My UI5 debugging tips and experience collection – how to resolve UI5 issues through debugging by yourself | SAP Blogs

Thursday, April 19, 2018 6:09 PM

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SAP Fiori

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- LAST BUT NOT THE LEAST – Tutorial how I do self-study on a given Fiori control and UI5 framework code behind

Updated on 2017-10-13 after I am working on Cloud for Customer for three months

  - One possible cause that embedded component fails to display in UI
  - Regarding C4C UI refresh logic based on response from backend
- The logic how the field list under Attributes folder is populated
- Ruby Script in C4C Oberon View
- A real example of promise usage in Cloud for customer framework

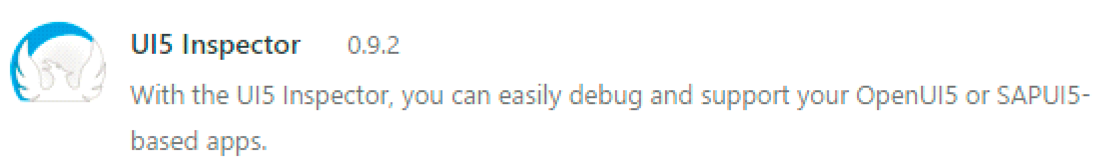
Three years ago I wrote a blog Six kinds of debugging tips to find the source code where the message is raised in ABAP forum, trying to summarize my ABAP debugging experience by using a concrete example.

So far I have been working on Fiori development in SAP for 1.5 years. My belief as always is that a good developer should have the ability to resolve complex issue / bug by himself using debugging. Debugging can not also help to resolve issue but also enable developer to gain a better understanding on how UI5 framework runs. So I would like to try to summarize my JavaScript debugging skills and experience in this blog.

Chrome development tool

All the blogs mentioned here are written based on Chrome development tool. I can hardly imagine my life without it. It is so necessary to know and master how this tool can aid we Fiori developers to debug code swiftly and efficiently. I have listed all the tips how I leverage this tool in my daily work in this blog: Chrome Development Tool tips used in my daily work.

UI5 inspector

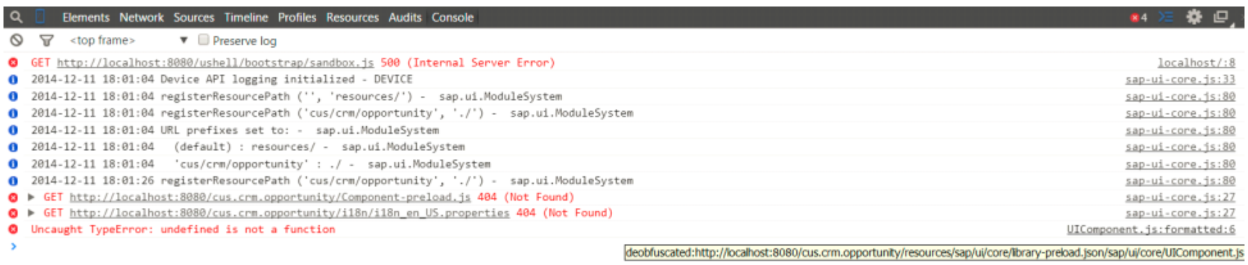


UI5 inspector in one of my favorite Chrome extension I use every day. See how to install it from this blog: An useful Chrome extension – UI5 Inspector.

Deal with “blank screen issue”

In Fiori world, you may frequently meet with “blank screen” issue after you click something in Fiori UI. For example, you click some UI field in application A to navigate to application B, however nothing is displayed, you can only see a blank screen. Most of the time it is because there is something wrong in JavaScript executing. When JavaScript error occurs, the page stops to render, so you see nothing.

Normally you could find corresponding JavaScript error displayed in console. The source code location of error reported in console mostly comes from the framework library, however according to my experience, 90% of the issues are not caused by framework, but by application side. The application code, either SAP standard or customer code, has generated some wrong output or perform incorrect operations which finally makes framework cease to work.

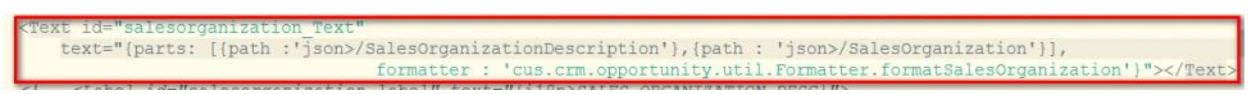


So the essential thing is to find out the exact line of SAP application code or your own enhancement which causes the trouble, so you can report incident to SAP application or fix your own code. There is an example in this blog My small experience about how to find the exact line position which causes “undefined is not a function” error to demonstrate the trouble shooting tip.

See this blog How to quickly locate the code error in application which causes UI stop to load for another example.

UI5 field formatter

In Fiori UI the field formatter is widely used in XML view.



The frequently asked questions accordingly are:

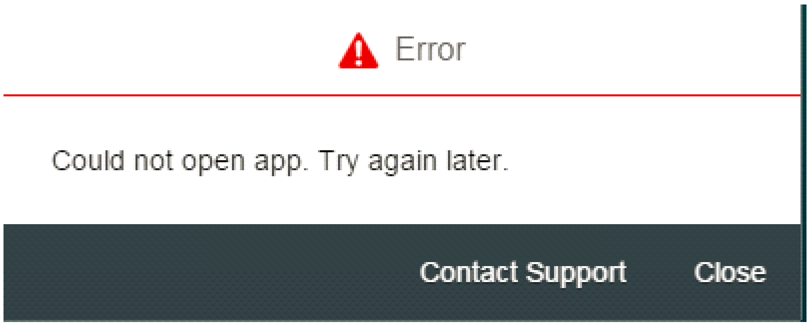
- why my field formatter is not called at all?
- why I have specified formatter, and I can also see response is back from backend in Chrome development tool, why still finally I see empty UI field?

You can find answer to those questions as long as you understand how formatter works under the hood. You can read this blog Why my formatter does not work? A trouble shooting example to know how it works to know more.

Even if you don't use any formatter, it is still useful if you understand the logic of data binding. See the explanation of data binding logic I learned via debugging from this blog How to trouble shoot field binding issue.

Negative cache

"Error: found in negative cache" – this error message found in console is always accompanied with the error dialog below.



If you know clearly about its meaning, you can then avoid it. See Something about negative cache error for detail.

Control registration and deregistration

Junior Fiori developers define control in XML view, bind control to a given model field. In the runtime the field displays value contained in model field correctly. That's all. They know nothing about why this data binding works as expected. They know nothing about the life-cycle management of control done by UI5 framework. As a result when tricky issues emerge, they don't know how to proceed. They may complain there is no documentation to discuss about this topic.

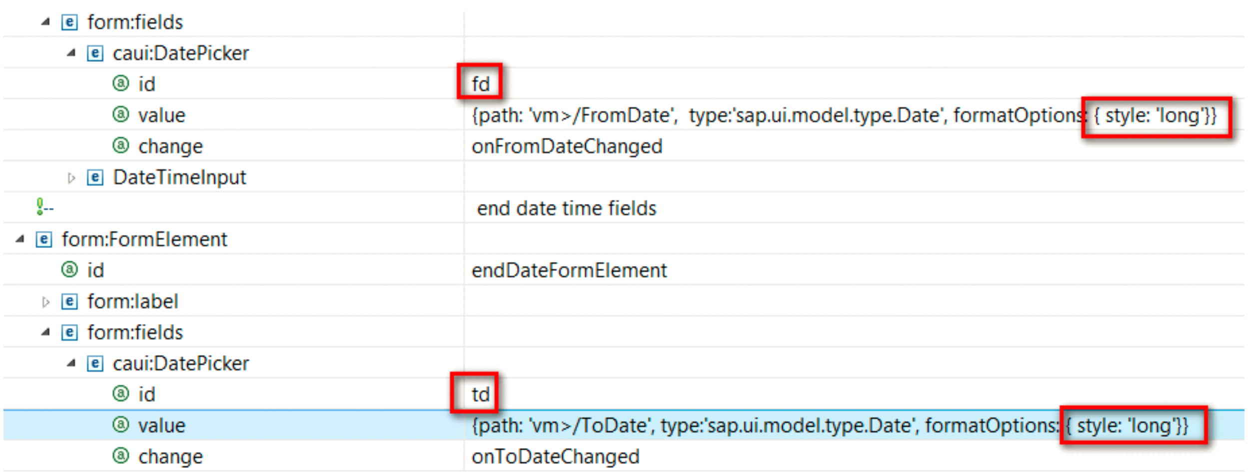
Now, you can research this stuff by yourself via debugging. See this blog How to monitor the control registration and deregistration which contains my approach to study control life-cycle management by debugging framework code.

Another related blog: How to find the location where control id is created in the runtime.

How to dynamically change UI behavior via debugging

As a SAP developer, during my incident support life, usually I have to debug directly in customer system since the reported issue could not be reproduced in our internal system. Sometimes I find suspicious code which causes the issue, I would like to verify such as “If I chance the source code XXXX to code YYYY, the issue may be resolved”. Of course I could not directly change UI code in customer system, however thanks to Chrome development tool, I can change the code loaded in Chrome development tool temporarily to finish my verification.

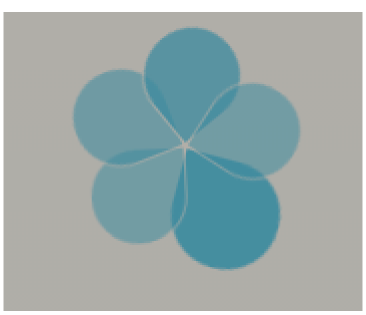
For example, I have a two DatePicker field with formatOptions set as style: long.



I need to change it to “style: medium” for verification purpose in the customer system. See this blog [How to dynamically change the formatOption of control in the runtime via debugging]() for detail.

Fiori flower animation

As a Fiori developer or user you probably see this animation every day.



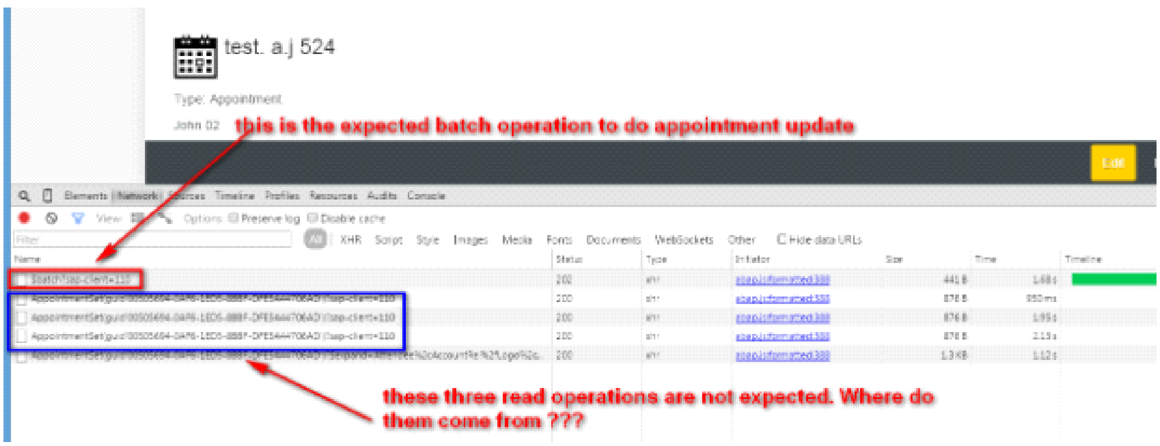
Have you ever thought about how it is implemented? You can read this blog [Fiori Busy Dialog – when is it opened and closed]() to know how I find answer by debugging.

Fiori Icon logic

When I write the following code for the first time, I am curious about how the string “sap-icon://add” can finally be converted to a “+” icon in UI. If you have the same curiosity as me, see this blog [Fiori Icon logic](#).

Find out the origin of suspicious HTTP roundtrips

This is a real question asked by one Australia customer by incident. Customer challenges SAP that why there are always three HTTP read roundtrips every time a given appointment is successfully saved.



And this blog [why there are always multiple read operations after BATCH operation is done successfully](#) contains my reply to the customer

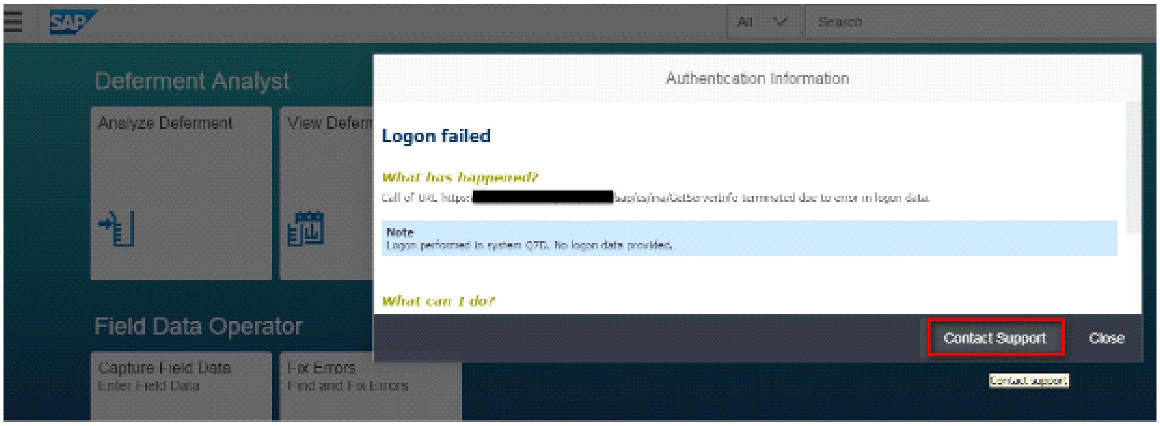
Date Picker

These blogs below are related to the UI5 control Date Picker. They are written after I have resolved some customer incidents with this control involved.

- [Regarding Edm.DateTime in Fiori application](#)
- [More details of DatePicker](#)
- [DateFormat in DatePicker control](#)
- [Language related topic for DatePicker](#)

Contact support button behavior

One day I was confused by the fact that I could see “Contact Support” in the error dialog in some system while in some other system the button is gone.



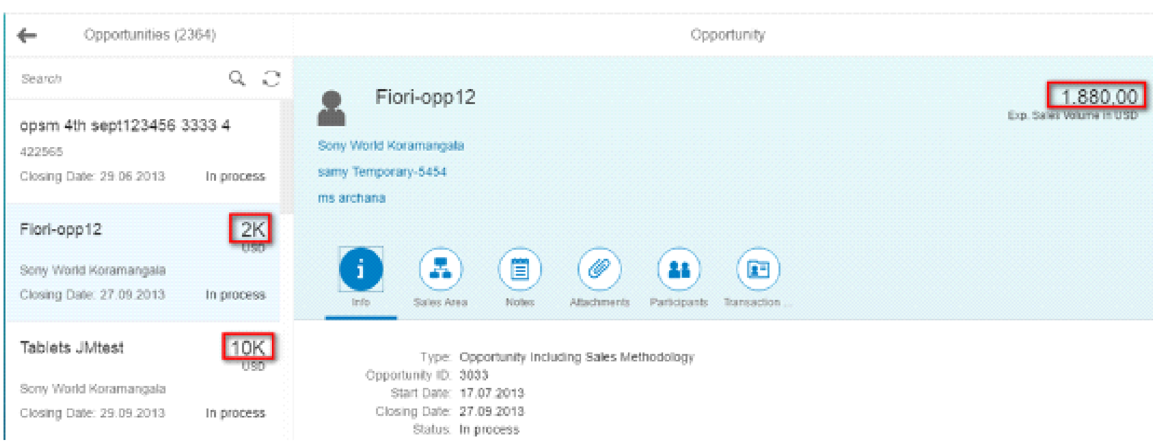
I cannot help figuring it out via debugging: Contact Support button display logic in Fiori.

Two types of popup Dialog in Fiori

The appearance of popup dialog normally is a sign to end user that something wrong occurs (error popup dialog) or some operation has been done (info / success dialog). A normal use case is to find out exactly in which line the popup dialog is raised. See this blog Two types of popup Dialog in Fiori.

Fiori globalization – amount display truncation logic

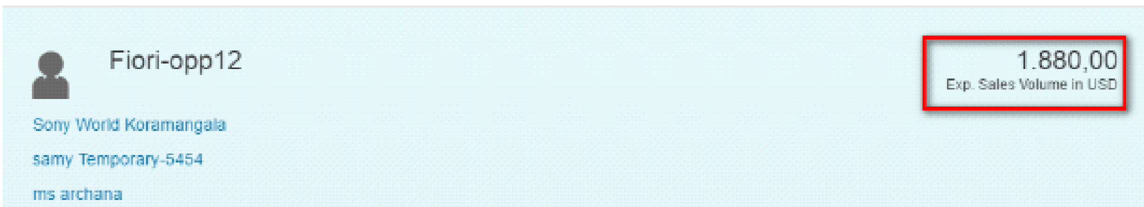
Have you even observed and asked yourself why 1880 USD in detail page is displayed as 2K USD in master list?

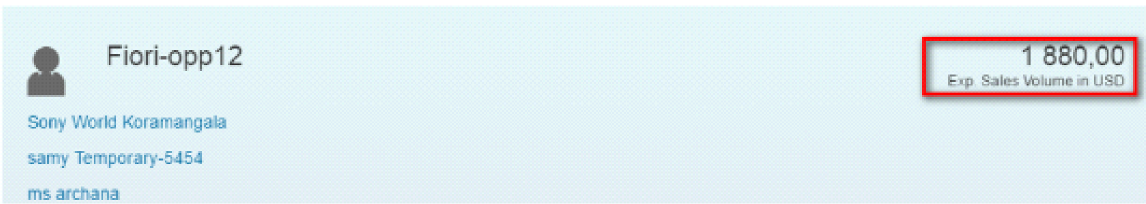


You are sure that it is framework which does this for you, but you don’t know in which code the task is done. See this blog An example of Fiori Globalization implementation – the logic of amount value truncation to find answer.

An example of Fiori Globalization implementation – the number format mystery

Can you explain the reason of this display format difference?

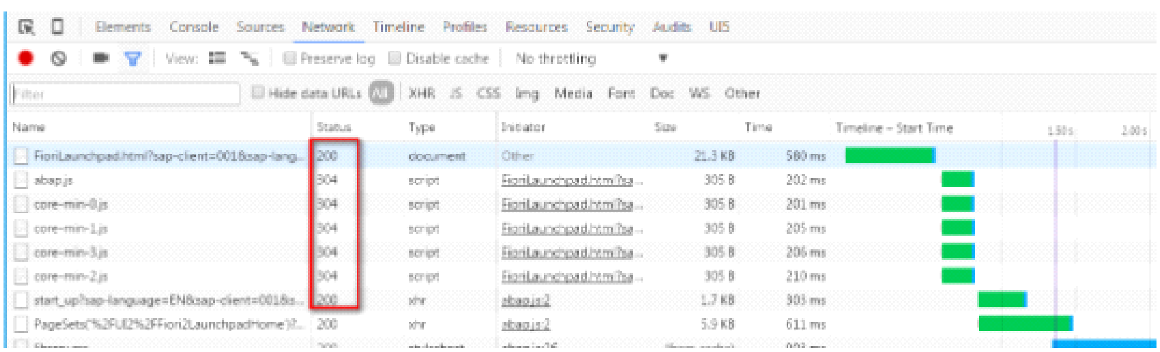




If not, see this blog to find answer: An example of Fiori Globalization implementation – the number format mystery.

HTTP 200 OK and HTTP 304 Not Modified

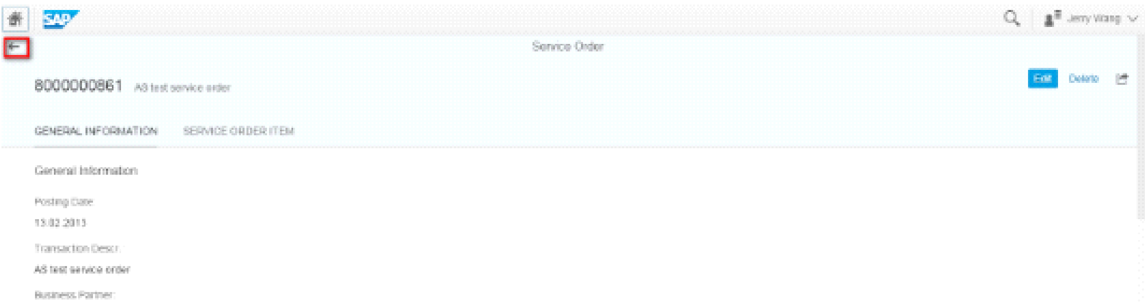
This question is also asked by one of our customer. They have performance issue using Fiori solution and they are monitoring the resource loading performance in Chrome development tool and notice this behavior: for some resource, response is HTTP 200 while for others HTTP 304.



Although this blog Do you understand the logic of HTTP 200 OK and HTTP 304 Not Modified contains mostly the debugging in ABAP backend, it still contains the tips to observe HTTP request and response in Chrome development tool, which is essential part to answer customer's doubt.

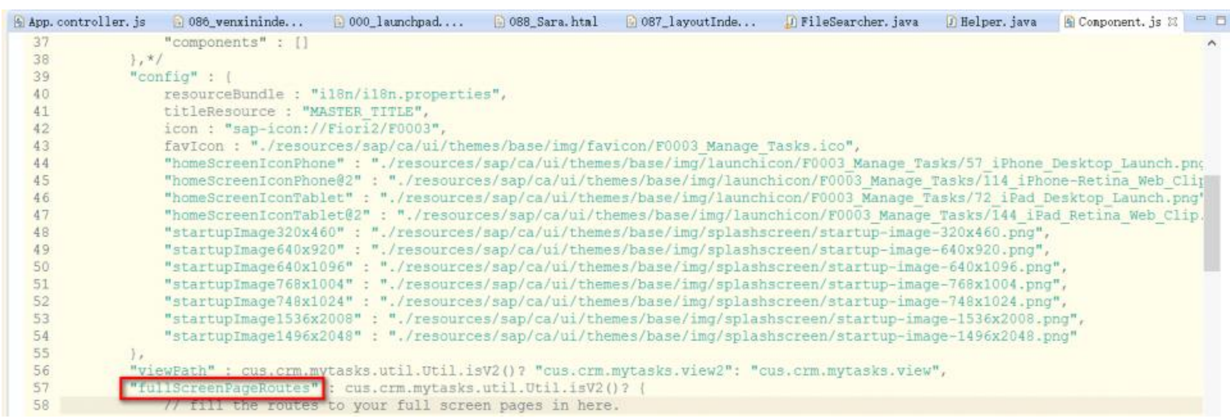
An example of how to find back button implementation on Smart Template generated application

Suppose you want to debug the back button implementation, where you should set breakpoint? The application displayed below is automatically generated by Smart Template, so it is then not possible for you to check controller source code in application folder since the whole UI code is now owned by template. I use the approach to quickly identify the location of source code which handles click event, I call it “tentative search”: [An example of how to find back button implementation on Smart Template generated application](#).



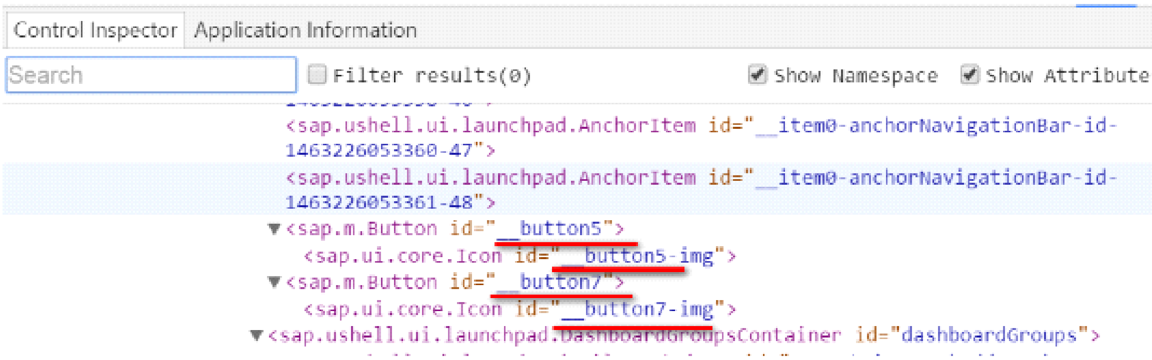
FullScreenPageRoutes in Component.js

In CRM Fiori application you can find the definition of fullScreenPageRoute in file Component.js. If you don’t know why it is needed and how it works in the runtime, you can read this blog [An example to learn how fullScreenPageRoutes works in full screen application via debugging](#).



An easy way to find location where Unique id of UI5 control is created

Would you like to figure out how those IDs are generated? See this [blog](#) for answer.



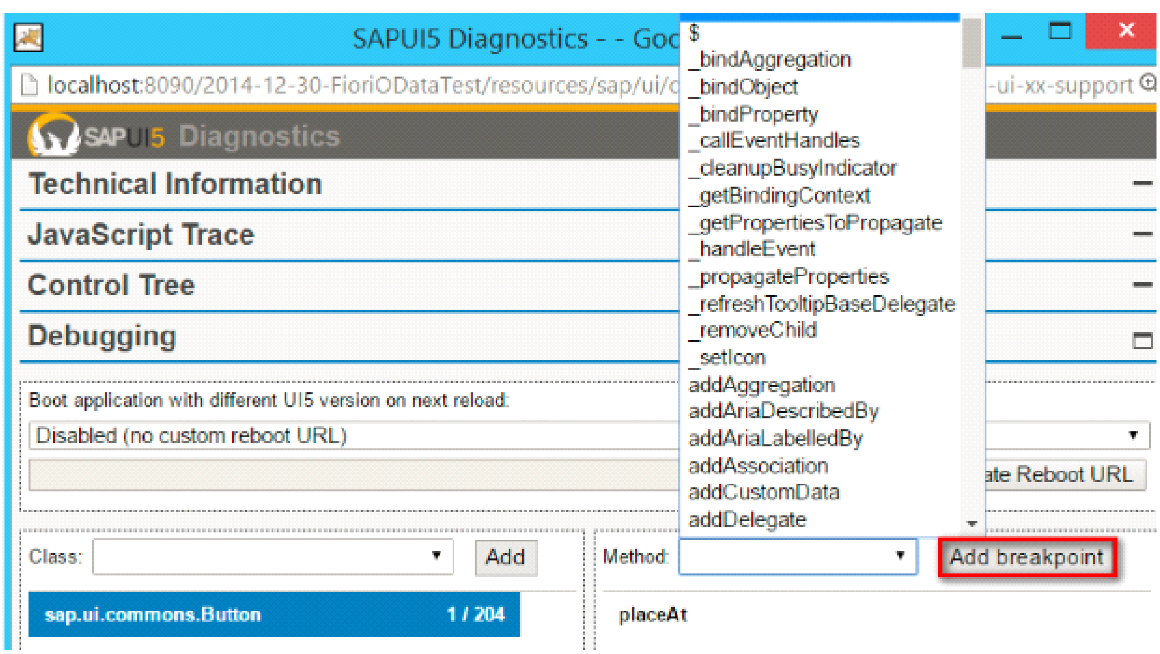
More detail about Bootstrap script tag

Do you really know the detail of this tag? Can I change this id of this tag to other value like id="helloword", does it still work? Find answer from this blog.

```
<html>
    <head>
        <meta http-equiv="X-UA-Compatible" content="IE=edge">
        <meta http-equiv='Content-Type' content='text/html;charset=UTF-8'/>

        <script src="resources/sap-ui-core.js"
                id="sap-ui-bootstrap"
                data-sap-ui-libs="sap.ui.commons,sap.ui.table,sap.ui.ux3"
                data-sap-ui-theme="sap_bluecrystal">
        </script>
```

A small tip I learn from UI5 Diagnostics tool – a practice of AOP programming
Have you even used this tool provided by UI5 activated via Ctrl+Alt+Shift+S? Have you even heard of AOP programming? Read this blog for more detail.

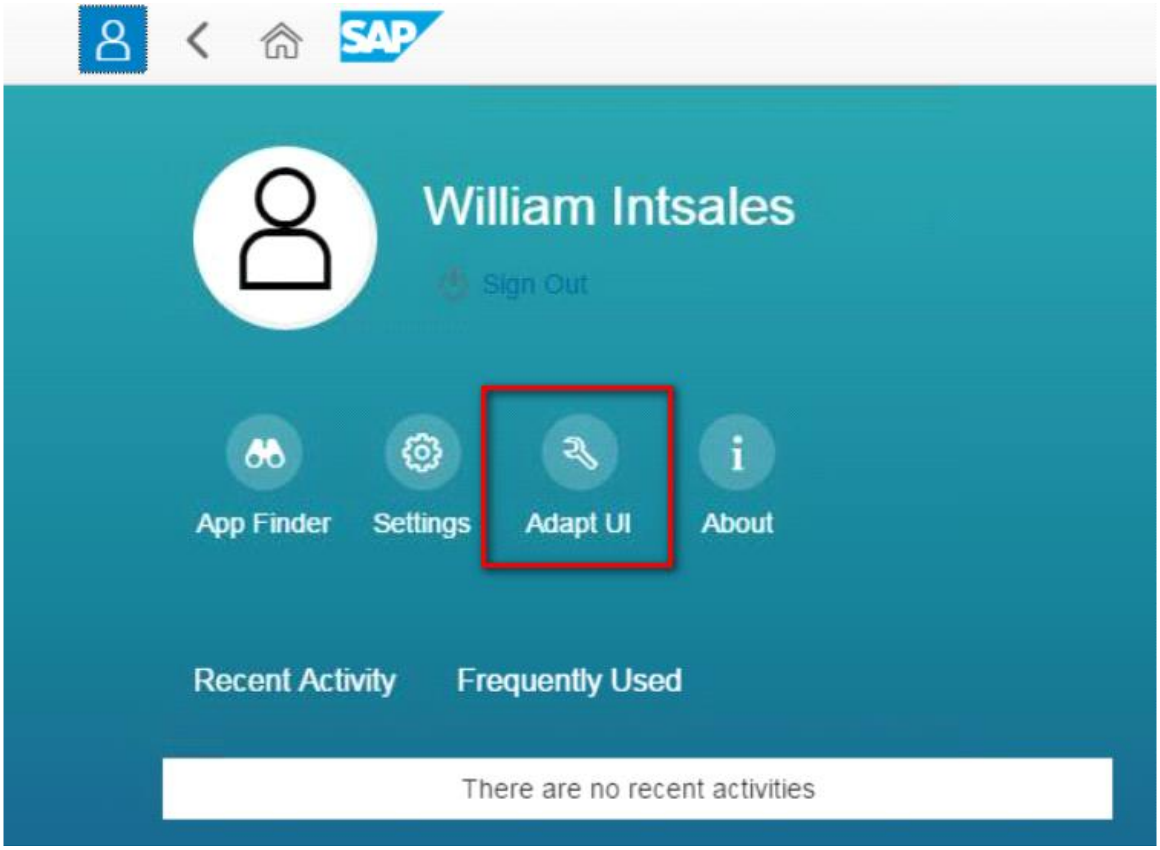


Another reason of empty screen issue and how I analyze the issue
I have worked out one customer incident regarding empty screen issue of

cross application navigation. Previously my assumption is the empty screen issue is always caused by the JavaScript execution error somewhere. However this incident provides another kind of reason: the UI5 framework fails to find a matched route for target navigation. Learn more detail from this blog.

Why "Adapt UI" button is available in some system but missing in some other system

Compare the two screenshots below which are caught via the same user but in different system. Feel confused about this behavior? You can debug yourself to find out the root cause. See detail from this blog.



Open your SAP GUI transaction in Fiori launchpad

Would you like to directly open the traditional SAP GUI transaction in Fiori launchpad now? Sounds impossible? See this blog about how I find out the secret and see this blog for step by step guide.

Why sometimes my OData request is cancelled automatically

Do you know the reason why sometimes your OData request is cancelled by UI5 framework automatically? If you would like to learn more about this cancellation logic, you can read my blog for detail.

