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This sample chapter discusses master data management in all major steps of a Central Finance project: data loads, master data processes, master data objects, ongoing transaction replication, and governance. It also provides an overview of why we need to harmonize data and the types of data we need to harmonize.

“Finance Data Harmonization: How Does Central Finance Standardize Data?”

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Chapter 6
Finance Data Harmonization: How Does Central Finance Standardize Data?

As data landscapes become increasingly complex, companies face the challenge of trying to manage the influx of both structured and unstructured data from multiple applications, files, databases, data warehouses, and data lakes. They need a solution that simplifies their landscape while also ensuring the highest levels of security.
– Bernd Leukert, member of the SAP Executive Board

If your goal is to replicate transactional data into Central Finance, you need the support of good master data management. The practice of creating, synchronizing, and updating master data across multiple systems is not easy and should not be underestimated, especially in the context of a Central Finance deployment.

In this chapter, we’ll link Central Finance with master data management through the major steps of the project: data loads, master data processes, master data objects, ongoing transaction replication, and governance. First, however, we’ll look at why we need to harmonize data and the types of data we need to harmonize.

6.1 Why Harmonize Data?

As discussed in earlier chapters, Central Finance is designed to deliver a single, universal system for all financial transactions which serves as the foundation for intelligent reporting, enhanced operations, and ultimately, stronger and faster decision making. This universal source of truth can only be realized, however, if the data and configuration of all the underlying systems can be effectively managed, harmonized, and brought together in a common way so as to support the technical requirements as well as serve the needs of the various consumers of this data.
Central Finance in SAP S/4HANA, although often thought of as a reporting solution because of the limited impact it has on the source transaction systems, is still a transactional system in and of itself. This means that when the data from numerous systems is replicated to the Central Finance system, this data must be appropriately mapped and harmonized so as to be able to pass the master data and configuration checks in the SAP transactional posting interfaces and be successfully posted.

To better illustrate this concept, let’s take the notion of the chart of accounts as an example. In a classic consolidation chart of accounts mapping exercise, many accounts—let’s say five, for example—could be mapped into a single group account regardless of some of the more technical settings each source account was assigned to, such as if two of the five were marked as open item managed, while the other three were not. The group account in a consolidation system is not concerned with the goings of open-item management and clearing, and so the mapping and merging of these items is allowed. However, in the Central Finance system, because the system is a transactional system and allows for follow-on processing such as central payment, these master data definitions, such as open-item management, are required to be in sync for all source accounts being mapped to the target Central Finance account.

The open-item management flag on the chart of accounts is just one example of a field within just one master data element which must be considered and designed for when implementing Central Finance. This section will explore and explain further the concepts and requirements for harmonization of both master data and configuration data when implementing Central Finance.

### 6.1.1 Master Data

In addition to the technical complexities and requirements of the solution, which require that certain master data elements be mapped and aligned, there are very useful and powerful business reasons to harmonize master data as well. To illustrate this, let’s take a look at a few sample elements and how their harmonization impacts the business from a benefits perspective:

- Chart of accounts
- Customers and vendors, now referred to as business partners in the SAP S/4HANA world
- Profit centers and cost centers

Harmonizing the chart of accounts and the financial statement versions allows businesses to achieve a common language across operating groups, business units, and systems. This increases visibility to the operations while reducing the amount of manual effort required to “translate” or consolidate the various accounts into those needed for reporting. This in turn enables soft and predictive financial closing through increased real-time visibility to the solution, improves the accuracy and reliability of the reporting due to less manipulation between transactions and reporting, and serves as the foundation on which to layer on next-generation reporting capabilities such as analytics, machine-learning, and automation. More information and detailed discussion of the harmonization of the chart of accounts from both technical and functional perspectives is addressed in Section 6.4.1.

Customer and vendor harmonization across the business into the newly required business partner concept in SAP S/4HANA allows businesses to look at their business partners holistically, from both a payables and a receivables perspective. This allows for better decision making in regard to things such as lines of credit and net effects. Often, there are many redundancies within an organization’s master data as it relates to customers and vendors as the result of factors such as multiple addresses or differences in spelling, such as “Main Street” versus “Main St.” versus “Main St.”. There are often discrepancies across source systems, which can now be managed and mapped to a common definition.

Having the business partner information collected from across an organization into a single source allows for issues such as over-lending and exposure to be identified more easily and acted upon. Mapping and harmonizing your data allows you to see, for example, if a customer you have allowed a $1M dollar line of credit is, in fact, receiving $1M dollars from each of your source systems independently for a total of $3M. Business partners as a master data element are discussed in further detail in Section 6.4.2.

Profit and cost centers are often reporting dimensions which are designed with the best intentions, but light governance can see them grow to large volumes and become difficult to manage. Maintaining the respective hierarchies for these items across an organization can often become difficult and time-consuming. For others, the enterprise and organization structure implemented in their SAP ERP system, sometimes 10–15 years ago, doesn’t accurately reflect their business today.

For many organizations, Central Finance presents an opportunity to right many of the ills of the past by adopting a new, central profit and cost center model for reporting, overhead, and operations which more accurately captures the way that they
want to view and manage their business. The result is often a reduction in the total number of these elements and improved dimensionality elsewhere on the code block to supplement some of the various reporting requirements. Additionally, with many different source systems, organizations sometimes find themselves with multiple controlling areas. In the Central Finance system, with the ability to map historic elements to the new system, companies can achieve a single controlling area in their SAP S/4HANA system while still being able to operate in a disparate historic environment both centrally and locally. Profit Centers and Cost Centers are explored in additional detail in Section 6.4.4 and Section 6.4.5.

We’ve listed only a few elements and a few of the benefits that harmonization brings to the business users for these elements. Additional elements, hierarchies, and their benefits and requirements are discussed later in this chapter, but it is clear that both operations and reporting can benefit from the effort of harmonizing your organization’s master data.

### 6.1.2 Configuration Data

Harmonizing master data alone is not enough to achieve a truly centralized platform in Central Finance. As with any implementation, complementary to master data is configuration data—the technical system settings which drive how SAP interacts with your business processes and data. Harmonizing your configuration settings between the systems is a challenging endeavor even if you are only utilizing a single source SAP ERP system, because of the significant number of changes SAP S/4HANA has compared to SAP ERP. This complexity is amplified by the increased number of source systems in consideration.

