



Integration of SAP and Microsoft Dynamics AX

Financial Consolidation

White Paper

This document is based on the integration between a SAP R/3 and a Microsoft Dynamics AX business management system in a demo environment. In particular, it focuses on integration between Microsoft® BizTalk® Server 2009, Microsoft Dynamics AX 2009 and SAP Business Suite.

Created by Microsoft Corporation in collaboration with Hitachi Consulting.

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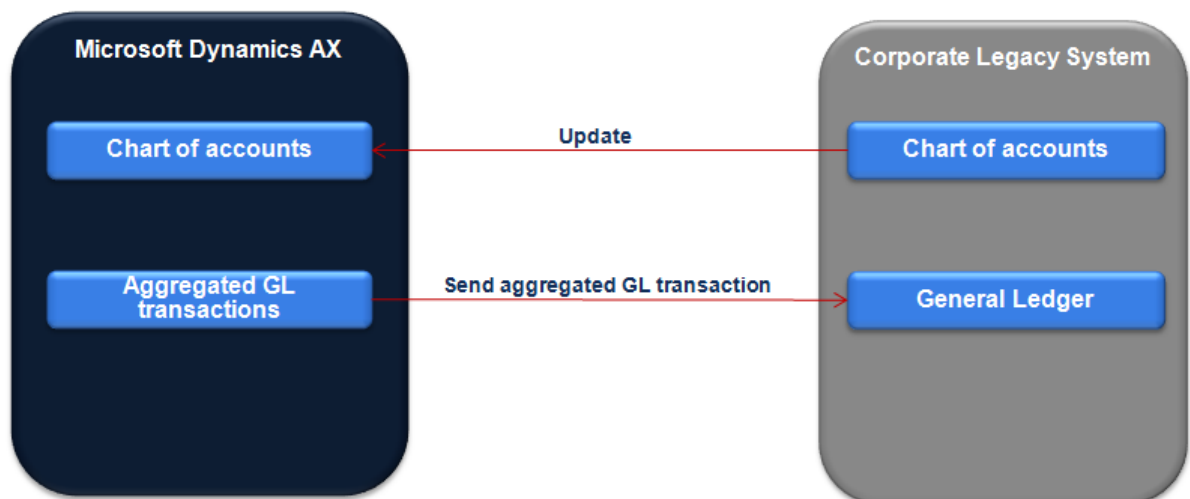
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1. INTRODUCTION

This document describes end-of-month consolidation that takes place in the Corporate Legacy System and is completed by uploading General Ledger balances from Microsoft Dynamics AX to the Corporate Legacy System. The data is exported from Microsoft Dynamics AX and imported into the Corporate Legacy System. Vendor and customer balances for the subsidiary can be viewed in Microsoft Dynamics AX, and will not be imported into the Corporate Legacy System.

1.1 BUSINESS TRANSACTIONS

A large company is running a different legacy system in its central operation and in some of its subsidiaries. In this scenario, Microsoft Dynamics AX is operated at the subsidiary level. In this case, the central organization is consolidating all necessary financial activities for reporting and consolidation. Subsidiaries operate Microsoft Dynamics AX and only send aggregated financial statements. There is no update of the system; just simple statements that are sent to the corporate legacy system. Chart of account, analytics accounts and cost and profit centers might be synchronized but this is not necessary as those data usually do not change that much and are easy to modify. The basic elements of this financial consolidation transaction between parent and subsidiaries are shown in the figure below.



2. FINANCIAL CONSOLIDATION SETTINGS

End-of-month consolidation will take place in the Corporate Legacy System and will be completed by uploading the total General Ledger balances from Microsoft Dynamics AX to the Corporate Legacy System. Both Microsoft Dynamics AX and the Corporate Legacy System have the same chart of accounts with identical General Ledger accounts so every account in Microsoft Dynamics AX is mirrored in the Corporate Legacy System. Also, the fiscal year in Microsoft Dynamics AX is the same as that in the Corporate Legacy System.

