

Oracle Cloud ERP Where is my Data?

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WHOAMI

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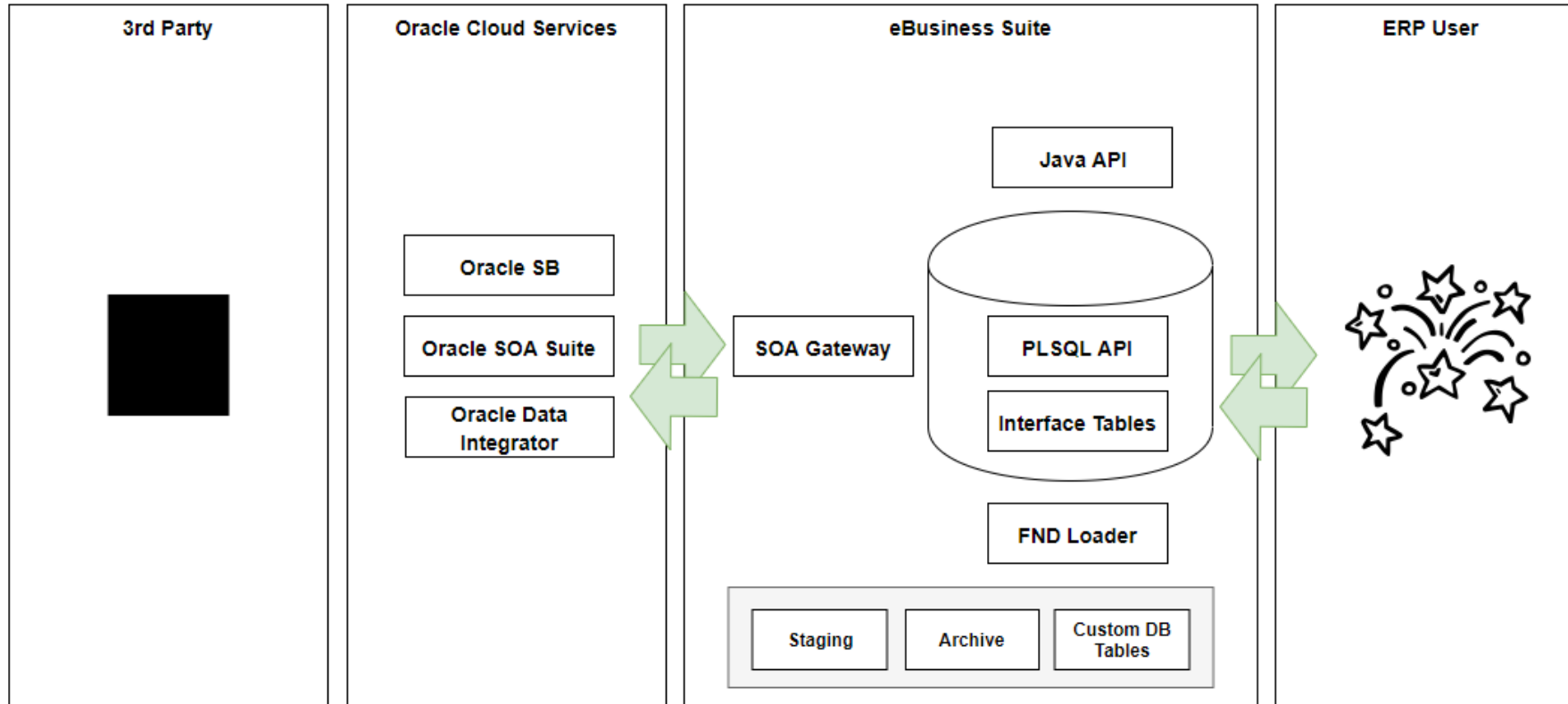


Where is my Data

Why: when I joined project, could not find opinion summary of a 3rd party on the integration implementation details

