

Cleo ERP Connector for SAP User Guide

Version 1.2



February 2017

RESTRICTED RIGHTS

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph (C)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227 - 7013.

Cleo

4203 Galleria Drive Rockford, IL 61111 USA Phone: +1.815.654.8110

Fax: +1.815.654.8294

Email: sales@cleo.com www.cleo.com

Support: +1.866.398.6524, or support@extol.com

Cleo reserves the right to, without notice, modify or revise all or part of this document and/or change product features or specifications and shall not be responsible for any loss, cost or damage, including consequential damage, caused by reliance on these materials.

This document may not be reproduced, stored in a retrieval system, or transmitted, in whole or in part, in any form or by any means (electronic, mechanical, photo-copied or otherwise) without the prior written permission of Cleo.

© 2017 Cleo. All rights reserved. Cleo is a trademark of Cleo. Cleo Clarify is a registered trademark of Cleo.

All marks used herein are the property of their respective owners.

Contents

Cleo ERP Connector for SAP	4
Supported Transactions.....	4
Related Help and Support	5
What's Included	6
com.cleo.sap.idoc.base	6
com.cleo.sap.idoc.mypartner	7
Sample EDI Transactions	7
Sample Data and File Directories	8
Status Database.....	9
Getting Started	10
Supported product versions and other system requirements	10
Download the Connector contents	10
Create the sample directory structure	11
Configure the root directory in a Global Variable object	11
Configure E-mail error notifications	12
Install the Status Database	12
Configure the Data Source object (to connect to the status database)	12
Manually Start and Stop the Status Database	13
Test the sample integrations	14
Start the remote Clarify Server.....	15
Deploy (and Install) Projects.....	15
Start File Monitors.....	16
Replicate the sending/receiving of data.....	16
Create Schemas from other SAP IDoc parser files	17
Create the Schema	17
Use the Schema	17
General Recommendations & Best Practices	18

Cleo ERP Connector for SAP

Cleo's *ERP Connector for SAP* provides customizable implementation solutions that can be used to integrate Cleo Clarify and SAP (System R/3, Release 4.0) using the Idoc interface and ASC X12 EDI transactions.

The ERP Connector includes a large collection of resources, such as Rulesets, Business Processes, source and target Schemas, and source and target Adapters, as well as sample data and file structures that can be used for testing. This also includes a metadata importer, which uses the Intermediate Document (IDoc) definitions to generate Flat File Schemas that represent the SAP-side interface in Rulesets, for both source and target cases.

Upon deployment, customized versions of these integrations automate processes that connect your SAP system with external trading partners.

The IDoc interface is used for sending and receiving of outbound and inbound transactions via the file system. Clarify facilitates transactions between SAP and a Trading Partner (via EDI or other options).

This ERP Connector delivers a centralized, SAP-certified configuration and control solution for all communications and data integration activity, allowing you to:

- Import SAP-specific metadata and generate corresponding schemas in
- Deliver EDI Order-to-Cash and Procure-to-Pay transactions by customizing the included sample integration projects;
- Create custom business integration projects for other transaction types, from scratch;
- Track EDI and IDoc transactions using an SAP Dashboard report

Supported Transactions

The Cleo ERP Connector for SAP includes pre-built integrations for common Order-to-Cash transactions, using several default SAP documents. These integrations provide a starting point for creating customized implementations that utilize non-standard SAP documents, partner-specific EDI documents, customized data transformations and process automations, and partner-specific communication adapters. Modify these integration projects to create integrations to meet your business needs, or refer to them as examples when creating new kinds of integrations.