2.1 SAP SPECIFIC SETTINGS

In SAP, two company codes have been set up: CUS and CEU. Company CUS is the parent company and uses financial statement version CUS for the end consolidation. This financial statement is defined by using the total inter-company accounts. Company CEU serves as the financial connection between Microsoft Dynamics AX and SAP. Company CEU uses a different Financial Statement Version: CEU. This is a standard SAP financial statement version.

2.2 INTERFACING WITH SAP

In order to post the General Ledger balances from Microsoft Dynamics AX to SAP, you must use a flexible upload method. This creates an official SAP posting.

The business transactions described above depends on system settings and master data. The system settings form the organizational and technical structure, and the master data is the basis for content in the business transactions. These following sections describe the configurations and system settings for SAP.

2.2.1 CHART OF ACCOUNTS

This call BAPI_GL_ACC_GETLIST is used to import the Chart of Accounts from SAP to Microsoft Dynamics AX. In order to request Chart of Accounts, the company code must be sent from the location we want to get the chart of account. In this scenario, the head corporate company code is set.

Once the Chart of Accounts are returned from the RFC call to BAPI_GL_ACC_GETLIST, BizTalk maps the response to a Microsoft Dynamics AX request to ChartOfAccountServices for updating Chart of Accounts in Microsoft Dynamics AX.

The following are the two BizTalk processes for synchronizing the Chart of Accounts.

- Reading the Chart of Accounts from SAP
- Updating the Chart of Accounts in Microsoft Dynamics AX

2.2.1.1 SCHEMAS

The following table shows the schemas used for synchronizing chart of accounts:

Schemas	
BAPI_GL_ACC_GETLIST	SAP schema for reading the Chart of Accounts
BAPI_GL_ACC_GETLISTResponse	SAP response for reading the Chart of Accounts
ChartOfAccountsService_ChartOfAccounts	Microsoft Dynamics AX Chart of Accounts

2.2.1.2 MAP

The SAPCOA_To_AXCOA.btm, maps the response message from SAP to a Chart of Account request message. The output of the map is used to call the “create” action of ChartOfAccountService in DAX. The following table displays the source and destination elements in this map:

SAPCOA_To_AXCOA.btm

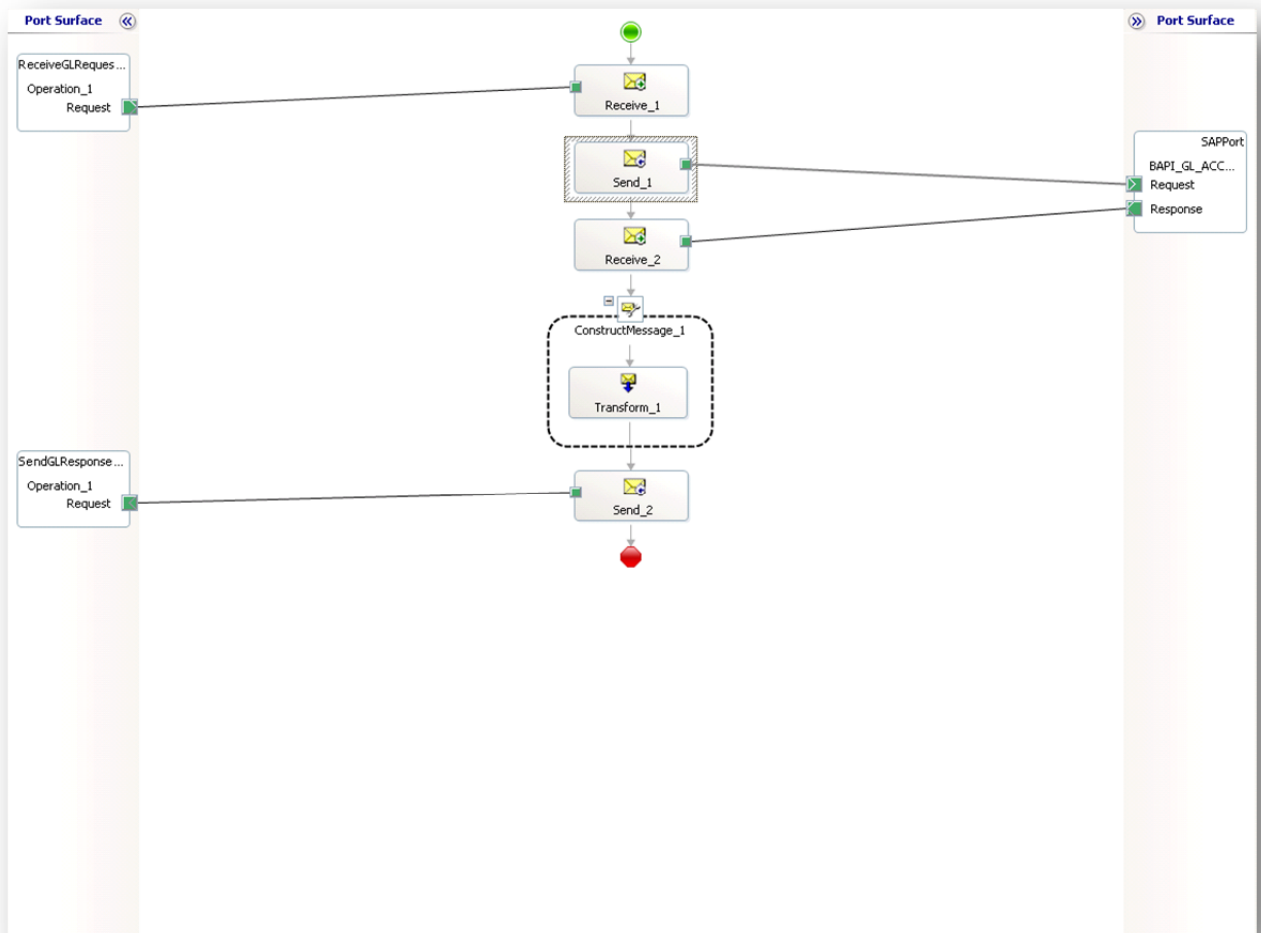
Source	Location	Destination	Location
GL_ACCOUNT	BAPI_GL_ACC_GETLISTResponse> ACCOUNT_LIST>	AccountNum	Ledger Table
ns3:LONG_TEXT	BAPI_GL_ACC_GETLISTResponse> ACCOUNT_LIST>	AccountName	Ledger Table

2.2.1.3 ORCHESTRATIONS

There are two orchestrations. First, GetSAPGLAcct.odx, gets the list of Chart of Accounts from SAP. The request message is an XML with the only required fields, "CompanyCode":

