SAP IBP External Integration

CPI-DS

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Agenda

- IBP Integration scenarios and architecture  
  Guru
- SAP Cloud Platform Integration  
  Venkat
- Overview on SAP Cloud Platform Integration for Data Services  
  Venkat
- What’s new in CPI-DS 1.0.11 latest patches  
  Venkat
- CPI-DS Content Development Outlook  
  Guru
SAP Integration Scenarios and Architecture
### Main Integration Scenarios in IBP

#### Supply Chain Monitoring

<table>
<thead>
<tr>
<th>IBP for demand</th>
<th>IBP for inventory</th>
</tr>
</thead>
</table>

#### Integrated Business Planning (IBP)

<table>
<thead>
<tr>
<th>User Experience</th>
<th>IBP for sales &amp; operations</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>IBP for response and supply</th>
<th>IBP Data Model</th>
</tr>
</thead>
</table>

#### Today's focus

**Master, time series and order data**

<table>
<thead>
<tr>
<th>SAP Cloud Platform Integration for data services</th>
<th>SAP Cloud Platform Smart Data Integration (OpenAPI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Model defined by configuration</td>
<td>Data Model defined by Open API</td>
</tr>
<tr>
<td>Master data, time series and KFs</td>
<td>Master data, inventory, orders</td>
</tr>
<tr>
<td>Customer project based, periodic loads,</td>
<td>Built-in integration, periodic loads</td>
</tr>
<tr>
<td>graphical data flows</td>
<td></td>
</tr>
</tbody>
</table>

#### Today's focus

- S/4 HANA On Premise, SAP ERP, SAP APO, SAP BPC and any source
- SAP ERP, S/4HANA On Premise, any source (file integration)
SAP IBP Architecture Overview

System Landscape

- MS Excel
- IBP Add-In
- Web User Interface
- IBP Fiori
- REST APIs
- OData Service
- IBP Applications
  - Applications
    - SC Control Tower
    - S&OP
    - Demand
    - Collaboration
    - Inventory
    - Response & Supply
  - Configuration
- HANA Database
  - Calculations and Algorithms
  - Data Model

SAP Cloud Platform

- SAP CoPilot
- SAP CP-IAS
- SAP JAM
- SAP Ariba

SAP Cloud Systems

- S/4 Hana
- or ECC
- Other
  - (BW, …)

Other

- SAP SDI
- DP Agent
- IBP Integr AddOns
- SAP CPI-DS Agent

Cloud NW

- IAM
- Job Scheduling
- Data Integration for SDI
- Data Integration for CPI-DS

SAP CPI-DS

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What Integration Tool(s) to Be Used for IBP?

- For time series based planning you have to use SAP Cloud Platform Integration for data services or the manual file upload. So this is mandatory for time series data integration.
- For order based planning you always need to use open API using SDI. So this is mandatory for order based integration.
- You cannot interchange these tools and there is currently no plan to replace one with another.
SAP Cloud Platform Integration
Note about product names

Throughout this presentation we’ll use name “SAP Cloud Platform Integration” (CPI) . The product name changed recently and this is how the product is referred in the product UI and documentation.

We use the “for process integration” (CPI-PI) and “for data services” (CPI-DS) addition to distinguish between the two products under the SAP Cloud Platform Integration suite.

The name used to be “SAP HANA Cloud Platform, integration service”.

And very recently the name was changed once more to “SAP Cloud Platform Integration”.

All these changes are only name changes, the actual products have not changed.
## SAP Cloud Platform Integration

One “platform” for process and data integration

<table>
<thead>
<tr>
<th>Objective</th>
<th>Process Integration</th>
<th>Data Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chaining of process steps</td>
<td></td>
<td>Synchronization of data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interaction Type</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>System-2-System</td>
<td></td>
<td>System-2-System</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Coupling to Application</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Process-Level</td>
<td></td>
<td>Data-Level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Trigger</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Event</td>
<td></td>
<td>Schedule</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urgency of Completion</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Near Real-Time / Real-Time</td>
<td></td>
<td>Batch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit of Data Exchange</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Business Objects</td>
<td></td>
<td>Bulk-Data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific Requirements</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transactional Process Integrity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability (Guaranteed Delivery)</td>
<td></td>
<td></td>
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<tr>
<td>Message Orchestration</td>
<td></td>
<td></td>
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<tr>
<td>Complex transformation (e.g. aggregation, joins, …)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass Data Handling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Simplified overview of SAP’s cloud integration portfolio

Process Integration
- On-Premise SAP Process Integration
- SAP Cloud Platform Integration for process integration (CPI-PI)

Data Integration
- SAP Cloud Platform Integration for data services (CPI-DS)
- On Premise Data Integration Tools
- Smart Data Integration (SDI)
  - SAP Landscape Transformation (SLT)
  - SAP Data Services
  - SAP (Sybase) Replication Server
SAP Cloud Platform Integration for Data Services
HANA Cloud Integration for data services (CPI-DS)
Release Strategy for 2018 & beyond

Maximum 4 times/year a new release, applied on our servers during the quarterly maintenance window.