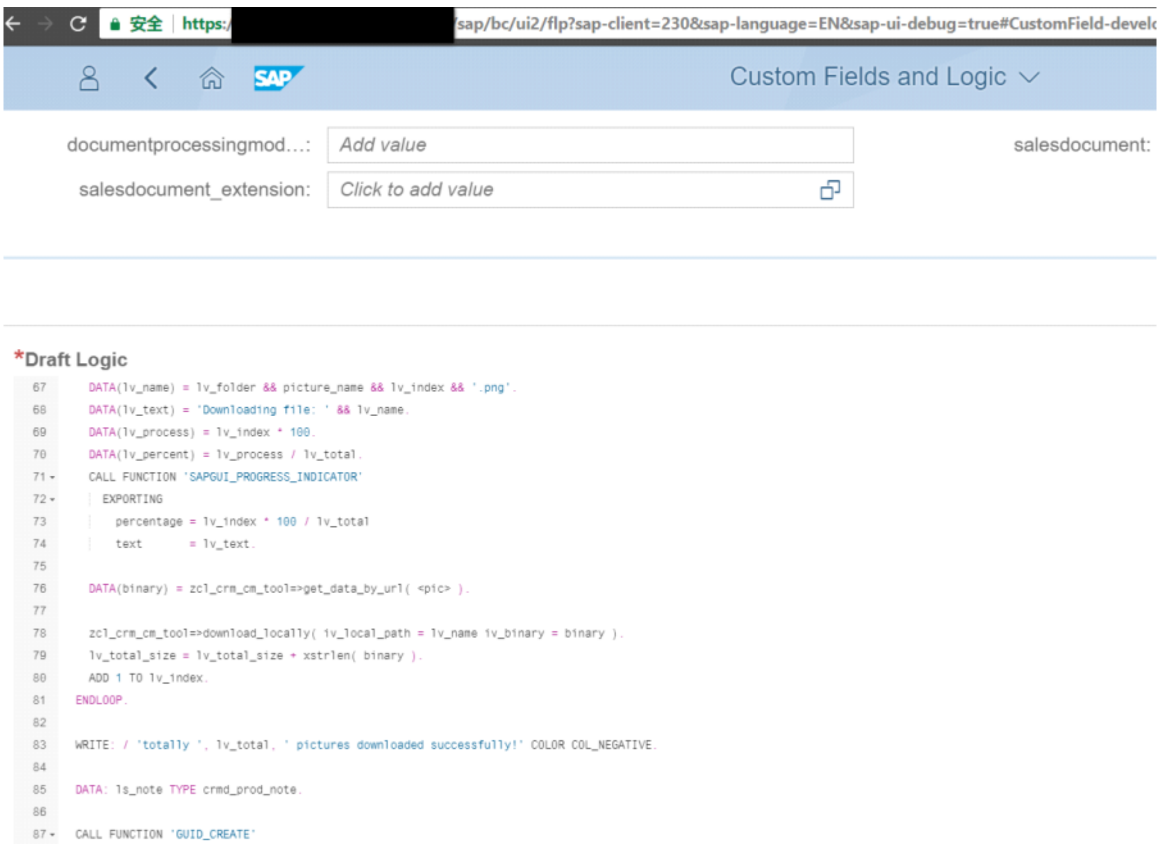
Some of my other blogs regarding UI5

debugging

[How to find UI element binding path which is not statically defined in XML view]()

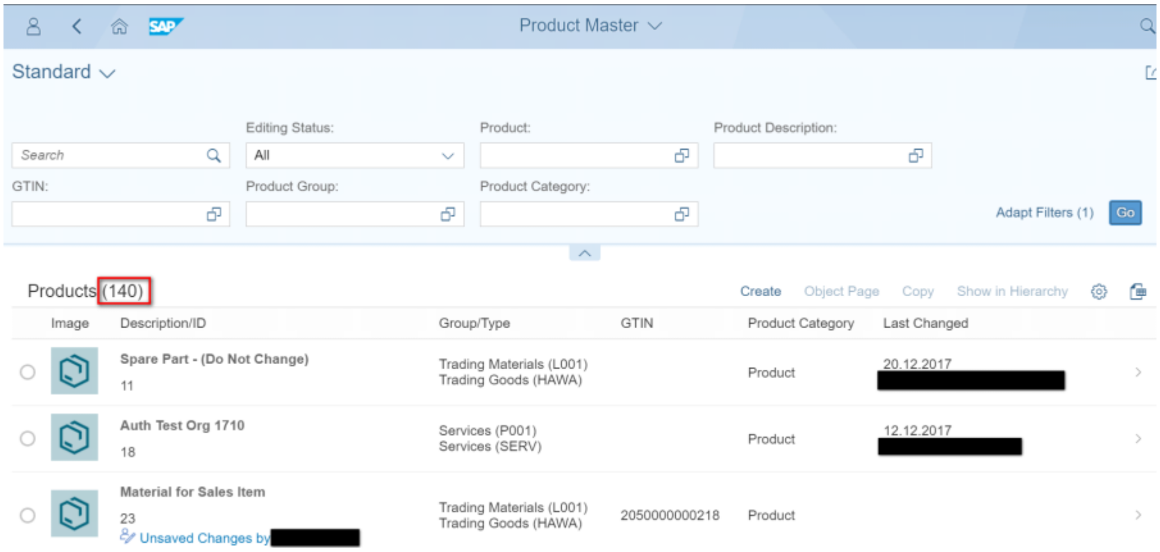
How ABAP syntax highlight is implemented in “WebIDE” launched via browser

Would you like to know how ABAP syntax highlight is implemented in the browser? Try to debug to figure it out by yourself by following this [blog]().

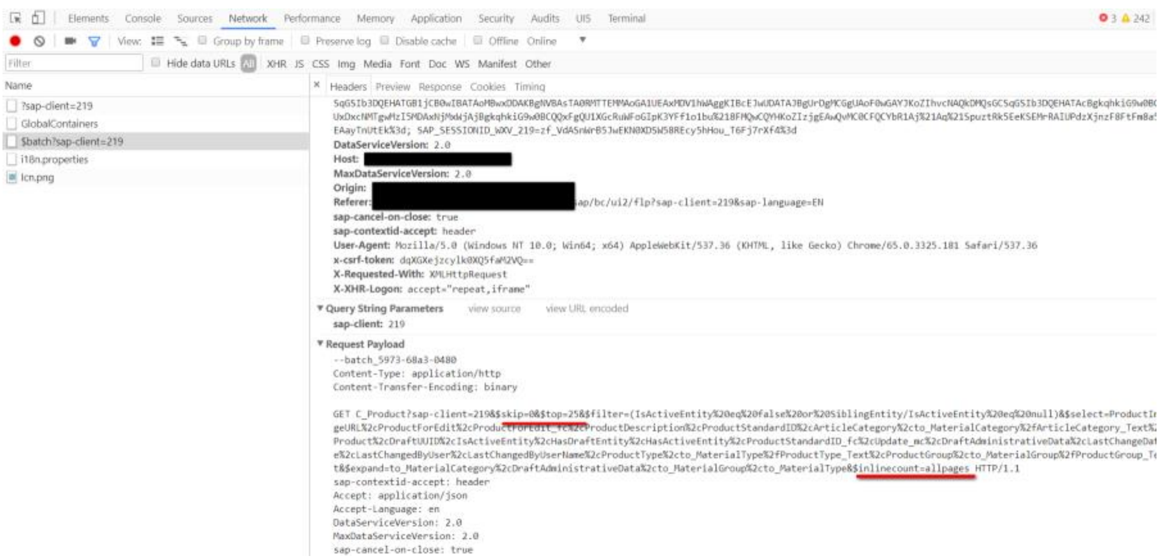


How does UI5 AutoGrowing list work

When you scroll down the table in S/4HANA Fiori application built by Smart Template,



the list will automatically grow: more data will be fetched from backend. Would you like to figure out how it works? See this blog.



LAST BUT NOT THE LEAST – Tutorial how I do self-study on a given Fiori control and UI5 framework code behind

Normally a Fiori application consists of various controls provided by UI5 library. If you just want to use a certain control and make it work in your application, it is enough for you to just go through the control API document, play it around in UI5 demokit. But if you meet with issues with the control, or you would like to know how the control is manipulated by UI5 framework to write a more robust and more efficient application, it is then inevitable that you need to dive into the UI5 framework source code.

Thus I write this tutorial, using the more simple button control for example, to illustrate how to thoroughly understand this control, together with the involved framework code in an step-by-step way.

Another benefit of studying UI5 framework code is, since the code are written by JavaScript veterans, by being familiar with those code everyday, you can learn how to program JavaScript in a more robust, elegant, generic, and efficient way, to upgrade your JavaScript skills.

The building blocks of this tutorial:

Part 1 UI5 module lazy load mechanism

Part 2 Control renderer

Part 3 Native html event VS UI5 semantic event

Part 4 control metadata

Part 5 control instance data

Part 6 control data binding

Part 7 Implementations for different binding mode: OneWay, TwoWay, OneTime

Part 8 Control ID

Part 9 Control internationalization support

Part 10 Button control in XML view

Part 11 Button control and its underlying DOM node

More to be added as long as I have resolved new incidents with debugging…

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   like (0)

2. Sergio Guerrero May 26, 2016 at 11:07 am
   one of the best blogs i have read – well done
   like (0)

3. Jeremy Good May 26, 2016 at 1:16 pm
   Jerry – excellent contributions to the community!
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How to check sapui5 version

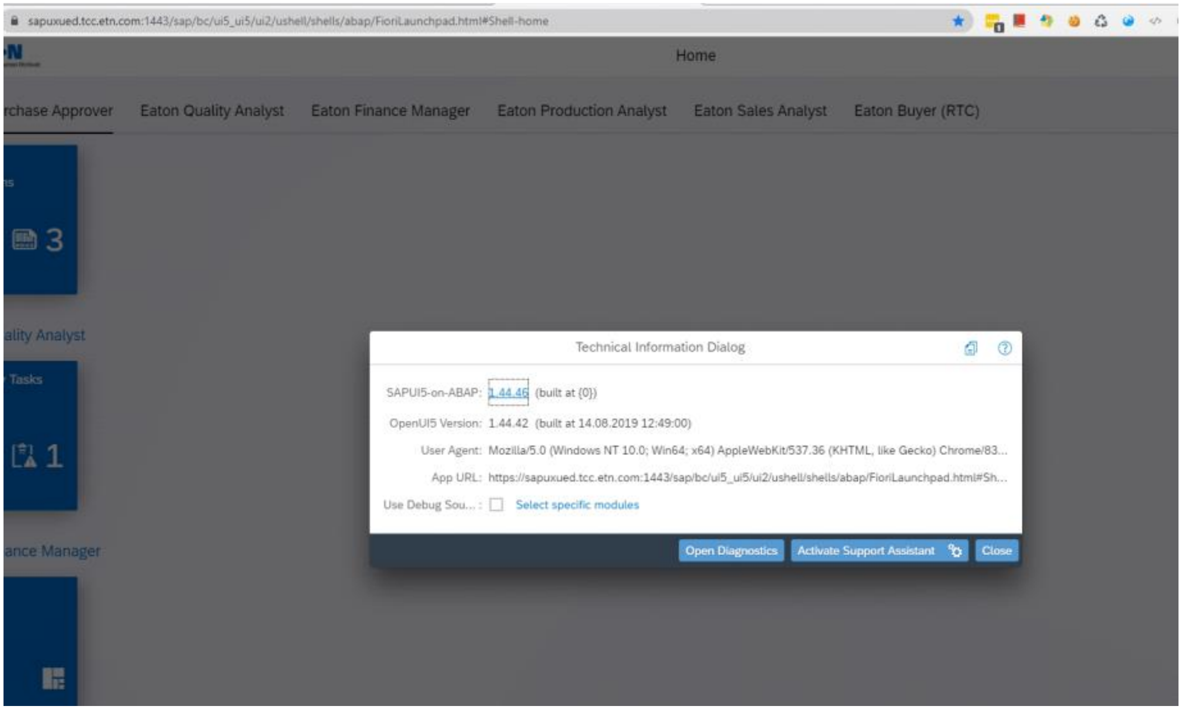
Wednesday, April 18, 2018 8:58 AM

Vivek Kumar

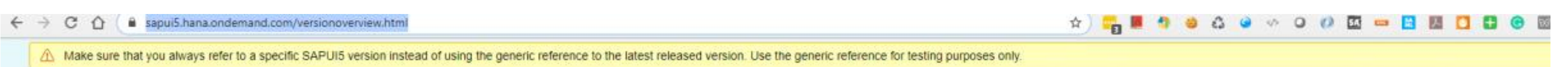
June 27, 2017 at 2:36 am

Press Ctrl, Alt, Shift together and then press 'P'. You will get SAPUI5 version, Core version, JQuery version etc.

like (1)



https://sapui5.hana.ondemand.com/versionoverview.html



SAPUI5 Versions Maintenance Status

Version	Maintenance Status	End of Maintenance	SAP_UI version*	Front-end Server*
1.78 (2005)	Maintenance	Q1/2021	7.55	SAP FIORI FES 2020 FOR S/4HANA
1.77 (2004)	Out of maintenance		Cloud only	Cloud only
1.76 (2003)	Out of maintenance		Cloud only	Cloud only
1.75 (2002)	Out of maintenance		Cloud only	Cloud only
1.74 (2001)	Out of maintenance		Cloud only	Cloud only
1.73 (1912)	Out of maintenance		Cloud only	Cloud only
1.72 (1911)	Out of maintenance		Cloud only	Cloud only
1.71 (1910)	Maintenance	Long-term Maintenance, Q4/2027	7.54	SAP Fiori FES 6.0 (SAP Note 2775163)
1.70 (1909)	Out of maintenance		Cloud only	Cloud only
1.69 (1908)	Out of maintenance		Cloud only	Cloud only
1.68 (1907)	Out of maintenance		Cloud only	Cloud only
1.67 (1906)	Out of maintenance		Cloud only	Cloud only
1.66 (1905)	Out of maintenance		Cloud only	Cloud only
1.65 (1904)	Out of maintenance	Q1/2020	7.54	SAP Fiori FES 6.0 (SAP Note 2775163)
1.64 (1903)	Out of maintenance		Cloud only	Cloud only

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Wednesday, April 19, 2017 2:53 PM

https://blogs.sap.com/2013/11/13/sap-fiori-ll11-consultants-should-know-about-odata-troubleshooting/

SAP Fiori LL11 – Consultants should know about OData troubleshooting

November 13, 2013 | 5,785 Views |

Masayuki Sekihara

SAP Fiori Lessons Learned 11
Consultants should know about OData troubleshooting

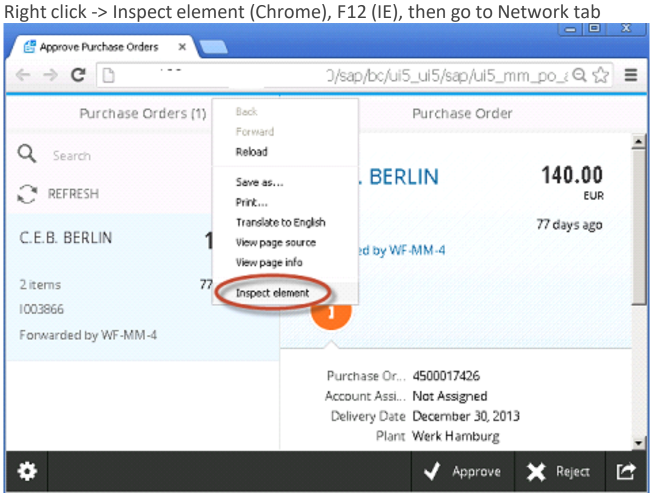
Background:
SAP Fiori apps are out of the solution but you face several issues because main functions are in backend ERP and each custome r has different backend setup/configuration. OData is the communication channel to the backend servers via get/post/put method.

Lessons Learned:
Understanding OData and backend function are must requirements for consultants.

- Application consultants should learn about OData technical and runtime behavior
- Technical consultants should learn about ERP application functions
- Both application consultants and technical consultants should work together

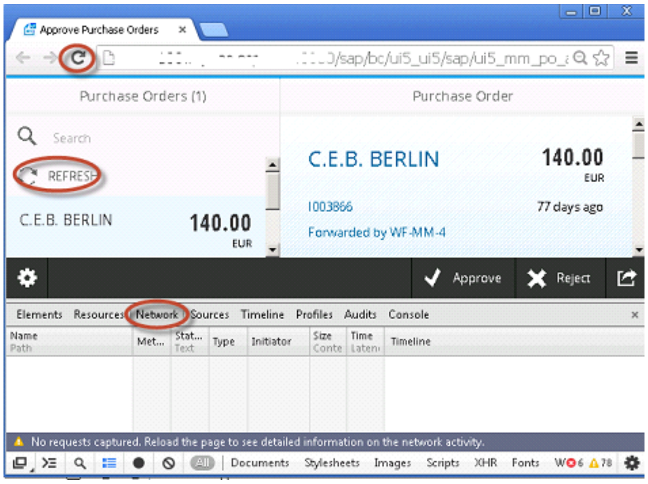
Consultants should know following steps.

Step 1. Identity the OData service call
1.1 Run the app
1.2 Inspect element
Right click -> Inspect element (Chrome), F12 (IE), then go to Network tab



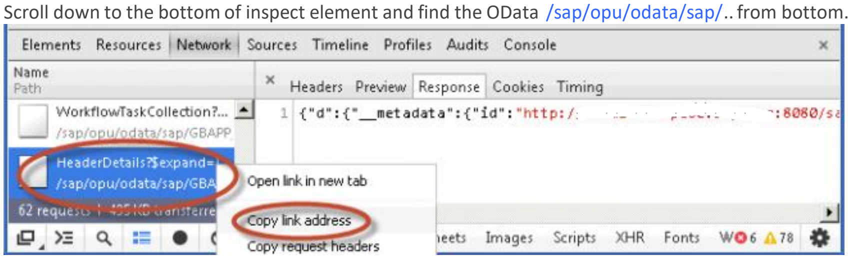
Ignore the warning or error message in the Console tab at this point in time. Focus on OData troubleshooting.

1.3 Refresh the app or browser



1.4 Find the last called OData URI

Scroll down to the bottom of inspect element and find the OData /sap/opu/odata/sap/.. from bottom.

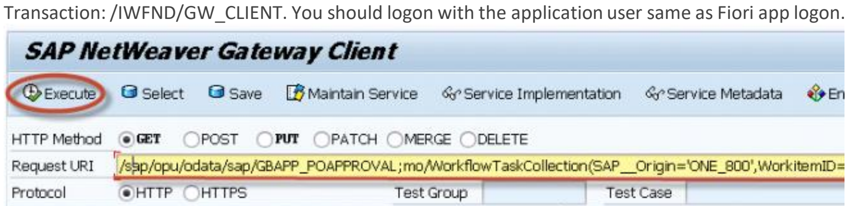


http://<host>.<domain>:<port>/sap/opu/odata/sap/GBAPP_POAPPROVAL;mo/WorkflowTaskCollection(SAP__Origin='ONE_800',WorkitemID='000001104681')/HeaderDetails?$expand=ItemDetails,Notes,Attachments,ItemDetails/Limits

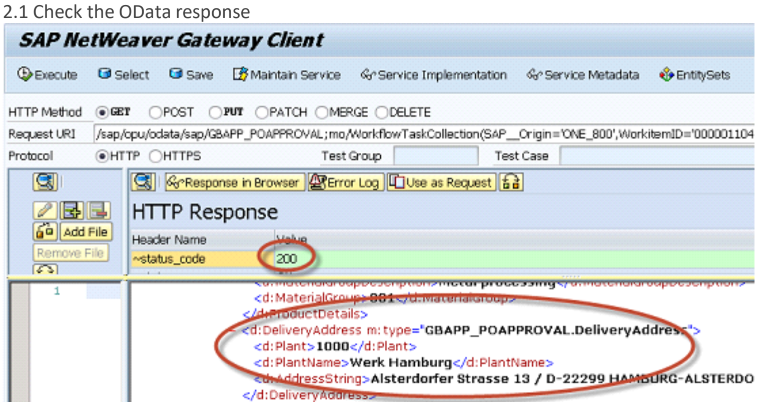
Step 2. Test OData in the Gateway client

2.1 Copy & Paste the OData URI

Transaction: /IWFND/GW_CLIENT. You should logon with the application user same as Fiori app logon.



2.1 Check the OData response

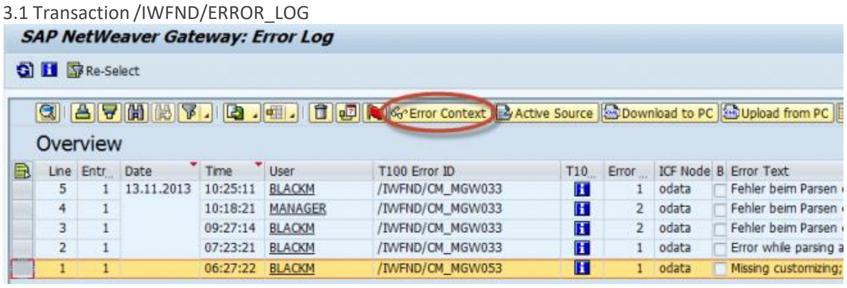


If http response is not 200, you may have some connection setting issue.

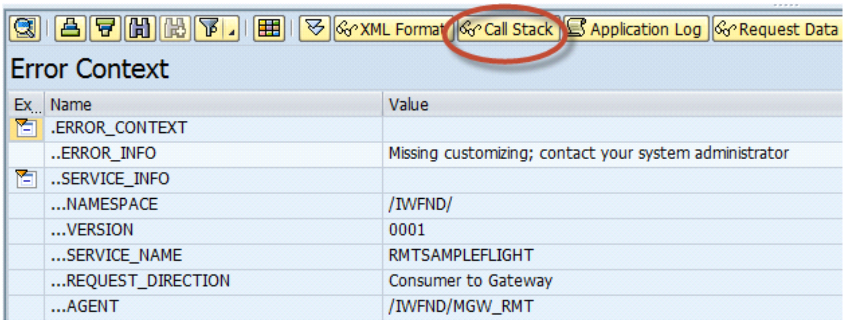
If tttp response is 200 but OData service does not return application data, you should go Step.5 debug section.

Step 3. Check error log

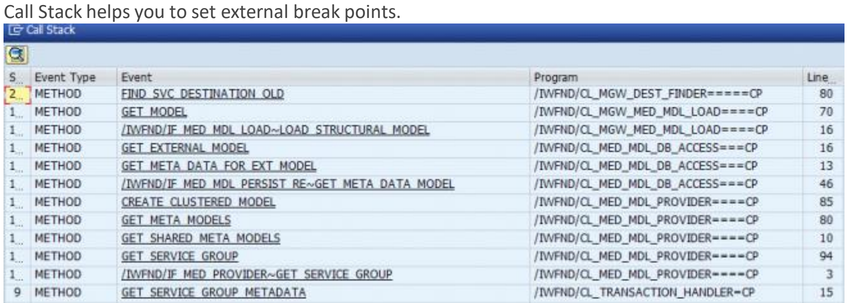
3.1 Transaction /IWFND/ERROR_LOG



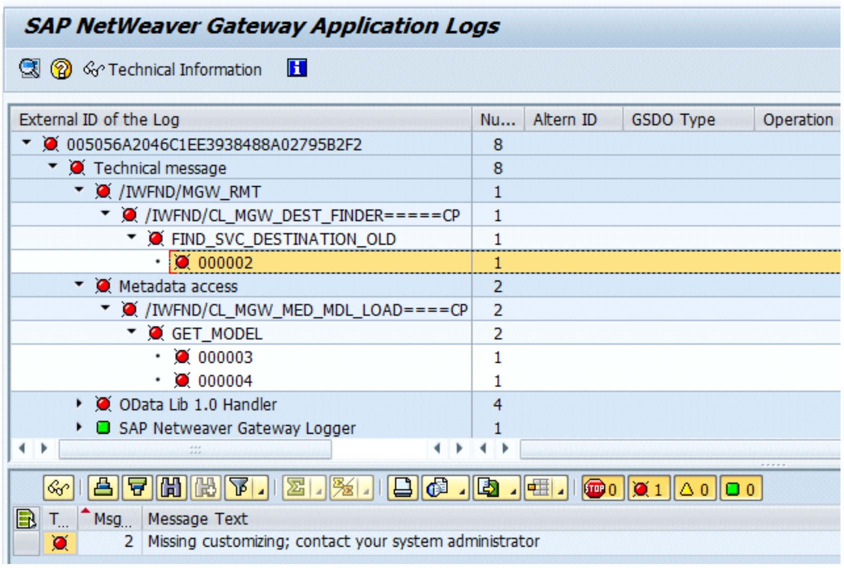
Select the "Error Context"



Call Stack helps you to set external break points.



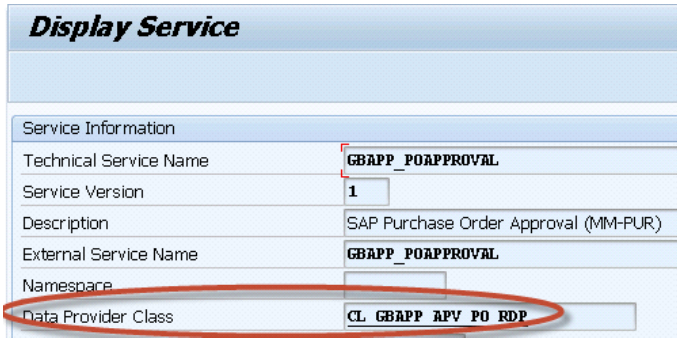
3.2 Transaction /IWFND/APPS_LOG



Reference: [Troubleshooting a SAP Netweaver Gateway Service]

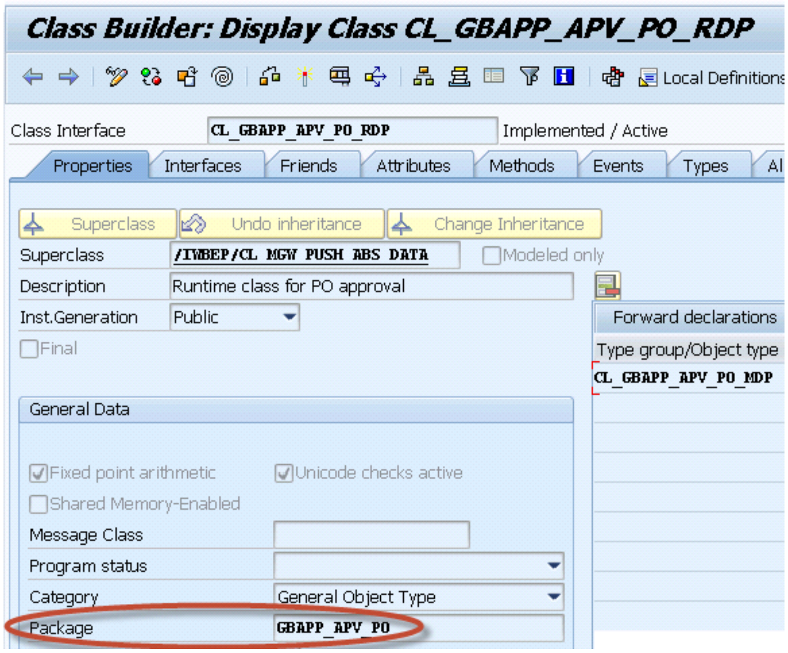
Step 4. Find the Runtime Data Provider class

4.1 Transaction /IWFND/MAINT_SERVICE



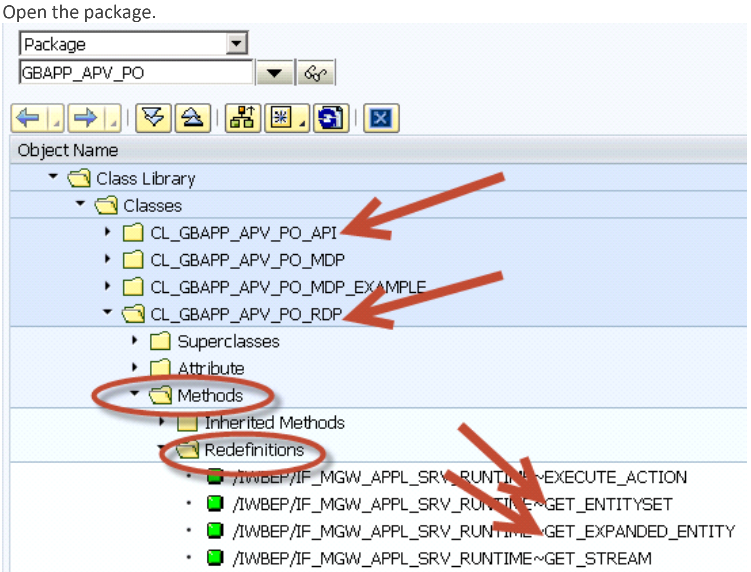
4.2 Transaction SE24

Open the Data Provider Class. Go to Property tab.



4.3 Transaction SE80

Open the package.



Class -> Runtime Data Provider Class -> Method -> Redefinitions

The example OData URI has &expand oprion, so you should look at the method GET_EXPANDED_ENTITY.

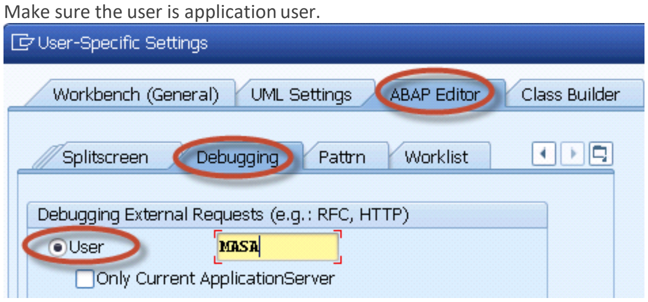
HTTP Method	Base URL plus	Query String	XML Body	OData Operation	ABAP Method
GET	Nothing			Handled by the Gateway Framework	
GET	Entity Set Name	None or $filter		QUERY	GET_ENTITYSET
GET	Entity Set Name	Key Predicate		READ	GET_ENTITY
PUT	Entity Set Name	Key Predicate	Yes	UPDATE	UPDATE_ENTITY
POST	Entity Set Name		Yes	CREATE	CREATE_ENTITY
DELETE	Entity Set Name	Key Predicate		DELETE	DELETE_ENTITY
GET/POST	Action Name	Variable parameter format		Custom Action	EXECUTE_ACTION

Step 5. Set External break points and debug

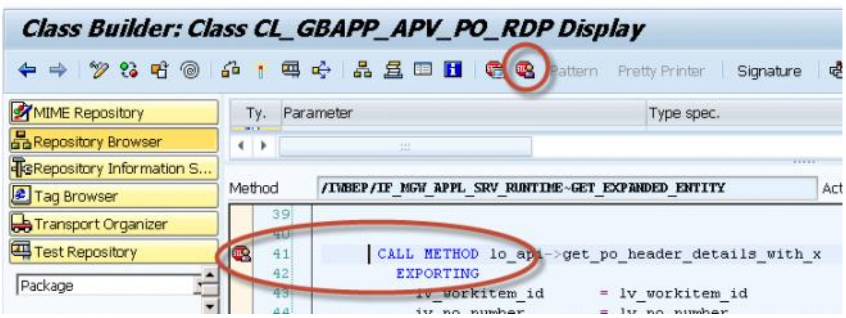
5.1 Check the user

Go to Utilities -> Settings

Make sure the user is application user.



5.2 Set external break points



5.3 Debug

Test the OData URI from Gateway Client. You can now debug the code. Most of case, issue is related with ERP customizing or ma ster data. Each customer has different customizing setting and master data.

Regards,
Masa
SAP Rapid Innovation Group – RIG

Inserted from <https://blogs.sap.com/2013/11/13/sap-fiori-ll11-consultants-should-know-about-odata-troubleshooting/>

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Introduction : Many times while building SAPUI5 applications a design time and run-time SAPUI5 version mismatch can cause application issues. This blog will help you check the version of SAPUI5 run-time.