Some of the more critical elements of configuration data which must be harmonized include finance-related configuration such as currency, document types, decimal places, and document splitting and controlling-related configuration, including profitability analysis, currency and account category, and tax configuration.

With SAP S/4HANA and the Universal Journal, the number of currencies which can be maintained has been increased. However, Central Finance has a prerequisite that the currency settings match between the source and target systems. So how does Central Finance reconcile the addition of new currencies while mandating that currencies be the same across environments? The answer is in how the system treats “integrated currencies” as opposed to “freely defined currencies.”

Integrated currencies are those currencies which previously existed in the SAP ERP environment as table BSEG, or finance document line item currencies. Previously, SAP ERP allowed up to three currency field definitions:

- Transaction or document currency: currency type 00
- Local or company code currency: currency type 10
- Group currency: currency type 30

In SAP S/4HANA, freely defined currencies were introduced, and there are additional columns in the Universal Journal table to capture these additional translations. The Central Finance requirement is only that the integrated currencies be in sync between source systems, and therefore it does support the addition of the new currencies in the freely defined currency columns.

The foundational reasoning that the source and target system integrated currencies must be aligned is so that corresponding or subsequent process posting activities will not fail.

Tax settings are another critical configuration item which must be synchronized when you’re implementing Central Finance. Central Finance supports the replication of tax-related information at the time of posting, so it is important that this tax information is posted correctly in the Central Finance system. Because the Central Finance system reposts the documents which it receives from replication, the tax settings must align between the source and target; otherwise, discrepancies in the tax calculation result in differing tax values being posted. This, in turn, breaks subsequent central processing, such as payments, and prohibits the Central Finance system from being able to be used as the tax reporting system, which is a prerequisite for the central payment solution.

Tax-relevant information such as tax country, jurisdiction, and code need to be validated across the systems to ensure consistency. For more information on the tax impacts that Central Finance brings, please refer to these references:

- SAP Note 2509047
- SAP Note 2656874
- SAP Central Finance Administrators Guide—Central Tax Reporting

SAP has provided a set of tools that can assist in the early identification and resolution of configuration inconsistencies. These tools include the Configuration Consistency Check Report, shown in Figure 6.1, and the MCDELTA tool, available as part of the Central Finance adoption content, which is discussed further in Chapter 9.
6.2 Transactional Data Loads

Transactional data replication from a source system to a Central Finance system is performed in two major steps: initial load and delta load. In parallel, master data maintenance must create a golden record.

6.2.1 Initial Data Loads and Delta Loads

The initial data load is a critical phase in any Central Finance project. The best way to approach the initial data load is to plan for multiple data loads with a data drop in between.

The reason is simple: Carrying a full data load for all company codes, including balances and document replication, could generate hundreds of thousands, if not millions, of error messages in SAP Application Interface Framework. Solving so many errors can be overwhelming, since resolution may require changes to both the configuration (number ranges, organizational structure, exchange rates, units of measures, etc.) and master data (chart of accounts, mappings, cost centers, etc.).

Instead of this big bang approach, an agile step-by-step strategy focused on learning is more effective and reliable. As shown in Figure 6.2, with a smaller number of transactions to replicate, these first steps are faster. The number of error messages is limited, and these errors are easier to solve. As complexity increases, for instance, by adding company codes or including balances that were skipped initially, the team could experience a sense of progress while enhancing their learning. However, this best practice strategy requires a drop and reload of the data between each step.

Table 6.1 Link between Document Types, Source Tables, Communication Channels, Filter Tools, and Error Handling Tools for SAP Sources
You need to execute the following configuration steps to perform the initial load from an SAP ERP system:

1. **SAP LT Replication Server**: Define a simulation of replication objects for table AUFK.
2. **Central system**: Perform smoke testing and/or simulating an initial load of cost object mappings.
3. **Central system/SAP Application Interface Framework**: Handle errors from table AUFK under CO_OBJ_SIM.
4. **SAP LT Replication Server**: Start the load and replication of table AUFK.
5. **Central system/SAP Application Interface Framework**: Handle errors from table AUFK under CO_OBJ.
6. **Source system**: Configure company codes in view VCFIN_SOURCE_SET.
7. **SAP LT Replication Server**: Define replication objects for table CFIN_ACCHD.
8. **SAP LT Replication Server**: Execute the start load and replication of table CFIN_ACCHD.
9. **Central system**: Extract/monitor data for the initial load.
10. **Central system**: Extract/monitor delta load for the initial load.
11. **Source system**: Select the Initial Load Finished checkbox in view VCFIN_SOURCE_SET.
12. **Central system**: Simulate/execute the initial load of commitments.
13. **Central system/SAP Application Interface Framework**: Handle errors from table CFIN_ACCHD under AC_DOC.
14. **Central system**: Reconcile journal entries, balances, and line items for FI and CO.

The initial load can take several hours, depending on the size and performance of your source systems and the central system. After the first initial load, you should always perform a second initial load (the delta load in step 10) to ensure that all documents have been selected and transferred.

After the delta load has completed, maintain the view VCFIN_SOURCE_SET in the source system and select the Initial load finished checkbox. Then, in SAP LT Replication Server, start the load and replication for table CFIN_ACCHD. From this point on, all documents created in the source system will be automatically replicated in the central system.

You need to execute the following configuration steps to perform the initial load from non-SAP systems using the SAP Central Finance Transaction Replication application by Magnitude:

1. Define the logical system for third parties in SAP LT Replication Server using Transaction BD54.
2. Enable change data capture in the source ERP system to build the change logs.
4. Upload any mapping that is defined in SAP Central Finance Transaction Replication.
5. Execute `<SourceSystem>%_balances` load in SAP Data Services after specifying the required parameters.
6. Execute `<source_system>_Journals_OT` load in SAP data services for loading historical transactions after specifying the required parameters.
7. Execute SAP Central Finance Transaction Replication reconciliation reports to identify errors between the source and SAP LT Replication Server. Resolve errors in the source and execute the first six steps to reprocess error records.