How: last 10 months

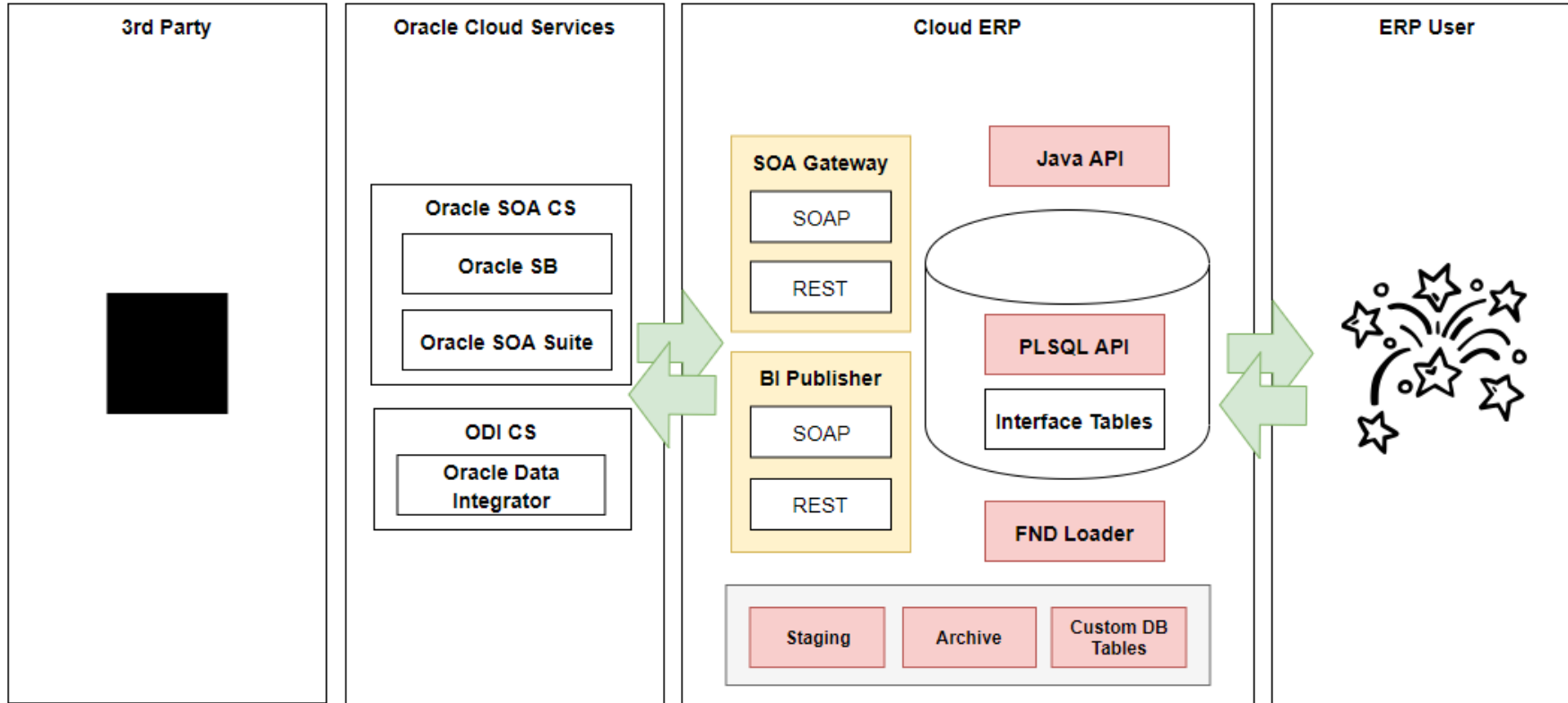
Summary: notes are effective for Cloud ERP releases at 2018.



Evolved for decades, well known:

- **Patterns (use case - solution)**
- **Assets**
- **Supported Application Integration Architecture**

Cloud ERP



Functionality lost (eBS perspective):

- **Java API's (e.g., Oracle Configurator)**
- **PLSQL API's**
- **FND Loader**
- **SQL Loader**
- **File/DB Staging Areas**
- **File/DB Archives**
- **Custom DB Tables**

Anonymized Project

Retail Customer

- **14 countries, pilot countries already rolled out**
 - 50+ Legacy systems
 - On-Premise MDM

Project First Task

Gather Requirements

- **Current system landscape**
- **Existing integration tools and data sharing mechanisms**
- **Master Data Management system location**
- **Auditing and Monitoring requirements**

Reference (January, 2018) : <https://blogs.oracle.com/dataintegration/oracle-data-integrator-odi-to-load-into-fusion-applications-oracle-erp-cloud>

Project Second Task

Select Tool

Oracle SOA CS

Oracle Data Integrator CS

Integration Cloud Service (ICS)

Oracle Integration Cloud (not covered)

Any Other ESB/Script (cloud or on-premise)

**Rationale of choice: extend,
if you have what to extend**

Oracle Tools Selection

Oracle Data Integration (ODI):
Data sources are Databases,
transformations and data enrichments
needs to be done (e.g., MDM)

Oracle Integration Cloud Service (ICS):
Cloud to Cloud or simple FBDI file
polling

Oracle SOA Suite (SOA CS):
Long running and stateful processes,
custom logic and persistence
requirements (Cloud ERP Polling).

Never the less: client without FTP
Server

Upload Types

File Based Data Import - FBDI

ORACLE Fusion Applications Customer Import Interface

Overview
Use the Oracle Fusion Trading Community Model Data Import program to import customer data from legacy or other external systems in bulk into the Trading Community Registry and into Oracle Fusion Receivables tables. Customer data includes, for example, Parties, Party Sites, Accounts, Account Sites, Site Uses, along with associated customer attributes, such as customer profiles, customer payment methods, and customer bank accounts.