Target Audience : Beginners and experts alike

Date : 27.06.2017

1. In Google Chrome (when an SAPUI5 App is running) :
   Open F12 Developer Tools -> Console -> Type sap.ui.version -> Hit enter -> View the SAPUI5 version displayed
2. In SAP ABAP Stack :Open the ABAP WAS URL http://[host]:[port]/sap/public/bc/ui5_ui5/ in your browser. This will display all the installed versions of the SAPUI5 library.

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1. Vivek Kumar June 27, 2017 at 2:36 am
   Press Ctrl, Alt, Shift together and then press ‘P’. You will get SAPUI5 version, Core version, JQuery version etc.
   like (1)

2. Sarbjeet Singh June 27, 2017 at 4:11 am
   Thanks for sharing the information.
   like (0)

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Debugging ui5 application

Thursday, November 30, 2017 3:55 PM

Debugging UI5

Debugging UI5 application

Step 1

Open Google Chrome browser in Incognito mode

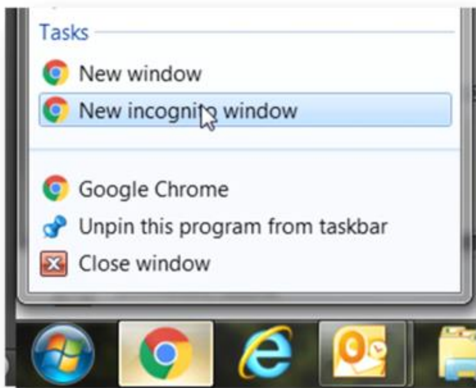


Figure 1 Incognito

Or we can open Incognito from an already opened browser window as shown below.

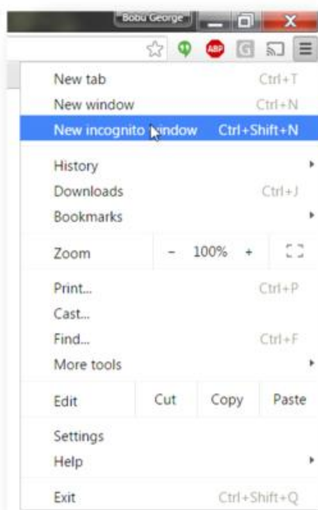


Figure 2 Incognito

Step 2

Hit the application url in the browser

http(s)://<gateway_server_address>:<gateway_port>/sap/bc/ui5_ui5/dol/ap_ui5/index.html

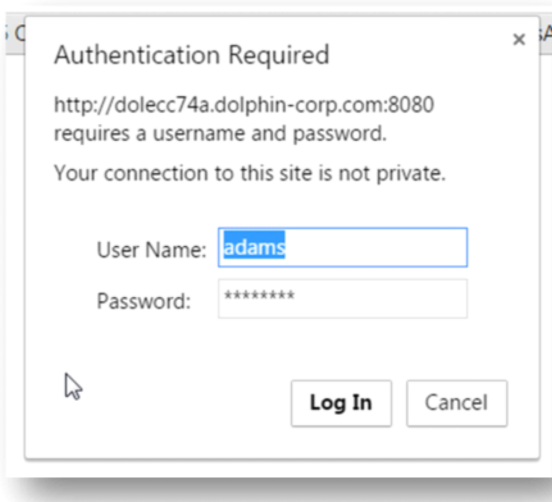


Figure 3 Login to gateway server

It is very important to have this login prompt. This will make sure that we are indeed taking the correct user in consideration for the testing. If the login prompt is not appearing, please close all the browser sessions that are open and restart from Step 1.

Step 3

Enable browser debugging

Right click anywhere on the screen, and bring up the menu.

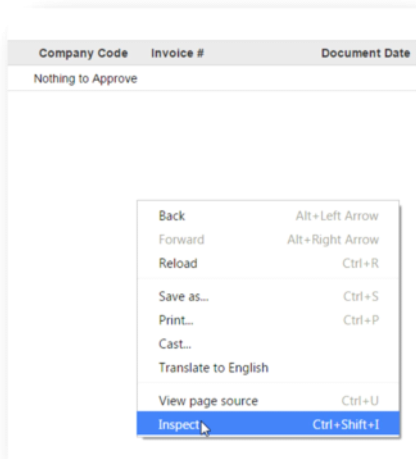


Figure 4 Opening the developer tools

You can also bring the debugging sessions by using the short cut key ***CTRL + SHIFT + I*** or as shown below.

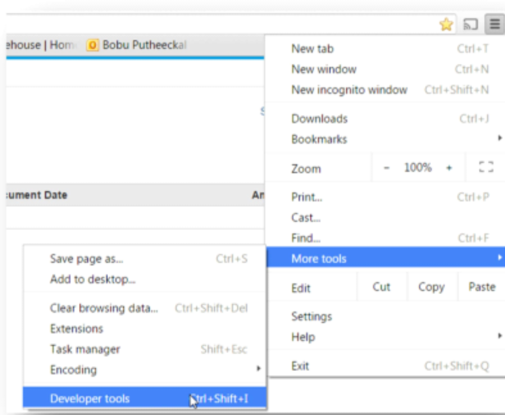


Figure 5 Opening the developer tools

Debugging UI5 application

You will see the screen as shown below

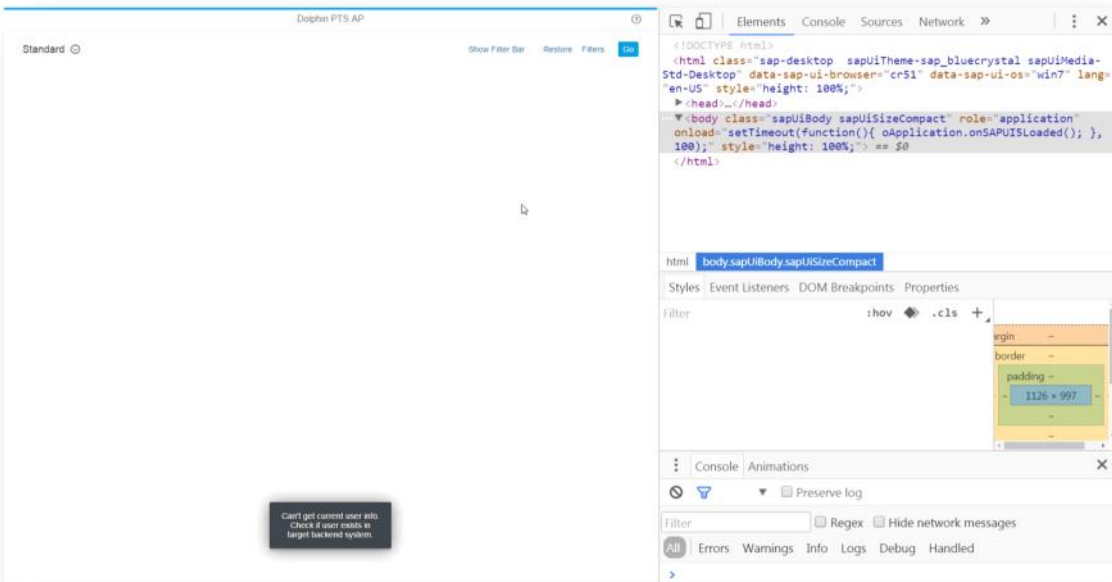


Figure 6 Developer options opened

Open the **Network** tab

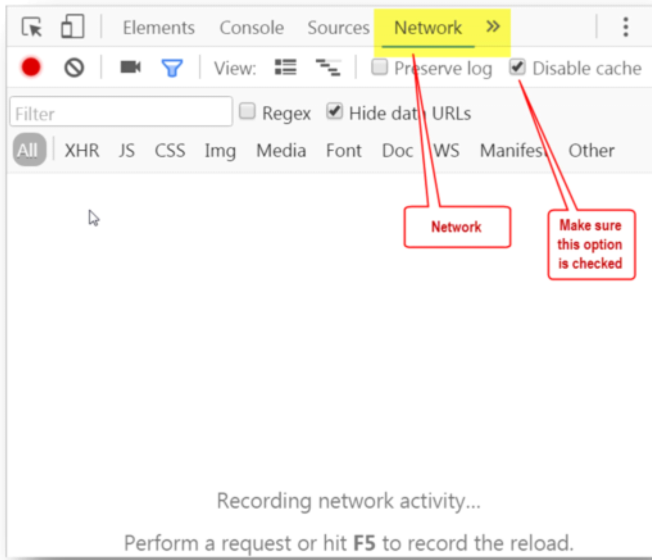


Figure 7 Network tab in Developer options

Use **Filter On** and give a filter value ***odata.***

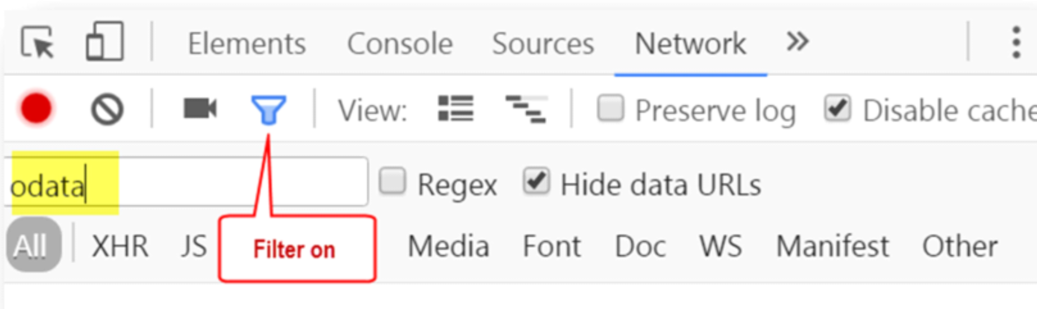
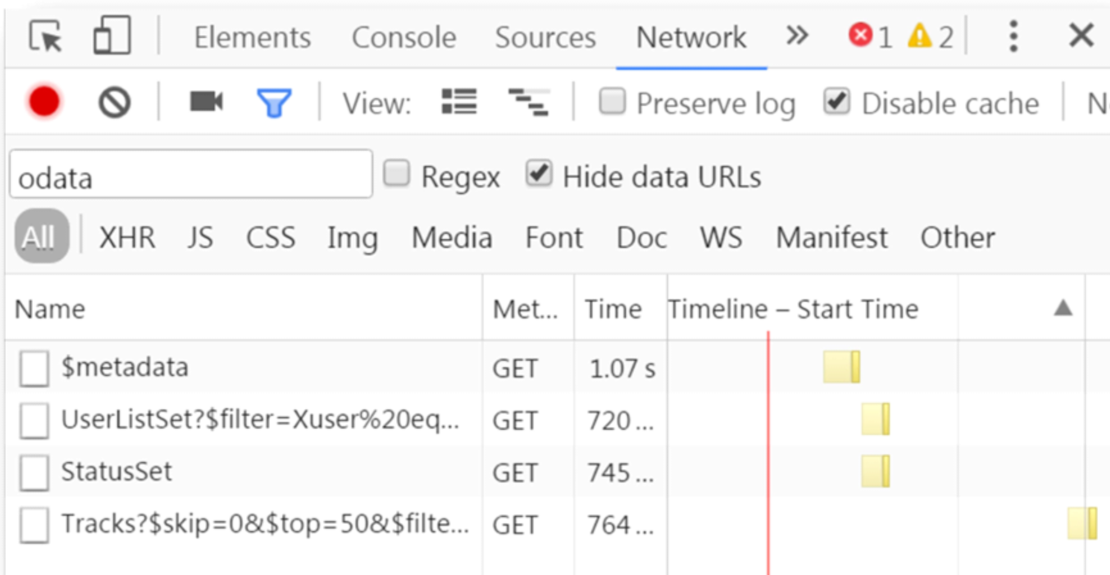


Figure 8 Filtering network request

Once the above settings are in place, refresh the browser to start capturing the network requests. You should be seeing something like the below. There will be many requests to the server from the browser, but we are mainly interested in odata related requests, that why we put the filter on.



Step 4

Collecting and sending data

In the below example, we see all the odata requests executed successfully (Status code: 200), but may not have brought the desired results.

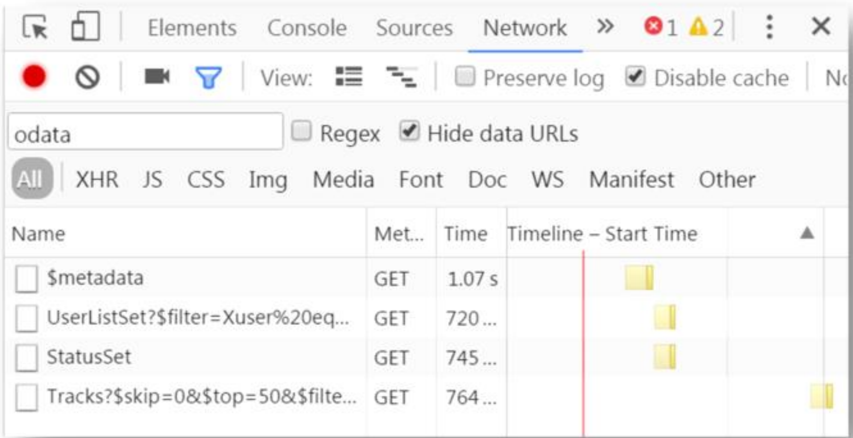


Figure 9 Odata requests status 200 ok

In the below example, we see some requests executed unsuccessfully (Status code: 500).

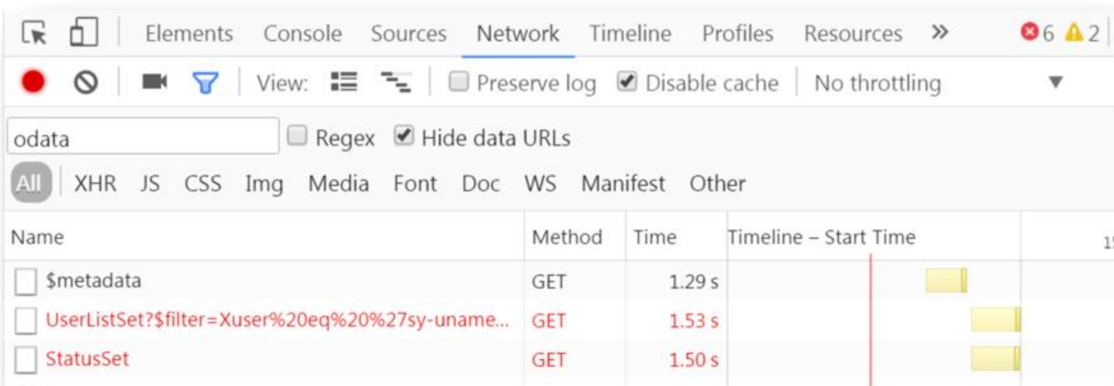


Figure 10 Odata requests ended in status 500 error

In either of the cases, click on each row to get the ***Header, Preview and Response*** information.

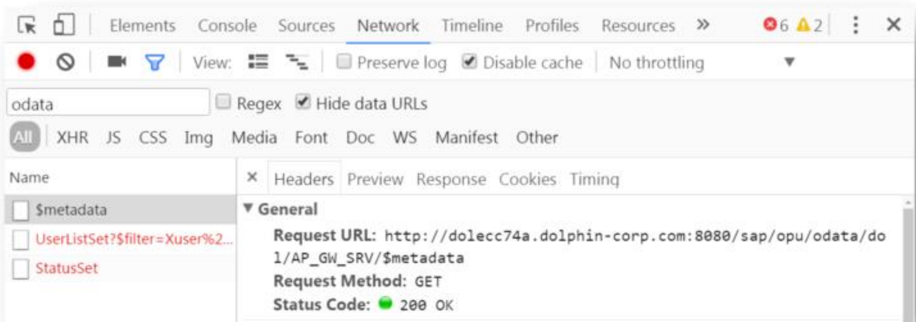


Figure 11 Header information

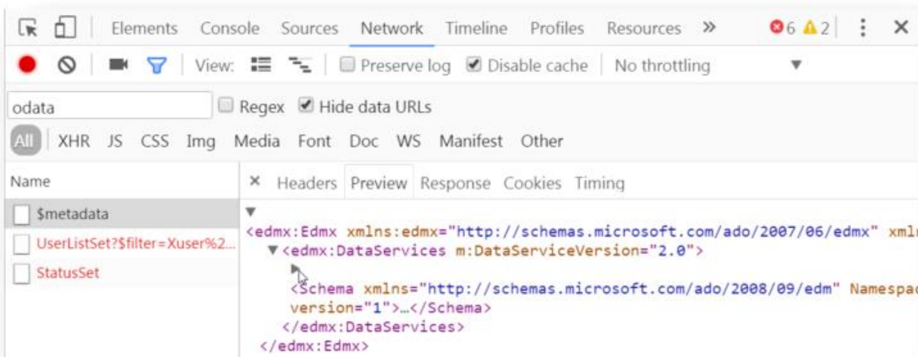


Figure 12 Preview information

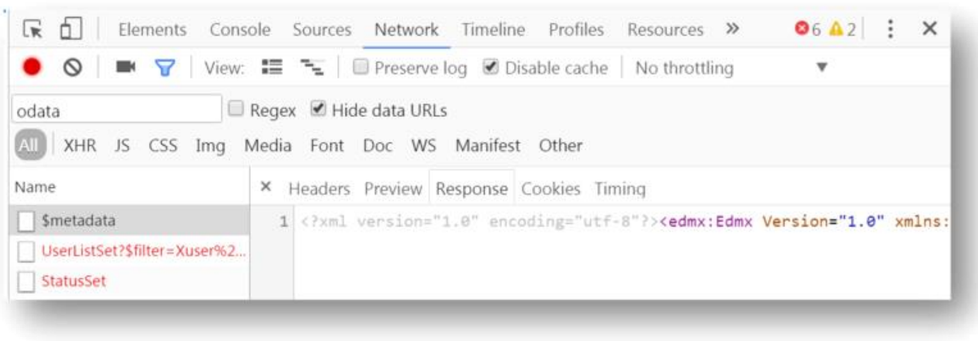


Figure 13 Response information

When capturing the information, it is important to take the full screenshot of both ***Header*** and ***Preview*** tabs as it has all the information (some key details are in the bottom of the screen). Screenshots are better for ***Headers*** and ***Preview***, but full text copy can be performed from the ***Response*** tab.

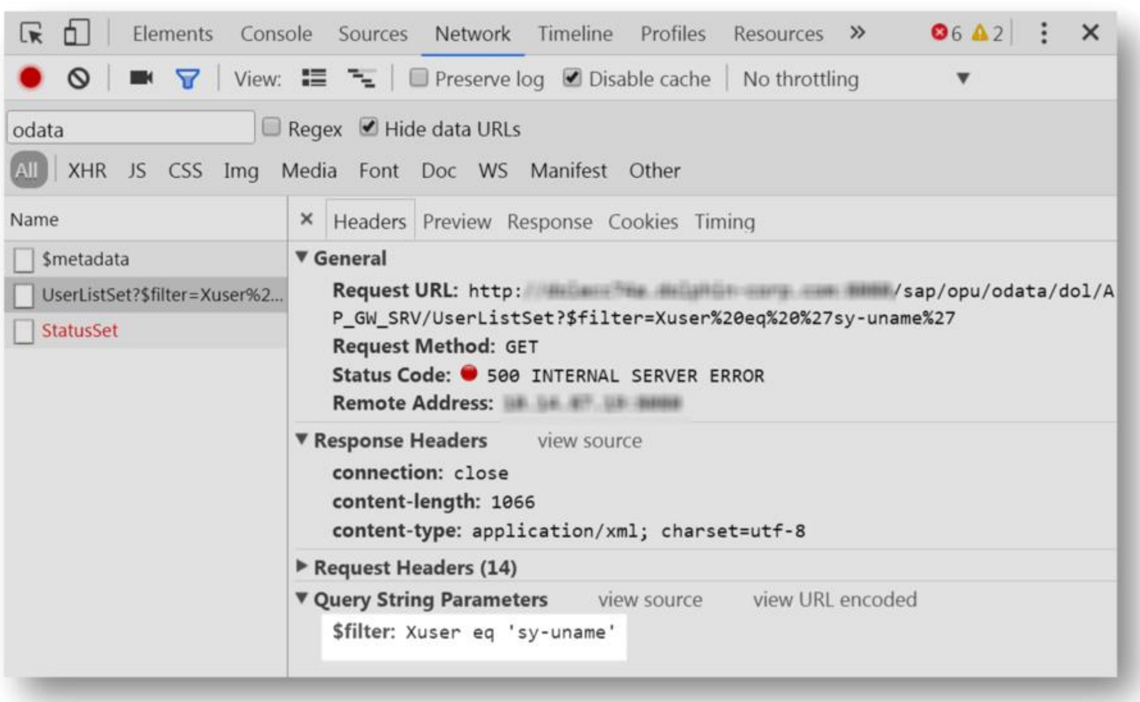


Figure 14 Details from the Header information

Step 5

Error details from ECC and Gateway

In the gateway use the transaction ***/o/IWFND/ERROR_LOG***, look for any errors under the logged in user and the time. Make sure the details of the error are fully captured. You may also have to check for any errors in the ECC server using the transaction st22.

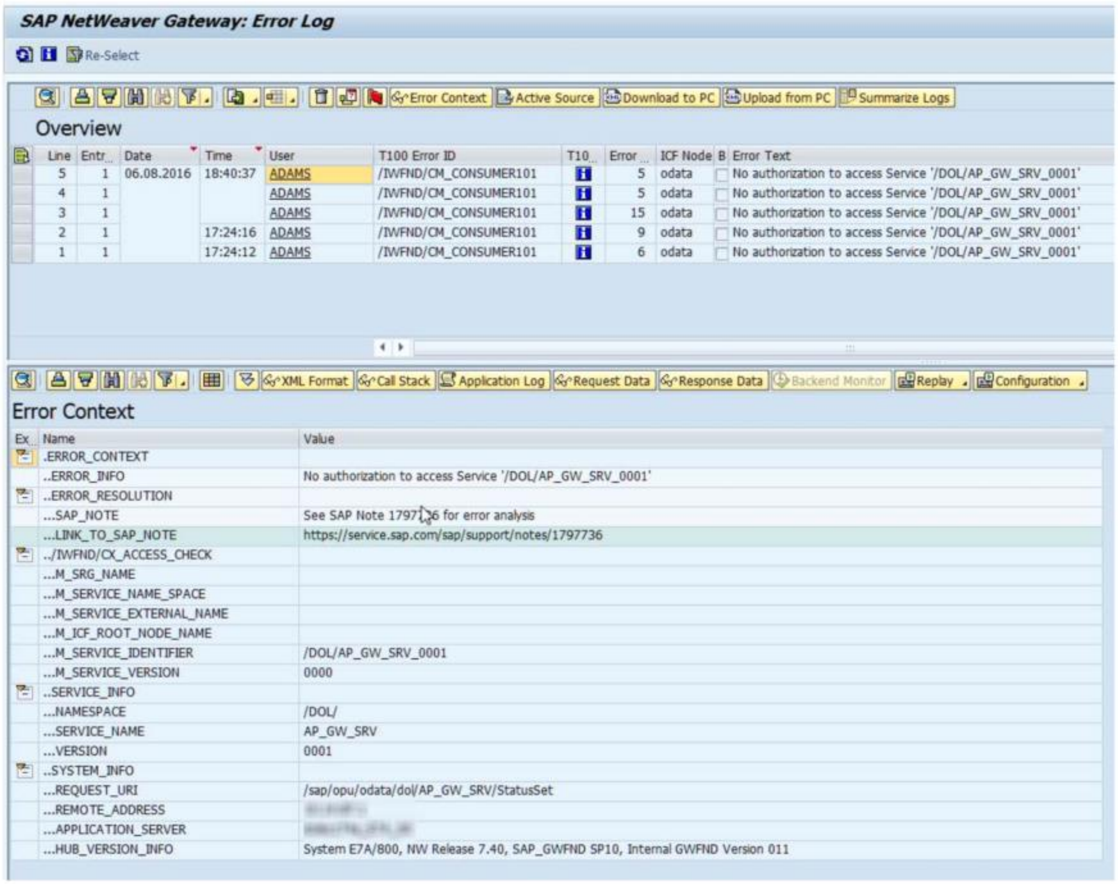


Figure 15 Gateway error logs

Dolphin UI5 web tech doc

Friday, December 1, 2017 3:15 PM

Dolphin_PTS-AP_We...

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Implementation & Maintenance Guide
Process Tracking System (PTS) for SAP Accounts Payable Advanced Approvals
Release 7 Q1/2 2017

Dolphin Enterprise Solutions Corporation
(dba Dolphin)

Document Release Date: 10/19/2017

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1 Overview

The core functionality provided by the Process Tracking System (PTS-AP) Advanced Approvals includes Web Approvals, Simple Email, optional Check/Payment Request and optional Expense Report Add-ons. Advanced Approvals are offered with two different web interfaces; NetWeaver Gateway and Classic WebDynpro on NetWeaver Java. This document provides the details of the installation and configuration steps necessary for the successful deployment of PTS-AP Advanced Approvals.

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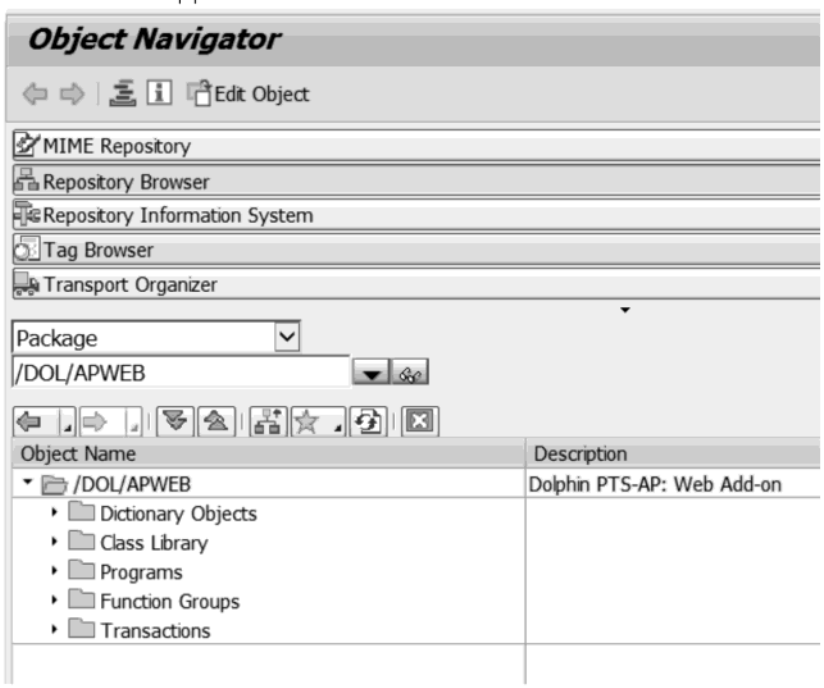
2 Delivered Objects

This section describes the objects included with the Advanced Approvals add-on solution. The basis and DBA groups in your IT organization may use this information for routine maintenance operations.

2.1 ECC Objects

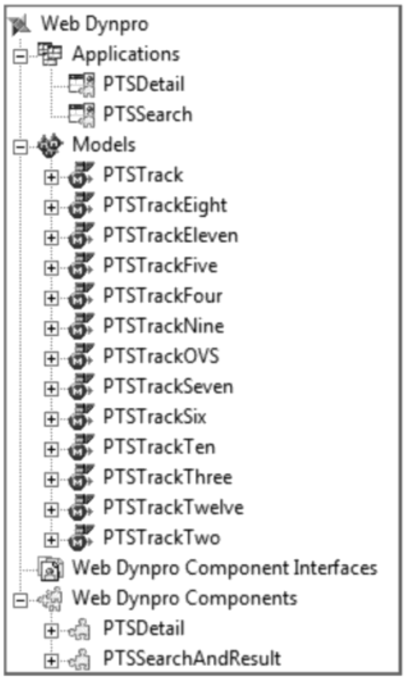
View package /DOL/APWEB in transaction SE80 to see the objects included with the Advanced Approvals add-on solution.



2.2 NetWeaver Java Objects

This section describes the objects created via the SAP NetWeaver Java development environment only. This is a Web Dynpro Java application which has been released on both NetWeaver 2004 (SP9 or higher) and 2004s (SP7 or higher).

The following picture illustrates the structure of the application (Applications, Components, and Models)



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3 Deployment

Note: SAP Web AS version 7.00 or higher is required.

3.1 ECC

The Advanced Approvals license key must be loaded for the Add-On to function. Transaction /DOL/LIC_UPLOAD is used to load the license key. The key must be loaded one time in each system. Transaction code /DOL/LIC_INFO can be used to view all loaded license keys.
Note: The license transport must be the **first** transport imported with any new installation or upgrade.

3.2 NetWeaver Gateway

The following steps must be taken for the Advanced Approvals to function if you have selected the NetWeaver Gateway (UI5) interface.

3.2.1 Requirements

These are the requirements for NetWeaver Gateway:
NetWeaver Gateway 2.0 updated to SP12
Hana Cloud Platform Only:
Hana Cloud Connector (latest version)
Additionally, if Active Directory authentication integration is needed ADFS 2.0 is required.
UI5 on-premise only:
The following is needed
SAP_UI release 740 SP-Level 9 or higher

Component	Release	SP-Level	Support Package	SPP-Level	Support Package Patch	Type	Short Description of Component
SAP_UI	740	0009	SAPK-74009INSAPUI	0000	-		User Interface Technology

Please refer to the following SAP documentation for the browser compatibility:
https://help.sap.com/saphelp_nw74/helpdata/en/91/f079dc6f4d1014b6dd926db0e91070/content.htm

3.2.2 Transports

If the package is delivered as external transport files, follow the standard external transport import procedures established by your SAP Basis team. Also, note that all

PTS transports should always go in with options "Overwrite" and "Ignore Invalid Component Version" checked.

3.2.3 Post Transport Steps in the Gateway

1. Ensure the NetWeaver Gateway is activated

2. In the transaction /n/IWFND/GW_CLIENT, enter "*/sap/opu/odata/DOL/AP_GW_SRV*", and then click the button for "Maintain Service".

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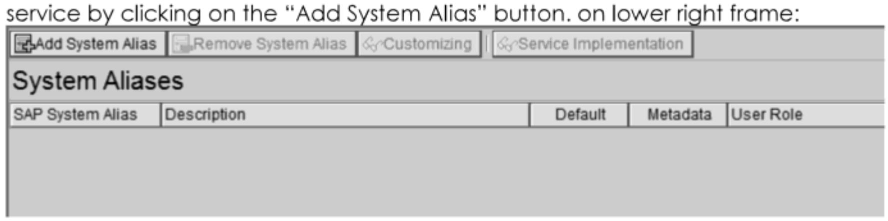
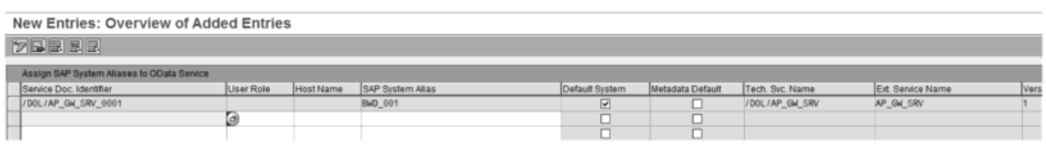
3. On the next screen, assign the system alias to the /DOL/AP_GW_SRV_0001 service by clicking on the “Add System Alias” button. on lower right frame:



4. Enter the values per the screenshot below. (Note: The system alias is customer and system specific and will be different for you.)

   a. Service Doc Identifier: /DOL/AP_GW_SRV_0001
   b. SAP System Alias: <customer- and system- specific alias>
   c. Default system: X



If no Alias exists, you will need to create one. Call transaction SPRO and go to SAP NetWeaver -> Gateway -> Former Development -> Generic Channel -> Configuration -> Connection Settings -> SAP NetWeaver Gateway to SAP System -> Manage SAP System Aliases.