- During the weekend somewhere between Friday 10pm – Monday 3am. Exact downtime window is communicated via email and shows up in the UI, two weeks before the actual downtime.
- For 2018, No slots planned.
- Customers need to upgrade their CPI-DS agents on-premise when they want to run tasks in sandbox. Productive tasks continue to run with the old agent.

- **Regular weekly downtime is Sunday 4:00am – 6:00am local datacenter time.**
  - No notifications are send out, the slot may or may not be used in any given weekend.
  - On average we have one patch each month which will be installed in this weekly downtime slot.
  - No further action on customer’s side is expected.

<table>
<thead>
<tr>
<th>Dec</th>
<th>May</th>
<th>Q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI-DS 1.0.10</td>
<td>CPI-DS 1.0.11</td>
<td>CPI-DS 1.0.12</td>
</tr>
</tbody>
</table>

2017/2018 2019
Downtime notification

Notification send out to all CPI-DS users. Customers can add additional users via the self-service user management.

An 8 hour window is announced but might end early. An announcement is send out right after the upgrade is done and when services are restored.

When:

<table>
<thead>
<tr>
<th>Time Zone</th>
<th>Start Date</th>
<th>Start Time</th>
<th>End Date</th>
<th>End Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTC</td>
<td>Sun 15/May/2016</td>
<td>11:00 AM</td>
<td>Sun 15/May/2016</td>
<td>7:00 PM</td>
</tr>
<tr>
<td>EDT (US East)</td>
<td>Sun 15/May/2016</td>
<td>7:00 AM</td>
<td>Sun 15/May/2016</td>
<td>3:00 PM</td>
</tr>
<tr>
<td>CEST (Germany)</td>
<td>Sun 15/May/2016</td>
<td>1:00 PM</td>
<td>Sun 15/May/2016</td>
<td>9:00 PM</td>
</tr>
<tr>
<td>AEST (Sydney)</td>
<td>Sun 15/May/2016</td>
<td>9:00 PM</td>
<td>Mon 16/May/2016</td>
<td>5:00 AM</td>
</tr>
</tbody>
</table>

Dear HANA Cloud Integration User,
Version 1.0.11 Patch related updates

- Central SAP note for all patches is available from
  https://help.sap.com/viewer/p/SAP_CLOUD_PLATFORM_INTEGRATION_FOR_DATA_SERVICES
  https://launchpad.support.sap.com/#/notes/2324184

- Subscribe to SAP note using Launchpad to keep informed about patches.

- Patch Release notes can be also accessed from server UI.
SAP Cloud Platform Integration for IBP
Use case #1: Loading data to HANA in the cloud

Integrated Business Planning (IBP) is an SAP HANA based cloud applications that bundles CPI-DS as data integration tool for integration with on-premise applications.

- Access on premise SAP ECC, S/4 HANA and APO data sources or 3\textsuperscript{rd} party databases through an on-premise agent.
- CPI server co-located with HANA database in the cloud for direct data loads at HANA database level.
- Bi-directional data transfer.
- Batch loads with built-in scheduler for ETL jobs.
- Out-of-the-box content + flexible web-based UI to customize dataflows
Other use cases for CPI-DS

Data Integration with SuccessFactors, Cloud for customer or other applications

Other integration scenarios include SuccessFactors, Cloud for Customer or other cloud applications with OData, SOAP or REST APIs that need to exchange data with an on-premise database.

- Extract data from SuccessFactors applications to load into an on-premise datamart of data warehouse (SAP BW).
- Mass data uploads to Cloud for Customer or data extracts for reporting purposes.
- CPI-DS provides a flexible tool to create custom dataflows, there is no out-of-the-box content available for these applications.
### Key Capabilities

- **Direct secure access** to multiple ECC sources to extract, transform and load to targeted cloud applications.
- Read and write from heterogeneous sources – databases (HANA, DB2, Oracle, SQL Server) and files (XML or delimited).
- Support for standards like OData, SOAP and REST as well as SFTP for files.
- **End to end visibility** for data loads into the S&OP and configurable e-mail notifications to alert on integration flow operations
- Built-in scheduler or invoke integration flow from 3rd party applications through a webservice call.