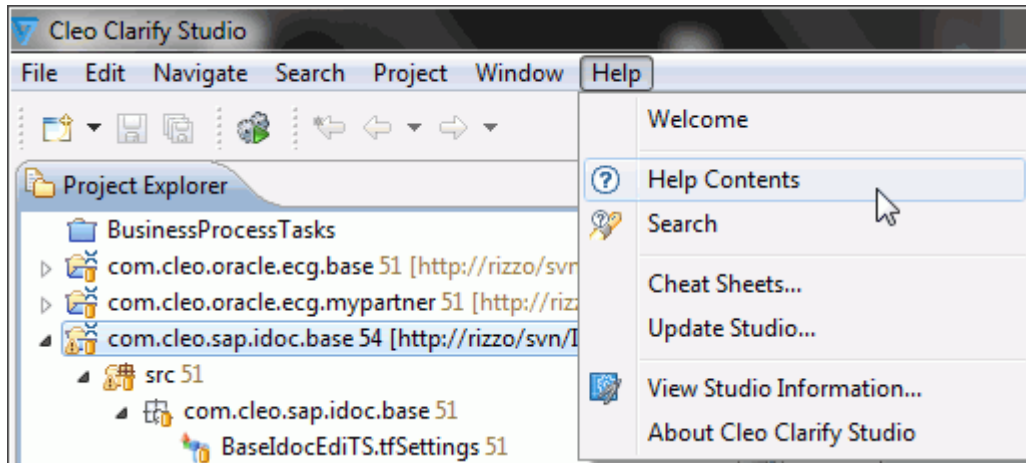
The pre-built integrations, shown below, can be used as a starting point to integrate any EDI document type supported by SAP.

- EDI X12 850 to SAP IDoc ORDERS05
- SAP IDoc DESADV to EDI X12 856
- SAP IDoc INVOIC02 to EDI X12 810

Other transaction types can be implemented by importing SAP metadata in conjunction with the EDI Standards, and other tools available in the Studio. This is further explained in the topic: *Create Schemas from other SAP IDoc parser files* on page 17.

Related Help and Support

This document refers to the Studio's product Help (User Guide) for detailed instructions on how to complete certain tasks that are not described here. To view the Help, select Help Contents from the main menu in your Studio.



For questions on...	Contact...
Professional Services Project Assistance	1-888-334-3986 (main line)
Product Licenses or Delivery	1-888-334-3986 (main line)
Customer Support Hotline	1-866-398-6524 (Clarify Support)

What's Included

The Cleo ERP Connector for SAP contains two Projects containing several packages, objects, sample data, and other resources. These include:

- com.cleo.sap.idoc.base (Project)
- com.cleo.sap.idoc.mypartner (Project)
- Sample EDI transactions
- Sample data and file directories
- Status database

com.cleo.sap.idoc.base

This base Project contains several Packages containing multiple objects. These objects may be referenced, or shared, by other Projects; in this case, the other Project, *com.cleo.sap.idoc.mypartner*.

Clarify supports sharing the same objects between different Projects, and sharing the same objects and Projects between different users. Shared objects within this Project include:

- Application Interfaces
- Business Processes
- Code Tables
- Control Number Generators
- Events
- File Adapters
- File Monitors
- Formulas
- Global Variables
- Rulesets
- Ruleset Data Objects
- Schemas
- Transformation Settings

The Project also contains a *Resources* folder, providing these folders:

- *database*: contains a status database used to provide a near-real-time view of the status of SAP documents being processed (and that have already completed processing) by Clarify.
- *documentation*: contains the Cleo ERP Connector for SAP User Guide.
- *sampleData*: contains inbound and outbound sample directories to be used to test the sample integrations.

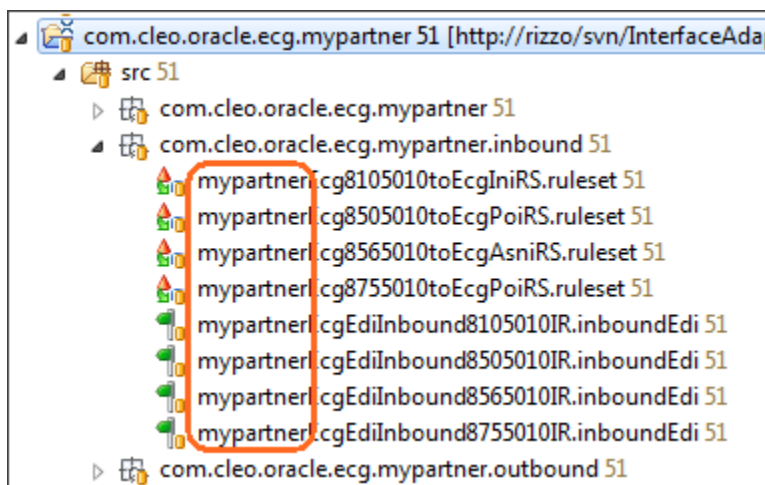
Note: The steps to set up this sample data is further explained in the topic, *Create the sample directory structure*, on page 11.

com.cleo.sap.idoc.mypartner

This Project contains Packages and objects that are specific to the sample Trading Partner used throughout the sample EDI and SAP transactions within *the Connector for SAP*. This includes inbound and outbound EDI Routes, EDI Envelopers, Rulesets, and Trading Partner objects.