- The Oracle Fusion Trading Community Model Data Import program contains parent, child, and grandchild table hierarchies to represent the hierarchy of data in customer information. For example, a customer party can have one or more accounts and other associated attributes; a customer account can have one or more sites and other associated attributes; a customer account site can have one or more site uses and other associated attributes.
- Use the control files (HzImpPartiesT.ctf, HzImpPartySitesT.ctf, HzImpPartySiteUsesT.ctf, HzImpAccountsT.ctf, HzImpAcctSitesT.ctf, HzImpAcctSiteUsesT.ctf, HzImpAccountRels.ctf, HzImpAcctContactsT.ctf, HzImpContactPtsT.ctf, HzImpContactRoles.ctf, HzImpContactsT.ctf, HzImpLocationsT.ctf, HzImpRelshipsT.ctf, HzImpRoleResp.ctf, HzImpClassificT.ctf, HzImpPersonLang.ctf, RaCustomerProfilesIntAll.ctf, RaCustomerProfilesIntAll.ctf, RaCustomerProfilesIntAll.ctf, RaCustomerProfilesIntAll.ctf) interface tables needed for custom interface tables. See more details in the Oracle Fusion Applications documentation.

Preparing the Table Data

1. Prepare the data for each interface table.
2. Refer to the bubble text on each interface table for more information.
3. Common tasks for preparing table data.

Loading the Data
After you finish preparing the data in the interface table, you can load the data into the Oracle Fusion Applications.

Generate CSV File

Excel Template Format

- Each interface table is represented by a separate Excel template file.

File Name: .ARIH.20180412235447.zip

Name	Type	Compressed size	Password ...	Size	Ratio	Date modified
RalnterfaceDistributionsAll.csv	Microsoft Excel Comma S...	1 KB	No	1 KB	86%	4/12/2018 5:08 PM
<input checked="" type="checkbox"/> RalnterfaceLinesAll.csv	Microsoft Excel Comma S...	1 KB	No	3 KB	84%	4/12/2018 5:07 PM

RalnterfaceLinesAll.csv [Read-Only] - Excel

File Home Insert Draw Page Layout Formulas Data Review View Tell me what you want to do

Clipboard Font Alignment Protection Number Styles

Data Classification: Not set
This document is not labeled.

Data Classification: Not set

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		DATA	ABC	30 NET	4/12/2018	4/12/2018	0321/10	DATA1005	DATA100591				
2		DATA	ABC	30 NET	4/12/2018	4/12/2018	0321/10	DATA1005	DATA100591				
3		DATA	ABC	30 NET	4/12/2018	4/12/2018	0321/10	DATA1005	DATA100591				

Full list of FBDI's for financials:
<https://docs.oracle.com/en/cloud/saas/financials/r13-update17d/oefbf/toc.htm>

Upload Types

SOAP or REST Service invocations

https://apicatalog.oraclecloud.com/ui/views/swaggerui3/oracle-public/financials-cloud/18b/erpintegrations?urls.primaryName=Tax%20Exemptions

ORACLE API Catalog Cloud Service Log In

< API Collection

Oracle Financials Cloud
API Catalog / Applications (SaaS / DaaS) / Enterprise Resource Planning
Last Updated May 2018

Updated: Jun 2, 2018
oracle-public / financials-cloud:18b

Oracle Financials Cloud delivers a comprehensive solution designed to automate and streamline your organization's financial management processes end-to-end.

Find what you need:

- Quick Start guides you through a simple request example.
- Reference topics include error messages and more.
- Tasks list each available REST API with its supported methods and child resources.

Sign in using your Oracle Public Cloud account to try out the API's operations against your service endpoint.

https://docs.oracle.com/en/cloud/saas/financials/18b/oeswf/ERP-Object-Descriptive-Flexfield-Update-Service-ErpObjectDFFUpdateService-svc-11.html

Operations

- updateDffEntityDetails

updateDffEntityDetails

Updates specific descriptive or global descriptive flexfield attributes for supporting business objects.

Life Cycle Status: Active

Request Payload

Element Name	Type	Description
document	Document Information	The prerequisite input that contains the file content, file name, content type, file title, author, security group, and account to update specific descriptive flexfield or global descriptive flexfield attributes using the available bulk batch update approach from the appropriate spreadsheet template. The document input will be NULL when the real-time calling of the web service is used as an alternative to the bulk update approach.
operationMode	string	Processing mode to designate whether a real-time single or a bulk batch update web service approach will be used to update specific descriptive or global descriptive flexfield attributes.
object	Object Information	List of elements, each containing the details of the ERP Object to be updated. The details include the entity name, context value, user key attribute values, DFF attribute name value pair.
notificationCode	string	The two-digit code which represents the type and timing when a notification will be sent.
callbackURL	string	The callback URL of the service implemented by customers to receive the Enterprise Scheduling Service job status on job completion.

Response Payload

Element Name	Type	Description
result	string	The request ID of the Enterprise Scheduling Service job in cases where the bulk batch update of specific descriptive or global descriptive flexfield attributes is used. Alternatively, the status value of success or failure in cases where the real-time single web service approach to update a specific descriptive flexfield or global descriptive flexfield attribute is used.