### Key Customer Benefits

- Seamless and secure integration of on-premise to SAP Cloud eliminating need to open firewall to inbound traffic
- Data never persists in SAP HANA Cloud Integration, but is piped from on-premise source to target data-store in SAP cloud
- **Role-based, wizard driven web UI** for designing, executing and monitoring ETL jobs.
- Guided user experience for creating and editing ETL jobs **without coding**
- “Set it and forget it “ automated with scheduling, no manual work

### Key Considerations

- Minimal on premise footprint (~100Mb) with software “agent” for secure connectivity
- Supports ABAP dataflows and Extractors for extracting from SAP Business Suite
- Automatic provisioning of sandbox and production repositories; 1-click promotion of jobs to production

---

SAP Cloud Platform Integration for data services (CPI-DS) is part of the overall CPI solution, together with CPI-PI (for process integration). CPI is now rebranded to “SAP Cloud Platform Integration” from “SAP HANA Cloud Platform, integration service”
SAP Cloud Platform Integration – Web-based UI
Design, Execute and Monitor from anywhere

- Web-based
- Easy-to-use (citizen developer), no coding
- Role based:
  - Designers
  - Operators
  - Administrators

Operator Dashboard
Designer’s dataflow editor
SAP Cloud Platform Integration - Agent
The key to successful deployment

Lightweight installation inside the customer’s firewall
- ~ 100MB to download
- Installation is one screen, less than ten minutes
- Runs on Windows or Linux (SuSE/RedHat)

Securely transfers data from on-premise to cloud
- Communicates with SAP apps through RFC (encryptable via SNC)
- Data sent over the cloud via HTTPS
- Data are streamed from source to target and never persisted

Operates without firewall exceptions
- Communication is always from the agent to the cloud
- No need for VPN, reverse proxy, or other firewall exceptions
- Agent uses long polling: places request to server and waits for response when a task is ready to execute
SAP Cloud Platform Integration
Built-in sandbox and production environment with multiple agents

• Built in sandbox and production environment – one click promotion from sandbox to production
• Different connection information to source and target for sandbox and production tasks
• Option to install separate agents for test and productive loads. Load balancing/fail over via agent groups.
### SAP Cloud Platform Integration (DS) – Connectivity

Wide range of supported sources and targets

<table>
<thead>
<tr>
<th>SAP Business Suite Applications (ERP, SCM/APO, …)</th>
<th>Databases</th>
<th>HANA Applications in the cloud</th>
<th>Other cloud applications</th>
<th>Files</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Content Extractors</strong></td>
<td>SAP HANA</td>
<td>SAP IBP (Integrated Business Planning)</td>
<td>SuccessFactors applications</td>
<td>Delimited files:</td>
</tr>
<tr>
<td>Standard and custom extractors, including delta queues – through ODP</td>
<td>SAP (Sybase) ASE</td>
<td>SAP Lumira</td>
<td>oData (v2 &amp; v4)</td>
<td>Local files</td>
</tr>
<tr>
<td><strong>ABAP tables</strong></td>
<td>SAP (Sybase) IQ</td>
<td>SAP HANA database-as-a-service on HANA Cloud Platform</td>
<td>Web Services (SOAP and REST)</td>
<td>Remote files through SFTP</td>
</tr>
<tr>
<td>Cluster, transparent, pool, Z-tables</td>
<td>IBM DB2</td>
<td></td>
<td></td>
<td>XML Files</td>
</tr>
<tr>
<td><strong>Custom ABAP programs</strong></td>
<td>MSSQL Server</td>
<td></td>
<td></td>
<td>Based on XSD</td>
</tr>
<tr>
<td>Generated on the fly – no ABAP coding needed.</td>
<td>mySQL</td>
<td></td>
<td></td>
<td>Template file</td>
</tr>
<tr>
<td><strong>SAP BW</strong></td>
<td>Oracle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct access to ODS tables</td>
<td>Teradata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write access through staging BAPI</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

(**) Not Generally Available – used in co-innovation with selected customers
Summary for cloud data integration
SAP Cloud Platform Integration for Data Services

For all integration with SAP Integrated Business Planning
- Recommendation (only possible option): use CPI-DS
- Exception: IBP Order based planning, here SDI is embedded through the IBP UI

For all data integration with a HANA database (in the cloud or on-premise – not an IBP use case):
- Recommendation: use HANA smart data integration
  - Native service in HANA database
  - Provides real-time and batch (plus federation), more adapters, more transformations, …

For (data) integration with other cloud applications (not an IBP use case):
- Check if CPI-PI isn’t the right solution.
- If not, CPI-DS is ready for custom dataflows and integration with databases/DWH.
What’s new in latest 1.0.11 patches
Enhancements : Dataflow Editor

- Support generation of ABAP program to review.
- Option to load generated ABAP program to SAP application.
- Upload to an SAP application is based on the upload attributes section of datastore configuration.
- ABAP execution option must set to “Generate & Execute”.