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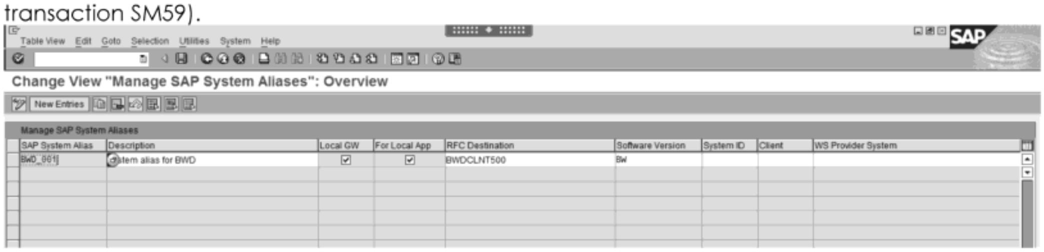
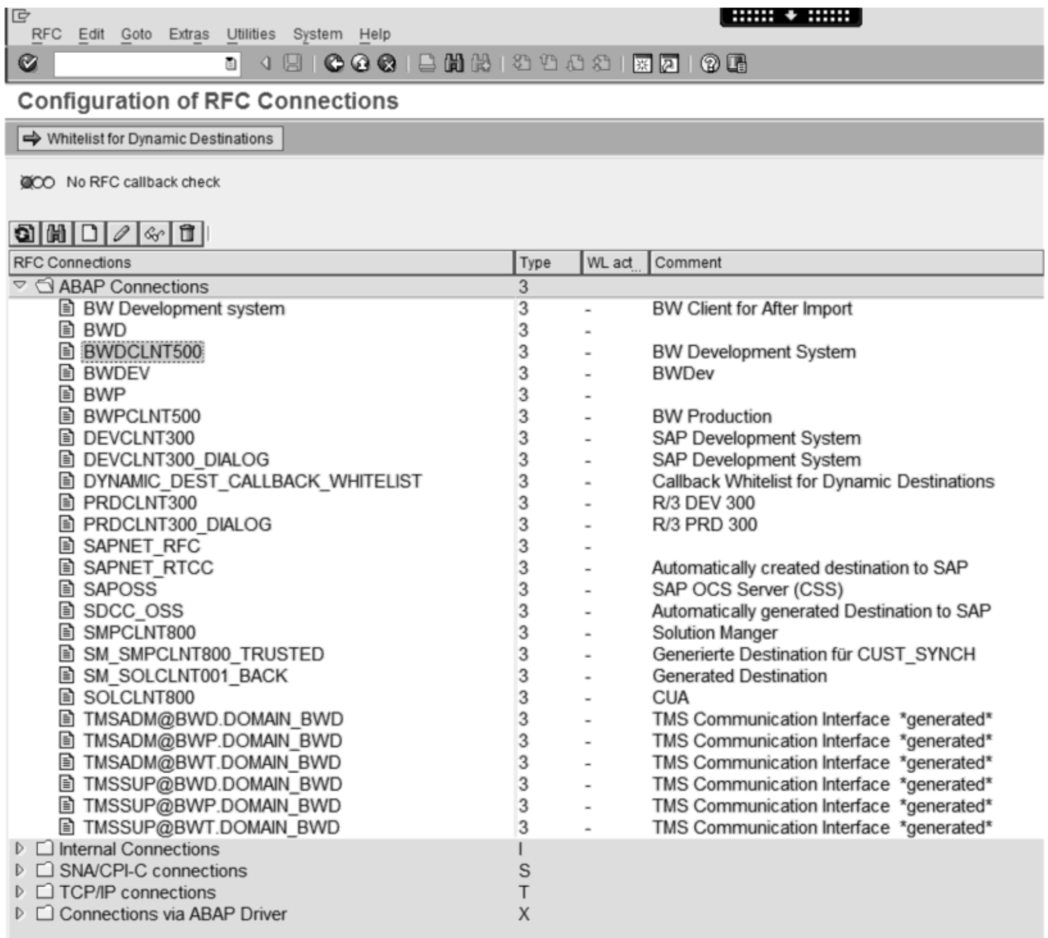
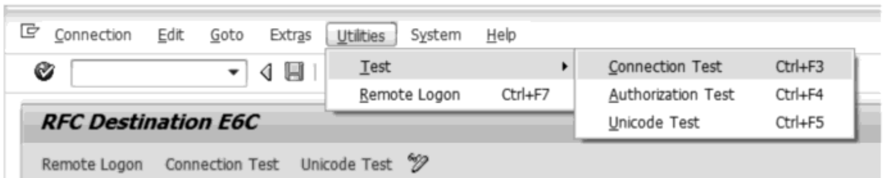
Click on “New entries” and enter the customer specific and system specific information. Ensure you select an RFC connection of type “ABAP” (see transaction SM59).



Here is a listing of RFC’s of type “ABAP” in the customer specific SAP landscape.

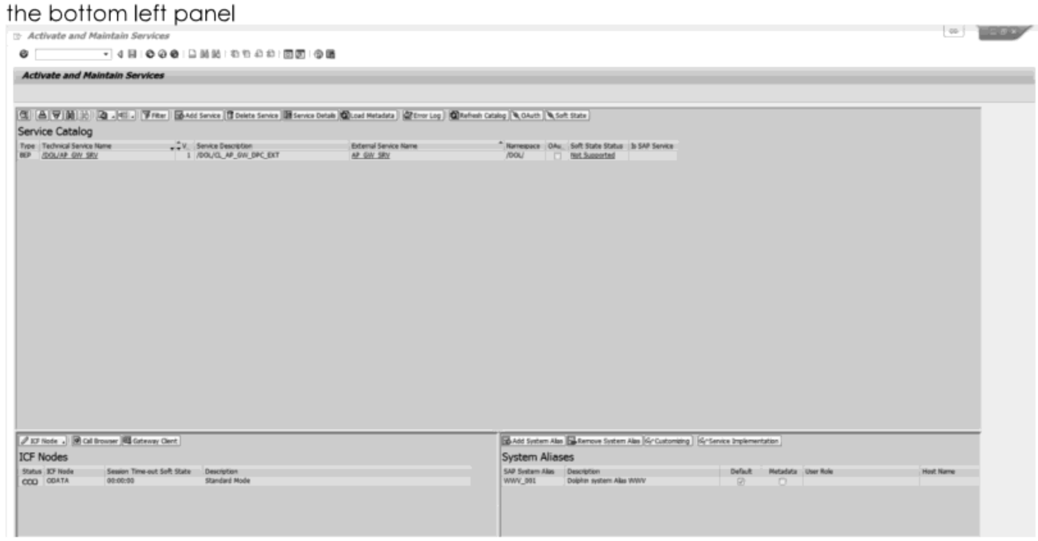


Check that the RFC connection is successful (Utilities->Test->Connection Test and Utilities->Test ->Authorization Test)



Once everything is properly linked the Alias section should look like this (again note that aliases are customer and system specific and your values will be different):

5. Once you've assigned the alias to the service, activate the ICF node in the bottom left panel



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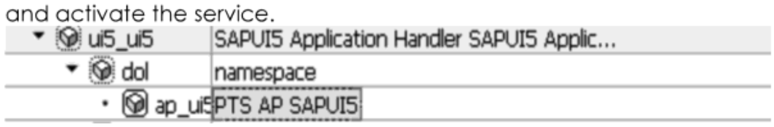
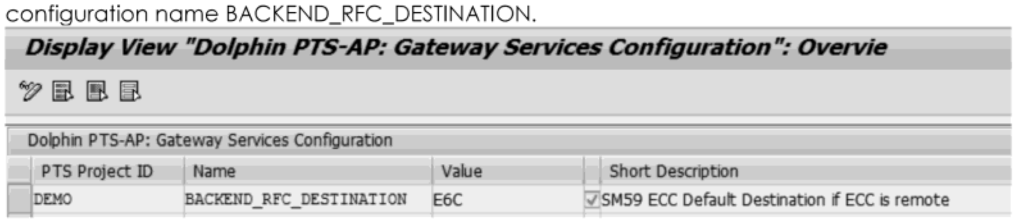
6. Execute tcode SICF to activate the Dolphin UI5 application and Gateway services (ap_ui5, ui5_ui5 and file_upload). In the bottom window, expand Default Host ->SAP->bc>ui5-ui5->dol->ap_ui5 Right click service ap_ui5 and activate the service.



Repeat the same for the "/sap/opu/odata//DOL" and "/sap/bc/dol/" nodes (choose to activate the sub-nodes as well).

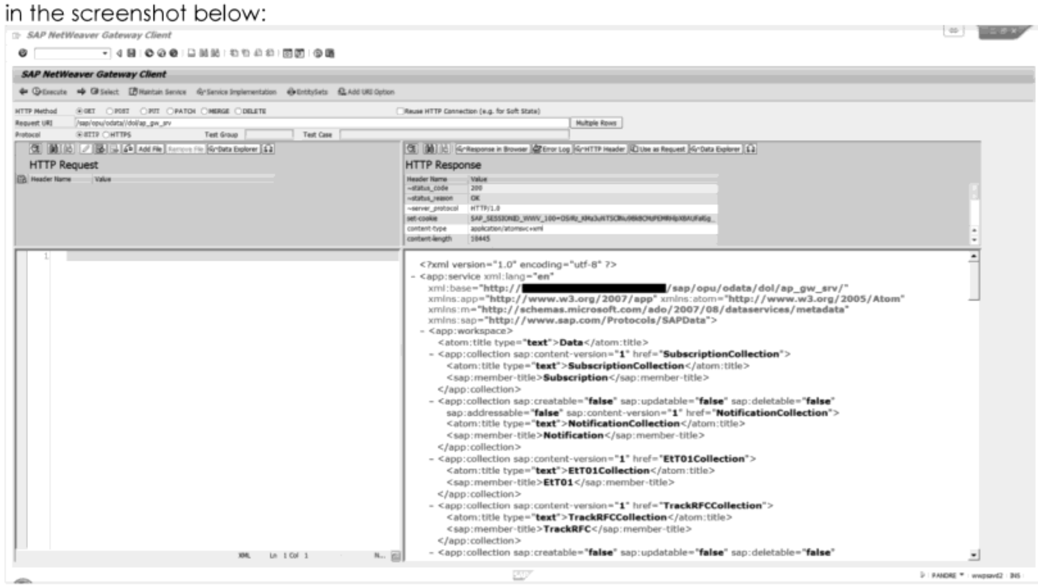
7. Using SM30, add the RFC destination in table /DOL/AP_GW_CONF with the configuration name BACKEND_RFC_DESTINATION.



PTS Project ID	Name	Value	Short Description
DEMO	BACKEND_RFC_DESTINATION	E6C	SM59 ECC Default Destination if ECC is remote

8. When everything is setup you should be able to go back to the service and run it in the Netweaver Gateway Client and see the http response like

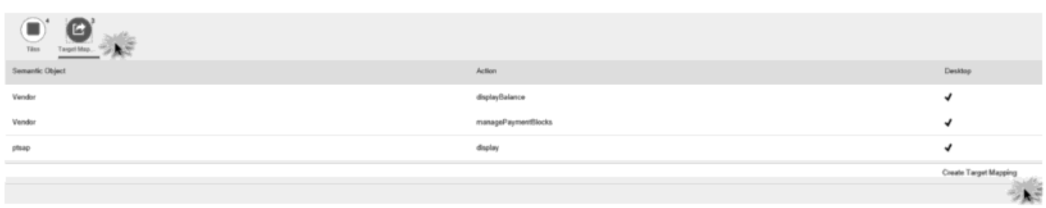
in the screenshot below:



9. To add APUI5 as a Fiori Tile:

    a. First import the transport (E7AK900146) contained in dolphinapui5_tile_semantics.zip.

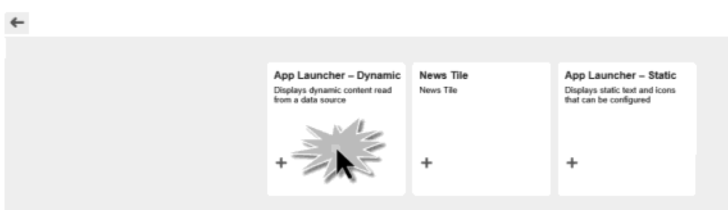
    b. In the FLP admin ((http://gatewayserver:port/sap/bc/ui5_ui5/sap/arsrvc_upb_admn/main.html), select the catalog you want to add the Dolphin Tile to and click on Target Mapping -> Create Target Mapping:)



c. Add the following details (URL: /sap/bc/ui5_ui5/dol/ap_ui5/) on the target mapping and click "Add":

d. Return to the catalog, click on Tiles tab and click on Add Tile icon:

e. Click on "App Launcher – Dynamic".



f. Click on the new draft Tile.

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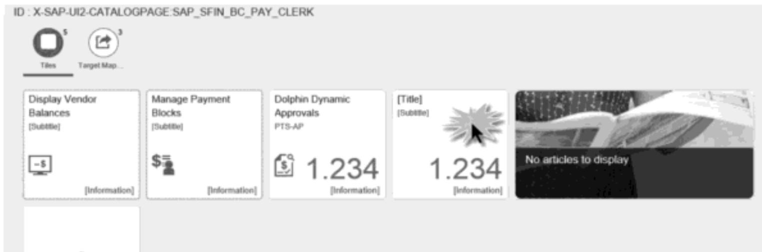


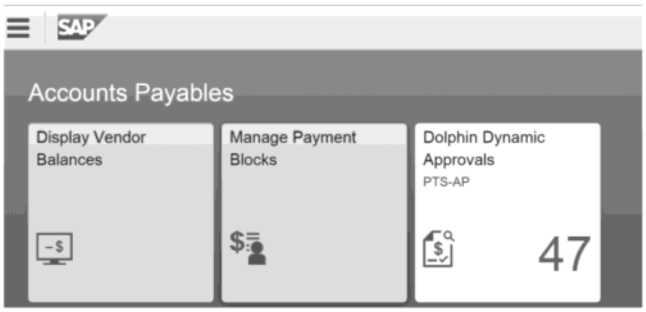
g. A blank form will be displayed.

h. Fill in as below:

Service URL:
/sap/opu/odata/dol/AP_GW_SRV/Tracks/$count?$filter=MyApprovals%20eq%20true

ICON: sap-icon: //Fiori2/F0252

i. Add this tile to the group using this catalog and the final output would show as in the example below:



3.2.4 Post Product Reimport Steps

After a product reimport, if any caching issues are suspected, perform the following actions on the NetWeaver Gateway system to clear the cache:

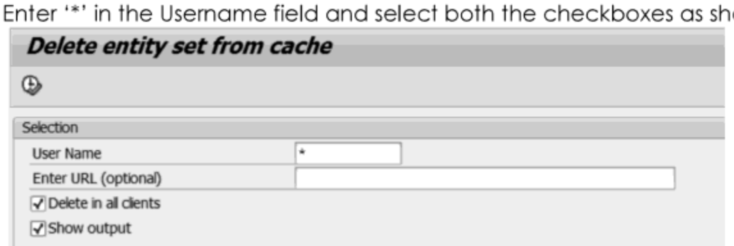
- Call transaction code /IWFND/CACHE_CLEANUP
- Call transaction code SE38 or SA38 to execute program /UI2/DELETE_CACHE_AFTER_IMP
- Delete the contents of the Dolphin table /dol/ap_gw_cache from SM30

3.2.5 Post Product Reimport Steps

The following SAP standard programs should be run from se38 after Gateway/ui5 upgrade transports have been applied in the system.

1. /UI2/DELETE_CACHE

Enter '*' in the Username field and select both the checkboxes as shown below:



2. /UI2/CHIP_SYNCHRONIZE_CACHE

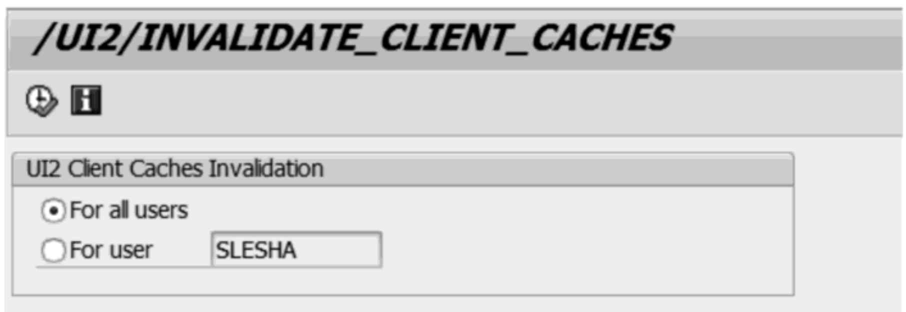
Run the report. No specific input selection is required.

3. /UI2/DELETE_CACHE_AFTER_IMP

Run the report. The output of this report will provide the cache entries deleted after import.

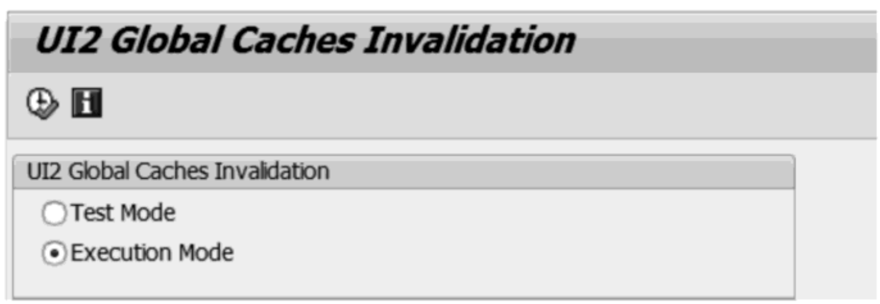
4. /UI2/INVALIDATE_CLIENT_CACHES

Select all users when running this report.



5. /UI2/INVALIDATE_GLOBAL_CACHES

Select 'Execution mode' when running this report.



6. /UI5/APP_INDEX_CALCULATE

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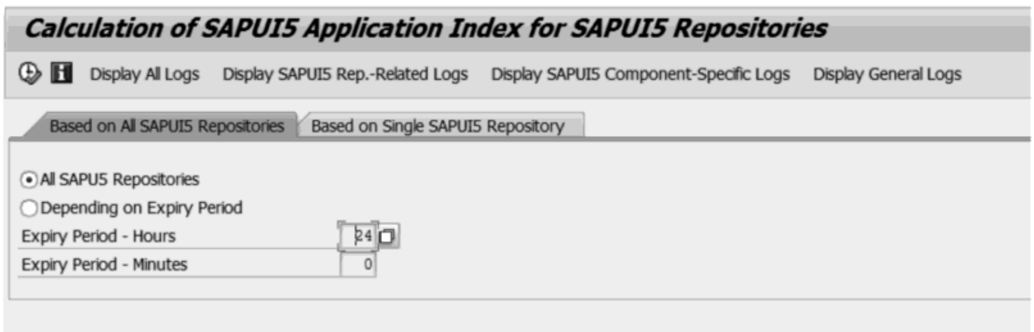
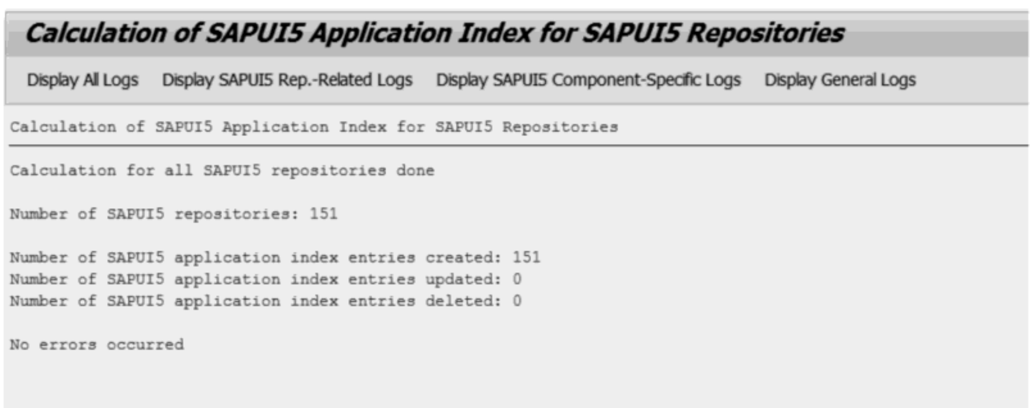
Use this report to calculate the SAPUI5 application index for SAPUI5 repositories which can contain SAPUI5 applications, components, or libraries.
Select "All SAPUI5 Repositories" and run this report.



Execution of this report takes approximately 30-40 seconds. Following is an example of the output of this report from our system.



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3.3 NetWeaver Java

3.3.1 EAR/SCA deployment

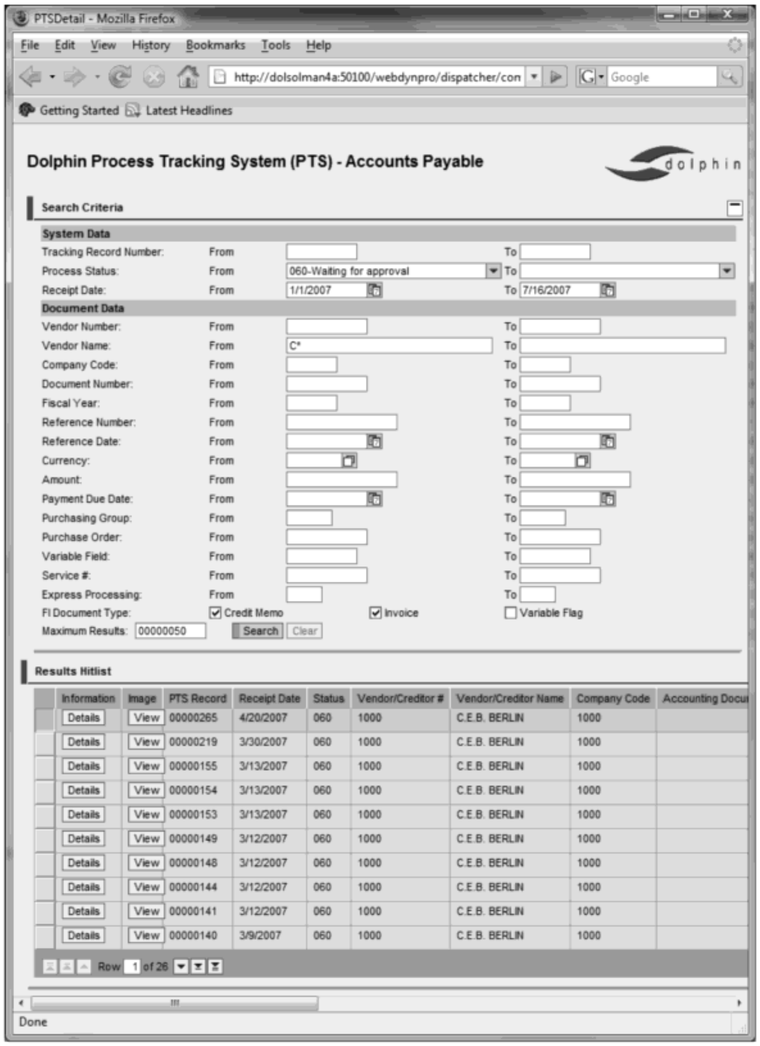
Web application can be delivered either as self-contained EAR file for easy SDM deployment directly on J2EE server, or as SCA, so that it can be imported as external software components in a dedicated track on your NWDI environment. Additionally, a jexcel file is delivered to enable spreadsheet uploading. The jexcel file should be deployed before the EAR file.

The SC name is dolphin-corp_PTSAP whereas DC name is dolphin-corp.com\PTS_AP.
Two applications corresponding to two components are PTSSearch and PTSDetail.

Test the deployment by logging on to:

http://<NWASserver>:<port>/webdynpro/dispatcher/dolphin-corp.com/pts_ap/PTSSearch

This application allows PTS invoice search as illustrated in the following figure.



To test detail application, click on "Detail" button. A screen similar to the following will appear:

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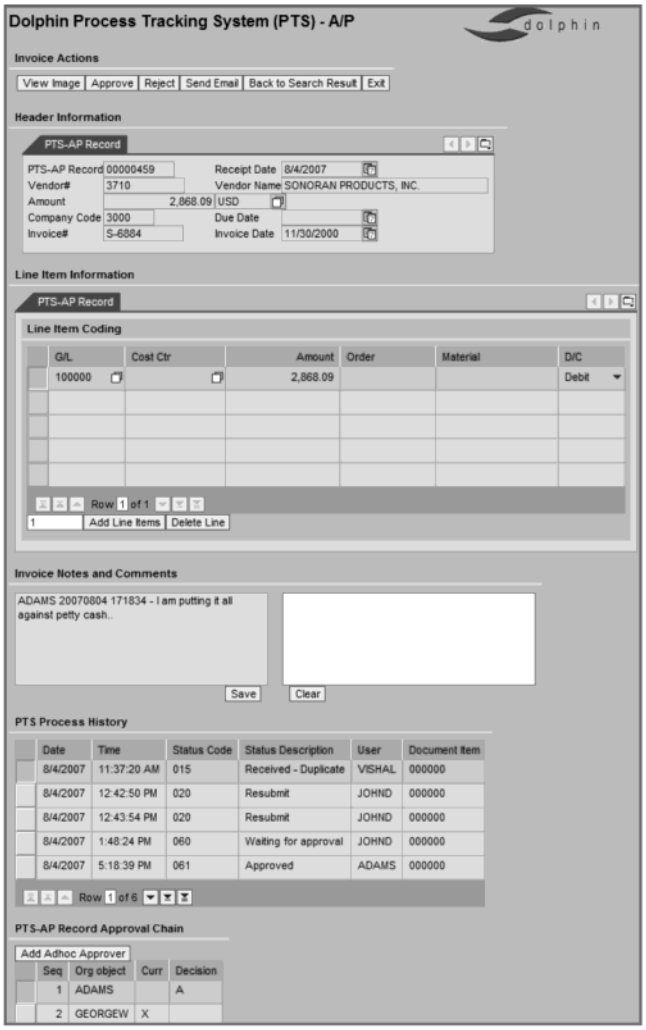

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3.3.2 JCO Destinations

The following JCO destinations need to be setup for Dolphin application to function:

The JCO destinations should be defined using Web Dynpro / Content Administrator from J2EE engine's home page.

For user authentication with User/Password method, a dedicated CPIC user should be entered in the logon tab and the specific data tab is left to whatever the default values are. Appendix A summarizes the authorizations required by CPIC user.

When both destinations are defined, perform ping and test to ensure that destinations are active.

For JCO pool settings, account for an average 4 sessions for each concurrent user.

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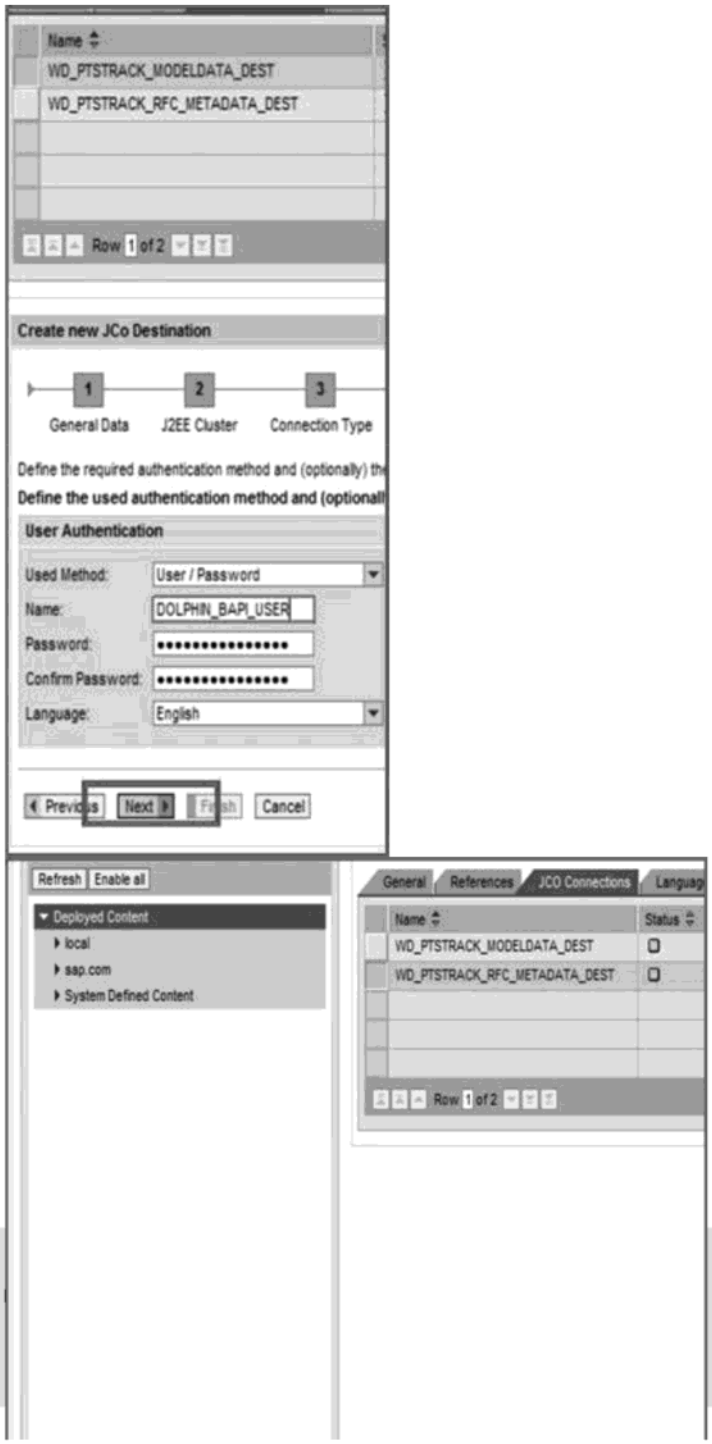


Refer to
https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/3103eb90-0201-0010-71af-be6f4a6f61d1 for best practices on JCO destination settings.

More details on using WD content administrator can be found on SAP help portal, or
https://www.sdn.sap.com/irj/servlet/prt/portal/prtroot/com.sap.nw.wpc.runtime.docs/library/web-dynpro-java/_web-dynpro-java/7.0/Portal%20Integration/How%20to%20Use%20the%20Web%20Dynpro%20Content%20Administrator.pdf

3.3.3 UME

The approver's user ID as selected in SAP during approver selection should match the user ID of the logged in Web Dynpro application user.

Any SAP supported method for user authentication and user store, e.g. ABAP store, AD store, local store, AD store including SSO is supported by Dolphin as long as above condition is met.

Assignment of role for ui5 users:

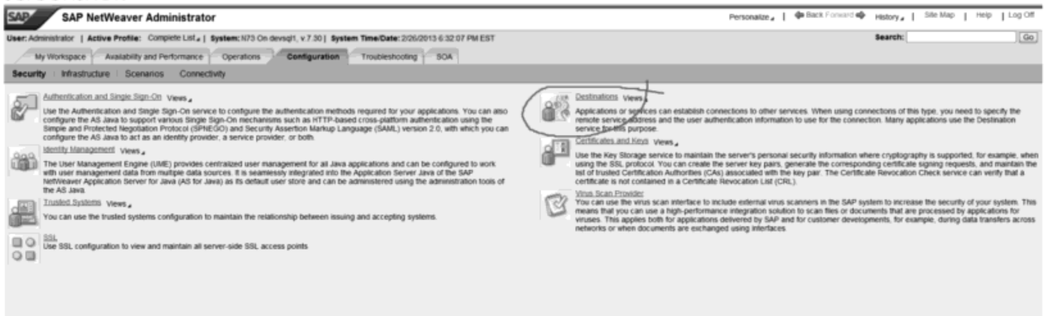
Dolphin does not need any special end-user role in the gateway system. BASIS can assign the users baseline Fiori role. The most commonly used role template is /IWFND/RT_GW_USER. This is the Role template for enabling all users, and user groups, to access all OData services in the SAP NetWeaver Gateway system. This role is maintained for users and their authorizations in the Profile Generator using transaction PFCG. This is a single role.