You need to execute the following steps to enable the delta load after the initial data load is complete using SAP Central Finance Transaction Replication:
1. Run the `<SourceSystem>CDC_Set_Status_On` job in SAP Data Services. This job enables the replication process.

2. Run the `<SourceSystem>_Journals_CDC` job. This job starts replication of documents from source ERP systems into SAP LT Replication Server. Once started, all the transactions are replicated in Central Finance in real time. The job runs continuously when viewed in the SAP Data Services management console.

3. The job `<SourceSystem>CDC_Set_Status_Off` can be used executed to stop the replication if required.

The following are the driving tables in each source ERP system to extract FI documents:

- **Oracle E-Business Suite:** table GL_JE_HEADERS
- **IFS Applications:** table GEN_LED_VOUCHER_TAB
- **JD Edwards EnterpriseOne:** table F0911
- **PeopleSoft:** table PS_JRNL_HEADER
- **Microsoft Dynamics AX:** table GENERALJOURNALENTRY
- **Microsoft Dynamics NAV:** table <CompanyName>_$G_L Register
- **PeopleSoft:** table P5_JRNH_HEADER
- **Microsoft Dynamics GP:** table GL20000
- **Epicor iScala:** table GL06<CompanyCode><FiscalYear>
- **Infor CloudSuite Industrial (SyteLine):** table LEDGER_MST
- **Infor Baan:** table TTFGLD106<CompanyCode>
- **NetSuite:** table NS_TRANSACTIONS

### 6.2.2 Golden Record Creation

Nowadays, data is considered an enterprise asset. Its value is recognized when it supports operational and strategic business decisions. However, this value is directly correlated to its quality, measured in the accuracy, consistency, existence, integrity, and validity of the data.

The highest value is given to the golden record, the most complete combination of master data elements and hierarchies in an organization, combining information from multiple sources. The golden record is an important step in the quest for a single source of truth.

In the context of master data management in SAP, the term “golden record” usually applies to master data domains such as customers, vendors, or materials. By extension, this principle can be applied to the configuration domain, such as plants or controlling areas, and to transaction objects, such as sales orders, purchase orders, or journal entries.

As shown in Figure 6.3, an ideal environment would use a master data management solution like SAP Master Data Governance (SAP MDG) or use third-party software to integrate master data from multiple SAP and non-SAP sources. At a high-level, the following steps are undertaken:

1. Synchronize the systems to match, merge, and purge the records.
2. Create the golden record in the master data management solution.
3. Create a corresponding record in the Central Finance system.
4. Match the record from the central system to the golden record.
5. Update the mapping table in the SAP MDG foundation in the central system.

### Figure 6.3 Golden Record Creation in a Central Finance Environment

### 6.3 Master Data Processes

Almost every organization has issues with master data, and many spend a great deal of time dealing with master data issues. Master data is usually captured and managed...
in multiple business applications and/or manually. As a result, the data lacks consistency across the different applications. The chief financial officer is usually the owner of all the financial numbers used in and produced by multiple applications and their master data. The consistency of these numbers can be directly affected by the lack of synchronization of master data across multiple applications. Some key issues in master data processes that may directly impact data quality in Central Finance include the following:

- Lack of resources allocated to master data quality
- No business ownership, with data quality being handled by IT and consultants
- Lack of adoption of best practices due to little or disconnected engagement with different parts of the business
- Starting a master data management process without understanding the underlying issues
- Trying to achieve too much too quickly due to a lack of focus on key master data objects
- Choosing a generalist as a leader who does not fully understand how processes interact with each other

When managing master data, you choose from three basic options:

- Leave the current way of managing the process as-is, even if it is not working
- Establish a manual process that allows you to determine who is doing what and to enforce manual governance
- Automate the process of governance for the core process involved in managing the master data

Automation is ideal because leaving the current process as-is could lead to issues in Central Finance after go-live that might manifest themselves in the following symptoms:

- Mapping errors appearing in SAP Application Interface Framework
- Missing master data in Central Finance even though the data had been mapped correctly
- Incorrect mapping between source and Central Finance master data
- High volume of errors caused by missing data or incorrect mapping during the initial load, the cutover period, and the real-time replication, after go-live

Users in the source system creating their own master data without notifying Central Finance owners, which could affect reporting and/or operations in the central system

Controlling this master data process for Central Finance is essential for avoiding frequent, redundant errors and for establishing business control over the initial creation and sustainability of your master data. The recommended process encompasses at least four steps, as shown in Figure 6.4.

![Figure 6.4 Central Finance Master Data Process Steps](image-url)
Whether the process is manual or fully automated, the master data process must have at least these steps to reduce the number of errors after go-live. In the following sections, we’ll describe each of these steps.

### 6.3.1 Request for Change

The change request must cover the creation, modification, deletion, and blocking of master data in accordance with SAP S/4HANA core master data operations. Mass create, change, delete, or block operations outside of core systems are optional, since these operations can be performed in a series. An additional task is that the change request needs to include whether the master data request requires any creation or changes to the mapping for Central Finance.

The mapping for Central Finance is a mandatory element in the change request because the mapping triggers alerts to users and/or executes an automated control in a tool (e.g., a business rules framework in SAP MDG).

Once the change request is raised, key elements of the master data element must be added before the changed data can be validated.

The completion of the change request should trigger the validation of master data. This task must be given to an expert in the business process being facilitated by the given master data object. For example, the creation of general ledger (G/L) accounts must be checked by the finance department, who would fully understand the impact of the various settings. Giving this task to the wrong department leads to poor processes and increased errors and is wasted effort.

The validation of the data is the most critical step in a master data process. You need to perform the following checks:

1. Check whether the change or creation operation requires a change in the mapping.
2. Check that the attributes requested by the change request are relevant for Central Finance.
3. Check whether any attributes are inconsistent between the source system and the Central Finance system.
4. Check that the objects requested in the change request are consistent with the scope of Central Finance.
5. Check that the individual values for the attributes are configuration dependent.
6. Check whether the master data organizational assignments are the same or different in the source system and the Central Finance system.