DEMO
Enhancements : Custom ABAP Editor

- A custom ABAP FORM editor allows for improved editing, adding, and deleting of custom ABAP transform components.
- The data flow calls the version of the ABAP program that is saved to the agent system.
- Changes are saved to UI repository or the ABAP language file.
- Make changes to your output schema, parameters, or global variables or proceed to run the ABAP program.

DEMO
New Certifications: HANA Views as source

- SAP HANA views are now supported as source.
- HANA views are supported in both on-premise HANA database datastore and SAP HANA Application cloud datastore.
- Any filters on views are pushed down to SAP HANA.
New Certifications: Microsoft SQL Server

- Microsoft SQL Server 2016 on-premise is now supported as source and target.
- Microsoft SQL Server on Azure PaaS and Azure VM is supported as source and target.
- Datastore option “Database Subtype” is available to select the MSSQL Server database type (on-premise, Azure PaaS, Azure VM).
Additional Certifications

- MySQL 5.5 and 5.6 are now supported as source and target.
- SAP Cloud Platform Integration for data services now supports version 7.3 of Red Hat Enterprise Linux (RHEL).
- SAP Cloud Platform Integration for data services now supports the SQL Server driver for Linux.
- SAP Cloud Platform Integration for data services now supports SAP S/4HANA version 1709.
- For more information refer to CPI-DS Product Availability Matrix (PAM)
Enhancements: Unlock Task/Process

- Option to unlock task or process is supported now.
- An administrator can now unlock a task or process that was inadvertently left locked after viewing.

⚠ Unlocking a task that is currently being edited, can cause inconsistencies.
Enhancements : Access for SAP Support

- Enable or disable SAP support Access to troubleshoot issues.
- SAP Support user will be visible in the user list with a different user icon and its role check (SAP Support).
- SAP Support role provides limited access sandbox and production environments.
- Access for SAP Support users is secure and audited.
- At anytime, you can disable SAP Support access or individual support users.
Enhancements : Global Variables

- Global variables are symbolic placeholders for runtime values.
- Enhanced to contain a list of variables within single global Variable.
- Useful in instances where the SQL IN operator is used.

For example: $G_VARS_LIST = "\"filter2\",\"filter2\""
Enhancements : Run Now Dialog

- "Run Now" dialog label change.
- The "Run Now" dialog now includes the task name in the dialog title.
Enhancements : Security Log

Retention Period

- Option to set the security log retention period.
- Data in the security log is deleted after a pre-defined retention period.
- Need security administrator role to set the retention period.
- Default retention period is 60 months.

Security Log Events

- Security log now will include occurrences of datastore configurations and table views.
Enhancements: Email notifications

- Agent downtime notification can now be set for all environments (sandbox, production and other environments like development or test).
- Need Administrator permissions to configure email notification.
- Select “Receive Downtime Notifications” option during agent configuration.
CPI-DS Content Development

Outlook
Overall Integration Direction for IBP

Today

- CPI-DS templates delivered and also adopted for Unified Planning area

Roadmap

- Extend the IBP Add-on to additionally support time-series Integration (CPI-DS)
- Separate integration streams into separate planning areas from independent sources

Product Direction

- Separate Integration streams into one planning area
- Integration data model extensions to operational supply planning

Lab Preview

- Product Direction

Target

- Unified Model with one common master data source
- Rich Integration content for Time series based Planning

SDI

- One integration stream (for master and transactional data) used in separate planning areas. Also supports back-integration and operational data life cycle.