Same functionality should be available over the SOAP and REST

Upload Target

Universal Content Management - UCM

UCM purpose is to provide file storage for Cloud ERP (inbound and outbound).

UCM fully replaces SFTP upload possibilities at the end of 2017.

Oracle SOA Cloud Service

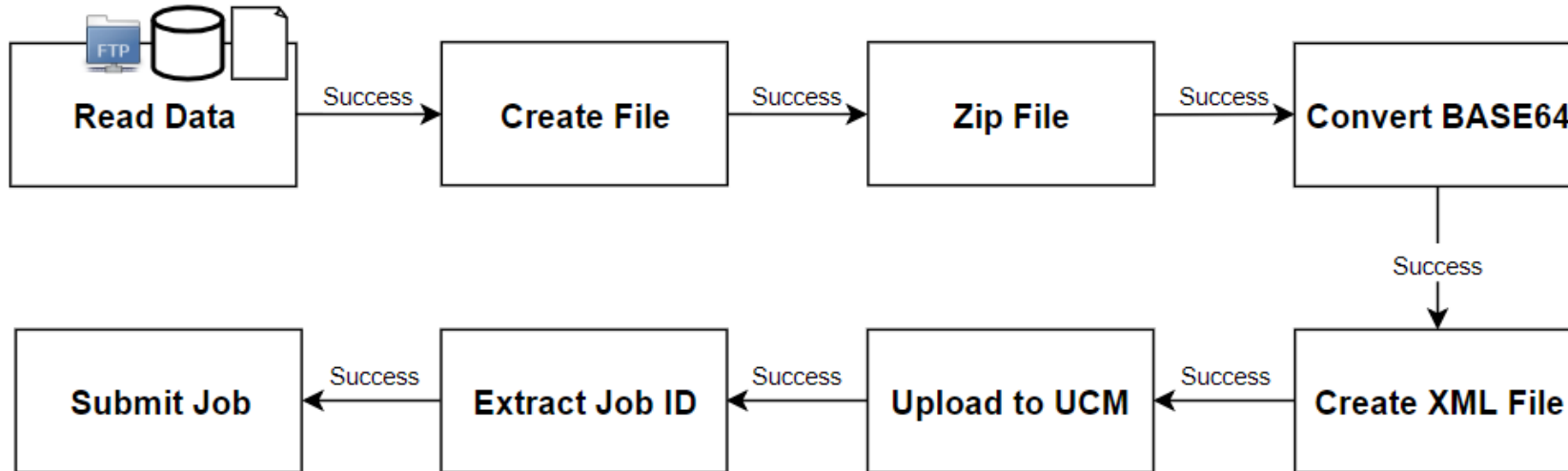
VM's + Oracle SOA Suite

Selected for our project

Oracle Data Integrator CS

VM's + ODI

Oracle Data Integrator CS



Expectation: some, out of the box, upload orchestration

Claims, no limit for row count

Integration Cloud Service

Web GUI + OSB & Adapters

Any Other ESB/Script

Existing tool extension to support the Cloud ERP Integrations

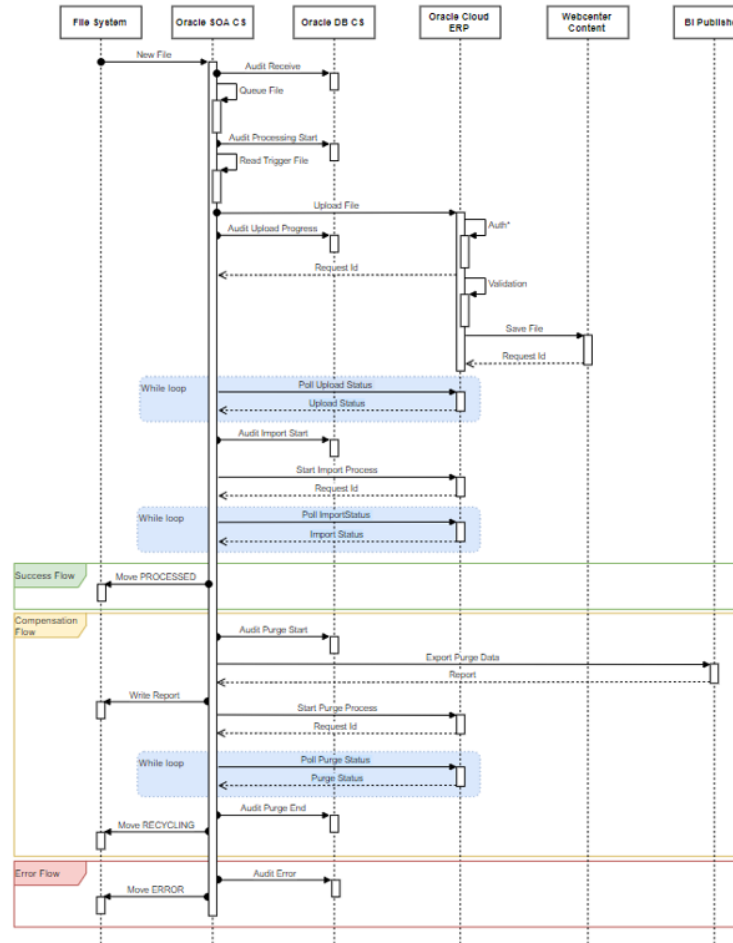
Development First Task

Like with any SaaS, first challenge is to import data

Large Data Loads

Oracle SOA CS

- **File Polling and Creation (FBDI)**
- **File Upload Orchestration**
- **Import Process Orchestration**
- **Purge Orchestration (custom report + purge)**
- **Detailed auditing**
- **Re-try Orchestration**



- **Up to 500'000 rows per upload**
- **Error data needs to be reported**
- **Custom status report needs to be created**

Large Data Loads

Oracle SOA CS

Lessons learned:

- **Limit zip file size you process**
- **LoadAndImport operation is good for 100% pre-validated data**
- **LoadAndImport can be multi step:**
 - /oracle/apps/ess/financials/payables/invoices/transactions,APXIIMPT – load and run job
 - /oracle/apps/ess/financials/payables/invoices/transactions,APXIIMPT* - only load (perfect for configuration management)
- **Reported statuses do not correspond the reality (error, warning)**
- **Verify if your interfaces supports import filtering**

Small Data Loads

When FDBI is not available

REST or SOAP Services - one web service invocation count, in one session, is limited to around 5000 calls

Workaround – just like in the Oracle AIA, create separate Requester service for Cloud ERP invocation

