversion could be done in advance following the steps below. Otherwise, the CVI conversion could be done with the SAP S/4HANA Conversion.
2. Configure CVI in ECC production system ONLY for the synchronization direction ‘Customer/Vendor to Business Partner’
3. Run the synchronization cockpit MDS_LOAD_COCKPIT preferably during a quiet time – no downtime is needed. Run PRECHECK_UPGRADATION_REPORT report to identify any Customers/Vendors/contact persons not converted. If, for some reason, any Customers, Vendors or contact persons are not converted, run the conversion MDS_LOAD_COCKPIT report again for those unconverted objects.
4. The users will continue to use the ECC Customer/Vendor maintenance transaction to create the Customer/Vendor master data before the SAP S/4HANA conversion, and the CVI will create the Business Partners in background.
5. Lock the BP transaction in the ECC system to prevent user usage before converting the ECC system to SAP S/4HANA.
6. Convert the ECC system to S/4HANA.

7.3.3. Bypassing CVI Pre-check during SUM run (for Proof of Concept use ONLY)

During an SAP S/4HANA Proof of Concept (POC) test in a sandbox environment, if the Customer/Vendor master data quality is poor and there is not enough time to correct the data, the CVI pre-check during the SUM run could be bypassed by following the steps described in the SAP Notes below.

Important
Bypassing the checks isn’t recommended by SAP and should only be made in exceptional cases for testing purposes in sandbox environments.
During the actual SAP S/4HANA conversion, it is not advisable to bypass this check as ideally these errors need to be corrected, either manually, by executing the automation report which is delivered as part of SAP Note 2344034 - SAP S/4HANA Automation for Master Data Migration or with other customer specific reports dependent on the source of error. SAP does not recommend bypassing these checks. Use this only, if at all, as option for POC’s in sandbox environments.

Implement the following SAP Notes before executing the MDS_LOAD_COCKPIT transaction to bypass few of the mandatory checks, which are basically used to synchronize the Customer/Vendor data to Business partner (see chapter 7.2.1 Synchronization Cockpit):

- SAP Note 2336018 - BP S4HANA : Suppress Mandatory BP field groups checks via MDS_LOAD_COCKPIT transaction
- SAP Note 2345087 - BP_BAP: Missing values in required entry fields cause posting termination in mass processing

Also consider switching off the country-specific checks as described in paragraph 7.2.5.4 Switch-Off country specific checks.

7.4. Post Processing

After the successful initial load of Business Partners and completed system conversion, some settings need to be changed to ensure, that Business Partner is the leading object. You must adjust the system to synchronize newly created or changed Business Partners back to Customer/Vendor.

7.4.1. Activate Creation of Post Processing Orders (Direction BP to Customer/Vendor)

In the standard system, creation of post processing orders is deactivated for all business processes. In paragraph 7.1.8.1.2 Activate Creation of Post Processing Orders post processing orders for the processes Customer/Vendor to Business Partner (CVI_01 and CVI_02) have been enabled. Now the direction Business Partner to Customer/Vendor must be activated.

![Activate Creation of Postprocessing Orders](Image)

Remark

After completing the system conversion, maintenance of Customers/Vendors is only possible using the Business Partner transaction. Therefore, business processes CVI_01 and CVI_02 are no longer in use. Customizing entries can remain, but will not be used.

**Attention**

Before performing the conversion to S4/HANA via SUM, it is crucial to resolve the Postprocessing Orders listed in the Post Processing Office since they are not covered by the SUM pre-check. For that, transaction MDS_PPO2 can be used. (see also chapter 7.2.3) Otherwise, data inconsistency will occur.
7.4.2. Activate Synchronization Options (Direction BP to Customer/Vendor)

Using this IMG activity, you can configure the direction in which data is synchronized between the Customer/Vendor and the Business Partner. Data can be synchronized in both directions. This means that you can update data from the Business Partner to the Customer/Vendor and from the Customer/Vendor to the Business Partner.

In chapter 7.1.8.1.4 Activate Synchronization Options you activated the options for direction Customer/Vendor to Business Partner. Now, you need to activate the direction Business Partner to Customer/Vendor.