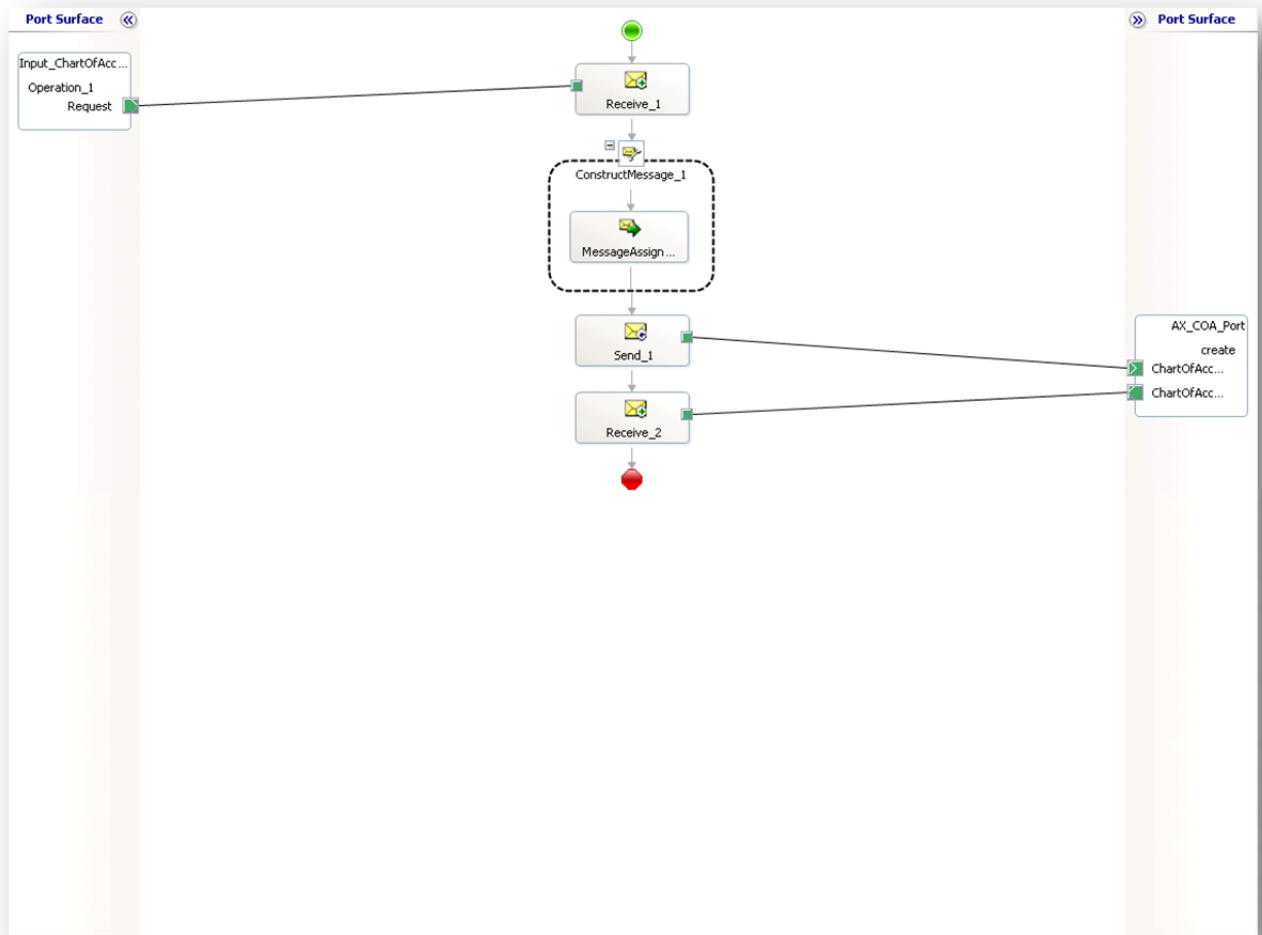
```
<ns0:GLRequest xmlns:ns0="http://FinancialConsolidation.RequestGL">
  <CompnayCode>3000</CompnayCode>
</ns0:GLRequest>
```

Once the request has been placed in Receive port, the orchestration will send the request to the SAP by calling the BAPI_GL_ACC_GETLIST.



Once the response (list of chart of accounts) is returned from SAP then the process maps it to a create request according to Microsoft Dynamics AX Chart of Account service message request using the map in previous section. It is saved in a file location accessible for the other orchestration, CreateAXChartOfAccounts.

This orchestration reads the converted Chart of Account list sent and calls the “create” action of *ChartOfAccountService*.



The header of the message is set in the message assignment shape as shown below:

```

AXCOARequest._ledgerChartOfAccounts = COARequest;
AXCOARequest(DynamicsAx5.Action) =
"http://schemas.microsoft.com/dynamics/2008/01/services/ChartOfAccountsService/Create";
AXCOARequest(DynamicsAx5.SourceEndpoint) = "RemoteEP";
AXCOARequest(DynamicsAx5.DestinationEndpoint) = "LocalEP";
AXCOARequest(DynamicsAx5.MessageId) = System.String.Format("{0:B}",
System.Guid.NewGuid());

```

2.2.2 FLEXIBLE UPLOAD METHOD

Flexible method is used to upload transaction data and master data from a Microsoft Dynamics AX generated file into the SAP consolidation system. The first step is the configuration of the flexible upload method. The file is divided into the following two parts.