Double Accounting

Purge Reports

Reports, extractable from Cloud ERP, are useless for machines, therefore, evaluate a possibility to write your own BI Publisher reports, extracting errors per interface table row, together with data.

Double Accounting Load Status

**Not advertised service for real-time report extraction:
xmlpserver/services/ReportService**

Status Reports

Edit Data Set - AP Invoice

* Name: AP Invoice

* Data Source: ApplicationDB_FSCM

* Type of SQL: Standard SQL

* SQL Query

```
SELECT NVL((SELECT 'ERROR'  
FROM DUAL  
WHERE EXISTS(  
SELECT 1  
FROM AP_INVOICES_INTERFACE  
WHERE LOAD_REQUEST_ID = :LOAD_REQUEST_ID  
AND  
STATUS = 'REJECTED'  
UNION ALL  
SELECT 1  
FROM REQUEST_HISTORY  
WHERE (REQUESTID = REQUEST_ID  
OR PARENTREQUESTID = REQUEST_ID)  
AND EXECUTABLE_STATUS <> 'SUCCEEDED')),  
'SUCCEEDED') STATUS
```

Buttons: Generate Explain Plan, OK, Cancel

Purge Reports

Purge Reports

Field Name	Status	Settings
ERROR_CODE	A	⚙️
STATUS	A	⚙️
INVOICE_ID	##	⚙️
OPERATING_UNIT	A	⚙️
SOURCE	A	⚙️
INVOICE_NUM	A	⚙️
INVOICE_AMOUNT	##	⚙️
INVOICE_DATE	A	⚙️
VENDOR_NAME	A	⚙️
VENDOR_NUM	A	⚙️
VENDOR_SITE_CODE	A	⚙️
INVOICE_CURRENCY_CODE	A	⚙️
PAYMENT_CURRENCY_CODE	A	⚙️
DESCRIPTION	A	⚙️
GROUP_ID	A	⚙️
INVOICE_TYPE_LOOKUP_CODE	A	⚙️

Global Level Functions: Drop here for aggregate function

Statuses reported correctly:

- **Account Payables**
- **Account Receivables**

Statuses to be verified:

- **General Ledger**

Note: service is working, it is documented but, if there are any problems, Oracle Support will tur you to best practice as:

- 1. Submit report**
- 2. Poll Status**
- 3. Get Report Data**

Double Accounting

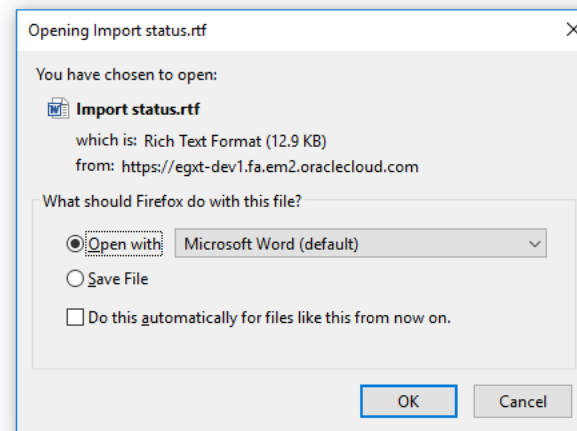
Status and Purge Reports

Standard CSV (with header) is not handy nor for integrations, nor for FBDI file creation. Use rtf templates to remove the header (works over WS only).