If a more fine-tuned role is needed, please refer to https://help.sap.com/viewer/68bf513362174d54b58cddec28794093/7.5.8/en-US/4a5d22518bc72214e10000000a44176d.html . The Dolphin gateway service name is /DOL/AP_GW_SRV_001 .

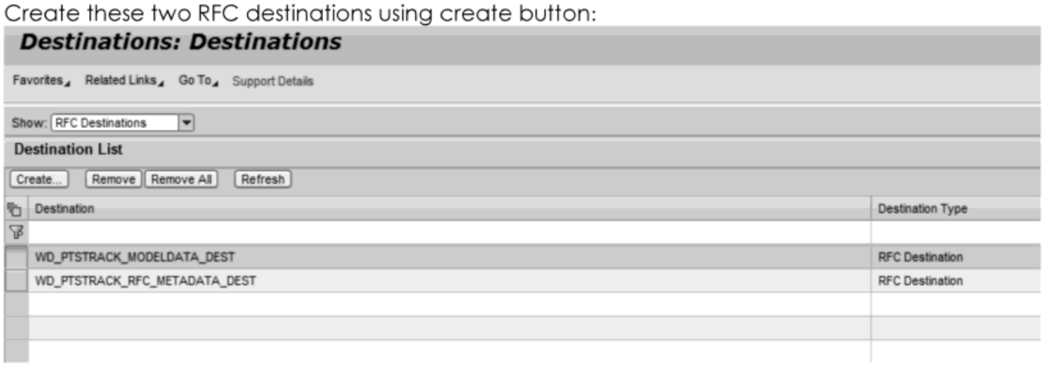
For the security role for the Dolphin RFC user in ECC or S/4, please refer to the Appendix A.

3.3.4 ARFC2 Destinations Definition for NetWeaver 7.3

The ARFC2 destinations need to be setup for Dolphin application for NW 7.3 to function. They should be defined using NetWeaver Administrator/ Configuration tab -> Destinations from J2EE engine's home page as shown in the following screenshot:



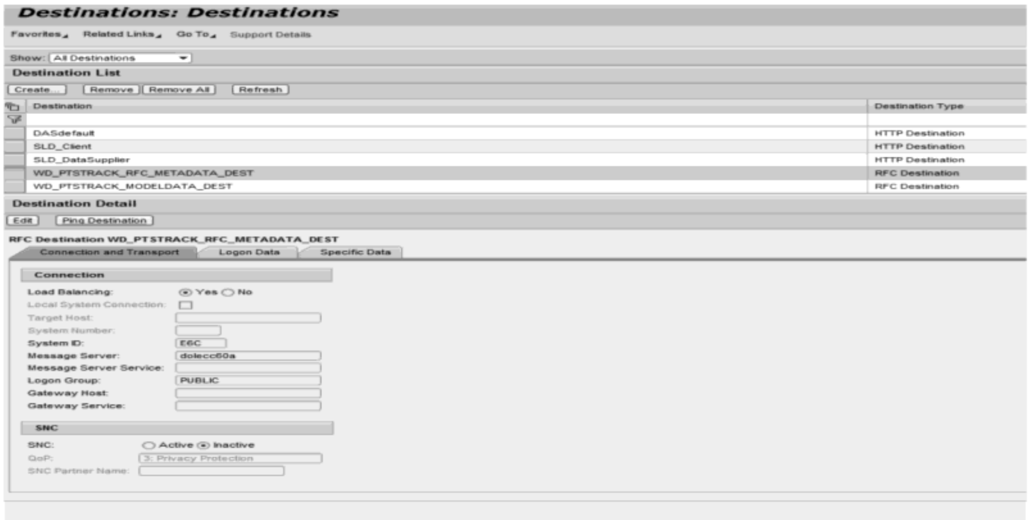
To utilize the SAP NetWeaver portal 7.3 compatible EAR, customers' needs to be on at least Dolphin PTS-AP 5.0 Q4 2012 release.
Create these two RFC destinations using create button:



The information that needs to be entered in connection and transport tab is shown in the screenshots on next page for both the destinations.

For user authentication, User/Password method with dedicated CPIC user should be entered in the logon tab and the specific data tab is left to whatever the default values are.

Once both destinations are defined, perform ping and test to ensure that destinations are active.



Test the deployment by logging on to:
http://<NWASserver>:<port>/webdynpro/resources/dolphincorp.com/pts_ap/PTSSearch

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4 PTS Application Configuration

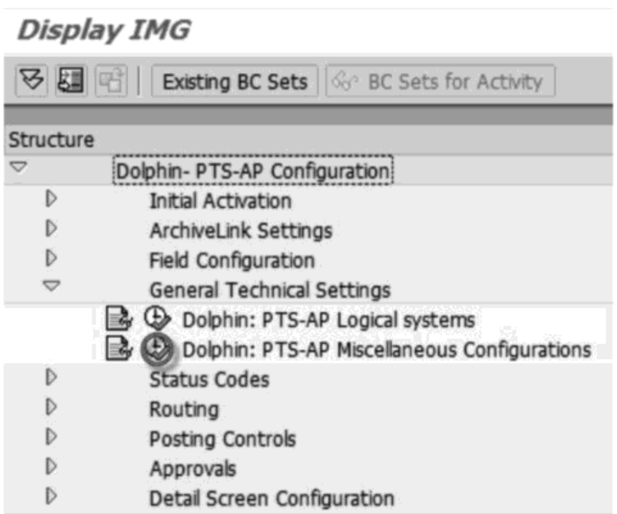
This section describes all steps necessary to activate the PTS-AP after the transport files have been imported successfully into the system and the development class /DOL/AP has been checked for completeness. It is recommended to verify that all data dictionary objects and ABAP/4 workbench objects in development class /DOL/APWEB are generated and activated in the system.

4.1 PTS Table Maintenance

Following tables in PTS-AP core system have to be maintained to activate the solution: /DOL/AP_T08 and /DOL/AP_T09

4.1.1 Miscellaneous Configuration Table (Activity: Dolphin: PTS-AP Miscellaneous Configurations)

1. Select activity **General Technical Settings → Dolphin: PTS-AP Miscellaneous Configurations**.



2. The Miscellaneous configurations table (/DOL/AP_T08) is used for various PTS-AP settings in the form of name-value pairs. Verify that all standard values are

maintained in the table /DOL/AP_T08 for your PTS project. The following entries are available in the standard PTS-AP:

Status	Description
AA_SIMPLE_EMAIL_ACTIVE	Value ='X' to make simple email feature active for only Non-Sap users. Value = 'GLOBAL' to activate for all
AA_SIMPLE_EMAIL_CLASS	Technical setting only. Custom Inbound class defined in SO50 for custom handling for Simple email inbound mail.
AA_SIMPLE_EMAIL_CUSTCLASS	Customer Class for custom methods
AA_SIMPLE_EMAIL_IMAGE	Value = 'LINK' to include invoice as a link. Value = ATTACH to include invoice as an attachment. Value = 'X' for both link and attachment. If active, the setting will be in effect for all emails, both simple and regular.
AA_SIMPLE_EMAIL_NOLINES	When active, send simple email even with no coding lines
AA_SIMPLE_EMAIL_NOTESM	Custom method for attaching inbound notes.
AA_SIMPLE_EMAIL_REPLY	'X' to send reply if successful. (If error, a reply is always sent.)
AA_SIMPLE_EMAIL_STATUS	Value = 661. Sub-status for Simple email decision
ADHOC_APPROVAL_EXIT	User exit for implementing customized adhoc approval user insert
ADHOC_MAIL_FORMAT	Format (MIME or Space for Text) for the adhoc mail from AP2N. Default or inactive is TEXT.
ADHOC_MAIL_TEMPLATE	Template prefix to use if not /DOL/ for the adhoc mail from AP2N
ALPHA_GLDROPDWN	Don't delete leading zero in dropdown search for GL on web
APPROVAL_EMAIL	Set to 'BATCH' if original approval e-mails are not to be sent out as individual e-mails
APPROVAL_EMAIL_FORMAT	Set to 'MIME' to use HTML templates for email texts. Value = 'TEXT' to use standard text.

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APPROVAL_EMAIL_HOLDER	"X" and active to add '&' around the placeholders (example &Y1&)
APPROVAL_EMAIL_TEMPLATE	Template prefix to use for customized templates
APPROVAL_SUBSTATUS_ONCE	Active and "X" to see sub-status selection for web approvals
CODING_VALIDATION_EXIT	User exit for implementing customized web line-item validation
EARMARKEDFUND_FIELDS	Dynamic assignment for earmark fund fields
EMAIL_OPEN_AMT_ONLY	"X" and active to send regular web approval email rather than simple email approval when there are insufficient funds on the PO
ESCALATION_EMAIL	Set to 'BATCH' if escalation e-mails are not to be sent out as individual e-mails
FI_PASS_UUID	If Active pass UUID to SAP Transaction screen for non-PO invoices
GATEWAY_PUSH_DEST	List the destination to send push notifications when approval emails are sent.
IMAGE_PROXY_URL	Image proxy URL for web. Sets the image URL used by the web application to be prefixed by this proxy URL, with the original image URL passed as a query string after being escaped
IMAGE_URL_FIND_REPLACE1	Find and replace URL for the web. Allows certain parts (or whole) image URL to be replaced by another string. (for classic web where the image server is behind the firewall and needs to be accessed via a reverse proxy server)
MIRO_PASS_UUID	If active pass UUID to SAP Transaction screen for PO invoices
ML81_FRONTEND	Check ML81N S_TCODE security for SE acceptance from Web. Need SSO authentication for this to work (as opposed to CPIC user).

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MOVE_ON_SUBSTITUTION	To move the current' user's MyApproval items to the substitute immediately upon saving new substitute from MySettings. This option should only be used if the batch job for batch substitution and effective dates concept is not used
REMINDER_EMAIL	Set to 'BATCH' if reminder e-mails are not to be sent out as individual e-mails
STATIC_EMAIL_SENDER	SAP User ID which can be used as "Sender" of the e-mails sent out from PTS. Default sender is A/P user's SAP user ID.
STATIC_V_EMAIL_SENDER	WF-BATCH or the desired SAP userid. The sender Email address for the vendor email function will be the address associated with the SAP userid in SU01. (If inactive, the sender address is the email of the last user who sent the vendor email.)
SUBSTITUTE_STATUS	Value = 601. Active for 'Substitution Done' added to history when a substitute approves the record.
WBS_MASKED_FORMAT_ACTIVE	When active, WBS will display in masked format on the web just as it does within R/3.
WEBLINK	URL to the web application's detail application. e.g. "http://<server>:<port>/webdynpro/dispatcher/dolphin-corp.com/PTS_AP/PTSDetail?qsimgatstart=true&qsrecno= " Note: This is the link that appears in the approval emails and the record number is filled in by the ABAP programming for email generation.

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WEBURL_MYAPPROVALS	Netweaver MyApprovals URL: "http://<server>:<port>/webdynpro/dispatcher /dolphin-corp.com/PTS_AP/PTSSearch? myapprovals=X UI5 My Approvals URL: "http://<server>:<port>/sap/bc/ui5_ui5/dol/ap_ui5/index.html?destination=E6C&myApprovals=
WEB_ACTIVATE_GLVALIDATION	"X" to validate GL. Custom FM is required with this activation.
WEB_ALLOW_MASS_ACTION	For UI5, when this is active, mass approval/rejection will be available for approvals with the same sub-status
WEB_APPLY_LINE_BUKRS	'X' to apply line co. code to header if header co. code is blank after approval/coding
WEB_AUTO_POST	'X' to auto-post after final approver if coding passes validations
WEB_BUTTONDESC_APPROVE	VALUE = Text of the Approve button
WEB_BUTTONDESC_HELP	VALUE = Text of the Help button
WEB_CHKGL_TAXCOD	Enforces tax code based on G/L settings. This check is not carried out by SAP BAPI. This entry makes tax code a required field.
WEB_CODER_DISABLE	'X' to disable coder entry from mySettings
WEB_CODING_REQD	If 'X', this forces web approver to provide at least one valid line of coding while approving
WEB_COLDESC_XREF1	Assign label to XREF1 column field in line-item coding for non-PO invoices. *In general, any coding table field can be assigned an alternate column header by adding WEB_ COLDESC _<fieldname> entry in T08 table for your project. Refer to T11 table for all possible line fields.*
WEB_DEBUG_METHODS	The methods which needs to be used on to the NWA logs, use csv
WEB_DEBUG_SEVERITY	Strictly used for testing
WEB_DEBUG_XML	Strictly used for testing

WEB_DISABLE_ADHOC	Disable Adhoc approval feature
WEB_DISABLE_EXCELTEMPLATE	"X" to disable excel template upload button on classic web & detail screen
WEB_DISABLE_MYAPPROVAL	Disable MyApprovals Option on Search Application. Disables button and checkbox.
WEB_DISABLE_ONE_SUB_POPUP	Active with value 'X' to have the substatus selection pop up not appear if there is only one sub-status
WEB_DOC_TYPE_ACC_ASSIGN	List of PO types that will be treated as framework POs with MAA functionality
WEB_DOC_TYPE_ASSIGN_CAT	List the account assignment category(s) to use as an indicator of MAA. Historically, this determination was based on the PO type only.
WEB_EDIT_**PH**VVALU1	Make VVALU1 field in PTS record header tab editable during approvals. *Currently VVALU, VVALU1, VVALU2, VVALU3. payment method, payment reference, tax code and company code (PTS header tab fields) can be made editable by adding WEB_EDIT_PH<fieldname> entry in T08 table for your project.*
WEB_EMAIL_LINK	Same as WEBLINK if "Send E-Mail" link on web detail page needs to use URL from this table instead of WebDynpro Java API. This is useful when PTS application is deployed as portal iView and SSO is needed.
WEB_ENABLE_ADDMANAGER	Enable Add Manager Button
WEB_ENABLE_ADDREVIEWER	Enable Ad Hoc Approver Button. Reviewer is a special feature that may require a custom user-exit development. Please contact your Dolphin implementation team before activating this option
WEB_ENABLE_APPLYTEMPLATE	"X" to enable the Apply Template button for web approvals (Applies to classic web, CR and ER)
WEB_ENABLE_FORWARD	"X" to enable the Forward button

WEB_ENABLE_GL_TAB	"X" to enable GL tab for PO entries
WEB_ENABLE_HELPFRAME	"X" to Auto display HELP on web CR
WEB_ENABLE_IMAGEFRAME	Enable Image display on separate frame on same web page
WEB_ENABLE_MYSETTINGS	Enable MySettings Button
WEB_ENABLE_PAYEEDETAIL	'X' to enable the Payee Details tab on the payment request screen
WEB_ENABLE_REJ2LAST	Enable "Reject to Last" button
WEB_ENABLE_SUBSTATUS	Enable sub-status popup during approval
WEB_FETCH_CCFROM	Default the co. code field in header and coding line (when blank) from this field. Possible value so far: 'KOSTL'
WEB_FILTER_VVALU	'X' to filter the T07 entries to those where the VVALU contains 'web', 'Web', or 'WEB'
WEB_FLDDESC_PHKIDNO	The text description for the field KIDNO in the detail screen on the web. *In general any field description text can be indicated by WEB_FLDDESC_PH<fieldname> entry in T08 table.*
WEB_FORWARD_LOOP	When a web user selects next agent via the "forward" button, the record will come back to sender after next agent Approves the record
WEB_FORWARD_STATUS	The sub-status value assigned to "Forward" button on web. Existence of this entry activates the button. When the recipient of the forwarded record approves, status 61 is removed and replaced with this sub-status.
WEB_HELP_LINK_DETAIL	URL to the client specific help documentation for PTS AP Detail screen. This is only required when using custom help documents. Custom help files may be hosted outside the NetWeaver (Sharepoint, other internal directory, etc.)

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WEB_HELP_LINK_SEARCH	URL to the client specific help documentation for PTS AP Search screen. This is only required when using custom help documents. Custom help files may be hosted outside the NetWeaver (Sharepoint, other internal directory, etc.)
WEB_HIDE_BUKRSSL	Hide Company Code field for browser only. This is for the selection screen on web only. *In general, header tab field can be hidden by adding WEB_HIDE_<fieldname>SL entry in T08 table for your project. Refer to T01 table for all possible line fields.*
WEB_HIDE_1_BUKRSSL	Hide Company Code field for **tablets** only. This is for mobile application add-on only. *In general, header tab field can be hidden by adding WEB_HIDE_1_<fieldname>SL entry in T08 table for your project. Refer to T01 table for all possible line fields.*
WEB_HIDE_2_BUKRSSL	Hide Company Code field for **mobile phones** only. This is for mobile application add-on only. *In general, header tab field can be hidden by adding WEB_HIDE_2_<fieldname>SL entry in T08 table for your project. Refer to T01 table for all possible line fields.*
WEB_HIDE_ACTIVITY**PL***	Hide Activity field in –"Invoice" line tab for PO invoices on web. (See following screen shot) This will also control the PO details grid in the SAPGUI detail screen *In general, any PO lines tab field can be hidden by adding WEB_HIDE_<fieldname>PL entry in T08 table for your project.*

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WEB_HIDE_ACTIVITY**PLA***	Hide Activity field in PO account assignment line tab. *In general, any PO account assignment tab field can be hidden by adding WEB_HIDE_<fieldname>PLA entry in T08 table for your project.*
WEB_HIDE_ACTIVITY**POL***	Hide Activity field in PO Based line tab. *In general, any PO based line tab field can be hidden by adding WEB_HIDE_<fieldname>POL entry in T08 table for your project.*
WEB_HIDE_ACTIVITY**SEL***	Hide Activity field in SE line tab. *In general, any SE line tab field can be hidden by adding WEB_HIDE_<fieldname>SEL entry in T08 table for your project.*
WEB_HIDE_AUFNR**PP***	Hide Internal Order# field in posted document line-item coding. *In general, any posted document line table field can be hidden by adding WEB_HIDE_<fieldname>PP entry in T08 table for your project. Refer to T11 table for all possible line fields.*
WEB_HIDE_AUFNR**T***	Hide Internal Order# field in line-item coding for non-PO invoices. *In general, any coding table field can be hidden by adding the WEB_HIDE_<fieldname>T entry in T08 table for your project. Refer to T11 table for all possible line fields.*
WEB_HIDE_AUFNR**TF***	Hide Internal Order# field in posted line-item coding. *In general, any posted document line table field can be hidden by adding the WEB_HIDE_<fieldname>TF entry in T08 table for your project. Refer to T11 table for all possible line fields.*

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WEB_HIDE_EMAIL	Disable E-Mail button on detail page
WEB_HIDE_EXIT	Disable Exit button on all pages
WEB_HIDE_HELP	Disable Help button on all pages
WEB_HIDE_**IH**NAME1	Hide NAME1 field in Posted SAP record header tab. *In general, any Posted SAP record header tab field can be hidden by adding WEB_HIDE_IH<fieldname> entry in T08 table.*
WEB_HIDE_IMAGE_URLSL	Hide Image URL. This is for mobile application only.
WEB_HIDE_MENGE**AAM**	Hide Menge field in pop up template table *In general, any table field can be hidden by adding WEB_HIDE_<fieldname>AAM entry in T08 table*
WEB_HIDE_PDFSL	Active and 'X' to hide the link to the document in the search results list.
WEB_HIDE_**PH**VVALU1	Hide VVALU1 field in PTS record header tab. *In general, any PTS header tab field can be hidden by adding WEB_HIDE_PH<fieldname> entry in T08 table.*
WEB_HIDE_**PO**VPURCHORG	Hide PurchOrg field in PO record header tab. *In general, any PO header tab field can be hidden by adding WEB_HIDE_PO<fieldname> entry in T08 table.*
WEB_HIDE_REJECT	Hide the Reject button
WEB_HIDE_VVALU1**S**	Hide VVALU1 field in PTS Search Application. *In general, any search field can be hidden by adding WEB_HIDE_<fieldname>S entry in T08 table. Refer to T01 table for all possible fieldnames.*
WEB_LIMIT_SEARCH	Value = PART_OF_CHAIN or PART_OF_COST_CENTER. Active to secure access for SAP and non-SAP web users to PTS records on the web.

WEB_LINEITEM_TEMPLATE	URL for excel template to be used for classic web excel upload.
WEB_LOGO_SRC	Source for logo. Set it to "null" if Dolphin logo is not to be shown. Set it to ~SAPIcons<image file name.gif or jpg> to set it to your company's logo (assuming logo file exists on J2EE server path: \\<server>\saploc\<SID>\<Instance>\j2ee\cluster\server0\temp\webdynpro\web\sap.com\tc~wd~dispwda\global\sapIcons For NW 7.3: \\<server>\saploc\<SID>\<Instance>\j2ee\cluster\apps\sap.com\tc~wd~dispwda\servlet_jsp\webdynpro\resources\sap.com\tc~wd~dispwda\root\global\sapIcons
WEB_MAX_FILE_SIZE	This setting limits the size of files that can be attached on the web. Recommended default is active with 1000000 (1MB)
WEB_MAX_OVS_HITS	Defines the maximum size of the returned rows for the OVS (drop down) searches
WEB_NOTES_OPT_ACCEPT	"X" to make notes optional when accepting
WEB_NOTES_OPT_FORWARD	"X" to make notes optional when forwarding
WEB_NOTES_OPT_REJECT	"X" to make notes optional when rejecting
WEB_NOTES_OPT_REJECT2LAST	"X" to make notes optional when rejecting to last approver
WEB_NOTE_CHARSET	Character set for encoding Notes (TCP00A maps to code page), default to UTF-8
WEB_ONLOAD_MYAPPROVALS	When active, the UI5 web link will open to My Approvals search results
WEB_OVS_AUFNR	Enable match-code search on line item coding block
WEB_OVS_AWSYS	Enable match-code search on logical system field in PTS Header tab
WEB_OVS_BANKKEY	Enable match-code search on bank key field
WEB_OVS_BUKRS	Enable match-code search on co.code# field in PTS Header tab

WEB_OVS_EGRUP	Enable match-code search on equity group field
WEB_OVS_FISTL	Enable match-code search on funds center field in line item coding block
WEB_OVS_FKBER	Enable functional area dropdown on line-item coding block
WEB_OVS_GEBER	Enable match-code search on funds field in line item coding block
WEB_OVS_GLACC	Enable G/L dropdown on line-item coding
WEB_OVS_GSBER	Enable business area dropdown on line-item coding block
WEB_OVS_KBLNR	Enable earmarked fund code dropdown on line-item coding block
WEB_OVS_KOSTL	Enable cost center dropdown on line-item coding block
WEB_OVS_LIFNR	Enable match-code search on vendor# field in Payment Request application
WEB_OVS_MWSKZ	Enable tax code dropdown on line-item coding block
WEB_OVS_NPLNR	Enable network dropdown on line-item coding block
WEB_OVS_PERNR	Enable personnel number dropdown on line-item coding block
WEB_OVS_PPRCT	Enable partner profit center dropdown on line-item coding on Payment Request and detail screen
WEB_OVS_PRCTR	Enable profit center dropdown on line-item coding on Payment Request and detail screen
WEB_OVS_PROJK	Enable WBS dropdown in line-item coding block
WEB_OVS_RECID	Enable Recovery Indicator field dropdown in line-item coding block
WEB_OVS_RZAWE	Enable match-code search on payment method# field in PTS Header tab
WEB_OVS_SGENR	Enable Building Number dropdown on line-item coding block
WEB_OVS_SGRNR	Enable Property Number dropdown on line-item coding block

WEB_OVS_SWENR	Enable Site Number dropdown on line-item coding block
WEB_OVS_TXJCD	Enable tax jurisdiction code dropdown on line-item coding block
WEB_OVS_VBEL2	Enable Sales Document dropdown on line-item coding block
WEB_OVS_VBUND	Enable Trading Partner Company ID dropdown on line-item coding block
WEB_OVS_VNAME	Enable Joint Venture dropdown on line-item coding block
WEB_OVS_VORNR	Enable Activity dropdown on line-item coding block
WEB_OVS_VVALU	Enable VVALU dropdown in PTS Header tab
WEB_OVS_WBS	Enable WBS element dropdown on line-item coding block
WEB_OVS_XREF1	Enable XREF1 dropdown on line-item coding block
WEB_PREVIEW_PDF_FORM	See Appendix B for Check Request for details
WEB_PTSAPP_URL	PTS WebApp Search screen URL
WEB_READONLY_BUKRS**T**	Make company code field read-only in line-item coding for non-PO invoices. *In general, any coding table field can be made read only by adding WEB_READONLY _<fieldname>T entry in T08 table for your project. It is possible that previous table may not include all possible line fields. Refer to T11 table for all possible line fields*
WEB_REQD_GLACC**T**	Make G/L account line coding field required on web. *In general, any coding table field can be made required by adding WEB_REQD _<fieldname>T entry in T08 table. It is possible that previous table may not include all possible line fields. Refer to T11 table for all possible line fields*

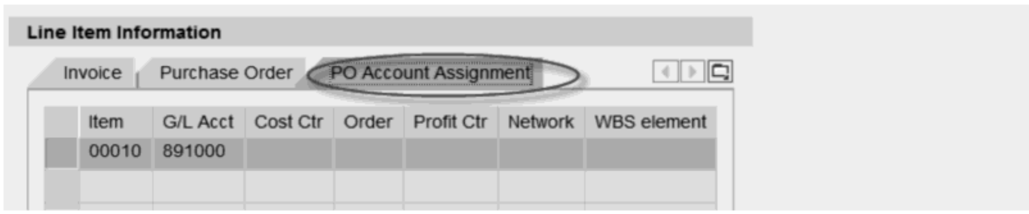
WEB_RFC_USER	Used in PO BAPI enhancement to call RFC to other AWSYS
WEB_SHORT_NAME	"X" to clear all text including and following the @. So, that the userid will match the T09 table entries when the fully qualified userid is used to validate the SAP user.
WEB_SORT_ORDER	A (ascending) or D (descending) for sort order of PTS Records in Web Search. D is default if this entry is not defined.
WEB_SUBSTITUTE_DISABLE	'X' to disable substitution entry from mySettings
WEB_SUBS_DATES_ENABLE	'X' to enable effective date fields on substitution for in mySettings
WEB_SUBS_LEVEL_CHECK	'X' for the system to check the substitute's approval level and if the level is found lower than the approver's prevent the substitution
WF_AUTO_DISP_NOTES	'X' for the web to automatically display image notes as a popup on the PTS detail screen during approval
Soft Escalation Settings	Refer to next section for soft escalation settings

Following are screen shots of the various sections affected by the WEB_HIDE* values:

WEB_HIDE_PD<fieldname> and WEB_REQD_PD<fieldname>

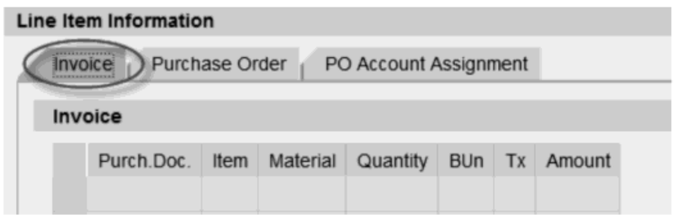
Possible fields for WEB_HIDE_PD<fieldname> and WEB_REQD_PD<fieldname>: Name, Rep_Name, Name_4, State, Name_3, City, Region, Postl_Code, Country, BANK, BANK_CTRY, BANK_ACCT, BANK_NO, INSTR_KEY, CTRL_KEY, PO_BOX, STREE2

WEB_HIDE_<fieldname>PLA



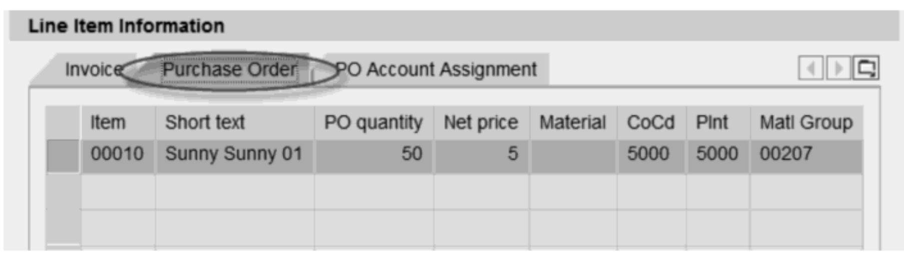
Possible fields for WEB_HIDE_<fieldname>PLA: Activity, Amt, Costctr, Glacct, Network, Orderno, Perc, Poitem, Profitctr, wbs

WEB_HIDE_<fieldname>PL



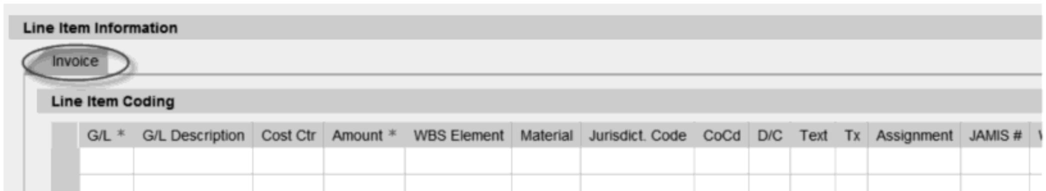
Possible fields for WEB_HIDE_<fieldname>PL: BUKRS, ITEM, MAT, MATGRP, PLANT, PRICE, QTY, TEXT

WEB_HIDE_<fieldname>POL



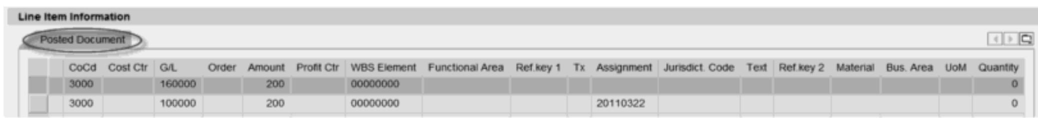
Possible fields for WEB_HIDE_<fieldname>POL: Ebeln, Ebelp, LFSNR, Matnr, Meins, Menge, Mwskz, Netwr

WEB_HIDE_<fieldname>T



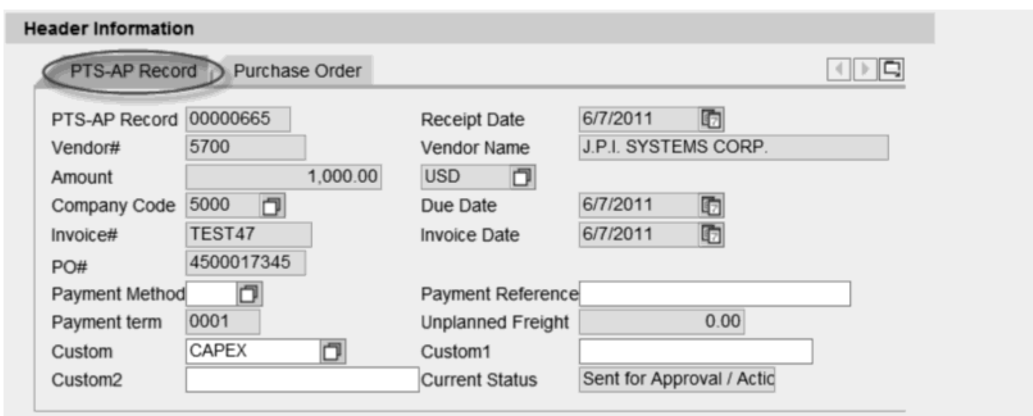
Possible fields for WEB_HIDE_<fieldname>T : See table /DOL/AP_T11