- Header
- Individual data rows (lines with data)

Define the Upload Method:

1. In the process view of the workbench, select **Consolidation Functions>Data Collection>Flexible Upload**.
2. Create an upload method and give it a name (**CS01**).

Column Width For the Upload File:

Variable column width: The fields are separated by a designated separation character such as the tab character. However, other characters can be designated also.

Transaction code: **CXCC**

Field Catalog: Color Legend for fields

Field	Required (red; must be assigned to the field catalog)
Field	Multiple assignments possible (green background; can be assigned to multiple field catalogs)
Field	Predefined (gray; assignment to field catalog is fixed, but its position in the field catalog is arbitrary)

Next, the upload of the transaction data will require the transaction code **CX25**. Please note: The **Upload method** field should be **CS01** and the **Test run** field should be unchecked. Cumulative (year-to-date) Input Type values that reflect the accumulated values as of the current date are used in the upload file. Internally, the system stores the values as period values after automatically calculating the differences to the prior period balance.

The statistics of the upload should display after the transactions is executed.

The writing of data is suppressed if errors occur. The data records are only written if no errors occur. This is necessary to prevent follow-up errors. (For example, inconsistent reported financial data can lead to erroneous results in currency translation and rounding.)

The uploaded data can be reviewed with the transaction code **CX34**.

2.3 AX SPECIFIC SETTINGS

2.3.1 CHART OF ACCOUNTS

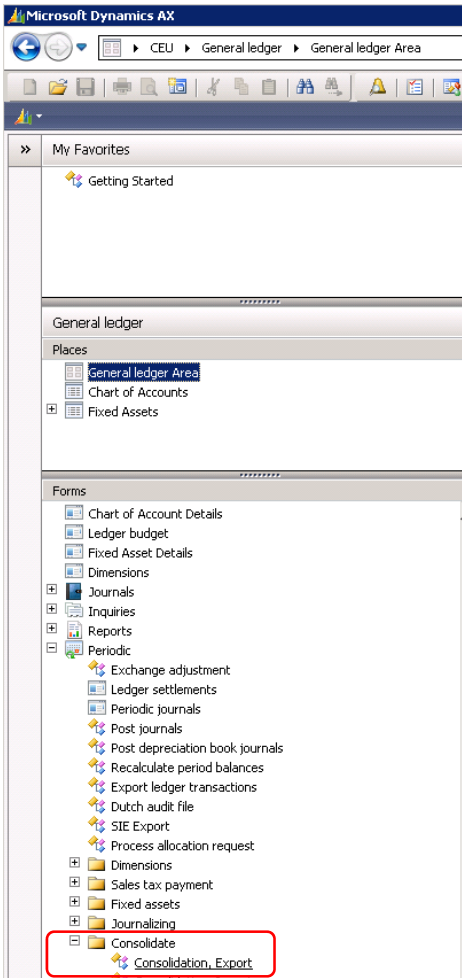
The Chart of Accounts is copied into Microsoft Dynamics AX automatically. The Ledger accounts beginning with "HQC-" are coming into Microsoft Dynamics AX from SAP via BizTalk.

The following is a screenshot from the Microsoft Dynamics AX Chart of Accounts which can be accessed through the following navigation: **General Ledger> Chart of Accounts Details.**