If not already done in preparation phase, insert new entries for
- Source Object BP and Target Object Customer
- Source Object BP and Target Object Vendor

Activate both entries by marking the activation indicator checkbox.

Remark
After completing the system conversion, maintenance of Customers/Vendors is only possible using the Business Partner transaction. Therefore, synchronization options Customer -> Business Partner and Vendor -> Business Partner are not any longer in use. Customizing entries can remain, but will not be used.

7.4.3. Set BP Role Category for Direction BP to Customer

In this IMG activity, you define which BP role categories enable Customer/Vendor integration in the direction from the Business Partner to the Customer/Vendor. You can determine how the system creates a corresponding Customer/Vendor in Financial Accounting when you process a Business Partner.

The BP role categories entered in this IMG activity are Customer-based. This means that the system considers Customer/Vendor integration when it processes Business Partners with a corresponding BP role. In the IMG activity, you define whether the Business Partner role assigned to the BP role category is a mandatory or optional Customer/Vendor Business Partner role.

In the case of mandatory Customer/Vendor Business Partner roles the system automatically creates corresponding Customers/Vendors. In the case of optional Customer/Vendor Business Partner roles you can determine whether you want to create a corresponding Customer/Vendor during Business Partner processing.

BP to Customer
On the overview screen, you have to assign a Business Partner role category. The system creates a Business Partner with the relevant account group in the BP roles that are assigned to this account group.

**BP to Vendor**

![Diagram](image_url1)

**Change View "Set BP Role Category for Customer Integration"**

On the overview screen, you must assign a Business Partner role category. The system creates a Business Partner with the relevant account group in the Business Partner roles that are assigned to this account group.

7.4.4. Number assignment (CVI-Target: Customer/Vendor)

In this IMG activity, you assign account groups for the Customer/Vendor master record to Business Partner groupings, to ensure that the Customer/Vendor is updated at the same time as the Business Partner is processed as part of Customer/Vendor integration. With this assignment, you can choose whether the Customer/Vendor master record is created with an account group with internal or external number assignment or with identical numbers.

Assign the same intervals for Business Partner and Customer/Vendor. Set the Customer/Vendor number assignment to external to ensure that newly created Customer/Vendor will have the same numbering as the corresponding Business Partner. Set the flag “Same number”.

**Number Assignment (BP to Customer)**

![Diagram](image_url2)
7.4.5. Change Field Status of Account Groups

After system conversion, the transactions to create or maintain Customer and Vendor cannot be used anymore and are redirected to Business Partner transaction BP.

Future settings regarding field status of Customer and Vendor master records can be configured using the corresponding Business Partner settings. To make sure that the field status settings defined in customer and vendor master records are considered in transaction BP, implement SAP Note 2516606 - BP_CVI: Taking into account the FI-specific field modification of customer and vendor in transaction BP.

7.4.6. Industry Mapping

You need to maintain the industry mapping for the direction Business Partner to Customer/Vendor. The configuration steps are already described in chapter 7.1.8.4.4 Assign Industries, ‘Industry mapping for the direction Business Partner to Customer/Vendor’.

Check, that you maintained valid values as described in the above-mentioned paragraph.

7.4.7. General Mapping Checks

Ensure that all the values you maintained for value mapping in CVI Customizing are available in Business Partner Customizing. Double check your settings for Contact Person, Customer and Vendor. See chapters...
7.1.8.3 Customer Value Mapping (Contact Person), 7.1.8.4 Customer Value Mapping and 7.1.8.5 Vendor Value Mapping for reference.
8. IMPACT ON CUSTOM CODE

There is limited impact on custom code. Custom code calls to old transactions generally need not to be adapted, they are automatically re-directed to the proper transaction. However, the Call Transaction statement or Batch Input will not work with old transactions.

The ECC corresponding Customer/Vendor master data table fields are populated in SAP S/4HANA via Business Partner to Customer/Vendor CVI.