WEB_HIDE_<fieldname>PP



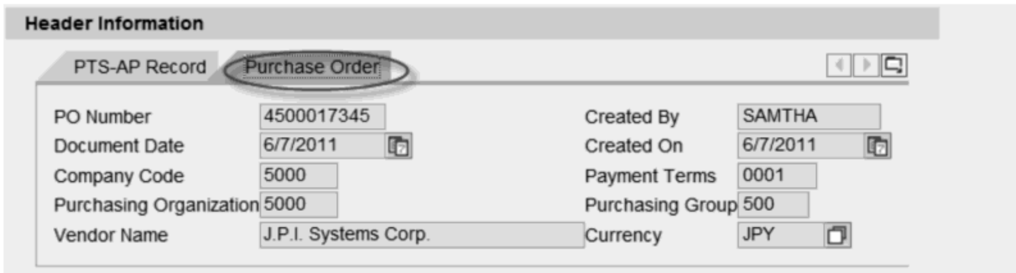
Possible fields for WEB_HIDE_<fieldname>PP : See table /DOL/AP_T11

WEB_HIDE_PH<fieldname>



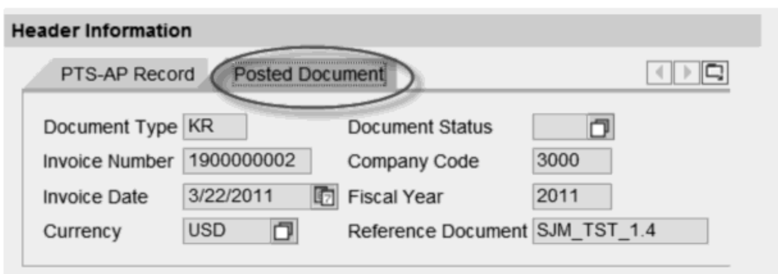
Possible fields for WEB_HIDE_PH<fieldname>: Any header field previous

WEB_HIDE_PO<fieldname>



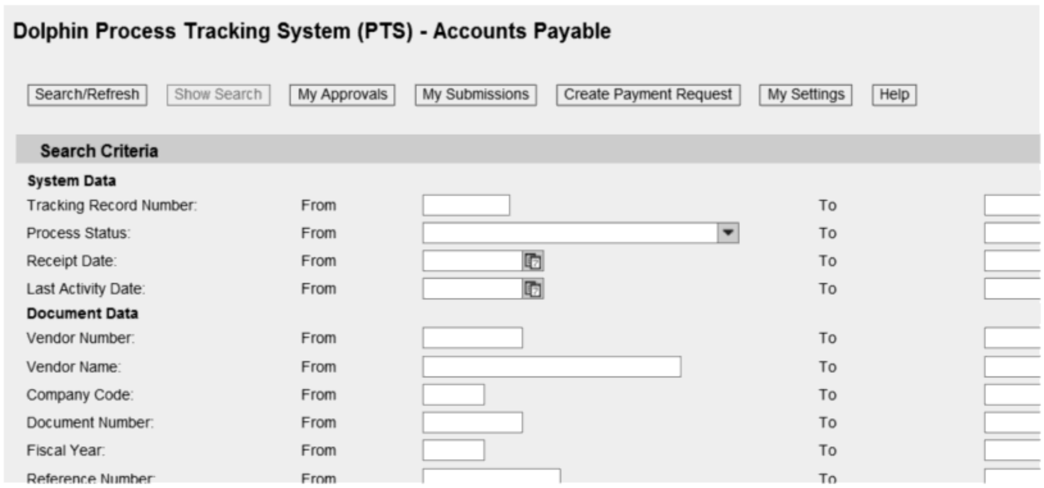
Possible fields for WEB_HIDE_PO<fieldname> include: CompanyCode, CreatedBy, CreatedOn, Currency, DocumentDate, Number, PaymentTerms, PurchGroup, PurchOrg, VendorName

WEB_HIDE_IH<fieldname>



Possible fields for WEB_HIDE_IH<fieldname> include: BELNR BLDAT, BUKRS, EBELN, LIFNR. NAME1, WAERS, WRBTR

WEB_HIDE_<fieldname>S



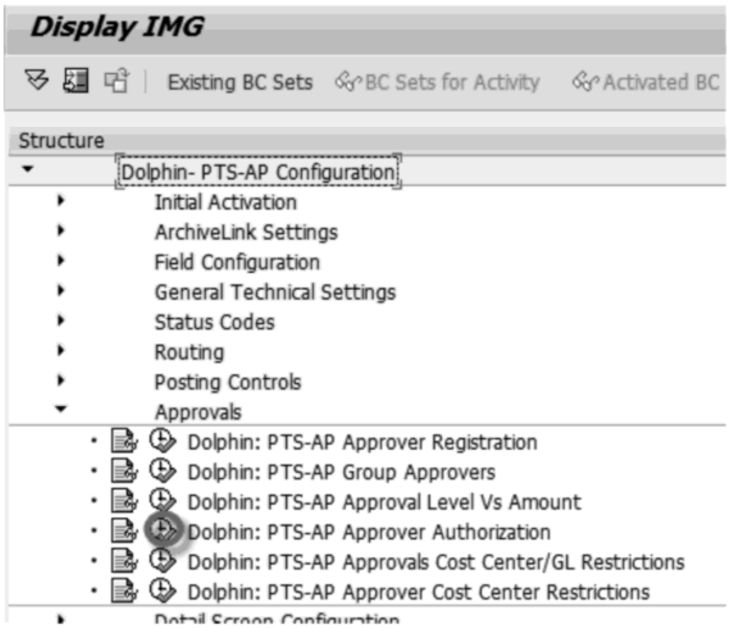
Possible fields for WEB_HIDE_<fieldname>S include: RECNO, STATS, RCDAT, STDAT, LIFNR, NAME1, BUKRS, BELNR, GJAHR, XBLNR, XBLDT, WAERS, WRBTR, DUEDT, POSTDAT, EKGRP, EBELN, VVALU, VVALU1, LBLNI, KOSTL, AUFNR

4.1.2 Approver Registration Table (Activity: Dolphin: PTS-AP Approver registration Table)

Refer to *Implementation & Maintenance Guide Process Tracking System (PTS) for SAP Accounts Payable.*
Note: *When the approver's web access is checked, the validity period of the user is also checked.*

4.1.3 Approver Authorization Table (Activity: Dolphin PTS-AP: Approver authorization table)

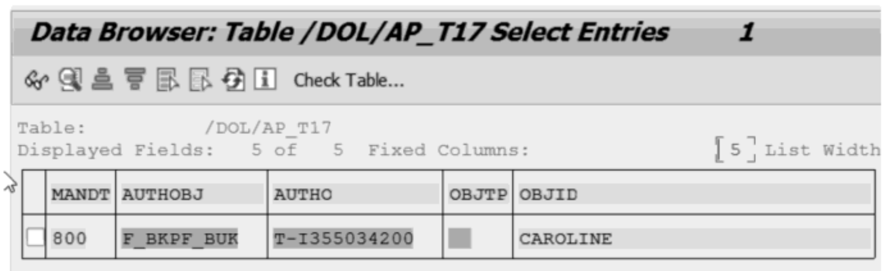
1. Select activity **Approvals → Dolphin: PTS-AP Approver Authorization**.



2. Use this table (/DOL/AP_T17) to create authorizations for approvers. The table consists of Authorization object, Authorization, the object type and the Approvers User ID.
This table is used in conjunction with the AUTH_XXX setting in the Miscellaneous Configurations table and the Approvers Registration table. The Approvers User ID can be individual userids or departments from the Approver Registration table.

For example: For web only user Caroline, in order to limit web access by company code the following entries would be required:

/DOL/AP_T08 AUTH_BUKRS is active with value F_BKPF_BUK
/DOL/AP_T09 has a valid entry for userid CAROLINE
/DOL/AP_T17 has a valid entry for userid CAROLINE



Data Browser: Table /DOL/AP_T17 Select Entries 1

Check Table...

Table: /DOL/AP_T17
Displayed Fields: 5 of 5 Fixed Columns: 5 List Width

MANDT	AUTHOBJ	AUTHO	OBJTP	OBJID
800	F_BKPF_BUK	T-I355034200		CAROLINE

4.2 Background Batch Job

/
/DOL/AP_EMAIL_BATCH should be scheduled to run as a background job if BATCH is selected for APPROVAL_EMAIL, ESCALATION_EMAIL, or REMINDER_EMAIL. This job should be scheduled to run daily before midnight. Leave current date blank and the system will set it to the current date automatically, or in the variant use sy-date which will also set it to the current date.

Note: When BATCH mode is selected for APPROVAL_EMAIL, ESCALATION_EMAIL, or REMINDER_EMAIL, the batch e-mail is a daily digest of all of the user's activities for that day whether it previously went out in single mode or not.

4.3 Email Configuration

Emails are sent for approval notification, approval reminder, approval escalation and manager notification or "soft escalation" (See Soft Escalation below). Generally, emails can be sent singularly or in batch mode. Exceptions are indicated in the relevant sections below. The email's subject and body can be configured. Additionally, approval emails can include a link for web approval, or they can allow for direct approval via email, referred to as "simple email". Also, there is the added feature whereby a user can request and receive a PTS record status via email. This section will cover the configuration for each of these options.

Note: Refer to *Implementation & Maintenance Guide Process Tracking System (PTS) for SAP Accounts Payable* for Sending Email to Vendor or Scanner when Requesting Rejection.

4.3.1 Soft Escalation

Overview

Soft escalation is a feature that can be activated through T08 configuration. When soft escalation is activated, two kinds of reminder emails are sent: the first regular reminder email is sent to the approver. After that, a special "cc email" is sent to both the approver and his/her manager. The default body of the cc email has one sentence: "This email is copied to your manager(s)". This text is configurable (see following section).
Note: Soft escalation is only available with Single mode, not with Batch mode.

How to activate soft escalation?

Soft escalation will be activated when the MAX_REM_COPY value in /DOL/AP_T08 is set to a number greater than 0. The ADD_MANAGER_AT_TOP setting should be deactivated.

How are regular emails sent with soft escalation activated?

The regular approval and first reminder emails will be sent in the same manner with or without soft escalation activated. Each approver will get one initial email, followed by up to a certain number of reminder or reminder copy emails, and this maximum number of reminders to be sent to an approver is determined by T08's MAX_REM value. When this max number is reached, the next approver in the chain will get one initial email, followed by the same maximum number of reminders. This cycle repeats itself with every level approver, including the last approver. The PTS record is then escalated (returned) to AP.

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With soft escalation, an option exists to terminate this cycle before the last approver. When T08's STOP_REM_WITH_CC value is set to 'X', the regular reminder emails will be stopped when all the cc emails have been sent.

How are cc emails sent?

When the approver gets his/her initial email and first reminder emails, no cc emails are sent.

Starting from the 2nd reminder, a cc email is sent to the approver and his/her immediate manager (1st level manager), rather than the normal reminder email. The maximum number of cc emails sent for an approver at any level is determined by the T08's MAX_REM_COPY value.

CC emails can be copied to the managers in the hierarchy above the approver. The maximum number of levels copied is determined by the T08's MAX_REM_COPY_LEVEL value.

For example, the following T08 configuration:

Name	Value	Note
DEADLINE	7200	2 hours
MAX_REM	7	Up to 5 reminders will be sent to the approver.
MAX_REM_COPY	3	2 cc emails sent to each level of manager.
MAX_REM_COPY_LEVEL	2	2 levels of managers will be copied to.

The following will happen:

Deadline	Approver	1st Level Manager	2nd Level Manager
Start	Initial email		
2 hrs	1st Reminder		
4 hrs	CC Email	CC Email 1-1	
6 hrs	CC Email	CC Email 1-2	
8 hrs	CC Email	CC Email 1-3	
10 hrs	CC Email	CC Email 2-1	CC Email 2-1
12 hrs	CC Email	CC Email 2-2	CC Email 2-2
14 hrs	CC Email	CC Email 2-3	CC Email 2-3
16 hrs	Escalate to the next level approver or to AP		

Note: The same cycle will happen for the next level approver.

Note the relationship of the three T08 values: MAX_REM, MAX_REM_COPY and MAX_REM_COPY_LEVEL. The previous table shows that in order for all cc mails to be sent, MAX_REM should be set to a value that equals MAX_REM_COPY * MAX_REM_COPY_LEVEL + 1.

How to stop reminders when all emails have been sent?

If the previous T08 settings are changed so that MAX_REM = 8, and the choice is to not have any reminder email sent after CC Email 2-3 is sent, simply set the T08' STOP_REM_WITH_CC value to 'X'.

What to do with more unique requirements?

The calculation formula listed in the previous section is the standard offer in terms of soft escalation, and is implemented as a function module: /DOL/AP_GET_CC_MANAGERS. If a different formula is required, a custom function can be developed, and the name can be entered in the value for T08's CC_MANAGER_FUNCTION_EXIT.

4.3.2 E-Mail Text Maintenance

The language of the e-mail body and subject for both original and reminder e-mails is configurable in PTS. There are two methods by which this can be accomplished: Standard Text (SO10) and MIME (SMW0).

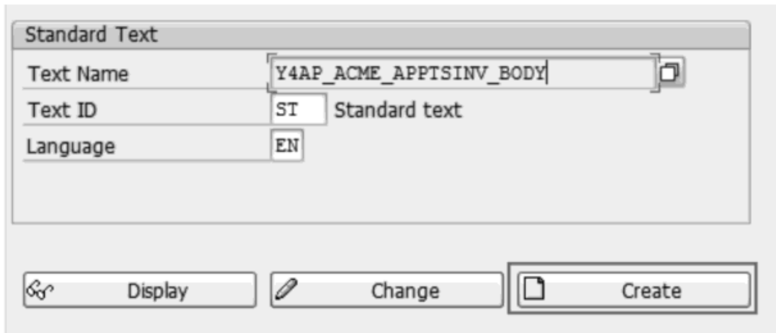
4.3.2.1 Standard Text (SO10)

This is based on standard text concept where text is maintained for pre-defined text values, in any language supported by SAP.

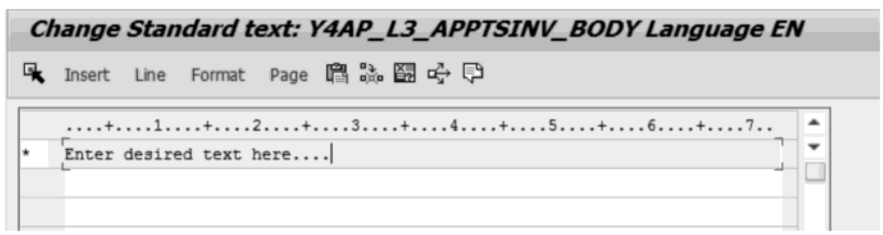
Configuration: In /DOL/AP_T08 the setting APPROVAL_EMAIL_FORMAT should be set to 'TEXT' or made inactive to use standard text.

Use the following steps to create various standard texts required by PTS.
Note: MIME is the recommended mail format. However, the /DOL/ standard texts are supplied. If custom standard texts are desired, then follow the following steps.

Step 1. Call transaction SO10 to enter following data, click the Create button. For a full list of possible text names see section 4.3.2.4. Rather than /DOL/xxx the custom texts will be Y4AP_XYZ_xxx where XYZ is your custom package name. Ask your Dolphin consultant or the Dolphin Support Center for the proper naming convention for your company.



Step 2. Enter your custom text:



Step 3. Click the Save button.

4.3.2.2 Transport of Standard Text

When saving a new standard text or changing an existing text, there is no prompt for transport request. Either create the standard text in the new system or transport it. Standard texts can be transported in the following manner:

1. Create a customizing transport request using transaction SE10.
2. Open the report program RSTXTRAN, and enter the customizing task (under the customizing request) in the input field Name of correction. Enter the standard text's object, name, ID, and language in the following

input fields. Then click the Execute button. (If you have multiple standard texts to transport, you can enter something like '/DOL/AP*' in the name field. This will create a list of all standard texts whose names start with "/DOL/AP".)

3. Make sure to check all those that you want to transport and uncheck those that you do not. Then click the continue icon, and then the "Trsfr texts to corr." Button.
4. Answer "YES" in the following question "Transfer texts to the correction?" If successful, the system will indicate so.
5. The remaining procedures are the same as those for a regular transport request.

For more details, see SAP Help document and SAP Note 3355.

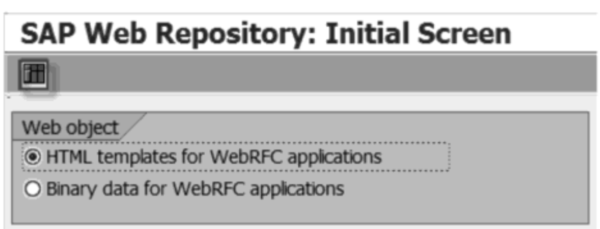
4.3.2.3 MIME (SMW0)

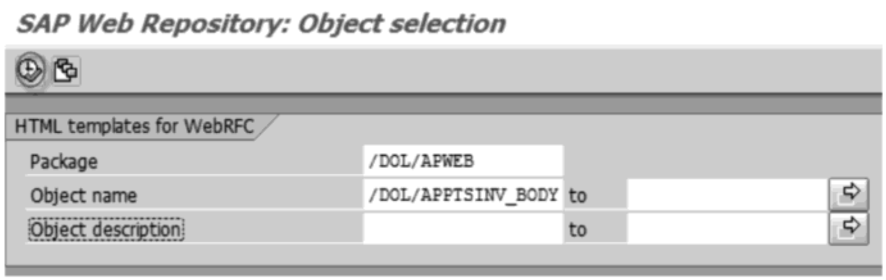
Mime texts are also available as an alternative to maintaining standard texts for email content. Using MIME templates allows more flexibility in content and formatting. MIME is the recommended email format.

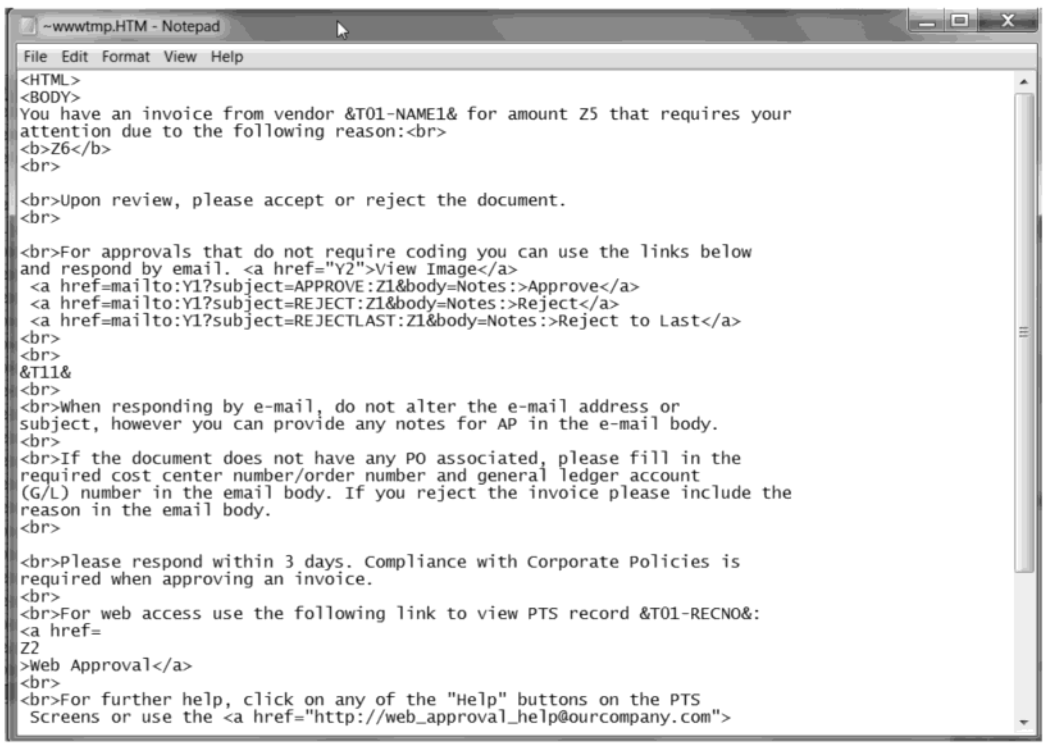
Configuration: In /DOL/AP_T08 the setting APPROVAL_EMAIL_FORMAT set to active with value 'MIME' will use the web template for the email texts instead of standard text. All other settings will default to the standard text.

Note: /DOL/ standard texts are supplied. If custom standard texts are desired, then follow the following steps.

1) Custom templates can be created via transaction SMW0. Rather than /DOL/xxx the custom texts should be named Y4AP_XYZ_xxx where XYZ is your custom package name. Ask your Dolphin consultant or the Dolphin Support Center for the proper naming convention for your company.



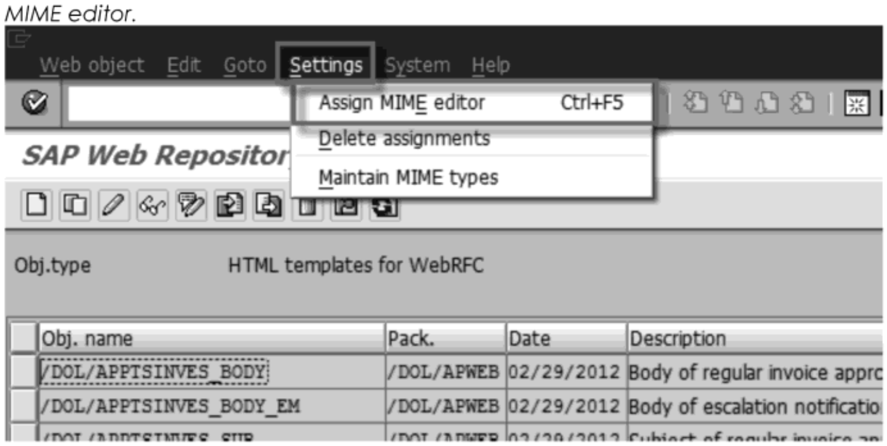




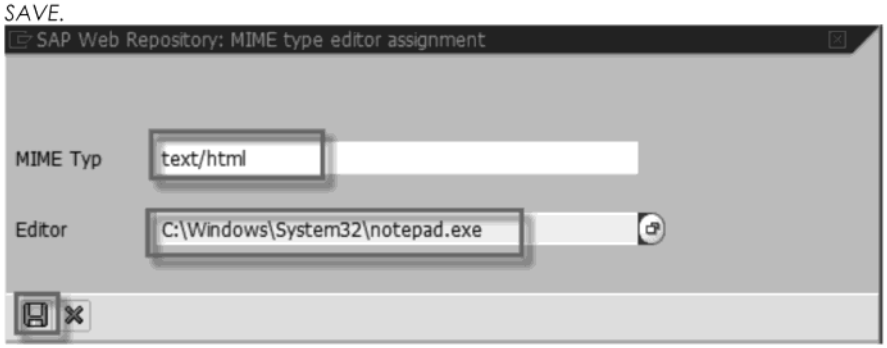

```
<HTML>
<BODY>
You have an invoice from vendor &T01-NAME1& for amount Z5 that requires your
attention due to the following reason:<br>
<b>Z6</b>
<br>

<br>Upon review, please accept or reject the document.
<br>

<br>For approvals that do not require coding you can use the links below
and respond by email. <a href="Y2">View Image</a>
 <a href=mailto:Y1?subject=APPROVE:Z1&body=Notes:>Approve</a>
 <a href=mailto:Y1?subject=REJECT:Z1&body=Notes:>Reject</a>
 <a href=mailto:Y1?subject=REJECTLAST:Z1&body=Notes:>Reject to Last</a>
<br>
<br>
&T11&
<br>
<br>When responding by e-mail, do not alter the e-mail address or
subject, however you can provide any notes for AP in the e-mail body.
<br>
<br>If the document does not have any PO associated, please fill in the
required cost center number/order number and general ledger account
(G/L) number in the email body. If you reject the invoice please include the
reason in the email body.
<br>

<br>Please respond within 3 days. Compliance with Corporate Policies is
required when approving an invoice.
<br>
<br>For web access use the following link to view PTS record &T01-RECNO&:
<a href=
Z2
>Web Approval</a>
<br>
<br>For further help, click on any of the "Help" buttons on the PTS
 Screens or use the <a href="http://web_approval_help@ourcompany.com">
```

2) Maintain the body in your preferred editor and upload it back.

The first time SMW0 is used, a MIME editor will have to be assigned. From the SMWO SAP Web Repository: Object Display screen, choose *Settings -> Assign MIME editor.*



Enter the MIME type as text/html and give the path of the editor you wish and SAVE.



4.3.2.4 Text Names

The following table provides for a list of all standard /DOL/ texts and templates.

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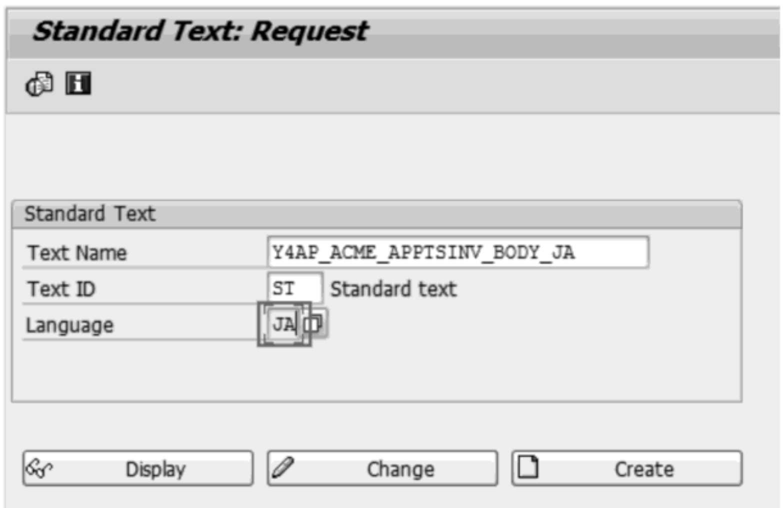
Obj. name	Pack.	Date	Description
/DOL/APPTSADHOC_BODY	/DOL/APWEB	19.07.2016	Body of adhoc email
/DOL/APPTSADHOC_SUB	/DOL/APWEB	19.07.2016	Subject of adhoc email
/DOL/APPTSERROR	/DOL/APWEB	22.10.2015	Body of Status Update
/DOL/APPTSERROR_SUB	/DOL/APWEB	12.11.2015	Subject of Simple email error
/DOL/APPTSINVES_BODY	/DOL/APWEB	23.04.2014	Body of regular invoice approval escalation emails
/DOL/APPTSINVES_BODY_EM	/DOL/APWEB	23.04.2014	Body of escalation notifications for simple e-mail
/DOL/APPTSINVES_SUB	/DOL/APWEB	25.11.2014	Subject of regular invoice approval escalation emails
/DOL/APPTSINV_BODY	/DOL/APWEB	23.04.2014	Body of regular invoice approval notifications
/DOL/APPTSINV_BODYBT	/DOL/APWEB	23.04.2014	Body for batched e-mail
/DOL/APPTSINV_BODYBT_EM	/DOL/APWEB	16.11.2015	Body for batched with simple e-mail approval
/DOL/APPTSINV_BODYBT_EM_ES	/DOL/APWEB	29.06.2015	Test Spanish extension
/DOL/APPTSINV_BODYCC	/DOL/APWEB	20.01.2016	Body for copied e-mail (soft escalation)
/DOL/APPTSINV_BODYREM	/DOL/APWEB	23.04.2014	Body of reminder notifications for regular invoices
/DOL/APPTSINV_BODYREM_EM	/DOL/APWEB	20.01.2016	Body of reminder notifications for simple e-mail
/DOL/APPTSINV_BODY_EM	/DOL/APWEB	17.11.2015	Body of regular invoice approval notifications for simple e-mail
/DOL/APPTSINV_BODY_EM_ES	/DOL/APWEB	29.06.2015	Test spanish text for single email
/DOL/APPTSINV_SUB	/DOL/APWEB	04.02.2015	Subject of regular invoice approval notifications
/DOL/APPTSINV_SUBBT	/DOL/APWEB	29.03.2013	Subject for batched e-mail
/DOL/APPTSINV_SUBCC	/DOL/APWEB	20.01.2016	Subject for copied e-mail (soft escalation)
/DOL/APPTSINV_SUBREM	/DOL/APWEB	01.03.2016	Subject of reminder notifications for regular invoices
/DOL/APPTSRTV_BODY	/DOL/APWEB	30.12.2015	Vendor Email Body
/DOL/APPTSRTV_BODY_DE	/DOL/APWEB	02.08.2016	Vendor Email Body German
/DOL/APPTSRTV_SUB_C	/DOL/APWEB	29.12.2015	Vendor credit subject
/DOL/APPTSRTV_SUB_I	/DOL/APWEB	29.12.2015	Vendor invoice subject
/DOL/APPTSSA_BODY	/DOL/APWEB	23.04.2014	Body of service acceptance notifications
/DOL/APPTSSA_BODYREM	/DOL/APWEB	23.04.2014	Body of reminder notifications for service acceptance
/DOL/APPTSSA_BODYREM_EM	/DOL/APWEB	20.01.2016	Body of reminder notifications for service acceptance
/DOL/APPTSSA_BODY_EM	/DOL/APWEB	30.06.2015	Body of Service entry acceptance notification for simple e-mail
/DOL/APPTSSA_SUB	/DOL/APWEB	23.04.2014	Subject of service acceptance notifications
/DOL/APPTSSA_SUBREM	/DOL/APWEB	20.01.2016	Subject of reminder notifications for service acceptance
/DOL/APPTSSE_BODY	/DOL/APWEB	23.04.2014	Body of Service entry acceptance notification
/DOL/APPTSSE_BODY_EM	/DOL/APWEB	30.06.2015	Body of Service entry acceptance notification for simple e-mail
/DOL/APPTSSE_SUB	/DOL/APWEB	23.04.2014	Subject of Service entry acceptance notification
/DOL/AP_EMAIL_CC_BODY	/DOL/APWEB	29.02.2016	Dolphin AP : Text for the CC email body.

Note: If BATCH mode is selected, Batch emails use the same template for approval, reminder, and escalation and everything is included on the email whether it may have previously gone out in single mode or not.

Follow these instructions to create standard texts in other languages (e.g. Japanese, Korean, Spanish, etc.) for SO10 and SMW0:

SO10: The Text Names and Text ID would be the same, the only difference when entering data on the SO10 initial screen would be the language. For Japanese, select 'JA'; for Korean, select 'KO'.

For example:



Depending on your language configuration, you might need to log on to the Japanese system to create the Japanese standard texts, and the Korean system for the Korean texts.

SMWO: To maintain a different language, create a new object with the text name suffixed with an underscore and the two character language key. For example to create a Spanish email body add '_ES' to the template name so Y4AP_XYZ_APPTSINV_BODY_EM would become Y4AP_XYZ_APPTSINV_BODY_EM_ES.

4.3.2.5 Placeholders

Placeholders have a different usage depending on the email type. Pay attention to the correct locations of the placeholders. It would be advisable to check with the language translators for the correct position of placeholders. However, the placeholders themselves should not be translated.

Single emails

NOTE: For MIME templates, if miscellaneous entry APPROVAL_EMAIL_HOLDER is active with a value of 'X', all placeholders will be enclosed with ampersands (&).

Placeholder	For:	Can Be Used In:	Length

Z1	PTS record number	Single email body and subject line	8
Z2	Web link to the document's detail screen	Body only	Max 255
Z3	Vendor name	Body and subject line	Max 35
Z4	Invoice reference number	Body and subject line	Max 16
Z5	Invoice amount	Body only	N/A
Z6	Sub status description	Body only	N/A
&REM&	Number of reminders	Subject line	N/A
&SYSID&.	System ID	Body and subject line (with MIME only)	N/A
&TNOTE&	PTS record notes	Body only (with MIME only)	N/A
&T01-FIELDNAME&	Any field in the /DOL/AP_T01 table	Body only	N/A
&T10&	Approvers list from /DOL/AP_T10 table	Body only (with MIME only)	N/A
&T11&	Account coding	Body only (with MIME only)	N/A

Note: When using Z1, Z3 and/or Z4 in the subject line, pay attention to the fact that the maximum length of the subject line is 50 characters, and a subject line longer than 50 will get truncated.
Note: Z1 – Z6 placeholders are not available for Vendor Emails.