7. Check which systems the master data requires to be created, changed, deleted, blocked, and so on.

This list of checks is not exhaustive but does reflect the lessons we’ve learned from our customers that either have gone live or are in the project phase. The validation phase should belong to a data steward, even if only unofficially. When one or more checks are inconsistent with the process laid out for the relevant master data object, this change request should be returned to the person who initiated the change request.

In instances where the data steward can determine the values or corrective action for a change request, a modification should be made to the change request and resent to the person who initiated the change request to confirm the changes suggested by the data steward. While this step is not necessary, some organizations could improve data quality continuously by requiring the initiator of a change request to ensure that checks won’t fail and to provide continuous feedback, which increases future accuracy.

### 6.3.2 Approval of the Request

Assuming the data steward, automated or manual, has carried out the validation steps with the requisite due diligence, the approval step should be a formality. However, this step represents the point of no return. The approver should understand the process, the systems, and the impact of a change while being accountable for the change request and its impact.

For Central Finance, an approval involves many facets of the master data process that have a direct impact on the replication process. The approver ideally is the owner of the object and someone who understands Central Finance design. The approver’s tasks include the following:

1. Confirm that the data steward has completed or verified all the mandatory fields.
2. Check that optional fields have the correct values for the target system.
3. Check that mapping values exist when mapping for Central Finance exists.
4. Make final changes to values for any attributes.
5. Approve the change request.
The data steward and the approver can be the same person for the purposes of Central Finance, but validation and approval processes should be segregated to ensure one final check before executing the change request.

Once the approval is granted, the given master data change operation (i.e., create, change, delete, block, mass change, etc.) is executed.

6.3.3 Execution of the Change Request

In execution, automation helps. Central Finance needs at least three events to occur to ensure the correct execution of master data changes, as follows:

- Always updating the Central Finance system first in the execution phase
- Updating the mapping engine for Central Finance next
- Carrying out the requested change in the source system if appropriate (i.e., create, change, block, etc.)

The exact method of execution depends on the scope of the project and the tools your organization uses to implement this process. Execution can take the form of a manual process at an offshore center or a completely automated web service that notifies all parties when a change request has been executed successfully. Figure 6.5 shows a high-level overview of the process for executing master data change requests.

Figure 6.5 Master Data Execution for Central Finance

Where the process stops short of full execution, you should expect to receive error messages in SAP Application Interface Framework for Central Finance.

All master data objects are subject to the core process for managing data we’ve described in this section. However, so far, we’ve been focused on the process and should look at master data itself next.

6.4 Master Data Objects and Hierarchies

Up to now, we’ve discussed the process for maintaining master data objects using tools from SAP and its partners (see Figure 6.6). In this section, we’ll discuss the most common master data objects relevant to Central Finance.

At the time of this writing, Central Finance can automatically create orders based on order types maintained in configuration settings. In addition, as of SAP S/4HANA 1709 FPS 01, work breakdown structure (WBS) elements can be replicated into Central Finance for reporting purposes. For other master data, automatic replication does not exist, as other tools already perform this function.

In general, four main tools for ensuring master data synchronization between your source systems and Central Finance are available:

- **Manual processes**
  - In a manual process, you use a CSV file that uses Central Finance mapping maintenance programs. The actual creation and change of master data between systems
for most master data is manual. This process requires users to confirm the output prior to posting a transaction. If a transaction is posted without the process being followed, the likelihood of an error arising is quite high.

- **Intermediate documents (IDocs)**
  IDocs can be used to send data from a source system to Central Finance, and vice versa. This method works well during the initial cutover, when harmonization is not critical for the relevant object. If harmonization is important, you need to customize the IDoc. IDocs are a purely IT solution and do not help manage master data.

- **Third-party tools**
  A partner solution, such as those offered by Magnitude, can be used for SAP and non-SAP data for the initial load during the cutover period. This solution can also assist with profiling data and with removing duplicates in legacy data. In addition, Magnitude solutions can handle both SAP and non-SAP systems to kickstart the process of loading data with some data cleansing.

- **SAP Master Data Governance**
  Using SAP MDG allows for initial loads and online replication based on change requests that comply with the optimal four-step process (request, validate, approve, and execute). In addition, Central Finance uses SAP MDG to maintain the mapping. SAP MDG also allows a full governance process for master data, including the creation of the golden record, replication, and notifications of changes to user groups. This tool is built and maintained by the IT department but owned and used by business users. Consider SAP MDG as just another business application that happens to manage master data.

### 6.4.1 Chart of Accounts (General Ledger Account)

The central object in a finance transformation is a chart of accounts, which represents the basic recording mechanism for accounting entries being fed from source systems. A chart of accounts is the number one prerequisite for implementing Central Finance from a business perspective and drives many design decisions for finance functions. You don’t have to wait until kicking off a Central Finance implementation project before creating a chart of accounts. Starting even months ahead could provide your organization the time to discuss the project and save resources in the long run. Up to three charts of accounts can exist for a company code, and each company code must have at least one chart of accounts, per SAP standards.

Within SAP S/4HANA, and thus within Central Finance, three charts of accounts exist: group, country, and operational. Each represents a different purpose, recording mechanism, and reporting capability. By default, implementing Central Finance implies commonality and harmonization among these objects from multiple source systems.

Often, but not necessarily, the Central Finance instance contains a single operational chart of accounts. This chart of accounts is used to make all the postings from the source system into SAP S/4HANA. The configuration of the Central Finance instance depends on this operational chart of accounts, as shown in Figure 6.7, and how this chart of accounts is set up directly impacts how Central Finance operates.

- **Source**
  - Company COA
  - Country COA

- **Central Finance**
  - Group COA
  - Operational COA

- **Company Code**

![Figure 6.7 Central Finance and Charts of Accounts](image)

Let’s consider the context of different charts of accounts in Central Finance. As shown in Figure 6.7, the group chart of accounts is linked to the operational chart of accounts in the Central Finance instance. This optional chart of accounts and configuration element becomes important for three reasons: First, perhaps your organization wants to generate a consolidation feed from Central Finance or use embedded SAP consolidation software within the Central Finance instance. Second, you also manage intercompany or intracompany transactions within the Universal Journal with Central Finance. Third, using the reporting capabilities enabled by Central Finance using the group chart of accounts could assist with resolving preconsolidation or intercompany issues.
When Central Finance is used as a reporting or operational tool for local generally accepted accounting principles (GAAP), then the country chart of accounts becomes relevant but is otherwise optional. If needed, this chart of accounts must be configured for each company code being transitioned into the Central Finance instance. Normally, the chart of accounts would be directly configured within Central Finance Customizing in an early design step. Thereafter, many customizing settings will be a product of the operational chart of accounts, such as the retained earnings account, the currency valuation, the bank account link to the G/L account, and so on.