Any external application creating or updating the Business Partner Master Data must use the available API (CL_MD_BP_MAINTAIN), IDOC or BP SOA Service as described in SAP Note 2417298 - Creation of Business Partner with Customer and Supplier Roles.
9. IMPACT ON SURROUNDING SYSTEMS / OTHER APPLICATIONS

9.1. Interfaces

The following interfaces for Business Partners still work in an SAP S/4HANA side-by-side implementation:

- CIF interface for Business Partner, e.g., SCM-EWM, TM
- Middleware for Business Partner synchronization, e.g., CRM
- BW report on Customers and Vendors

Any external application creating or updating the Business Partner Master Data must use the available API (CL_MD_BP_MAINTAIN), IDOC or BP SOA Service as described in SAP Note 2417298 - Creation of Business Partner with Customer and Supplier Roles.

You can navigate to transaction BP from an external application by calling the function module (FM) BUP_PARTNER_MAINTAIN.

See also chapter 6.2. Migration / BP update

9.2. Employee Replication

SAP S/4HANA customers may also be using SAP ERP HCM on-premise and like to continue to use SAP ERP HCM. SAP HCM can be run in either a separate instance or single instance with SAP S/4HANA. The integration among both on-premise instances (SAP HCM with SAP S/4HANA on-premise) will be available via ALE in case SAP HCM is running on separate instance. In case SAP HCM is running in the same instance as SAP S/4HANA on-premise, then the integration is automatically given as part of so-called Compatibility Mode.

The new data model in S/4HANA is based on Business Partners (BP). A BP must be assigned to each employee. Employee master data is not part of CVI. They will need to be created as Business Partner with role ‘Employee’ and ‘Vendor’.

After conversion to SAP S/4HANA, the migration report /SHCM/RH_SYNC_BUPA_FROM_EMPL must be executed before productive use of the system. Due to customizing dependencies, the report cannot be executed in technical downtime.

For more details, please refer to the following SAP Notes:

- SAP Note 2340095 - S4TWL - Conversion of Employees to Business Partners
- SAP Note 2323301 - Customizing document - Synchronization of Business Partner for SAP HCM Employee Role
- SAP Note 2517507 - HR -> Business Partner Synchronisation: missing data from a reference business partner, missing company codes and bank accounts.

In an S/4HANA system when a Business partner has roles Employee(BUP003), Service Provider(BBP005) or Freelancer(BBP010) then the Business Partner fields cannot be edited from BP transaction. Following functionalities are delivered notes (see below).

- Creation of Business Partner in role Employee(BUP003), Service Provider(BBP005) or Freelancer(BBP010) is prohibited.
- Bank details flowing from HCM would be display only, while others can be created, changed and deleted.
- Manual changes to the address usage (XXDEFAULT) is not allowed.
- Address usage HCM001 is display only. Creation, modification, deletion or the change in validity is not allowed.
- For Business Partner in role Service Provider(BBP005), create/edit of relationship type Service Provider (BUR025) is prohibited.
In an S/4HANA system, success factor is the leading application for Business Partners of roles BUP003, BBP005, BBP010. However, since not all fields of Business Partner application are available on HCM/success factor, customers need an option to edit the unavailable fields through BP transaction.

To achieve and implement this behavior please implement these notes:

- 2475550 - HCM Employee Handling in BP transaction - DDIC Report
- 2475604 - HCM Employee Handling in BP transaction
- 2463565 - Behavior of transaction BP in S/4HANA system with respect to Employee data from HR system
- 2507610 - Exception raised while calling S/4 method due to mismatch in returning parameter.

Please note: note “2406039 - Enablement of some fields for Employee Business Partner in BP transaction in S/4HANA system which are not part of HCM system” is replaced by above mentioned notes and obsolete.

### 9.3. Credit Management

Credit Management (FI-AR-CR) is not available as part of SAP S/4HANA. The functional equivalent in SAP S/4HANA is SAP Credit Management (FIN-FSCM-CR). You must migrate FI-AR-CR to FIN-FSCM-CR.

The migration contains amongst others Business Partner related steps (e.g. Activating the Business Partner Role for Credit Management).

Activation procedures for Business Partner role for credit management are provided in the following PDF document link: [Activation of Business Partner Role for Credit Management](https://example.com).

For details see SAP Note [2270544 - S4TWL - Credit Management](https://example.com).

### 9.4. CRM

If you are using SAP CRM and planning to convert from SAP ERP to SAP S/4HANA, you need to perform the pre-conversion actions described in SAP Note [2285062 - S4TWL: Business partner data exchange between SAPCRM and S/4 HANA, on-premise edition before activating the CVI and starting mass synchronization](https://example.com).