Batch email

Placeholder	**For:**	**Can Be Used In:**	**Length**
Z1	Recipient name	Batch email body	Max 80
Z2	Web link to My Approvals screen	Batch email body only	Max 255
Z3	List of PTS records to be processed by the approver	Batch email body	N/A

Simple email

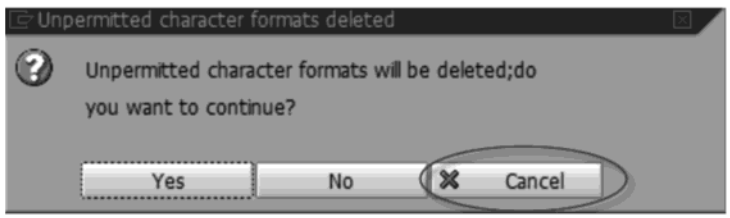
Placeholder	**For:**	**Can Be Used In:**	**Length**
Y1	Recipient address (from SO50)	Simple email body only	Max 240

Y2	Web link to view image	Simple email body only	Max 255

Status email

Placeholder	For:	Can Be Used In:	Length
&T01-FIELDNAME&	Any field in the /DOL/AP_T01 table	Request status email	Max
&T02&	PTS record history	Request status email	N/A
&T10&	PTS approval Chain	Request status email	N/A
&TNOTE&	PTS record notes	Request status email	N/A

Note: When using transaction SO10 to edit the "Request status" email, the following message may appear:



Simply select 'Cancel' and continue.

4.3.3 Simple E-mail Configuration

Simple Email is a feature whereby the approver will have the ability to submit his/her decision via email by selecting a link with his/her decision. If simple email is selected, a check is made to see if there is at least one line of coding. If the coding exists, the simple email template is sent. If no coding exists, the simple email is not sent, but rather the regular email is sent to force approvers to the web for the necessary coding.

Prerequisites
Inbound Email in SAP must be configured in order to use Simple Email Approvals. See OSS note 455140 for instructions on how to set up mail.

In transaction SO50, create the Exit rule for inbound processing of simple email approvals:

Communication Type: Internet Mail
Recipient address:
USER@sapserver (where sapserver is the fully qualified name of the sap server, So for example, our SAP server is dolecc60a.dolphin-corp.com, so the email would be smtpuser@ dolecc60a.dolphin-corp.com

Give a similar email address in SU01 for the SMTP user. The exchange connector will forward any mail for the SAP server to SAP where it will be picked up.)

Document Class: *
Exit Name: /DOL/APWEB_INBOUND_MAIL

Configuration: Make the following settings active with the following values in /DOL/AP_T08

AA_SIMPLE_EMAIL_ACTIVE = X or GLOBAL (Required)
AA_SIMPLE_EMAIL_IMAGE = 'LINK', 'ATTACH', or 'X' (defines whether the invoice image is sent as a link and attachment or both)
AA_SIMPLE_EMAIL_REPLY = X (Optional)
AA_SIMPLE_EMAIL_STATUS = 661 (Optional)
APPROVAL_EMAIL = Single or BATCH (Required)

Additionally the following standard texts must be maintained:

/DOL/APPTSINVES_BODY_EM
/DOL/APPTSINV_BODYREM_EM
/DOL/APPTSINV_BODY_EM
/DOL/APPTSADHOC_BODY_EM

Your Basis team will want to consider the cleanup procedures for inbound emails if you will use Simple Email Approvals. Refer to this SCN link: http://scn.sap.com/thread/3419715.

Note: For those with EHP6 support pack 7.31, in the SXPARAMS table, the param MULTIPART/ALTERNATIVE is set to HTML by default. This must be changed to "Prefer text" for the inbound emails to record notes properly.

Note: The port settings in the ICM parameters may need to be set to 25$$ and not just port 25, depending upon the SAP system set up.

4.3.4 Request Status Via E-mail

A feature of the Advanced Approvals is the ability to obtain the status of a PTS record via email.

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In order to request a status of a PTS record, inbound email must be configured in the SAP system. See OSS note 455140 for instructions on how to set up mail.

Configuration: The text must be maintained for /DOL/APPTSSTATUS either with SO10 or SMW0.

In transaction SO50 create the Exit rule for inbound processing of request status email approvals:
Communication Type: Internet Mail
Recipient address:
USER@sapserver (where sapserver is the fully qualified name of the sap server, for example dolecc60b.dolphin-corp.com)
(Note: This must be the email address the request is addressed to)
Document Class: *
Exit Name: /DOL/APWEB_INBOUND_MAIL

4.3.5 Custom wording option

The option exists with customization to have customer specific text for each template. The templates must be saved with the prefix Y4AP_ or Y4AP_XXX_ where XXX is the project name. Under this naming convention, the prefix is followed by the core template name, followed by _EM (if simple email is selected), followed by _ZZ (where ZZ is the selected language). For example for project DOL, a template could be customized and named Y4AP_DOL_ APPTSINV_BODY_EM_EN. If a particular language text is not maintained, the system will try to use the default language English (EN). Thus, the customer is expected to maintain at least the English version.

Prefix	Core Name	Suffix 1 – Simple Email link when active	Suffix 2 – Language Key
Y4AP_	APPTSINV_BODY		_DE
Y4AP_XXX	APPTSINV_BODY	_EM	_EN

Note: For custom wording the miscellaneous configuration must be active for field APPROVAL_EMAIL_TEMPLATE with a value of Y4AP or Y4AP_XXX_ where XXX is the project name.

Note: For simple email, the miscellaneous configuration must be active for field AA_SIMPLE_EMAIL_ACTIVE with a value of 'X'.

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4.3.6 Reason code specific option

Custom templates can also be reason code specific. Under this configuration, a specific email text will be sent when an approval is sent with a specific status 60 sub-status. Under this naming convention, the custom prefix is followed by the core template name, followed by _EM (if simple email is selected), followed by _### (where ### is the specified sub-status), followed by _ZZ (where ZZ is the selected language). The template must have a suffix equivalent to the sub-status inserted between the simple email and the language key. For example, to send a specific text in Spanish when the approval is sent with sub-status 750 "Tax Issues", the template could be customized and named Y4AP_APPTSINV_BODY_EM_750_ES.

Prefix	Core Name	Suffix 1 – Simple Email link when active	**Suffix 2 – Reason code**	Suffix 3 – Language Key, default to EN
Y4AP_	APPTSINV_BODY		**_750**	_DE
Y4AP_XXX	APPTSINV_BODY	_EM	**_750**	_EN

Note: For custom wording. the miscellaneous configuration must be active for field APPROVAL_EMAIL_TEMPLATE with a value of Y4AP or Y4AP_XXX_ where XXX is the project name.

Note: For simple email, the miscellaneous configuration must be active for field AA_SIMPLE_EMAIL_ACTIVE with a value of 'X'.

4.4 Substitution

PTS-AP's handling of approver substitutions involves a few scenarios, with different configurations. Following is a description of the three scenarios:

4.4.1 Standard Approach

The standard approach allows approvers to activate their substitutes for a certain period.

Configurations and Other Prerequisites
T08-CUSTOM_SUB = 'X'.
T08- WEB_ENABLE_MYSETTINGS = 'X'
T08-WEB_SUBSTITUTE_DISABLE de-activated
T08-WEB_SUBS_DATES_ENABLE = 'X'.

Expected Behaviors

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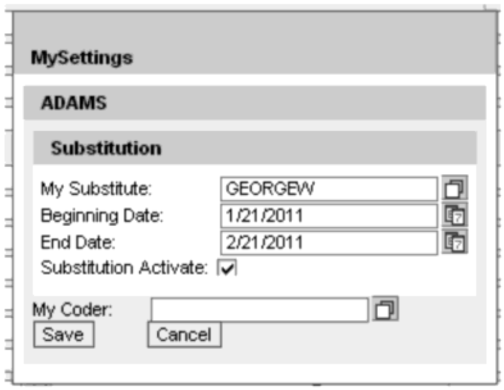
The approvers specify their substitutes on the web for a certain period. When the button My Settings is pressed, a pop-up will display the substitute status, if any, such as the substitute ID, dates and whether the substitute is active. (He/she can also specify his/her coder here (the coder functionality is not covered here)). Note: the dates and the active checkbox apply only to the substitution relationship.

Example: Suppose that today is 01/21/2011. Approver ADAMS will be out of office for a month. The approver goes to the web, opens My Settings and saves GEORGEW as his/her active substitute for the period from 01/21/2011 to 02/21/2011.

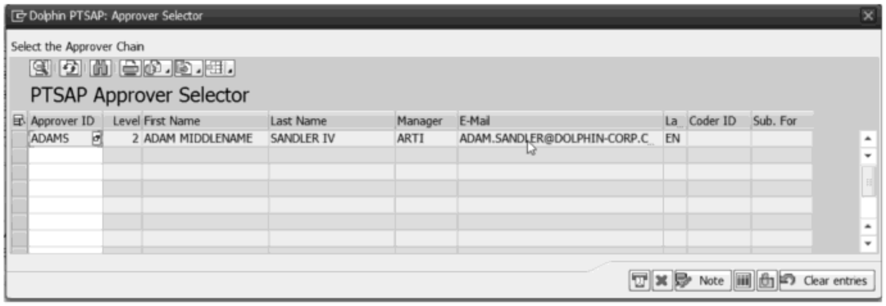


The substitution data is saved in the Approver Registration table (/DOL/AP_T09):

Dolphin: PTS-AP approver registration table

Approver's ID	Last name	First name	De...	T...	Man...	Email	Lang	Level	Substitute's ID	Coder's ID	Subs Active	Start Date	End Date
ADAMS	Smith	Adams	PTS			ADAMS@DOL	EN	99	GEORGEW		☑	01/21/2011	02/21/2011

Thereafter, all new approval chains built during the period will send approvals to both ADAMS and GEORGEW. ADAMS will show as the approver in the selection screen and will not be replaced by GEORGEW.



What about those approval chains already built in which ADAMS is an approver, but has not yet had a chance to handle? These existing approval requests will also be seen by the active substitute. If the substitute approves the record, the substitute sub-status will appear in the history log.

When ADAMS comes back, he can de-activate the substitution relationship by going to the web's My Settings, clearing the Substitute Activate checkbox and pressing SAVE. Thereafter, the substitute will no longer see the original approver's records.

4.4.2 Simplified Approach

The simplified approach allows approvers to activate their substitutes, without specifying the validity period.

Configurations and Other Prerequisites
T08-CUSTOM_SUB = 'X'.
T08- WEB_ENABLE_MYSETTINGS = 'X'
T08-WEB_SUBSTITUTE_DISABLE de-activated
T08-WEB_SUBS_DATES_ENABLE = de-activated
T08-MOVE_ON_SUBSTITUTION = 'X'

Expected Behaviors
Approvers can specify their substitutes on the web. When My Settings button is opened, it will show the substitute status, if any, such as the substitute ID, and whether the relationship is active. But, My Settings does not have the date range fields.
Suppose that Approver ADAMS will be out of office for a month and needs to have GEORGEW as his/her active substitute. He/she can open My Settings, enter the data as shown in the following and click SAVE:

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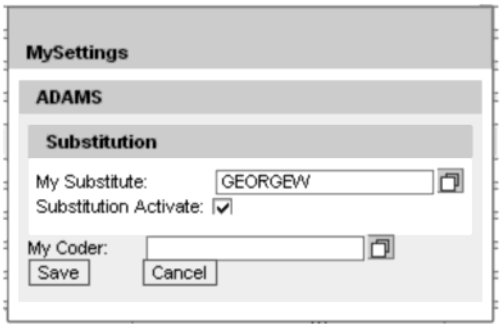
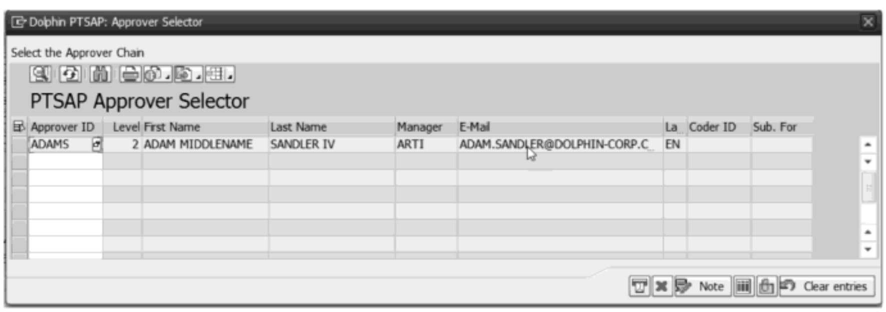


The substitution data is saved in the Approver Registration table (/DOL/AP_T09):

XUSER	LNAME	FNAME	DEPT	P	M...	EMAIL	LANG	APRL...	SUBS_ID	CODER_ID	SUBS_ACTIVE	SUBS_BEG_DA...	SUBS_END_DA...
ADAMS	Smith	Adams	PTS			ADAMS	E	99	GEORGEW		X		

Thereafter, all new approval chains built will send records to both ADAMS and GEORGEW, that is, until ADAMS comes back and de-activates the substitution. When an AP clerk enters ADAMS as the initial approver on the Approver Selector, ADAMS will display as the approver.



As for those approval chains already built in which ADAMS is an approver, but he/she has not yet had a chance to handle, These existing approval requests will also be seen by the active substitute. If the substitute approves the record, the substitute sub-status will appear in the history log.

When ADAMS comes back, he can de-activate the substitution relationship by going to the web's My Settings, clearing the Substitute Activate checkbox and pressing SAVE. Thereafter, the substitute will no longer see the original approver's records.

Standard SAP Workflow Substitution Approach

When choosing this approach, it is recommended that substitution profile "/DOL/AP" is used so that the substitution relationships set up for non-PTS-AP workflows will not impact our PTS-AP workflows, and vise-versa.

Configurations and Other Prerequisites

T08-SUBSTITUTE_PROFILE = /dol/ap

Create the substitute profile by transaction code SPRO, then following the menu path: SAP Web Application Server >> Business Management >> SAP Business Workflow >> Basic Settings >> Substitute profile >> Define substitute profile:

Subs.profile	Substitute Profile
/DOL/AP	Dolphin PTS-AP

(For those with Web Package, My Settings can be configured in the same way as described for T09-based substitution. For example, the validity date fields can be hidden.)

Maintain Substitution in SAP Business Workplace. To maintain substitute from SAP Business Workplace, use transaction code SBWP, follow the following menu path: Settings >> Workflow Settings >> Maintain Substitutes, highlight your user ID and click the Create Substitute button: (For those with Web Package, substitution can also be maintained in My Settings.)

Expected Behaviors

When AP enters the approver ID on the traditional Approver Selector screen, the system will not replace the approver ID with the substitute ID. When approval request is a work item to be executed in SAP R/3, the work item will be visible to both the approver and his/her substitute. In other words, both the approver and his/her substitute will see the PTS record under My Action List.

Substitutes can be created, activated or de-activated, and the validity dates can be changed on My Settings. When a substitute is maintained via My Settings, expect the following additional behavior: My Settings will display the current active substitute, if any. If the validity dates are hidden or left blank when creating a substitute, the system will automatically fill use today's date as the start date and 12/31/2999 as the end date.

4.4.3 Other Options

There are a few related options available:

Preventing Lower Level Substitute
Configuration needed: T08-WEB_SUBS_LEVEL_CHECK = ‘X’.
With the previous configuration in place, the system will check the substitute’s approval level and if the level is found lower than the approver’s, will prevent the set up with an error message shown as follows:

This feature is available in both Standard and Simplified Approaches.

WF Administrator Maintaining Substitute for Approver
A workflow administrator with authorizations to maintain the Approver Registration table (/DOL/AP_T09) can set up the substitute for any approver in case he/she forgets to do so. Use transaction code /DOL/AP_SPRO, click the execute button for Approver Registration, and enter the substitute’s data.
With standard configurations, the expected behavior is exactly the same no matter if the substitute is set up by the approver via My Settings or by the WF administrator using /DOL/AP_SPRO.

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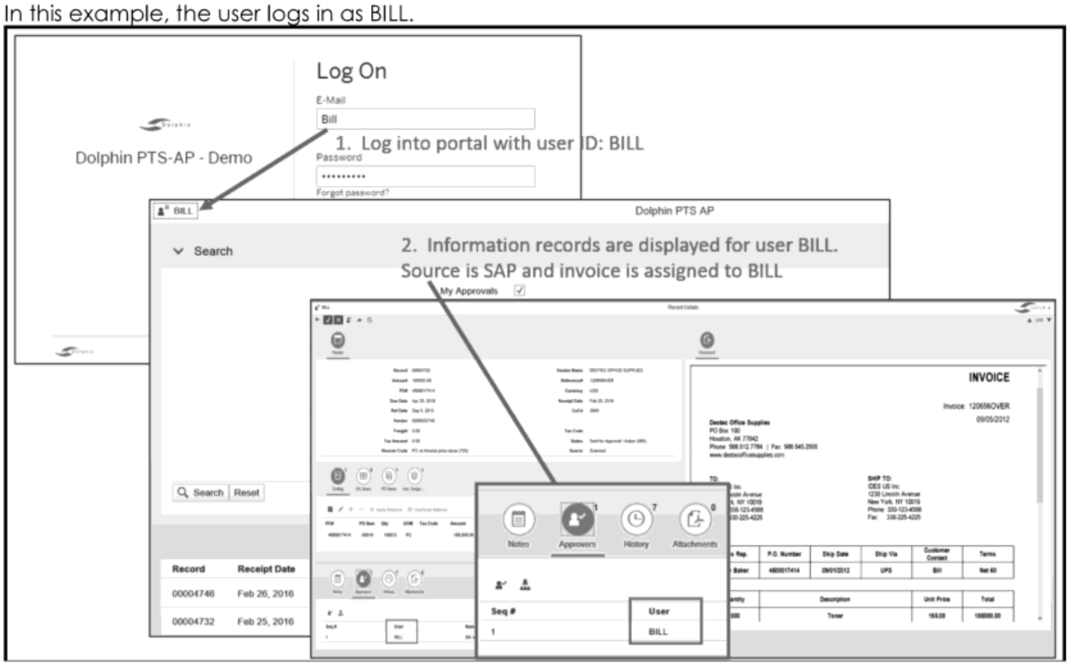
Appendix A: Background User Authorization for Advanced Approval

Dolphin PTS Fiori/UI5 to SAP Communication Security

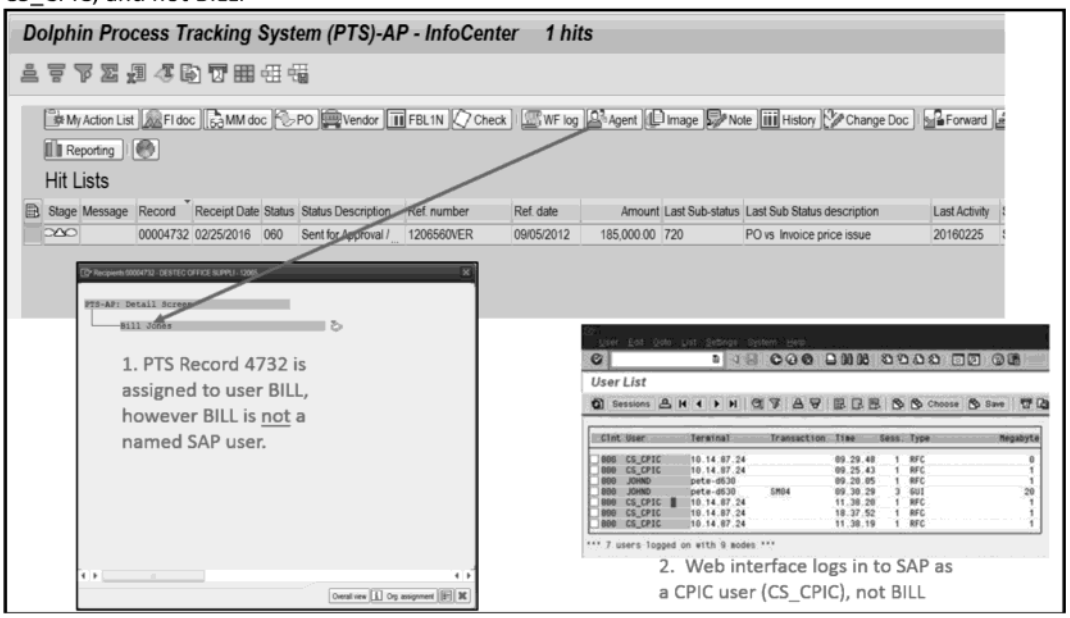
The connection between the PTS Fiori / UI5 application and ECC is established through RFC protocol. This RFC connection to ECC can be made using a single CPIC user.

The following screen shots illustrate the CPIC concept from the user perspective:

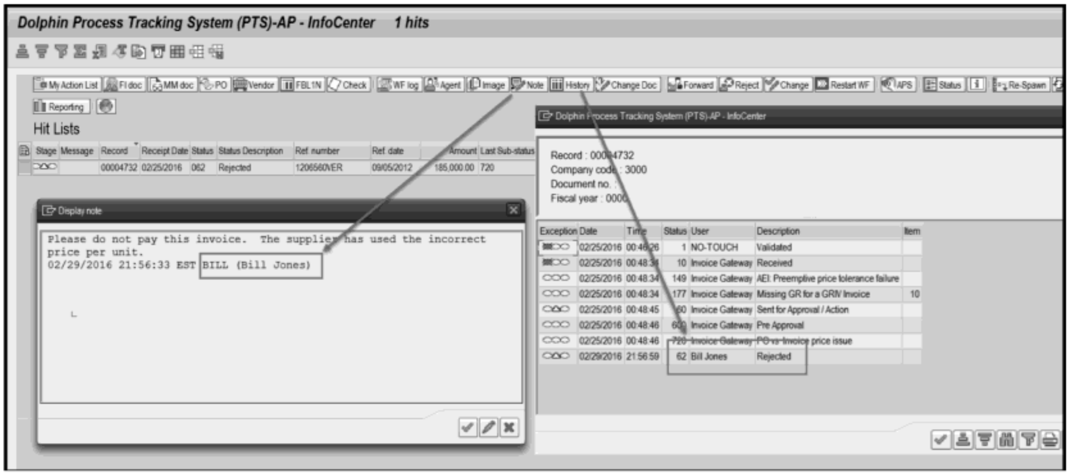
A Web user logs into the Fiori / UI5-based Dolphin web application and is authenticated, either through a manual login or via an SSO solution for Fiori / UI5 applications, should one exist. The Fiori/UI5 Advanced Approval application will display a hit list of invoices that are assigned to this user. In a background process, the Web Application logs into SAP as a CPIC user, however the calls to the Dolphin PTS solution in SAP contain the USER ID of the logged on individual. In this example, the user logs in as BILL.



As shown in transaction SM04, there are only RFC connections from User CS_CPIC, and not BILL.



All actions recorded by Dolphin PTS are tagged with the User ID of the Fiori/UI5 user BILL and not the CPIC user.



Required Authorizations

Note: If communication is via a fixed RFC user, the background user needs the following authorizations. If single sign-on (SSO) is used, users will need these authorizations.

Authorization Object	Activity	Properties
RFC Authorization		
S_RFC *(Authorization check for RFC access)*	Execute	**RFC name:** 0002, 0003, 3006, 3006_HRO, 1011, BDL5, BUS1001, LC01, RFC1, SDTX, SYST, SYSU, SZAK, ACC4, ACC6, ATSV, BAPI_REL, BAPT, BATG, BBPIV, CADR, LC01, MEWP, MRM_BAPI, OPTD, OPTV, RFC1, SDTX, SOA1, SOC3, SYST, SYSU, SSCV, /DOL/*, RFC2, SDIFRUNTIME, SDDO, FACI, MLBO **RFC type:** FUGR
Data Access		
S_TABU_DIS *(Table Maintenance)*	Display	**Authorization group:** &NC&, FA, FB12, FB21, FC, FC01, FC03, FC21, FCOR, KA, MA, MCMR, SC, SS, FA, MA, SA, VA (&NC& 'non classified table': used for view M_KOSTN)
Image Access		
S_WFAR_OBJ	03, 04, 70	**OAARCHIV Value *** **OAOBJEKTE Values: BKPF, BUS2081, LFA1 and /DOL/APPTS** **OADOKUMENT Value: /DOL/***
Substitute Setup		
PLOG	*	**plvar: 01** **infotype: 1001**

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Authorization Object	Activity	Properties
		subtype: A210 **others: ***
File Access		
S_DATASET *(Authorization for File Access)*	Delete	**File name:** Full Authorization **Program name:** SAPLARCHIVOBJECT
G/L Account		
F_SKA1_BES *(G/L Account: Account Authorization)*	Display	**Authorization group:** Full authorization
F_SKA1_BUK *(G/L Account: Authorization for Company Codes)*	Display	**Company code:** Full Authorization
F_SKA1_KTP *(G/L Account: Authorization for Charts of Accounts)*	Display	**Chart of accounts:** Full Authorization
Accounting Document		
F_BKPF_BLA *(Accounting Document: Authorization for Document Types)*	Display Pre-enter	**Authorization group:** Full authorization
F_BKPF_BUK *(Accounting Document: Authorization for Company Codes)*	Change Display Pre-enter	**Company code:** Full Authorization
F_BKPF_BUP *(Accounting Document: Authorization for Posting Periods)*	N/A	**Authorization group:** Full authorization
F_BKPF_GSB *(Accounting Document: Authorization for Business Areas)*	Display Pre-enter	**Business Area:** Full authorization
F_BKPF_KOA *(Accounting Document: Authorization for Account Types)*	Display Pre-enter	**Account type:** Full Authorization
Vendor		

Authorization Object	Activity	Properties
F_LFA1_APP *(Vendor: Application Authorization)*	Display	**Customer and vendor:** Full authorization
F_LFA1_BEK *(Vendor: Account Authorization)*	Display	**Authorization group:** Full Authorization
F_LFA1_BUK *(Vendor: Authorization for Company Codes)*	Display	**Company code:** Full Authorization
F_LFA1_GEN *(Vendor: Central Data)*	Display	N/A
F_LFA1_GRP *(Vendor: Account Group Authorization)*	Display	**Vendor acc. group:** Full Authorization
Transfer Price		
K_TP_VALU *(Transfer Price Valuations)*	Display	**Controlling area:** Full authorization **Valuation view:** Legal valuation
Purchase Order		
M_BEST_BSA *(Document Type in Purchase Order)*	Display	**Customer and vendor:** Full authorization
M_BEST_EKG *(Purchasing Group in Purchase Order)*	Display	**Customer and vendor** Full Authorization
M_BEST_EKO *(Purchasing Organization in Purchase Order)*	Display	**Customer and vendor Full Authorization**
M_BEST_WRK *(Plant in Purchase Order)*	Display	**Customer and vendor Full Authorization**
Invoice		
M_RECH_EKG *(Invoice Release: Purchasing Group)*	Display	**Purchasing group:** Full Authorization
M_RECH_SPG *(Invoices: Blocking Reasons)*	Change	**Blocking reason:** Full authorization
M_RECH_WRK *(Invoices: Plant)*	Display Pre-enter	**Customer and vendor** Full Authorization
Vendor		

Authorization Object	Activity	Properties
F_LFA1_APP *(Vendor: Application Authorization)*	Display	**Customer and vendor**: Full authorization
F_LFA1_BEK *(Vendor: Account Authorization)*	Display	**Authorization group**: Full Authorization
F_LFA1_BUK *(Vendor: Authorization for Company Codes)*	Display	**Company code**: Full Authorization
F_LFA1_GEN *(Vendor: Central Data)*	Display	N/A
F_LFA1_GRP *(Vendor: Account Group Authorization)*	Display	**Vendor acc. group**: Full Authorization
Service Entry (only for PTS-AP Service Entry Add- On)		
S_TCODE	N/A	**Values**: ML81, ML81N

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WEB_CR_OVERWRITE_TEMPLATE	"X" to allow values from the account assignment model to be overwritten by the user. Note: classic web CR only
WEB_CR_SIMULATE_PDF	"X" to create and attach a PDF to the PTS record when a payment request is saved and there is no attachment
WEB_DEFAULT_BLANKLINE	"X" to default a blank coding line for the requestor to add coding. Note: classic web CR only
WEB_DEFAULT_COCD	Value = company code defaulted in the Payment Request creation screen. (Value can be overwritten by the user.) Note: classic web CR only
WEB_DEFAULT_CONTACT_TYPE	Value = The default value for contact type in C Note: classic web CR only
WEB_DEFAULT_CURRENCY	Value = Default currency for Payment Request. (Default is blank if no value)
WEB_DEF_PAYEETAB_CR	'X' to set the default value for contact type in CR. Note: classic web CR only
WEB_DISABLE_COPY	'X' to disable and hide the Copy button for the Payment Request. Note: copy feature not available in ui5 CR
WEB_DISABLE_EXCELTEMPLATE	'X' to disable and hide the Excel Template button from the Payment Request. This setting will hide the button on BOTH the details screen as well as the classic web.
WEB_ENABLE_APPLYTEMPLATE	Enable the Apply Template Button on the Classic Web (Applies to Web Approval, CR, and ER) Note: classic web apps only
WEB_ENABLE_CR	Enable Create CR button on CR
WEB_ENABLE_HELPFRAME	'X' to display help screen side by side with Payment Request Note: classic web CR only

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WEB_ENABLE_MYDRAFTS	Enable My Drafts button on PTS web search screen. This enables 'My Drafts' button for both Payment Request and Expense Report.
WEB_ENABLE_MYSUBMISSIONS	Enable My Submissions button on PTS web search screen. This enables 'My Submissions' button for both Payment Request and Expense Report.
WEB_ENABLE_PAYEEDETAIL	Enable the payee details tab to allow the Payment Request submitter to request payment to a one time vendor, an overnight contact, or an accounts receivable contact
WEB_ENABLE_SAVEDRAFT	Enable functionality to save a draft. This enables both Payment Request and Expense Report draft options.
WEB_FLDDESC_PDNAME	The text description for the field KIDNO in the Payment Request Payee detail tab on the web. In general, any field description text can be indicated by WEB_FLDDESC_PD<fieldname> entry in T08 table.
WEB_HELP_LINK_CR	URL to the client specific help documentation for PTS AP Payment Request screen. This is only required when using custom help documents. Custom help files may be hosted outside the NetWeaver (Sharepoint, other internal directory, etc.)
WEB_HIDE_**PD**NAME	Hide NAME field in Payment Request payee details tab. *In general, any payee details field can be hidden by adding WEB_HIDE_PD<fieldname> entry in T08 table.*

WEB_PREVIEW_PDF_FORM	If active and 'X', a hotlink will be made available to allow a PDF preview of the current PTS record details as a dummy attachment on the detail screen on various web/mobile interfaces. Value can also be 'server:port' with server as the IP address. Note: Output device must be maintained.
WEB_REQD_**PD**Name	Make NAME a required field in Payment Request payee details tab. *In general, any payee details field can be made required by adding WEB_HIDE_PD<fieldname> entry in T08 table.*
WEB_REQD_**PH**VVALU1	Make VVALU1 header field a required field for the Payment Request. *In general, any PTS Payment Request header tab field can be made required by adding WEB_REQD_PH<fieldname> entry in T08 table.*

Maintain Approver Authorization Table

See *Approver Authorization Table (Activity: Dolphin PTS-AP: Approver authorization table) above* for details regarding limiting authorizations for Check/Payment Request.

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Excel Import Templates

In order to upload coding via an Excel template on the classic web, the following setup and configuration needs to be done. The option is available unless hidden by activating WEB_DISABLE_EXCELTEMPLATE with value X in table /DOL/AP_T08. This setting will hide the button on BOTH the classic web and the details screen. Note: this feature is not currently supported on the ui5 web applications.