The G/L account is part of the chart of accounts. Two main types of G/L accounts are set up: balance sheet accounts and P&L accounts. You must create G/L accounts for each chart of accounts set up in Central Finance as per the project scope. Each G/L account in Central Finance has the same segments as SAP ERP 6.0 in terms of chart of accounts segment and company code segment. The key difference between SAP ERP 6.0 and a Central Finance instance is that Central Finance does not differentiate between G/L accounts and cost elements.

Therefore, you must understand how the design of the G/L account will work with Central Finance given the differences between the two technologies as well as the existing differences between your various G/L accounts, which may be set up across the same technologies. For example, a G/L account number may be seven digits in one system and nine digits in another. Meanwhile, the organization may have decided to create a new G/L account structure based on eight digits going forward.

Differences can arise in the G/L account structure for the following reasons:
- Length of the G/L account
- Usage of the G/L account
- Settings of the G/L account
- Structure of the G/L account for non-SAP technologies
- Same G/L account usage with different codes
- Links between G/L accounts for country and group charts of accounts inconsistent at the operational level

This list represents just a few sample reasons why the harmonization of G/L accounts is a key activity in all implementations of Central Finance. Regardless of the reason, the G/L account should be harmonized as a matter of best practice.

Like all other master data objects relevant for Central Finance, the G/L account may need to be mapped, as shown in Figure 6.8, from the source system to the SAP S/4HANA system where Central Finance is operational. Three options exist for mapping the G/L account:
- The G/L account number in the source system is the same as the G/L account number in Central Finance. In this case, no mapping is needed.
- One or more G/L account numbers in the source system have different numbers from one G/L account in Central Finance. In this case, mapping is needed.
- A rule does not exist for mapping on a 1:1 or N:1 basis. In this case, rule-based mapping is needed.

Figure 6.8 G/L Account Mapping for Central Finance

For each source system G/L account, the designer needs to establish the mapping options from a business perspective to ensure the correct working of the G/L account master data process. Note that the process of managing G/L accounts also requires that users understand how the design of this object has changed with SAP S/4HANA. In the following section, we’ll cover the most salient changes.

6.4.2 Business Partners

One big change in SAP S/4HANA beyond the G/L account is the adoption of the business partner as the main functional object for customers and vendors. Business partners are probably the second most important objects in Central Finance, in terms of data volumes and impact, because most open items in Central Finance are related to a business partner. While business partners are mandatory for Central Finance for...
payables and receivables reporting, for operational scenarios, or as a stepping stone to SAP S/4HANA logistics, customer and vendor objects are still involved in these processes in SAP S/4HANA and, therefore, in Central Finance.

You should consider how business partners will be initially loaded into Central Finance, whether using a master data load tool described earlier or another method. Once the data is loaded into the Central Finance instance, the configuration must be set up appropriately to ensure that customers and vendors are correctly created from business partners.

The process of creating customers and vendors requires that you design and build business partner roles, their attributes, and any process-relevant data such as bank data, credit details, payment methods, and so on. The scope of the business partner data is directly driven by the scope of the processes used for reporting or transactional scenarios. Once your data needs have been clearly determined and according to scope, customer/vendor integration (CVI) can be used to manage the process of maintaining customers and vendors through the business partner. Figure 6.9 shows the required movement setup as a process during the cutover and for ongoing maintenance. What tool is used to maintain the source system and the Central Finance instance depends on your requirements.

Of course, manual tools dealing with large data volumes in a large company require greater effort to ensure that business partner and customer integration is maintained in Central Finance. For example, you need to ensure that bank data is correct across the landscape, a prerequisite for payment factories to make payments, which may originate from more than one system, to vendors and to engage in multiple types of procurement categories.

By understanding the management of the business partner process and its attributes during the project, the go-live will be smoother, and after go-live, maintenance will be easier. These organizational change management issues can cause symptoms in Central Finance’s functional and technical operations.

### 6.4.3 Material Numbers

Whether you use the material master within Central Finance is optional. Replicated postings from SAP source systems include the material number, which can then be used for market segment reporting within the Universal Journal within Central Finance. Another reason for maintaining the material master within Central Finance is to facilitate the execution of logistical processes that may be centralized, such as procurement.

When material master numbers differ across multiple source systems, SAP MDG key mapping can be used to manage their relationships. When deployed fully, SAP MDG can also be used to manage governance and distribution processes.

If the material master is not required within the scope of the project, a Central Finance BAdI (Business Add-In) will be required to remove the material master from the replicated accounting postings, which is a relatively easy task. Assuming the BAdI is no longer relevant and that the material master is no longer needed, the BAdI can be deactivated and the code removed as a project activity. The flexibility is provided by the technical framework behind Central Finance.

### 6.4.4 Profit Centers

Profit centers are probably required within Central Finance because almost every connected system (both SAP and non-SAP systems) uses the concept of profit centers to manage overhead. Also, profit center codes may differ in the Central Finance system in order to introduce a single controlling area. SAP MDG key mapping would therefore be required to identify new values based on the source system, controlling area, and profit center.

As with financial master data objects, fully deployed, SAP MDG can centrally govern and distribute profit center records. SAP S/4HANA Finance provides SAP Fiori applications for the maintenance of profit centers (e.g., the Manage Profit Centers app). Profit centers within SAP S/4 HANA are linked to a “segment” as per the new G/L functionality, and document splitting can be performed for both profit centers and...
segments. If the source system uses the classic G/L, profit center master records will not contain this attribute. However, given the framework behind Central Finance, any classic G/L attributes can be determined using a BAdI based on business rules or default values, which could be a project activity.