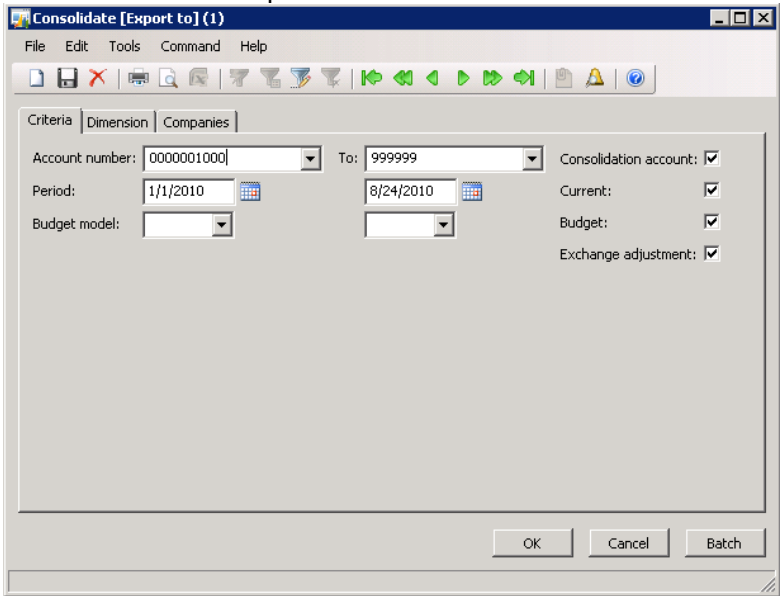
Ledger account	Account name	Search name	Account type	Ledger account category	Locked in journal	Balance
0000001000	HQC-Real estate and similar rights	HQC-Real estate and similar rights	Profit and loss		<input checked="" type="checkbox"/>	0.00
0000001010	HQC-Accum. deprecn - real estate and similar rights	HQC-Accum. deprecn - real estate and similar rights	Profit and loss		<input type="checkbox"/>	0.00
0000001050	HQC-Appreciation land	HQC-Appreciation land	Profit and loss		<input type="checkbox"/>	0.00
0000002000	HQC-buildings	HQC-Buildings	Profit and loss		<input type="checkbox"/>	0.00
0000002010	HQC-accumulated depreciation-buildings	HQC-Accumulated depreciation-buildings	Profit and loss		<input type="checkbox"/>	0.00
0000002050	HQC-Appreciation buildings	HQC-Appreciation buildings	Profit and loss		<input type="checkbox"/>	0.00
0000011000	HQC-Machinery and equipment	HQC-Machinery and equipment	Profit and loss		<input type="checkbox"/>	0.00
0000011002	HQC-Constructions	HQC-Constructions	Profit and loss		<input type="checkbox"/>	0.00
0000011010	HQC-Accumulated depreciation - machinery and equipment	HQC-Accumulated depreciation - machinery an...	Profit and loss		<input type="checkbox"/>	0.00
0000011020	HQC-accumulated depreciation-constructions	HQC-Accumulated depreciation-constructions	Profit and loss		<input type="checkbox"/>	0.00
0000011050	HQC-Appreciation Plant & Machinery	HQC-Appreciation Plant & Machinery	Profit and loss		<input type="checkbox"/>	0.00
0000012000	HQC-Low value assets	HQC-Low value assets	Profit and loss		<input type="checkbox"/>	0.00
0000012010	HQC-Depreciation - Low value assets	HQC-Depreciation - Low value assets	Profit and loss		<input type="checkbox"/>	0.00
0000013000	HQC-Vehicles	HQC-Vehicles	Profit and loss		<input type="checkbox"/>	0.00
0000013010	HQC-Depreciation - motor vehicles	HQC-Depreciation - motor vehicles	Profit and loss		<input type="checkbox"/>	0.00
0000021000	HQC-Fixtures and fittings	HQC-Fixtures and fittings	Profit and loss		<input type="checkbox"/>	0.00
0000021010	HQC-Accumulated depreciation - fixtures and fittings	HQC-Accumulated depreciation - fixtures and ...	Profit and loss		<input type="checkbox"/>	0.00
0000021050	HQC-Appreciation office equipment	HQC-Appreciation office equipment	Profit and loss		<input type="checkbox"/>	0.00
0000022000	HQC-Low value assets (fixtures and fittings)	HQC-Low value assets (fixtures and fittings)	Profit and loss		<input type="checkbox"/>	0.00
0000022010	HQC-Depreciation - LVA office equipment	HQC-Depreciation - LVA office equipment	Profit and loss		<input type="checkbox"/>	0.00
0000031000	HQC-Down payments made - tangible assets	HQC-Down payments made - tangible assets	Profit and loss		<input type="checkbox"/>	0.00
0000031010	HQC-Input tax for down payments - tangible assets	HQC-Input tax for down payments - tangible ...	Profit and loss		<input type="checkbox"/>	0.00
0000031100	HQC-Capitalized payments on account - tangible assets	HQC-Capitalized payments on account - tangl...	Profit and loss		<input type="checkbox"/>	0.00
0000031200	HQC-Clearing capitalized down prints - tangible assets	HQC-Clearing capitalized down prints - tangl...	Profit and loss		<input type="checkbox"/>	0.00
0000032000	HQC-Assets under construction	HQC-Assets under construction	Profit and loss		<input type="checkbox"/>	0.00
0000032010	HQC-Depreciation - assets under construction	HQC-Depreciation - assets under construction	Profit and loss		<input type="checkbox"/>	0.00
0000032050	HQC-Appreciation assets under construction	HQC-Appreciation assets under construction	Profit and loss		<input type="checkbox"/>	0.00
0000034000	HQC-Computer software	HQC-Computer software	Profit and loss		<input type="checkbox"/>	0.00