Using the Clarify Project Generator

An important aspect to this Package is the use of the generic “mypartner” in the object names, shown here. This facilitates use of the Project Generator, which allows you to easily replicate a template Project and its resources, updating new resource names, re-configuring enveloping and trading partner info, all while maintaining resource dependencies and other attributes and values to automatically reflect a newly generated Project.



For more information on the Project Generator, please refer to the *Wizards and other Tools* topic in the *Clarify User Guide*.

Sample EDI Transactions

The *Connector for SAP* provides several inbound and outbound sample integrations for typical Order to Cash transactions. All samples use EDI X12 version 004010 messages, and implement the following transactions:

Inbound

- EDI Purchase Order 850 to SAP Idoc Orders

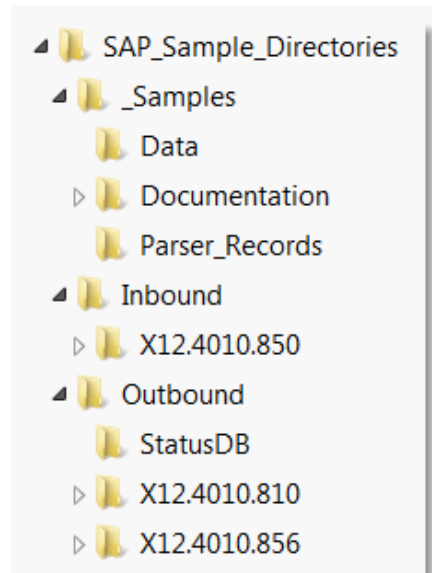
Outbound

- SAP IDoc Invoice to EDI Invoice 810
- SAP IDoc Ship Notice to EDI Ship Notice 856

Note: Rulesets and other objects are configured for these sample transactions only; to adapt them to your business, you must customize the objects to use the actual EDI messages (e.g., version) and IDocs needed.

Sample Data and File Directories

After extracting the contents of the *SAP_Sample_Directories.zip* file to your local file system, three root folders should now exist. These folders contain the sample data and status database needed to execute the sample integrations. The root folders are *_Samples*, *Inbound*, and *Outbound*.



_Samples

This root folder contains these sub-folders:

- *Data*: contains sample inbound and outbound transactional data used to test and configure the sample integrations.
- *Documentation*: contains samples of the output that is expected when running the integrations.
- *Parser_Records*: contains sample parser files (IDoc Definition files) to be used in testing.

Inbound

This root folder contains the *X12.4010.850* sub-folder, which is used to demonstrate the inbound 850 integration. It contains these sub-folders:

- *EDI*: File Monitor objects listen for any files to be dropped into this folder; once a file has been picked up from the EDI folder, it will be copied to the processed sub-folder.
- *IDOC*: When a file disappears from the EDI folder, the transformed IDoc now appears here, specifically within the *ORDERS05* sub-folder. Functional acknowledgements that are created during this inbound transaction will be placed in the *FA* sub-folder.

Outbound

This root folder contains the *X12.4010.810* and *X12.4010.856* sub-folders, which are used to demonstrate the two outbound integrations. This root folder also contains the *StatusDB* sub-folder.

- Both 810 and 856 sub-folders contain *EDI* and *IDOC* sub-folders. File Monitor objects listen for any files to be dropped into the *IDOC* folder, at which point they will be copied to the *processed* sub-folder. The transformed EDI file now appears in the *EDI* folder.
- The *StatusDB* sub-folder will be used by certain objects as a 'staging' location for the status information prior to it being written to a status database.

Status Database

The *Connector for SAP* also provides an SAP status database. The status database provides an almost real-time view of IDoc status as they are being processed, including those that have completed processing through a remote Clarify Server. This database also can be viewed using the Cleo Dashboard's SAP report.

The database is located in the core Project (com.cleo.sap.idoc.base), within the *resource/database* folders. Here you will find the *SAPDB.zip* file, which should be extracted to a location on your remote Clarify Server.

Once installed, the database must be manually started and stopped with the use of included scripts. See steps to [Manually Start and Stop the Status Database](#) on page 13.

Getting Started

This topic explains how to initially set up the *Connector for SAP* in your existing workspace, which when completed, will establish the necessary resources, sample data, and file system structure used for the different EDI and SAP transactions provided. Additional support information is also provided.