Full P&L account reporting by profit center and profit center hierarchy is available in the Central Finance instance using replicated and direct postings. Standard SAP Fiori applications (e.g., the Profit Centers—Plan/Actual app) are provided, together with queries and core data services (CDS) views. Queries and views can also be consumed within business intelligence tools such as SAP Analysis for Microsoft Office. You should also consider planning data since most profit center managers require actual and plan postings within a single report. Thus, building a centralized planning system using SAP S/4HANA optimized with SAP Business Planning and Consolidation (SAP BPC) may make sense since planning data is not replicated to Central Finance. Alternatively, SAP Analytics Cloud could also provide users the necessary planning capabilities.

### 6.4.5 Cost Centers

Cost centers are probably required within Central Finance process design because almost every connected system (both SAP and non-SAP systems) uses the concept of cost centers to manage overhead and operational expenses. Also, cost center codes may differ in the Central Finance system in order to introduce a single controlling area. SAP MDG key mapping is therefore required to identify the new values based on the source system, the controlling area, and the cost center. Like other financial master data objects, fully deployed, SAP MDG can centrally govern and distribute cost center records.

Central Finance provides SAP Fiori applications for maintaining cost centers (e.g., the Manage Cost Centers app). Cost centers may also be posted to directly within Central Finance because centralizing certain indirect business processes (e.g., connectivity with SAP Ariba and Concur) may make sense.

Full profit and loss reporting by cost center and cost center hierarchy is available in the Central Finance instance using replicated and direct postings. Standard SAP Fiori applications (e.g., the My Spend app) are provided, together with queries and CDS views. Queries and views can also be consumed within business intelligence tools such as SAP Analysis for Microsoft Office. You should also consider planning data since most cost center managers require actual and plan postings within a single report. Thus, building a centralized planning system using SAP BPC optimized for SAP S/4HANA may make sense since planning data is not replicated to Central Finance. Like profit centers, SAP Analytics Cloud can also hold planning data and provide reporting capabilities.

### 6.4.6 Activity Types

Activity types are optional within Central Finance. If the connected SAP system performs activity type allocations (directly or indirectly), then these activities can be passed to Central Finance via SAP LT Replication Server CO document replication. Alternatively, allocations may be performed directly within Central Finance as a part of centralized closing activities.

If activity type allocations are being replicated to Central Finance, you may need to perform an SAP MDG key mapping to convert to a harmonized activity type code. Often, this mapping is necessary when the Central Finance design includes a single controlling area and the connected systems use multiple controlling areas. Like other financial master data objects, fully deployed, SAP MDG can centrally govern and distribute activity type records.

One dimension often overlooked regarding activity types is that, if direct activity type allocations are replicated, the activity type rate must exist within Central Finance. SAP S/4HANA Finance provides SAP Fiori applications maintaining activity types (e.g., the Manage Activity Type app).

### 6.4.7 Statistical Key Figures

Statistical key figures (SKFs) are optional within Central Finance. SKFs are generally used to support allocations within the CO module. For example, SKFs may be used within an assessment cycle to distribute costs from a central cost center to several receiver cost centers (e.g., based on floor space or employee headcount).

If central closing allocations are being performed within Central Finance, then SKFs can be defined. Like other financial master data objects, fully deployed, SAP MDG can centrally govern and distribute SKF records. Like other CO objects, SAP S/4HANA Finance provides SAP Fiori applications for maintaining SKFs (e.g., the Manage Statistical Key Figures app).
Flexible Hierarchies
Not strictly master data, flexible hierarchies need special mention as one of the key innovations from SAP that can be used when deploying Central Finance. Hierarchies (e.g., profit center and cost center hierarchies) are composed of master data exclusively. Since SAP S/4HANA 1709, you can create hierarchies and base their levels on cost center and profit center attributes.

End users can create these hierarchies and then use them on all data replicated via Central Finance in SAP S/4HANA. Using Central Finance with flexible hierarchies can benefit business users by separating the process of managing hierarchies from the normal master data processes for cost centers and profit centers. Flexible hierarchies can use a harmonized model down to the profit center and cost center attributes, which in turn can be used in reporting based on different levels and the nature of the hierarchy.

6.5 Ongoing Transaction Replication
Master data and configuration harmonization is a necessity for ongoing transaction replication just as it is for the initial load process. Naturally, the system requires consistency across the various source systems and the Central Finance systems throughout the life of the solution, and as mentioned in Section 6.3, this means setting up systems and processes to govern and ensure this consistency. Chapter 11 introduces the SAP MDG toolset, which is one such tool that can assist in the governance and controls relating to the management and creation of key finance master data elements across various source systems as well as the Central Finance system.

This section discusses features relating to the ongoing replication of transactions from SAP source systems in Section 6.5.1, as well as the replication of transactions from non-SAP source systems in Section 6.5.2.

6.5.1 SAP Transaction Replication
As we’ve seen, sourcing from an SAP source system supports a large variety of business operations and financial information to be replicated to the Central Finance system. Whether it is the financial data sourced from classic FI, the managerial financial data sourced from classic CO, the profit center accounting information from Profit Center Accounting (PCA), or document changes, taxes, or clearing information, replicating SAP transaction information comes to Central Finance through a number of interfaces. Each of these interfaces requires its own consideration, rules, mapping, and customizations. The detailed information about the technical interfaces across the systems will be explored further in Chapter 9, but for now let’s briefly touch on them at a high level in order to discuss the configuration and options that SAP provides to assist in the mapping and management of the data supported with these interfaces.

The standard SAP interfaces are as follows:

- **Accounting document replication**
The standard replication of financial postings from source to target system. The technical name for the FI interface which is visible for monitoring within the SAP Application Interface Framework Interface Monitor is AC_DOC. This interface name corresponds to the source system staging table CFIN_ACCHD, which is populated for all relevant FI transactions to be replicated to Central Finance. When a business transaction is executed in the source system which results in the creation of a financial document, (historically a BKPF entry) and this financial document is required in the Central Finance system, the source system creates the necessary entries in a series of CFIN_ACC## tables, where the ## suffix represents different information, such as CFIN_ACC## for header information or CFIN_ACC## for item information. In the source system, these various CFIN_ACC## tables are linked together by a unique identifier, a GUID, which exists across these tables. In this way, when a trigger and replication are made on the CFIN_ACC## table, a subsequent pull from all the CFIN_ACC## tables with that GUID is also done, and these pieces of “children” information are sent along to Central Finance as a part of the Central Finance package.