A Business Add-In (BadI) implementation is provided to ensure that the mass synchronization does not generate new GUIDs instead of using the existing GUIDs from the CRM mapping tables.

**Important**

It is imperative that the BadI is implemented before the Customer Vendor Integration (CVI) is activated and the mass synchronization of Customer or Vendor master data for the generation of Business Partners is started. If you start the synchronization before the implementation, the mapping between Business Partners that is used in an integration scenario with SAP CRM is irretrievably lost.

A check report is provided to examine whether the BadI implementation is available in your system. In addition, a check report is available that identifies any existing inconsistencies (if you have been using an active CVI already) or any inconsistencies that appear after mass synchronization.

For more information about the preparation steps as well for the steps after system conversion, please refer to the latest version of the above-mentioned SAP note. It refers to several other notes which provide further information and tools (corrections and customizing guides).

See also the following list of SAP notes related to SAP CRM and CVI:

- **SAP Note 1808119 - Creating or Changing ECC customer results in two queues in CRM**
- **SAP Note 1968132 - Business partner replication between CRM and ECC with active CVI ECC 617 only. For lower releases please apply SAP Note 25345498 - Incorrect Business partner GUIDs between ERP and CRM with Active CVI (currently for ECC 600 only, if not available for respective release at customer, raise an incident).**
• SAP Note 2283695 - Synchronization cockpit generates business partners with wrong GUIDs by ignoring CRM mapping tables
• SAP Note 2283810 - Customizing settings for business partner data exchange between SAP S/4 HANA, on-premise edition and SAP CRM

BP Role Filtering
If there is a need to filter out roles or complete business partner for replicating from ERP to CRM a Z-function module has to be registered in ERP in table COM_BUPA_CALL_FU (transaction COM_BUPA_CALL_FU). It has to entered at event R3OUT / object BUPA before the main function module to prepare BP data is called, e.g.

Reasons to filter roles and/or BP, e.g.:
• Vendor roles are not required in CRM
• BP that are not assigned to any customer master (e.g. “pure” vendors) are not required in CRM

BP Role Mapping:
If a role mapping from ERP (ECC and S/4) to CRM is required, an own Z-function module has to be registered in CRM in table CRMC_BUT_CALL_FU (transaction BUPA_CALL_FU). This Z-function module has to be registered directly before function module “BUPA_INBOUND_MAIN_CENTRAL”, e.g.:

Please note: check chapter “9.6 MDG (embedded in S/4)” for the reason not doing it in ERP outbound event CRMOU.

9.5. Industry Solution - Utilities
The Utilities Industry Solution cannot use MDS_LOAD_COCKPIT to convert C/V to BP. Please refer to the SAP Notes below:
• SAP Note 2344100 - S4TWL - CVI Integration for SAP ISU
• SAP Note 2354282 - S4 PreChecks IS-UT: Reports for the conversion for transition of the SAP Utilities Industry Solution to S/4 HANA
• SAP Note 2202282 - S4TC IS-UT Master Check for S/4 System Conversion Checks

9.6. MDG (embedded in S/4)
As per current experience please consider:
• MDG itself is using existing functionality to map and prepare data of Business Partner to be displayed. E.g. it uses event CRMOU of CRM-middleware. Every active function module will be called. This has
to be considered in particular when own Z-function modules shall be registered. With this background event CRMOU is not appropriate e.g. to map BP roles from S/4 to CRM.
10. ADDITIONAL INFORMATION

10.1. SAP Notes

Below is an overview of useful SAP Notes. The ones which are mentioned in this document are marked in column ‘Link in Document’. See especially SAP Note 2265093 - S4TWL - Business Partner Approach.

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10.2. Documentation

Below is a list of links to further resources.

- S/4 HANA Simplification List
- S/4 HANA Conversion Guide
- SAP Help: Introduce Business Partner Approach
- SAP Help: Customer Vendor Integration
- SAP Help: Master Data Synchronization
- SAP Help: S/4 HANA – SAP Business Partner
- SCN: Top Simplification List Items
- SCN: Simplification Item: Business Partner Approach
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