Supported product versions and other system requirements

This product has been designed and tested to work with Cleo Clarify v3.1 and above. All references within this document cite these versions only. The following versioning and requirements apply:

- Clarify Studio v3.1.1 or all other versions above must be installed;
- Clarify Server v3.1.2 or all other versions above must be installed;
- Licensing for Cleo ERP Connector for SAP must be enabled;
- Cleo ERP Connector for SAP supports SAP System R/3, Release 4.0.

Please contact Cleo Support should you have additional questions on these requirements.

Download the Connector contents

The Cleo ERP Connector product must be downloaded from the Cleo-hosted SVN repository. Please contact Cleo Support for initial registration and setup.

Once you have access to the hosted SVN repository, follow this process to download contents.

1. From the Clarify Studio, create a repository location using the SVN Repository perspective. ***This location URL will be provided by Cleo Support.***
2. Check out the two *SAP* Projects from the Cleo ERP Connectors repository location. This can be done by right-clicking the Project, and selecting *Check Out* from the menu. This establishes the necessary resources in your Workspace.
3. Disconnect the Projects from the hosted repository. Select a Project from the Project Explorer perspective, right-click, and choose *Team/Disconnect*. When prompted, delete all SVN meta-data. Your Projects can now be shared and committed to your own repository.

You must perform the above step for ***each*** Project.

Create the sample directory structure

To create these sample directories on the Server file system, extract the SAP_Sample_Directories.zip file to the recommended location of C:\SAP_Sample_Directories.

This location corresponds with replacement values and settings already configured in a several objects. By following this recommendation, these objects are set to work "out of the box" for testing purposes, and require no additional configuration.

Note: If the recommendations have been followed, then the steps to create the sample directory have been completed.

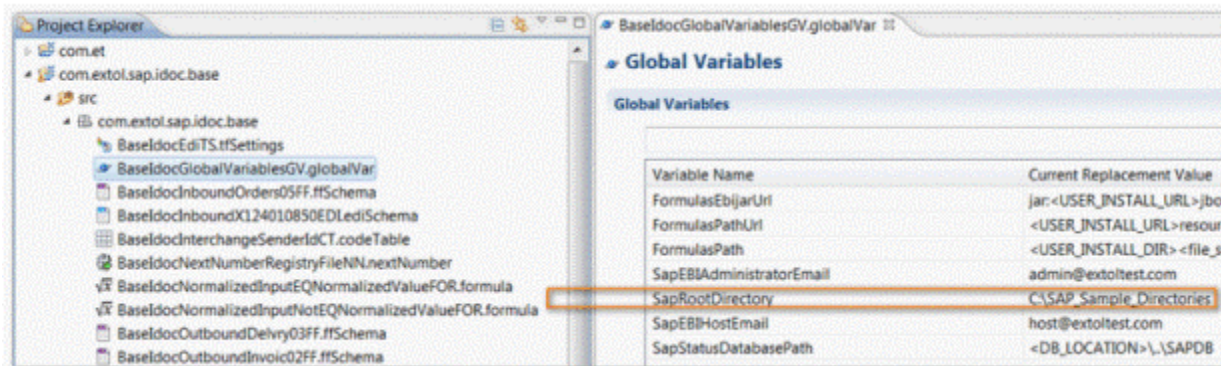
IF sample directory has...	THEN take these additional steps...
Not been installed to recommended location...	<ul style="list-style-type: none"> • Configure the root directory in a Global Variable object (required) • Configure E-mail notifications (optional)
Been installed to recommended location...	Configure E-mail notifications (optional)

Configure the root directory in a Global Variable object

These additional steps are required when the sample directory resides somewhere other than the recommended location.

If you select a location other than what's recommended, you will need to update the replacement value for the *SapRootDirectory* variable with the new location. This is done in the following object:

/com.cleo.sap.idoc.base/src/com/cleo/sap/idoc/base/BaseSapGlobalVariablesGV.globalVar



Configure E-mail error notifications

The *BaseSapGlobalVariablesGV.globalVar* object (same as above) contains two variables (*SapEBIAdministratorEmail* and *SapEBIHostEmail*) that must be updated to reflect your e-mail server settings in order to receive any error notifications.

Install the Status Database

The status database is located in the core Project (com.cleo.sap.idoc.base), within the *resource/database* folders. Here you will find the SAPDB.zip file, which should be extracted to a location on your remote Clarify Server.