- **Controlling document replication**
The standard replication of managerial accounting postings from source to target system. The technical name for the CO interface is CO_DOC, and it corresponds to the COBK table (CO Headers) in the source system. Whenever a relevant transaction is posted in the source system which creates a Controlling document which updates COBK, the CO_DOC interface transfers the relevant information from COBK and the various information tables, such as COEP (CO Line Items) and so on. Because Central Finance is utilizing the standard CO tables as staging tables, no Central Finance-specific GUID is created for CO documents; instead, the reference document number of the standard CO tables is used to link the header to the various line item details.
Accounting document change replication
The accounting document changes can be replicated to Central Finance via the AC_DOC_CHG interface. This interface utilizes change triggers in the source system to replicate the updated information to Central Finance, where it is reposted with its own unique GUID. In some cases, documents may be captured in SAP Application Interface Framework for this interface with errors such as “reference document not found.” and this is due to the nature of change documents requiring that their original document be in the system prior to changes being created on that document.

Commitment replication
Central Finance supports the replication of commitment information from the source system to the target via the CMT_DOC interface. This interface uses triggers set in the newly created central finance source persistence table for commitments, table CFIN_CMT_H. When new or updated commitment information is created in the source system, table CFIN_CMT_H is updated, and data is replicated to the target system.

Profit Center Accounting replication
Profit Center Accounting documents are supported in the central finance solution. The PCA_DOC interface can be viewed in SAP Application Interface Framework and supports the replication of Profit Center document entry, actual assessment in Profit Center Accounting, and actual distribution in Profit Center Accounting. The data for PCA postings is retrieved from the source system via table GLPCA, and PCA configuration is carried out via Transaction FIN_CFIN_PCA_SET in the source system, where a configuration table similar to that of CFIN_SOURCE_SET is maintained for PCA specifically.

In summary, not all documents that are posted in the SAP source system are relevant for replication to Central Finance. There are cases where the documents in the source system should indeed not be replicated to the target system, either because of the scenario you have chosen to deploy or because if they were to be replicated, the accounting would be inaccurate, such as the case with CO/FI postings. For example, in SAP ERP, the CO/FI posting used to reconcile FI to CO when an intercompany CO movement created an FI document; however, in Central Finance, because the CO document was already replicated, when the CO document is posted in the target system, the CO and FI accounting has already been updated. This is because SAP S/4HANA has merged FI and CO via the Universal Journal. If the CO/FI document posted in the source system was replicated to Central Finance, it would result in a double FI posting.

To understand all of the latest relevant transactions which are in scope for Central Finance, you should refer to SAP Note 2184567, the Central Finance FAQ, and the Central Finance Administrators Guide for your version.

6.5.2 Non-SAP Transaction Replication
Realizing and achieving the vision of a Universal Journal across an entire enterprise often requires the caring for and integration of ERP systems which are not SAP. Many times, these source systems are fundamentally different in their approach to master and transaction data. These differences in data structure and definitions must be cared for both functionally and technically in order to harmonize and successfully create and post this information into Central Finance.

Central Finance does provide support and accelerators to integrate the data from non-SAP systems via the SAP LT Replication Server third-party interface. Utilizing this interface has several requisites and dependencies, which we’ll highlight in this section. In Chapter 9, we’ll explore the specific details of the technical structure of data as it flows into Central Finance from SAP LT Replication Server, but for now it is sufficient to understand that the SAP S/4HANA architecture is driven by a set of structures representing the header of the document, the line items of the document, and so on. These tables are linked together via a GUID in SAP LT Replication Server and by their reference document number, or their primary key, such as company code, fiscal year, and document number. Figure 6.10 shows at a high level the various structures that SAP LT Replication Server can support when receiving data from the non-SAP systems and how these structures are linked.

Note
Take a look at the clearing information row in Figure 6.10. Clearing information is now supported for third-party source systems as of SAP S/4HANA 1909. Refer to SAP Note 2173300 on how to enable the SAP LT Replication Server structures to support this functionality.

As you can probably already discern, this reliance of SAP LT Replication Server on a strictly SAP data structure requires a lot of effort to transform the non-SAP source system data and structures into a form that SAP LT Replication Server can operate with. The complexity and variations can be quite numerous given the number of the various different source system software platforms available and the differences in design each system represents.
The drilldown component deployed using SAP Fiori enables visibility into source ERP operational data for sales orders, purchase orders, goods receipts, and G/L journals. Additionally, any new and ongoing postings in source ERP systems are captured by SAP Central Finance Transaction Replication and loaded into Central Finance in real time, as shown in Figure 6.11.

SAP Central Finance Transaction Replication replicates the following items:
- G/L account balances
- Historical transaction load
- AR/AP open items
- Ongoing accounting transaction replication

The following items are replicated:
- G/L account balances
- Historical transaction load
- AR/AP open items
- Ongoing accounting transaction replication

Figure 6.12 Master Data Maintenance Process

6.6 Governance

Since a Central Finance system merges master data, configuration, and transactions from multiple systems, a question often arises: What happens when new data is created, updated, or even archived? This process requires proper governance.

The steps shown in Figure 6.12 follow the lifecycle of master data governance: extraction, harmonization, rationalization, dissemination, and maintenance.
In the following sections, we’ll first look at some initial considerations for master data and master data objects before moving on to an overview of the dynamic cost object creation process. Then, we’ll walk through each process in the master data governance lifecycle.