	Name	Template File	Type	Output Formats	Default Format	Default Layout	Apply Style Template	Active	View Online	Locale	Reorder
<input type="checkbox"/>	APINV	Import status.rtf	etext	Text;Data (CSV) ▼	Data (CSV) ▼	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	English	▲ ▼



APINV
[Edit](#) | [Properties](#) | [Delete](#)



Data Integrations

Challenges – Upload – Tool independent

Problem Summary

Service Unavailable (HTTP-503)

Problem Description

Random HTTP-503 error when calling ReportService of Cloud ERP.

Multiple SR's has been opened

Problem Summary

Service Unavailable, Internal Server Error (HTTP-503/500)

Problem Description

When we invoke service endpoints:

URI "https://*.em2.oraclecloud.com/xmlpserver/services/ReportService"

URI "https://*.em2.oraclecloud.com:443/fscmService/ErpIntegrationService"

Development Second Task

Like with any SaaS, next challenge is to export data

Extract

Problems:

- **Dependencies (ER Diagram, 70+ tables)**
- **Last Update Date**
- **Row count (100m +)**

Discussions:

- **How to extract, what tools to use**
- **Back to PLSQL**

Oracle BI Cloud Connector

SaaS Replication

Staging Database

Oracle BI Publisher Reports

Oracle BI Cloud Connector

BI Cloud Connector

- **Predefined View Objects**
- **Supports incremental export and data chunking**
- **Export to:**
 - UCM
 - Cloud Storage

More information: <https://docs.oracle.com/en/cloud/saas/applications-common/r13-update17d/biacc/biccc-overview.html>

Prospects: aligned with Cloud ERP availability and Oracle is fully responsible for scheduling and extract.

Concerns: UCM (we could not find exported files) and Cloud Storage Monitoring/Consumption.

SaaS Replication

The target database for the replication can be one of the following:

- **Oracle Database Cloud Service**
- **Oracle Big Data Cloud**
- **Oracle Autonomous Data Warehouse Cloud Service**

More information: <http://www.ateam-oracle.com/saas-data-replication-in-oracle-analytics-cloud-oac-and-oaac/>

Prospects:

- **Aligned with Cloud ERP availability and Oracle is fully responsible for scheduling and extract**
- **Automatic replication to the DBCS**

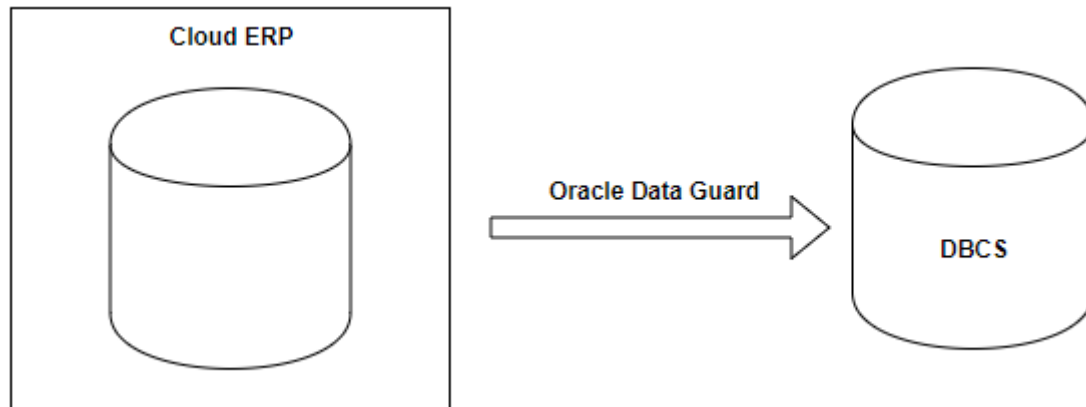
Concerns:

- **Dependency management (make sure that all latest data is available)**

Not investigated for now

Staging Database

Option found over discussions between Implementation Team and Oracle



Oracle BI Publisher Reports

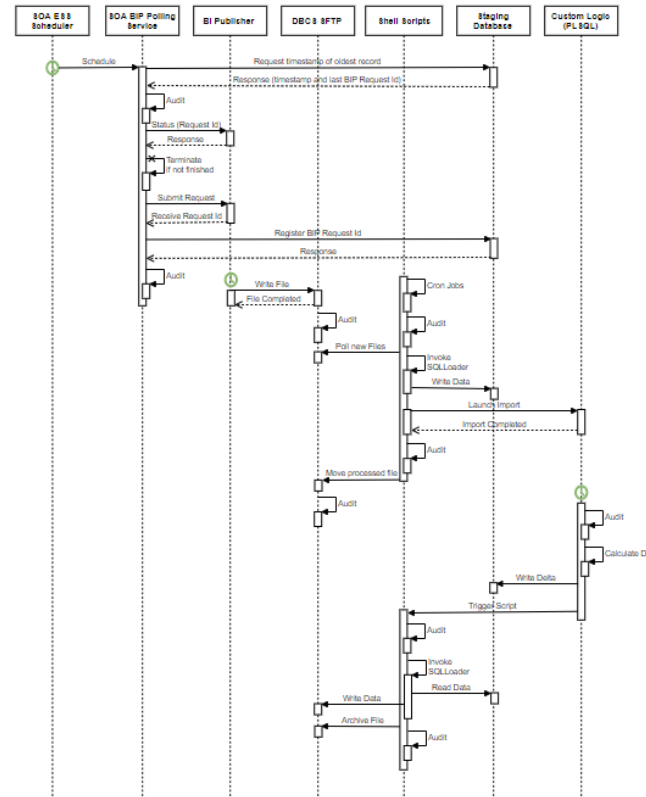
In other words, same approach, used at majority of known projects

Prospects:

- Support of full and incremental data extractions
- Full control on scripts

Concerns:

- Monitoring
- Component and Technology mix
- Several separate schedulers
- Cloud ERP Availability (ESS checks)



Oracle BI Publisher Reports

Prospects:

- **It is working NOW (2018)**

Concerns:

- **Cloud ERP BI Publisher queuing**
- **Superstar support engineer:**
 - We accounted some 10 possible points of failure
 - Wide knowledge, starting with bash scripting, ending with Oracle SOA Suite/ESS/BI Publisher and Cloud ERP
- **Data transfer time:**
 - Decisions taken, based on the old data
 - Failed datasets

Oracle BI Publisher Reports

Good to know ...

Restrictions:

There is pre approved memory guard changes for which Support is able to create a collaborations SR in order to request the changes, these cannot be set by the customer. Today, the changes are:

Maximum report data size for online reports ONLINE_REPORT_MAX_DATA_SIZE 500MB

Maximum report data size for offline (scheduled) reports OFFLINE_REPORT_MAX_DATA_SIZE 2GB

**XML_DATA_SIZE_LIMIT to 4GB (for non-payroll)
5 GB (for payroll customers) - see bug 25347743
needs to be at least as high as the max report data size for offline**

**Fusion Applications : BI Publisher Memory Guard, associated messages:
XML Output generated exceeds specified file size limit, File does not begin with '%PDF.'**
oracle.xdo.XDOException: java.io.IOException: Memory above memory limit

Doc ID 2378993.1
Doc ID 1945547.1
Doc ID 1914656.1

Oracle BI Publisher Reports

Good to know ...

Too big Data Set:

**[180907_11010027][dp id:448965506][sch info:JobId:13126[ESS RequestId:45123]]Process Cancelled
Stage:false**

**[180907_11010027][dp id:448965506][sch info:JobId:13126[ESS RequestId:45123]]XMLPGEN:ORA-01652:
unable to extend temp segment by 128 in tablespace FUSION_TEMP**

**[180907_11010027][dp id:448965506][sch info:JobId:13126[ESS RequestId:45123]]java.sql.SQLException:
ORA-01652: unable to extend temp segment by 128 in tablespace FUSION_TEMP**

Data Integrations

Challenges – Tool independent

401 Unauthorized

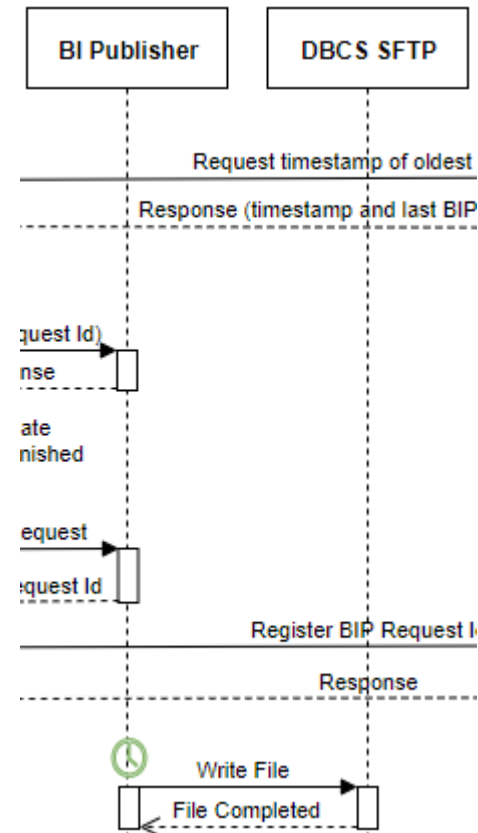
Oracle BI Publisher Report Bursting

Good to know ...