Once installed, additional configuration will be required to start, stop, and connect the database. Refer to the following steps:

- Configure the Data Source object (to connect to the status database)
- Manually Start and Stop the Status Database

For Dashboard users: Since the Dashboard references the location of the status database, any changes to the status database location will also require the Dashboard's SAP data source to be modified. Please refer to related procedures in your Dashboard Administrative Guide.

Configure the Data Source object (to connect to the status database)

In Clarify, the Data Source object facilitates connection to a database using information, such as the url path to the actual database, among other things. The following steps explain how to configure the Data Source object from within your Clarify Studio, allowing it to reflect the actual location that you have installed the status database.

1. From the Project Explorer, expand the base Project.
2. From within this Project, expand the outbound Package (*base.outbound*).
3. From within this Package, open the *BaseIdocStatusDatabaseDS.dataSource*. The Data Source editor opens.
4. From the *Connection Information* section, change the *URL* field value to match the connection path to which you have installed the status database.

An example of the url could look like this:

jdbc:derby://localhost:1529/./SAPDB

Note: the path in the url is relative to where the status database is started from, using the batch script included with the Connector for SAP.

5. Save your changes and close the editor.

For more information, please refer to the *Designing Integration Solutions/Sending and Receiving Data/Adapters/Database Adapters* topic in the Clarify User Guide.

Manually Start and Stop the Status Database

You must manually start and stop the database using Windows batch files or Linux scripts.

For **Windows**: Use the *Database.bat* file.

For **Linux**: Use the *Database.sh* file.

Both files can be found in the extracted *SAPDB* folder. Please see below for script usage.

Database [operation]

where **operation** must be one of the following:

- **start** - Starts the Derby Network Server
- **stop|shutdown** - Shutdown Shuts down the Derby Network Server
- **help | ?** - Prints this help message

Depending on the system configuration, there are two variables in these scripts that may need to be updated: *JAVA_HOME* and *DB_PORT*.

- Set *JAVA_HOME* equal to a location where a Java JRE or JDK is installed.
- Set *DB_PORT* equal to the port you wish the SAP database to run on.

If you are using a Java 7 JRE or JDK, or receive an access denied “java.net.SocketPermission” exception when attempting to start the database, you will have to modify the *java.policy* file located in the JRE or JDK under the *lib/security* directory. Modify this file by adding the following line (and saving):

- `permission java.net.SocketPermission "localhost:<DB_PORT>", "listen";`
- Where *<DB_PORT>* is the port where the SAP database is running.

Test the sample integrations

Testing the sample integrations included with the Connector for SAP allows you to execute the inbound and outbound EDI and SAP integrations, including some of the automated processes such as data transformation, status analysis, file archiving, and e-mail notification (when configured).

This topic describes how to test these integrations using the sample data provided, and how to view the expected results in the Clarify Studio as well as in your file directory. While the inbound and outbound processes differ in certain aspects, the overall process follows the same basic flow regardless of transaction type. There are differences, however, when testing these integrations on your local test Server versus a remote Clarify Server. Both are described here.

This is the process when testing on a *local* test Server:

1. Start your local test Server.
2. Deploy objects used in the integration.
3. Start the File Monitor.
4. Drop the files (replicate the sending/receiving of documents) and view the results.

This is the process when testing on a *remote* Server:

1. Start your remote Clarify Server.
2. Deploy and Install Projects used in the integration.
3. Start the specific File Monitor.
4. Drop the files (replicate the sending/receiving of documents) and view the results.

For the purpose of this topic, we will use an outbound scenario, where an SAP IDoc INVOIC02 will be transformed to an EDI X12 810. The process to test on a remote Clarify Server will be followed.

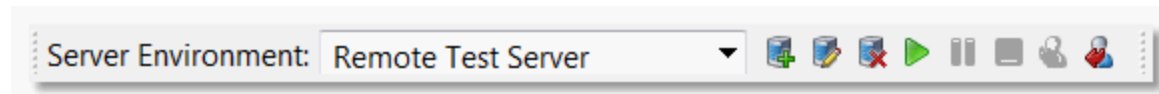
Prerequisites


The following prerequisites must be met before successful testing can occur.

- Licensing for Cleo ERP Connector for SAP must be acquired.
- The Sample Directory and its content must be available (and configured) on the appropriate Server environment.
- The SAP Status Database should be installed and running (applies to outbound examples).