CPI-DS
Reuse IBP add-on for time series content (SAP ERP and S/4HANA)

SAPIBP1

Time series
(MDT and KF)

CPI-DS

Build Content

IBP Add-on

Inbound APIs

Outbound APIs (extractors)

Capture Data

ERP, S/4HANA

Business Layer

Application Tables

BW, BPC, C4C and others

Capture Data

Order based Staging Tables

TS-based Staging Tables

Data service agent

Enhancements to existing components

New components

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## Content delivery using IBP Addon for CPI-DS Integration

<table>
<thead>
<tr>
<th>Master data</th>
<th>Master data</th>
<th>Master data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource</td>
<td>UOM</td>
<td>Currencies and Exchange rate</td>
</tr>
<tr>
<td>Resource Location</td>
<td>Source Production</td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td>Production Source Item</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Product Resource</td>
<td></td>
</tr>
<tr>
<td>Location Product</td>
<td>Source Production Validity</td>
<td></td>
</tr>
</tbody>
</table>

### Key figure
- Capacity Supply
- Outbound Integration: Safety stock
- Outbound Integration: Planned Independent Requirement
- On-Hand Stock
## Target: Common master data type for time-series and order-based planning

For S/4HANA and SAP ERP customers

Once we have ability to do extensions in order based planning, we will invest on unified master data for both time series and order based planning -

### Today: Standard Delivery

<table>
<thead>
<tr>
<th>Platform</th>
<th>Simple MDT</th>
<th>External MDT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAPIBP1</td>
<td>Simple MDT</td>
<td>External MDT</td>
</tr>
<tr>
<td>SAP7</td>
<td>External MDT</td>
<td></td>
</tr>
</tbody>
</table>

**CPI-DS** | **SDI**

- In SAPIBP1 all attributes derived from Simple MDT
- In SAP7 all attributes derived from external MDT

### Today: Workaround possible

- **Unified Model**
  - Simple MDT extended by External MDT
  - MD duplication with two integration tools (both SDI and CPI-DS)

### Future: Standard Delivery

- **Unified Model**
  - External MDTs only or a new MDT with a mix of external and simple attributes
  - No master data duplication

- Extend SAPIBP1 to have all attributes derived from external MDT
- No master data duplication
- Extension concept for order based planning integration is the pre-requisite

*This is our recommended approach*
Links for CPI-DS Resources

PAM

Help Portal
https://help.sap.com/viewer/p/SAP_CLOUD_PLATFORM_INTEGRATION_FOR_DATA_SERVICES

Agent Guide for installation and Configuration

Youtube Demo videos:
https://www.youtube.com/playlist?list=PLkzo92owKnVvHyVtrzyF4KSQomTuKRg0q

CPI-DS community
https://answers.sap.com/tags/67838200100800005117

Quick Start Guide for IBP time series data integration
Links for Time Series Based Integration Getting Started

Onboarding Document

Application Help for IBP Integration using SAP Cloud Platform Integration for data services
https://uacp2.hana.ondemand.com/viewer/feae3cea3cc549aaa9d9de7d363a83e6/1702/en-US/84c79657c82c6c10e10000000a441470.html -

Product Availability Matrix for source and target verification

Getting started on Integration for data services https://hcids.hana.ondemand.com/DSoD/help/index.html

Downloading Data Services Agent https://launchpad.support.sap.com/

Configure the Agent https://help.sap.com/viewer/7d9858e1309e459093ed397c6fc40f12/latest/en-US/ad9b6e8cc01a455c8c9800377f1f9477.html -

Integration guide https://uacp2.hana.ondemand.com/viewer/eab8fd1726934516a89eabcd318b210/1702/en-US -
Links for Order Based Integration Getting Started

Application Help for IBP Response Integration using SAP Cloud Platform Smart Data Integration
https://uacp2.hana.ondemand.com/viewer/feae3cea3cc549aaa9d9de7d363a83e6/1702/en-US/e10f0b5642880033e10000000a44538d.html

Onboarding document

Administration Guide for SAP Cloud Platform Smart Data Integration
https://help.sap.com/viewer/7952ef28a6914997abc01745efefb607/2.0_SPS00/en-US

Needed staging area structure given by Open API

Supported staging area types: Data Provisioning Adapters
https://help.sap.com/viewer/7952ef28a6914997abc01745efefb607/2.0_SPS00/en-US/6ed502701abd4d1ca94d463d7dc6e99f.html

IBP add-on for ERP
http://help.sap.com/ibp_erp_addon

IBP add-on for S/4HANA
http://help.sap.com/ibp_s4hana_addon

Data Provisioning Agent
https://uacp2.hana.ondemand.com/viewer/feae3cea3cc549aaa9d9de7d363a83e6/1702/en-US/e10f0b5642880033e10000000a44538d.html

Integrating with External Systems
https://uacp2.hana.ondemand.com/viewer/feae3cea3cc549aaa9d9de7d363a83e6/1702/en-US/e10f0b5642880033e10000000a44538d.html
Thank you.

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