2.3.2 EXPORT OF GENERAL LEDGER BALANCES

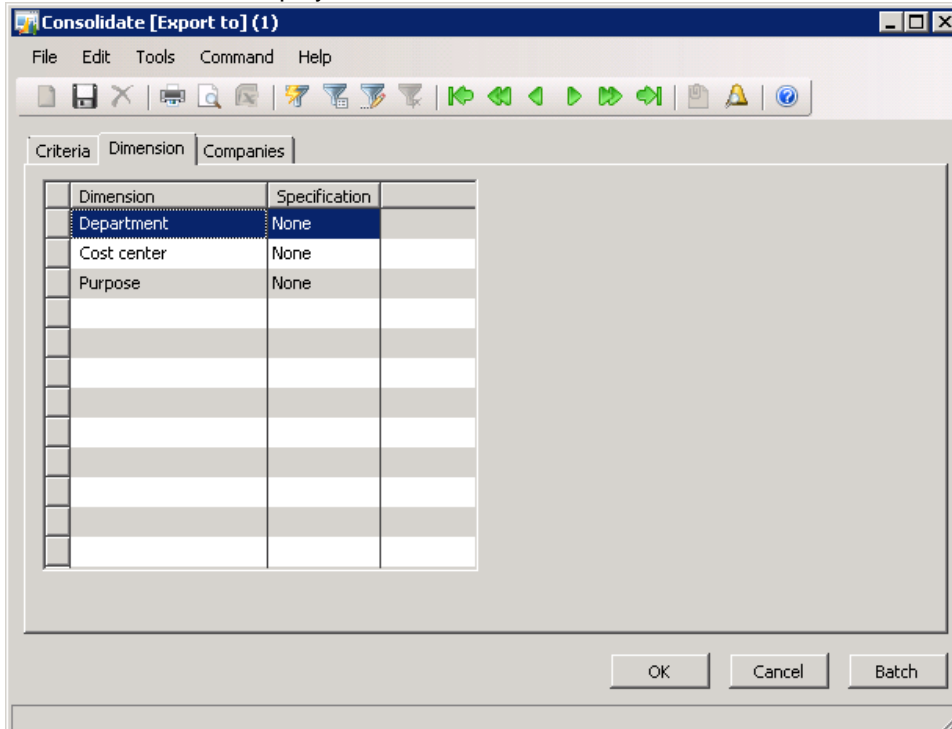
In AX, the general ledger balances must be exported for upload into SAP. The data can be exported with the following navigation: **General Ledger > Periodic > Consolidate> Consolidation, Export.** The following displays the navigation.