Start the remote Clarify Server

For the purpose of testing these example SAP scenarios, it's recommended to use a remote server, which works as the engine of Cleo Clarify. This runtime component is the installed instance of Clarify where your test and/or production environment resides. There are separate installing/licensing procedures for remote Clarify servers. Note: sample integrations should never be tested using a Production server.



To start the remote Server: From the Admin Console's main menu toolbar, select the remote Server from the Server Environment drop-down, and click the **Start** button .

Deploy (and Install) Projects


All deployment activities take place on the Admin Console Perspective's Projects view. Deployment essentially bundles all objects contained in a Project and copies them to a server. The Server may reside remotely (Clarify Server) or locally (Local Test).

The Project is the unit of deployment to a remote Clarify Server. If a Project depends on another Project, then all dependent Projects must be satisfied in order for the Project to successfully deploy to a Clarify Server. Deployments to a server are atomic – that is, the project is either deployed in its entirety, with all dependencies satisfactorily resolved, or it is not deployed at all. When you install a project in Clarify, you're basically unarchiving a Project which has already been deployed; as a result, the objects (within the Project) are made available to a remote Server. This installation process makes your runtime environment operational.

In this example, we will deploy and install both *Connector for SAP* Projects to a remote Clarify Server.

- com.cleo.sap.idoc.base
- com.cleo.sap.idoc.mypartner

Deploy Projects to the remote Clarify Server:

1. Select both Projects and drag to the *Server Projects* section. You can also click the **Deploy Project Scenario** button  to accomplish the same thing.

The result will be that both Projects appear in the *Server Projects* sections, with a status of *Deployed, not Installed*.

2. Click the **Install all deployed Project(s)** button. This will install all deployed projects in the Server Projects view. Project will appear with a status of *Installed*.

Note: Click the **Refresh** button if the status doesn't change after a few seconds.

Expand both the Project folder and its Package to view the objects now residing on the remote Clarify Server.

For more information, please refer to the *Designing Integration Solutions/Deploying the Solution* topics in the *Clarify User Guide*.

Start File Monitors

Now that the File Monitor has been deployed, it must be enabled, or started. An enabled File Monitor checks the directory in which the inbound or outbound files are placed; when data arrives, the Monitor raises an event (causing specific processes to execute) and then moves the document to its applicable folder.

To start the File Monitor:

1. From the Admin Console's Resource Monitors view, select File Monitor from the Resource Monitor Types section. This will display any deployed File Monitor in the Resource Monitors section. Any monitor that has already been started has a green indicator, while red indicators show that a monitor is not started.

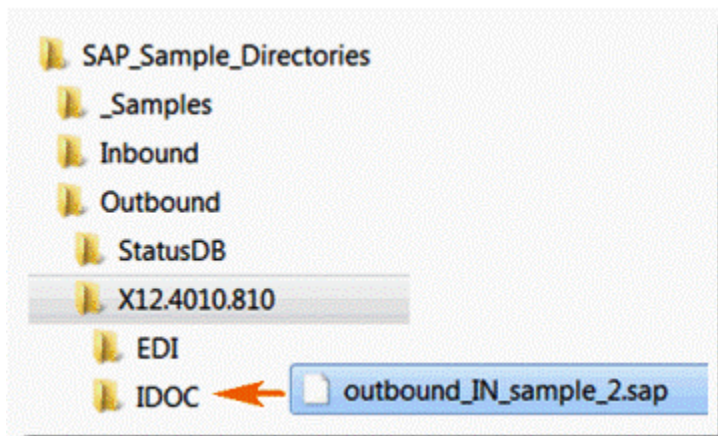
Since we've deployed both Projects, every object contained within each has now deployed - this includes any File Monitors. As there are different File Monitors for different transactions, we must select and start the correct one.

2. Select *BaselDocOutboundInvoicesFM.fileMonitor* and click Start (▶).

Replicate the sending/receiving of data

This sample integration demonstrates how to transform an SAP IDoc INVOIC02 to an EDI X12 810.

From your sample file directory, you will now take the EDI document (*outbound_IN_sample_2.sap*) from within the *_Samples/Data* folder and drop it directly into the *Outbound/X12.4010.810/IDOC* folder, as shown here.