### 6.6.1 Master Data and Master Data Objects

The following domains should be considered in all Central Finance projects:

- Operating concern, controlling areas, company codes, plants
- Profit centers, cost centers, activity types, G/L accounts, and cost elements
- Customers, vendors, and business partners
- Projects and WBS elements
- Materials and characteristics

During the scoping phase, the following questions have to be answered:

- Which domains are relevant to the selected scope? For instance, plants and materials might not be necessary if logistics and product profitability are not considered.
- Which source system(s) contain the right master data? Are all characteristics necessary for the project? For example, material dimensions might not be required, but unit costs might.
- What software solutions are already in place that cover part or all of these domains?
- Are the master data objects time-dependent? How frequently are they created, updated, or archived?
- Is there a language component for the master data objects (e.g., cost center description) in multiple languages?
- When a master data object is changed, how quickly does the change need to be replicated to the Central Finance system before a corresponding transaction is replicated?
- What are the security and authorization requirements?
- What are the audit or logging requirements?
- What is the incremental level of effort required for the initial load? For ongoing maintenance?

This list of questions should help you evaluate the need for a dedicated master data governance solution.

### 6.6.2 Dynamic Cost Object Creation

The following cost objects are supported in Central Finance:

- OR: Order
- KS: Cost center
- KL: Cost center/activity type
- EO: Profitability segment (account-based)
- AO: Profitability segment (costing-based)
- PR: Project (WBS element)

Some cost objects, however, are not supported by the Central Finance system, but BAdIs are available to extend the solution, which is the case for the following:

- VB: Sales order
- BP: Business processes
- NV: Networks
- HP: Generic cost object
- I*: Real-estate object
- OP: Order/line item

For more information on supported cost objects, refer to SAP Note 2103482.

Figure 6.13 shows a list of all BAdIs available for Central Finance. Templates are available to facilitate these extensions.

![Figure 6.13 List of BAdIs Available for Central Finance](image-url)
In general, you follow these steps:


2. Now, an implementation for BAdI BADI_FINS_CFIN_CO_INTERFACE of enhancement spot ES_FINS_CFIN_CO_INTERFACE is created. Click Continue.

3. In the popup window, enter an Enhancement Implementation name and a Short Text.

4. Click Creation of Enhancement.

5. Select a transport package or choose Local Object if in a sandbox system.

6. Enter a name for the BAdI Implementation and the Implementation Class. Click Continue.

7. This step is important. Choose between Create a new empty class, Copy one of the example classes, and Inherit from an example class not declared as final. We recommend either copying the example or inheriting the class attributes from class CL_FINS_CFIN_CO_INTERFACE_EXAM. In this example, choose Copy sample class.

8. On the overview screen, click Save and then Activate.

In the implemented class, open method IF_BADI_FINS_CFIN_CO_INTERFACE~MAP_REPLACE_CO_POSTING_DATA. Notice the call to object_handler_bp. In this private method, the technical object key is interpreted and available in the field prznr. From this field, developers can map to a dummy business process, perform remote calls, or generate the necessary master data.

6.6.3 Extraction

Data extraction from SAP and non-SAP systems can be performed in three ways:

- Manually, through data file export
- With standard solutions like SAP MDG, SAP Data Services, or third-party software
- With custom programming

Which solution you choose depends on the level of effort, the frequency of updates, and the solutions already in place. The solution could also handle the initial load and the ongoing operations differently.

6.6.4 Harmonization

Multiple strategies are possible for master data harmonization, for example:

- Spending as little time as possible harmonizing data by only dealing with overlapping number ranges
- Focusing on attributes and characteristics like groups and only harmonizing the top elements (i.e., top 10% of customers by revenue or top 20% of raw materials by procurement volume)
- Performing an extensive harmonization process using matching algorithms and machine learning

When merging data from multiple source systems, especially in the case of customer/vendor integration (CVI), pay special attention to key IDs when these values are kept from the source systems. Watch out for the following:

- Different elements representing different IDs
- The same elements with different IDs
- Different elements with the same IDs
- The same elements with the same IDs

The only hard requirement is that if key IDs are kept from the source system, the third case must be avoided, which is possible with preliminary work.

Organizations usually worry about the second case. What if the same customer or supplier exists in different source systems but is represented as two different customers? The answer is to overlook the IDs and focus on customer attributes, groups, or hierarchies. If these elements are maintained correctly, reports will show these elements in the same group, and harmonization can be performed after the fact.

With harmonization, unfortunately, the return does not always match the level of the effort that the team has put in, and the law of diminishing returns can certainly apply in this situation.
6.6.5 Rationalization
Over time, or through system integration, chances are that some pieces of master data will be duplicated. For example, a vendor could have different numbers in the procurement and ERP systems; a customer could be represented twice in customer relationship management (CRM), ERP, or logistics due to multiple subsidiaries; a raw material could be represented differently in separate source systems, and so on. The process of reducing the number of duplicates while ensuring better master data quality is called rationalization.

For master data rationalization, we recommend using standard taxonomies such as UNSPSC, NATO, or eClass to facilitate the rationalization process. These taxonomies are supported by most master data software.

Once duplicates have been identified, you need to determine which fields should be kept. This process can be done manually if the volume is reasonable. With larger datasets, the best strategy is to prioritize information based on source systems. For instance, a customer address is probably more reliable coming from the logistics system than from the CRM system. Another strategy would be to prioritize the most recent records.

6.6.6 Dissemination
The dissemination or synchronization of master data is the process of communicating the updated record back to the source systems. To maintain transactional integrity, the original element IDs should be kept and transferred together with the updated information. As much as possible, the dissemination process should update all systems at once to avoid discrepancies.

6.6.7 Maintenance
To reduce effort and provide a more reliable framework, we recommend setting up the same de-duplication rules during the initial load as in the ongoing replication. Master data management should be set up in such a way that exceptions will be raised, and the master data group should be notified. Then, an analyst can evaluate master data conflicts and either resolve these issues directly or dispatch issues to the relevant groups.
Master data is an important workstream in all Central Finance projects but should be separated from transactional data or configuration. The initial load process can be overwhelming, so an agile approach is preferred over a big bang implementation. To that end, SAP Application Interface Framework can be used during the initial load and for subsequent delta loads.

A master data management solution deployed in the landscape will help you in the overall process of extracting, harmonizing, rationalizing, disseminating, and maintaining the key master data domains. More than the data itself, the processes around maintaining master data will increase the value of the Central Finance project.

In the next chapter, we’ll take a look at your deployment options for Central Finance.
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PART II Deploying Central Finance

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