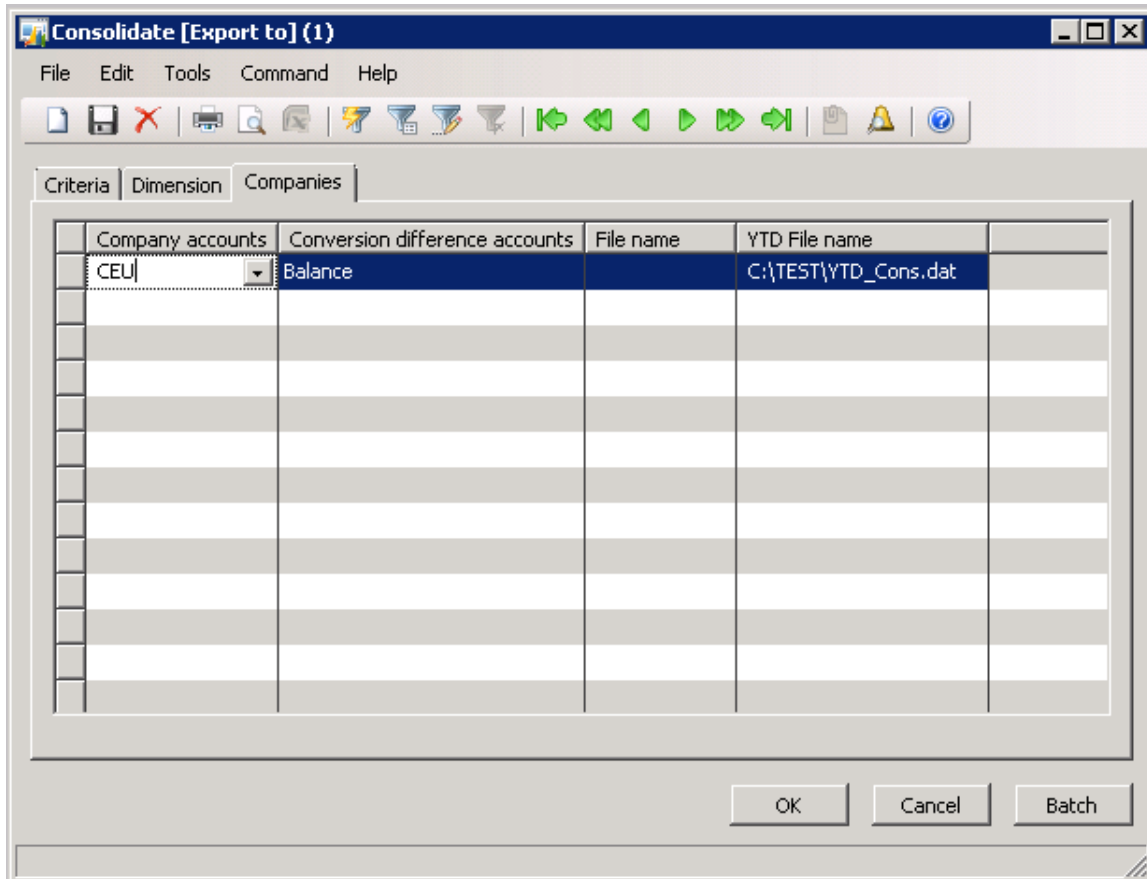
The Criteria tab will require the **Account number** and Period.



The Dimensions tab displays the dimensions that can be set.



The companies tab requires the **YTD File name** for the data to be exported.



3. CONCLUSION

This scenario detailed a large company running a different legacy system in its central operation and in some of its subsidiaries to consolidate all necessary month end or year-end financials for reporting and consolidation. The large company would be able to use a Tier 1 financial application such as Oracle or SAP to run its headquarters. The smaller entities such as subsidiaries, divisions, branches, departments, lines of businesses would standardize to use Microsoft Dynamics AX and only send aggregated financial statements. Microsoft Dynamics AX allows the smaller entities to run their business processes with a globally available industry ready solution to take advantage its ease of use, flexibility, scalability, quick implementation and training that result in lower cost of ownership.

This realistic scenario can be used as a template for implementations if the organization wants to connect local entities to the corporate ERP solution across Microsoft Dynamics AX and SAP.

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