Results:

- The SAP document disappears within several seconds.
- A copy is placed in the *processed* folder (within the IDOC folder).
- The resulting 810 document now appears in the EDI folder.

Note: If any of the above did not occur, there may have been an error in the process, which can be investigated through the Clarify Studio's *Auditor* view (part of the Admin Console).

Create Schemas from other SAP IDoc parser files

The *Cleo ERP Connector for SAP* license enables support in the Clarify Studio to create IDoc schemas in Clarify by importing SAP-specific metadata (IDoc parser files). The parser files describe the formats of IDocs, and can be generated from your SAP system.

You then use these file definitions to create source or target Schemas.

This topic explains the basic process behind this SAP metadata support, which is broken down into two main steps:

1. Create the Schema using the IDoc parser file.
2. Use the Schema in your Ruleset (to transform SAP data).

Create the Schema

After acquiring the sample IDoc parser file, it will then be used in the creation of a Schema in Clarify.

In Clarify, a Schema (object) defines data; this includes metadata qualities like data type, field length, decimal places, and EDI message ID. It also includes descriptions of fields, cells, or elements, such as order number, unit price, etc.

Before creating the Schema, place the IDoc parser file into Clarify. Cleo recommends creating a new folder called samples in your working Project at the same level as the src and META-INF folders to hold sample data.

1. Select File | New | SAP Schema from the Clarify Studio main menu.
2. Note: If you select the Package (from your working Project) in which the SAP Schema should reside before creating it, some parameters are automatically populated in the New SAP Schema window.
3. The New SAP Schema window appears. Under SAP IDoc File, in the File Name field, click Browse to select a file. Click Next.
4. Provide the Source folder, Package, and Name.
5. Click Finish. A Schema editor appears.

Use the Schema

The Schema can now be used as source or target for one of the shipped Rulesets in the Connector for SAP, or when creating new Rulesets going forward.

At this point, you will make any required changes to the Schema using this editor. For more information, please refer to the *Designing Integration Solutions/Defining the Data/Schema* topics in the Clarify User Guide.

General Recommendations & Best Practices

This topic provides some general recommendations and best practices when working with the *Cleo ERP Connector for SAP* product.

Re-purpose sample Projects for your own business needs

The integrations provided in the *Connector* provide a starting point for creating customized implementations that utilize non-standard SAP documents, partner-specific EDI documents, customized data transformations and process automations, and partner-specific communication adapters.

They serve as examples of EDI and SAP integrations only. They can, however, be customized for your actual business needs, and to rapidly onboard new Trading Partners. The Clarify Studio provides all of the tools necessary to customize, test, and deploy integration applications based on the default integrations included in the package.

How you re-purpose these examples depends on many factors, but the general path to customization will always reflect the creation of new objects, configuration with your environments, and the utilization of the Project Generator. This feature helps you quickly generate Projects by using an existing Project as a template. Clarify replicates the template Project and its resources, updates new resource names, re-configures enveloping and trading partner info (for EDI Projects), maintains resource dependencies, and updates other attributes and values to automatically reflect the newly generated Project.

For more information, please refer to *Wizards and other Tools* topic in the Clarify User Guide.

Follow Naming Conventions

A good practice is to use a standardized method for naming Projects, Packages, and objects, but it's especially critical when employing a modular approach to designing Clarify solutions. Several rules are recommended based on common standards and experience, and provide several benefits:

- Enhance clarity in cases of potential ambiguity
- Avoid naming collisions or duplicate names
- Provide meaningful information
- At-a-glance understanding of Projects/Packages/objects, especially if you are away from developing integrations for an extended period of time
- Predictability

For more information, please refer to the *Guidelines and Recommendations* topic in the Clarify User Guide.

Practice Version Control

We recommend using version control to take advantage of change management, even if there is only one Clarify user, and no shared Projects. With an SVN repository for example, you can track all your changes, and your ability to revert to a previously saved state is much more robust than that of a resource's local history.

Cleo hosts an SVN repository to share Projects and resources. Please contact Cleo Support for initial registration and setup.

For more information, refer to the *Versioning & Synchronizing Projects* topic in the *Clarify User Guide*.

Use the Cleo Dashboard

The Cleo Dashboard's *SAP* report can also be used to view status data related to IDoc transactions as demonstrated in the sample integrations as part of the *Connector for SAP*. Users can search by a status code, IDoc number, Trading Partner or another piece of data written to the status database.

Please contact your Account Manager for more information.