We strongly suggest to provision stand-alone SFTP server for data extracts in the Cloud VM's or use separate service

It requires:

- **FTP Folder Naming Convention**
- **Security Exception SR with Oracle**
- **BIP Setup**



Environment Challenge

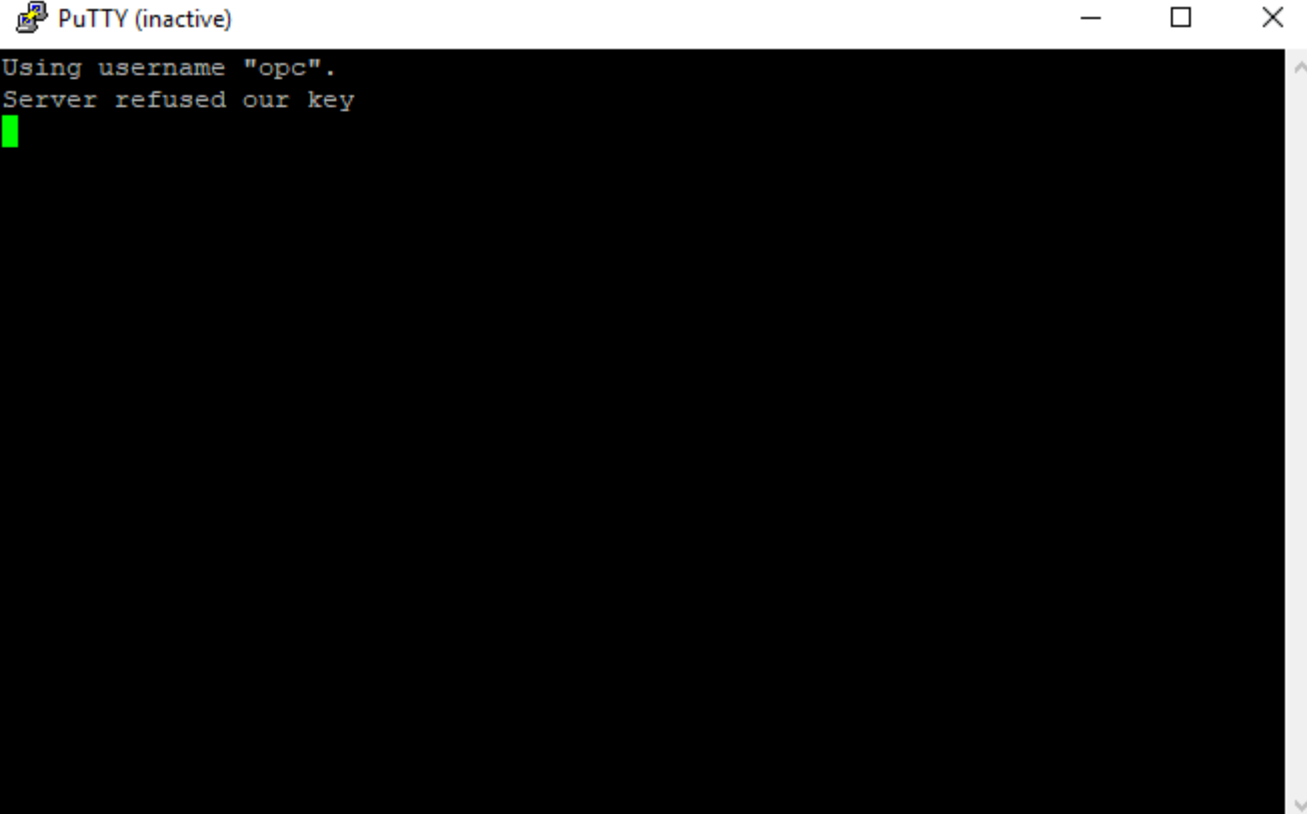
Good to know ...

Loss of access to the DBCS/JCS Environment

```
[root@RecoveryTST /]# cat /etc/ssh/sshd_config
AllowUsers opc otools oracle
Match User opc
PasswordAuthentication no
Match User oracle
PasswordAuthentication no
Match User otools
PasswordAuthentication no
[root@RecoveryTST /]#
```

Happened twice, root cause not found

Doc ID 2085512.1



```
PuTTY (inactive)
Using username "opc".
Server refused our key
```

Integration Notes

- **Oracle SOA Cloud Service is using self signed certificates (Cloud ERP setup). Solution depends on the Oracle Support personnel**
- **Data amounts, processing times – before kick-off with design, ask Oracle confirmation to support functional/technical approach**
- **Not all functionality is available over the FBDI or present via Web Services, we were waiting for 5 months to get certain services (AP/AR Updates)**

Oracle Tools or existing solution

Cloud Services

Prospects

- **Great use case for Cloud to Cloud**
- **Claims to have pre-built adapters**
- **Claims to be capable to orchestrate upload of any size of the file (verified successful upload of 16Mb)**

Concerns:

- **New product for client support teams**
- **ICS/OIC – vendor lock in**
- **Black Box (monitoring, semantic monitoring)**



**Ready to answer
questions.**

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