The column headings in the excel template must match the ABAP field names. An example follows:

	A	B	C	D	E	F	G	H	I	J	K	L
1	BUKRS	GLACC	KOSTL	PROJK	AUFNR	VBEL2	POSN2	PRCTR	SGTXT	NETWR	SHKZG	
2	1000	100000								550		
3												

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Appendix C: Technical Guide for Expense Report

The Expense Report license key must be loaded for the Add-On to function. Transaction /DOL/LIC_UPLOAD is used to load the license key. The key must be loaded one time in each system. Transaction code /DOL/LIC_INFO can be used to view all loaded license keys.

Additional configuration is required for the Expense Report add-on. Note: Credit Card data is loaded from program RPRCCC00.

Note: this add-on is currently not supported on the ui5 application.

Structures

The following structure is implemented in the PTS-AP Expense Report.

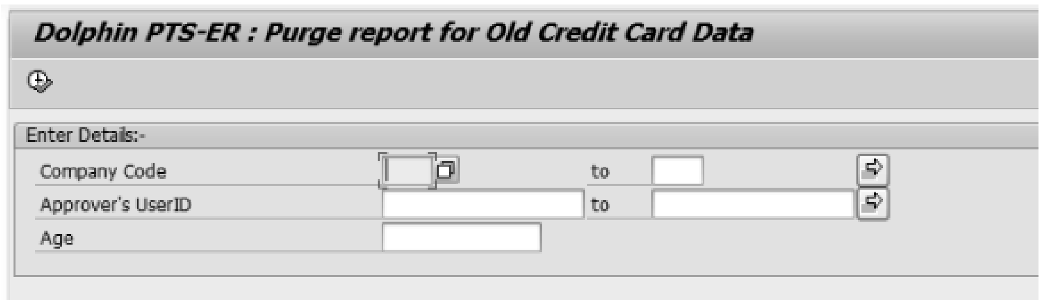
Structure	Description
/DOL/AP_ER_EXPTYPE	Dolphin PTS-AP: Expense type information

Programs

One ABAP/4 report was created for PTS-AP Expense Report Add On.

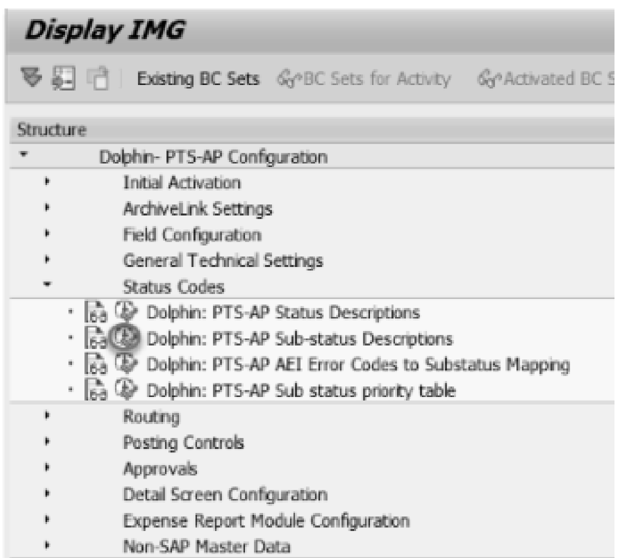
Program	Description	Type	Transaction
/DOL/AP_ER_PURGE_PTRV_CCC	Allows the purging of credit card lines	Executable program	/DOL/AP_ER_PURGE_CC

This program should be run in the background to purge aged credit card records.



Maintain Sub-status Description Table

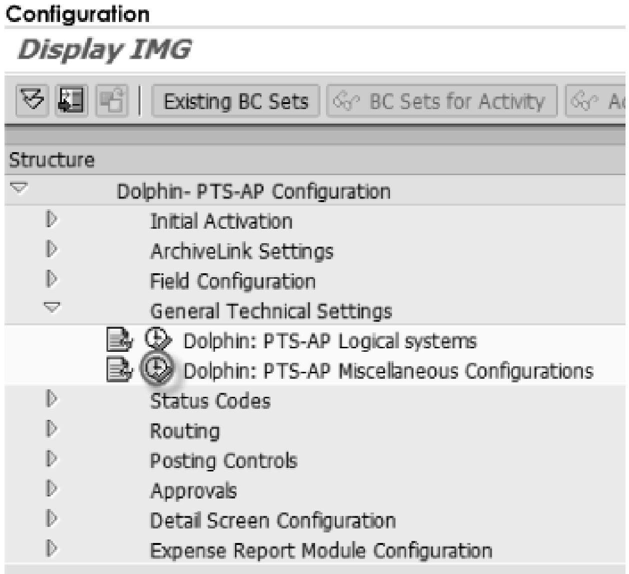
Select activity **Status Codes → Dolphin: PTS-AP Sub-status Descriptions**.



Set sub-statuses for core PTS-AP. Additionally, for status 60 a sub-status with 'ER' in the first text column indicates that sub-status is the default for Expense Report pre-approvals.

Maintain Miscellaneous Configurations

Select activity **General Technical Settings → Dolphin: PTS-AP Miscellaneous Configuration**



The Miscellaneous configurations table (/DOL/AP_T08) is used for various PTS-AP settings in the form of name-value pairs. Following is a brief explanation of the additional settings required for the Expense Report Add-On.

Status	Description
ENTRY_WEB_ER_SIMULATE_ATT	Active to create smartform pdf for ER
ER_MAIL_FORMAT	Indicates whether to use the template for email text (Value = MIME) or to use standard text (Inactive or active with Value = blank) for ER email
ER_MAIL_TEMPLATE	Custom template prefix to use for ER email
WEB_ENABLE_APPLYTEMPLATE	Enable the Apply Template Button on the Classic Web (Applies to Web Approval, Payment Request, and Expense Report) Note: classic web apps only

![Dolphin logo]

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WEB_ENABLE_ER	Enable Create Expense Report button on the classic web application
WEB_ENABLE_MYDRAFTS	Enable My Drafts button on PTS web search screen. This enables 'My Drafts' button for both Payment Request and Expense Report.
WEB_ENABLE_MYSUBMISSIONS	Enable My Submissions button on PTS web search screen. This enables 'My Submissions' button for both Payment Request and
WEB_ENABLE_SAVEDRAFT	Enable functionality to save a draft. This enables both Payment Request and Expense Report draft options.
WEB_ER_ADD_REPORT_FOR_APP	When active the Report For user will be added to the approval chain for expense reports
WEB_ER_APPROVER_MANDATORY	Enforce entry of approver for Expense Report
WEB_ER_FORCE_COUNTRY	If active and 'X', and the header currency does not match the line currency, the line item country will be a required input
WEB_ER_GLFROMWEB	If active and 'X', the GL assignments will always be sourced from within SAP, ignoring what came (or did not come) from the web
WEB_ER_HIDE_CC	"X" to hide the credit card
WEB_ER_HIDE_GLACC	"X" to hide the General Ledger Account
WEB_ER_HIDE_PHDTYPZ	"X" to hide the express flag
WEB_ER_HIDE_PHRCDAT	"X" to hide receipt date
WEB_ER_OVERWRITE_TEMPLATE	If active and 'X', the items table value will be overwritten with the template values
WEB_ER_REQD_CRG_TYPET	"X" for Payment method to be required
WEB_ER_REQD_EXP_AMOUNTT	"X" for Expense Amount to be required
WEB_ER_REQD_EXP_CURRENCYT	"X" for Expense Currency to be required
WEB_ER_REQD_EXP_LAND1T	"X" for Expense Country to be required

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WEB_ER_REQD_GLACCT	"X" for G/L Account to be required
WEB_ER_REQD_KOSTLT	"X" for Cost Center to be required
WEB_ER_REQD_PHWRBTR	"X" for header Reimbursement Amount to be required
WEB_ER_REQD_SGTXTT	"X" for Line Item text to be required
WEB_ER_REQD_SPKZLT	"X" for Expense Type to be required
WEB_ER_SIMULATE_PDF	"X" to create and attach a PDF to the PTS record when an expense report is saved and there is no attachment
WEB_HELP_LINK_ER	URL to the client specific help documentation for PTS AP Expense Report screen. This is only required when using custom help documents. Custom help files may be hosted outside the NetWeaver (Sharepoint, other internal directory, etc.)

Maintain Travel Expense Types

Select activity **Expense Report Module Configuration → Dolphin: PTS-AP Travel Expense Types for Receipt**

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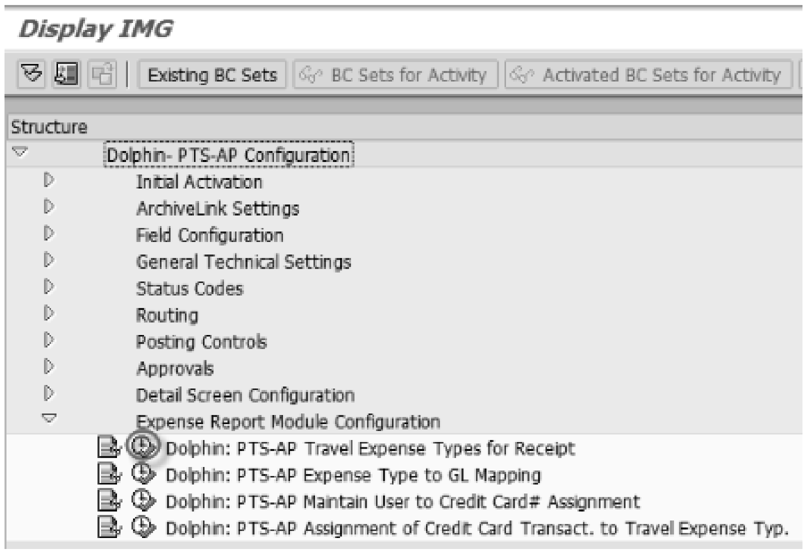
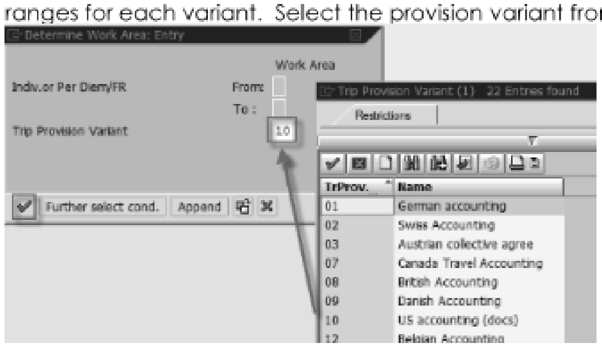
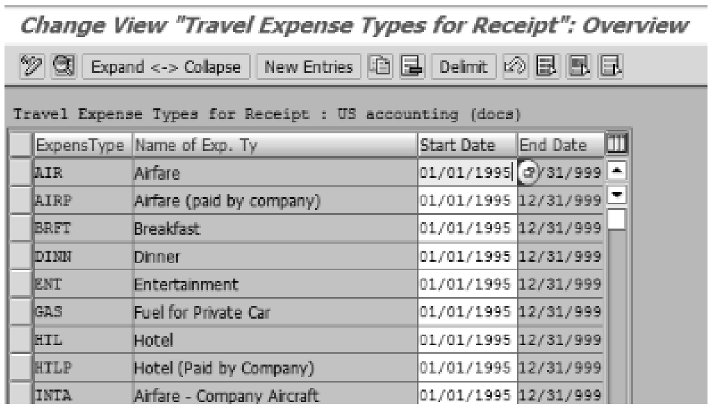


Table V_T706B1 lists the expense types and descriptions and the active date ranges for each variant. Select the provision variant from the drop down list.

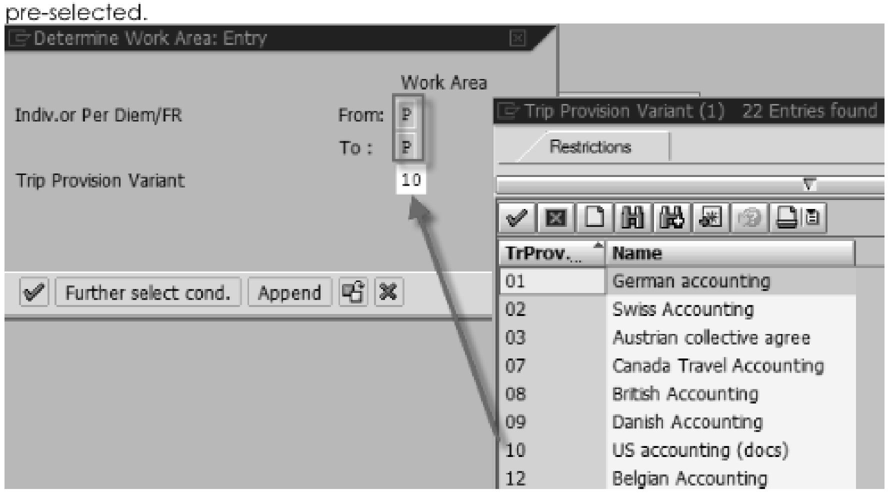


Maintain the expense types for receipt.



Maintain Table for Flat Rate Expense Types

Using SM30 maintain table V_T706B1_A for the given provision variant. This is where per diems and other flat expense types are maintained. Select the trip provision variant from the drop down list. Note the Individual or Per Diem type is pre-selected.



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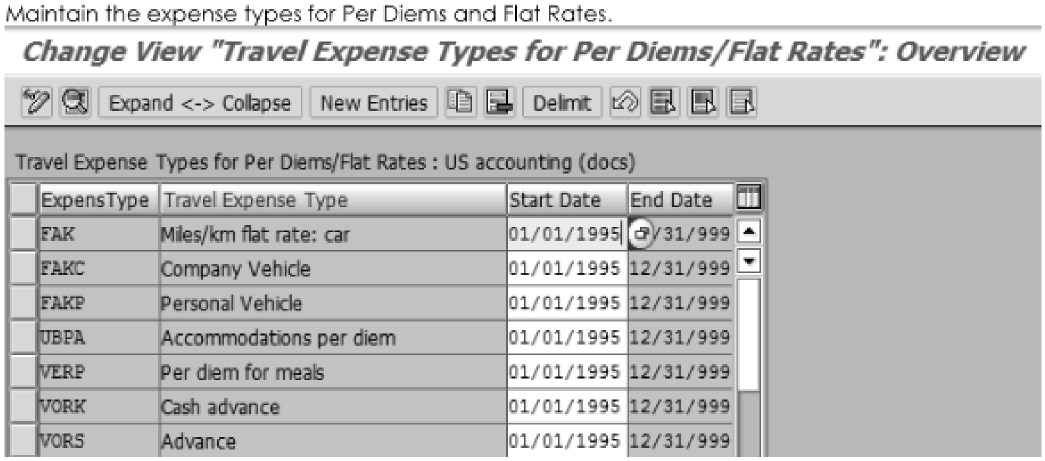
Maintain the expense types for Per Diems and Flat Rates.



Maintain Expense Types to GL Mapping

Select activity **Expense Report Module Configuration → Dolphin: PTS-AP Expense Type to GL Mapping**

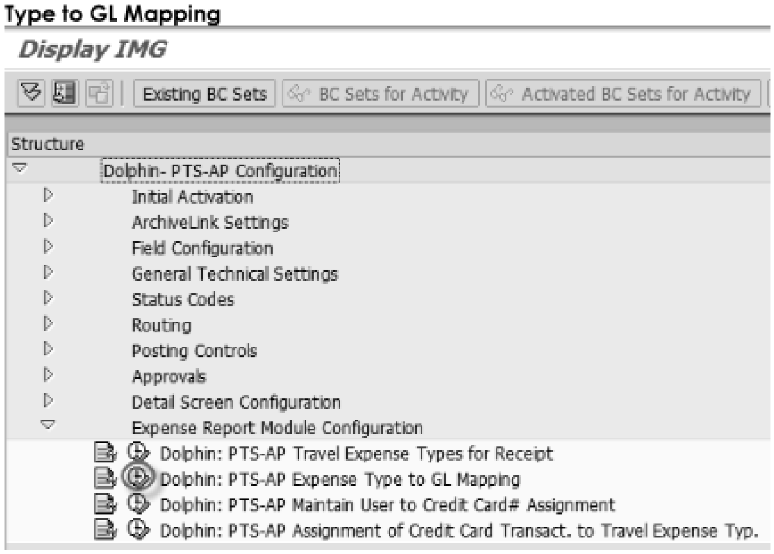


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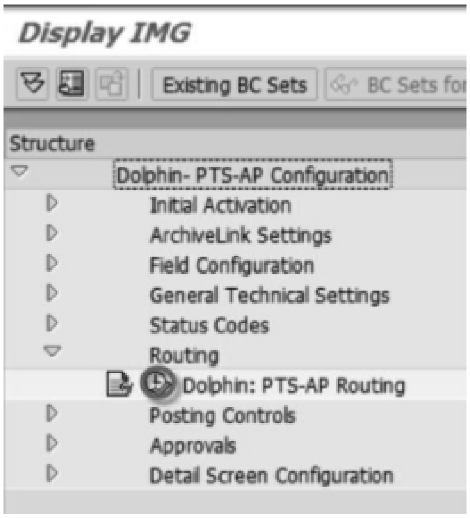
Table /DOL/APWEB_ER_GL lists the expense types per variant and maps them to the GL account to be charged. This can be specific by country and can vary for different tax codes. The table fields are described as follows.

Field	Data Type	Length	Decimal	Description
MOREI	CHAR	2	0	Trip Provision Variant as configured in the previous section
SPKZL	CHAR	4	0	Travel Expense Type as configured in the previous section
LAND1	CHAR	3	0	Country Key if accounting differs by country
VAT	CHAR	1	0	Dolphin PTS-AP: VAT Flag
SHKZG	CHAR	1	0	Debit/ Credit Indicator
MWSKZ	CHAR	2	0	Sales Tax Code
COPY_KOSTL	CHAR	1	0	Don't Copy Cost Center (from header) Flag
CALC_RATE	CURR	10	2	Reimbursement Amount (Enterprise Specific)
CALC_WAERS	CUKY	5	0	Currency Key
SCGST	CHAR	1	0	Field Control - Entry is possible and mandatory or not, or entry is impossible and visible or invisible
SUB_TITLE	CHAR	20	0	Title
GLACC	CHAR	10	0	G/L Account Number

Add From and To in the 'Title' column to activate sub-lines functionality.

Routing Table (Activity: Dolphin: PTS-AP Routing)

Select activity **Routing → Dolphin: PTS-AP Routing**.



Additional entries are required in the routing table (/DOL/AP_T06) for the Expense Report add on. The table will link the project to the trip provision variant for each company code with the role 'EX'. An entry must be made for each country code trip provision combination. See below for an example entry.

PTS Project ID	Sequence number	Role	Company Code	Operand	Operand	Currency	Amount	Doc. type invoice	Doc. type credit	Variable	Express processing	Doc. type PO	Text	Object Type	Agent ID	Logical System
DEMO	0261	EX	3000				0.00								[illegible]	
DEMO	0262	EX	1000				0.00								[illegible]	

Maintain User to Credit Card# Assignment

Select activity **Expense Report Module Configuration → Dolphin: PTS-AP Maintain User to Credit Card# Assignment**

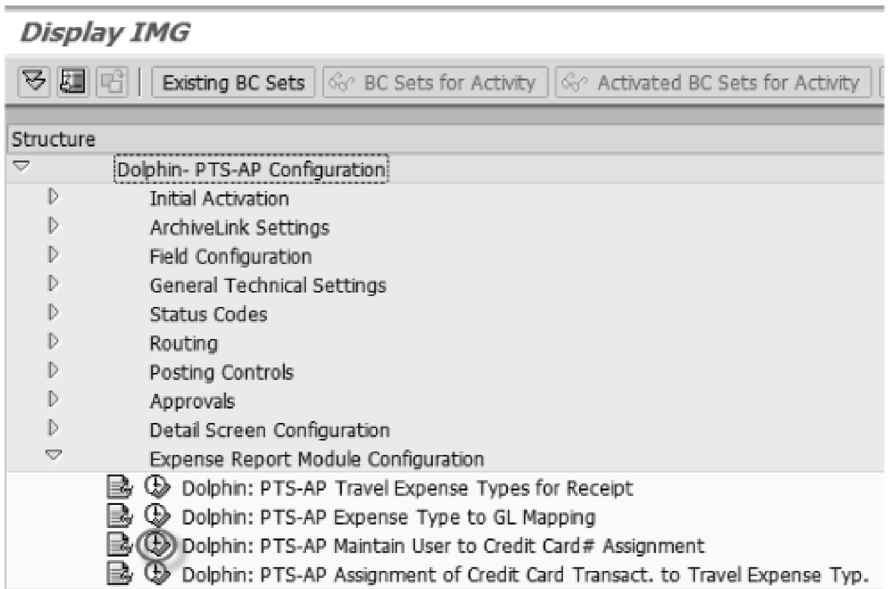


Table /DOL/APWEB_ER_US links the userid to the credit card number. List each userid with their credit card numbers. The table fields are described as follows:

Field name	Data Element	Type	Length	Description
CLIENT*	MANDT	CLNT	3	Client
XUSER *	/DOL/AP_APR_USER_ID	CHAR	30	Dolphin: PTS-AP Approver's UserID
CARDNUM *	C_NUM	CHAR	19	Card#

Assignment of Credit Card Transactions to Travel Expense Types

Select activity **Expense Report Module Configuration → Dolphin: PTS-AP Assignment of Credit Card Transactions to Travel Expense Types**

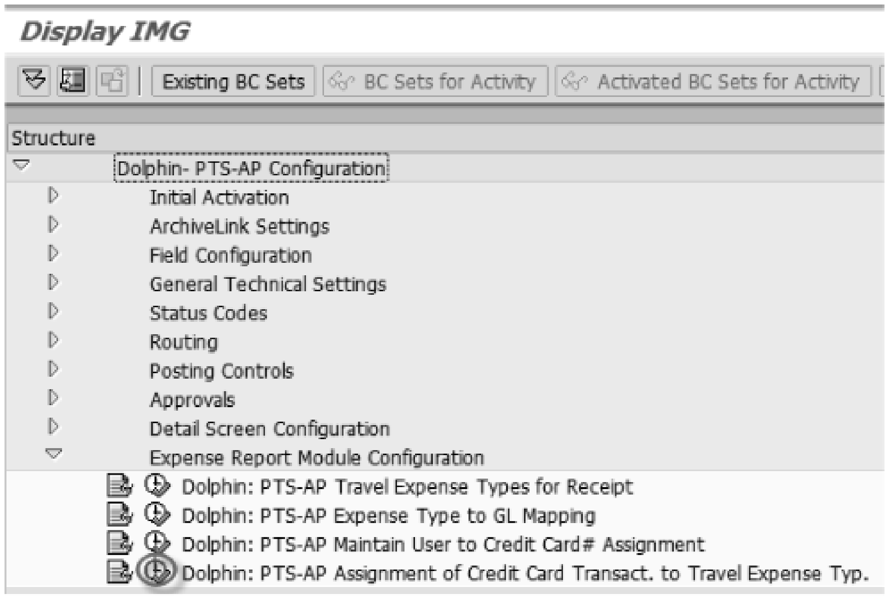
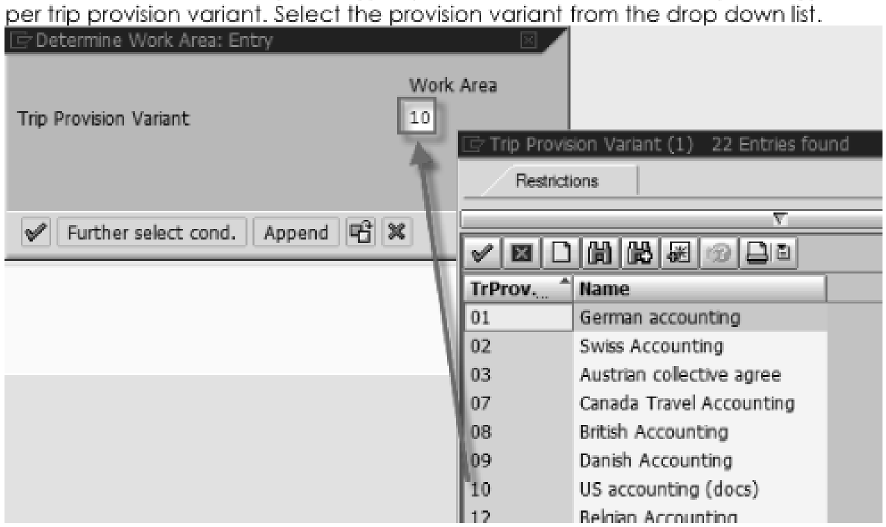
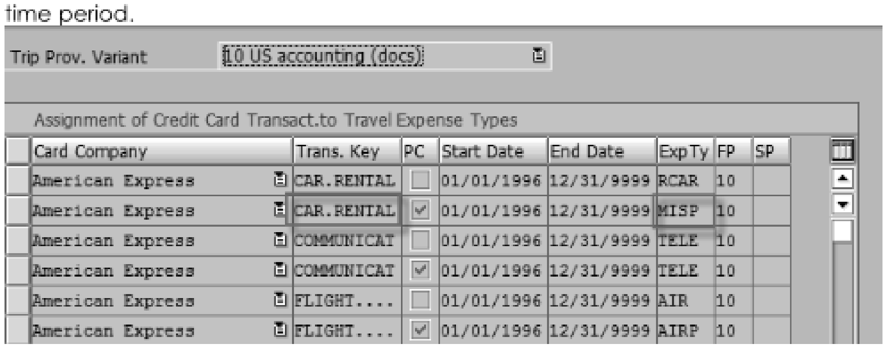

Display IMG
Existing BC Sets
BC Sets for Activity
Activated BC Sets for Activity
Structure
Dolphin- PTS-AP Configuration
Initial Activation
ArchiveLink Settings
Field Configuration
General Technical Settings
Status Codes
Routing
Posting Controls
Approvals
Detail Screen Configuration
Expense Report Module Configuration
Dolphin: PTS-AP Travel Expense Types for Receipt
Dolphin: PTS-AP Expense Type to GL Mapping
Dolphin: PTS-AP Maintain User to Credit Card# Assignment
Dolphin: PTS-AP Assignment of Credit Card Transact. to Travel Expense Typ.

Table V_T702B links the expense types per the credit card to the expense types per trip provision variant. Select the provision variant from the drop down list.



Maintain an expense type for each credit card transaction key for the effective time period.



Trip Prov. Variant: 10 US accounting (docs)

Assignment of Credit Card Transact.to Travel Expense Types

Card Company	Trans. Key	PC	Start Date	End Date	ExpTy	FP	SP
American Express	CAR.RENTAL		01/01/1996	12/31/9999	RCAR	10	
American Express	CAR.RENTAL	✓	01/01/1996	12/31/9999	MISP	10	
American Express	COMMUNICAT		01/01/1996	12/31/9999	TELE	10	
American Express	COMMUNICAT	✓	01/01/1996	12/31/9999	TELE	10	
American Express	FLIGHT....		01/01/1996	12/31/9999	AIR	10	
American Express	FLIGHT....	✓	01/01/1996	12/31/9999	AIRP	10	

Check if the expense is paid by the company. Maintain the further processing selection. Also, maintain the service provider if required.

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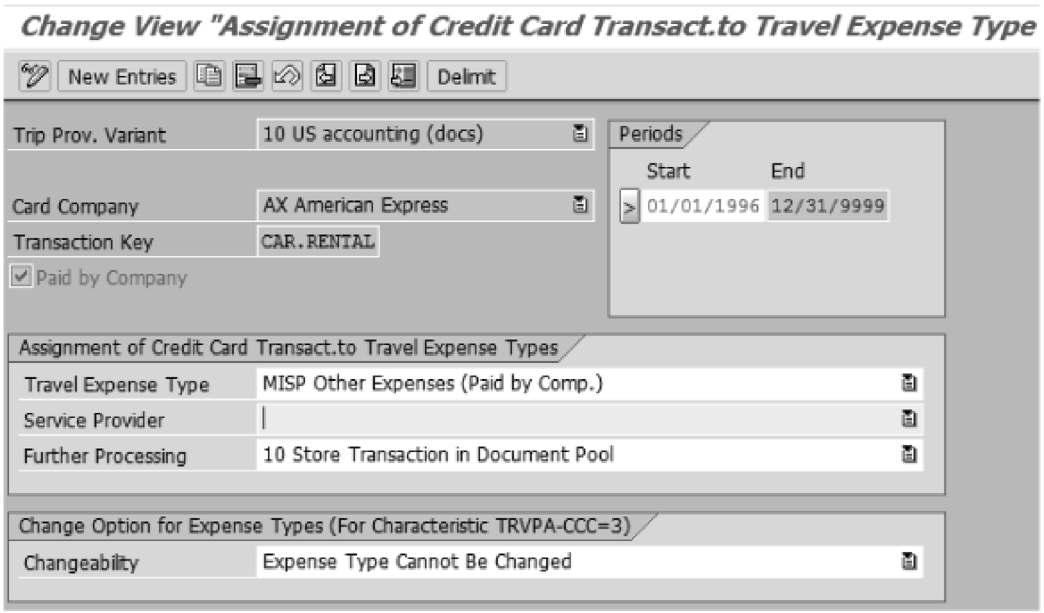

Repeat for all expense types for all provision variants.

Function Modules

Function Group	Function Module	Description
/DOL/APWEB_ER	/DOL/APWEB_ER_EXPTYPE	Dolphin PTS-AP: Expense type SVS
/DOL/APWEB_ER	/DOL/APWEB_ER_SUBMIT	Dolphin PTS-AP: Expense Report Add-on Creation
/DOL/APWEB_ER	/DOL/APWEB_ER_UNUSEDCCLINES	Dolphin PTS-AP: Unallocated credit card lines

Credit Card Data

Credit card data is kept in the SAP table PTRV_CCC and imported through report RPRCCC00.

Standard Text Templates

The following table details all standard text template names specific to the Expense Report add-on.

Name	Language	Description
/DOL/APWEB_ER_BODY_EM	EN	Aging credit card email body
/DOL/APWEB_ER_EMAIL_SUB	EN	Aging credit card email subject
/DOL/EMAIL_CC_BODY	EN	Credit card notice email body
/DOL/EMAIL_CC_SUB	EN	Credit card notice email subject

SAP Fiori – SAP Fiori launchpad troubleshooting

Thursday, October 18, 2018 4:58 PM

SAP Fiori – SAP Fiori launchpad troubleshooting

From <https://blogs.sap.com/2014/07/29/sap-fiori-sap-fiori-launchpad-troubleshooting/comment-page-1/#comment-439880>

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Debugging Tools Notes

Wednesday, October 23, 2019 1:38 PM

1) sap-ui-debug=true

The SAPUI5 Diagnostics Tool

The SAPUI5 diagnostics tool (see Figure 14) is part of SAPUI5, and therefore available pretty much everywhere: You don't have to install anything. It comes with the runtime and can be invoked at any time. The SAPUI5 diagnostics tool is assessed by pressing Ctrl+Alt+Shift+S.

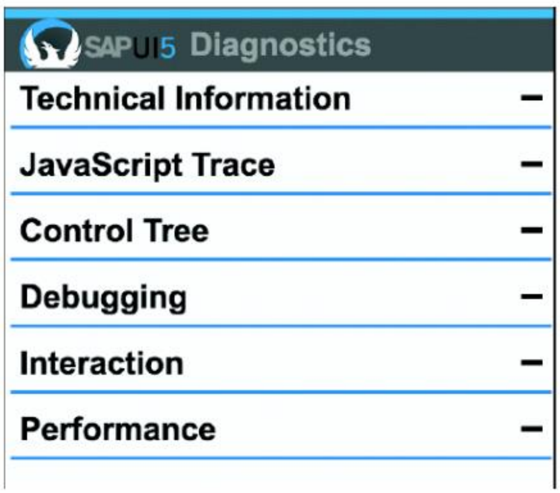

Figure 14 SAPUI5 Diagnostic Tool

Standard JS and XML file in a Fiori App

Wednesday, October 23, 2019 2:11 PM

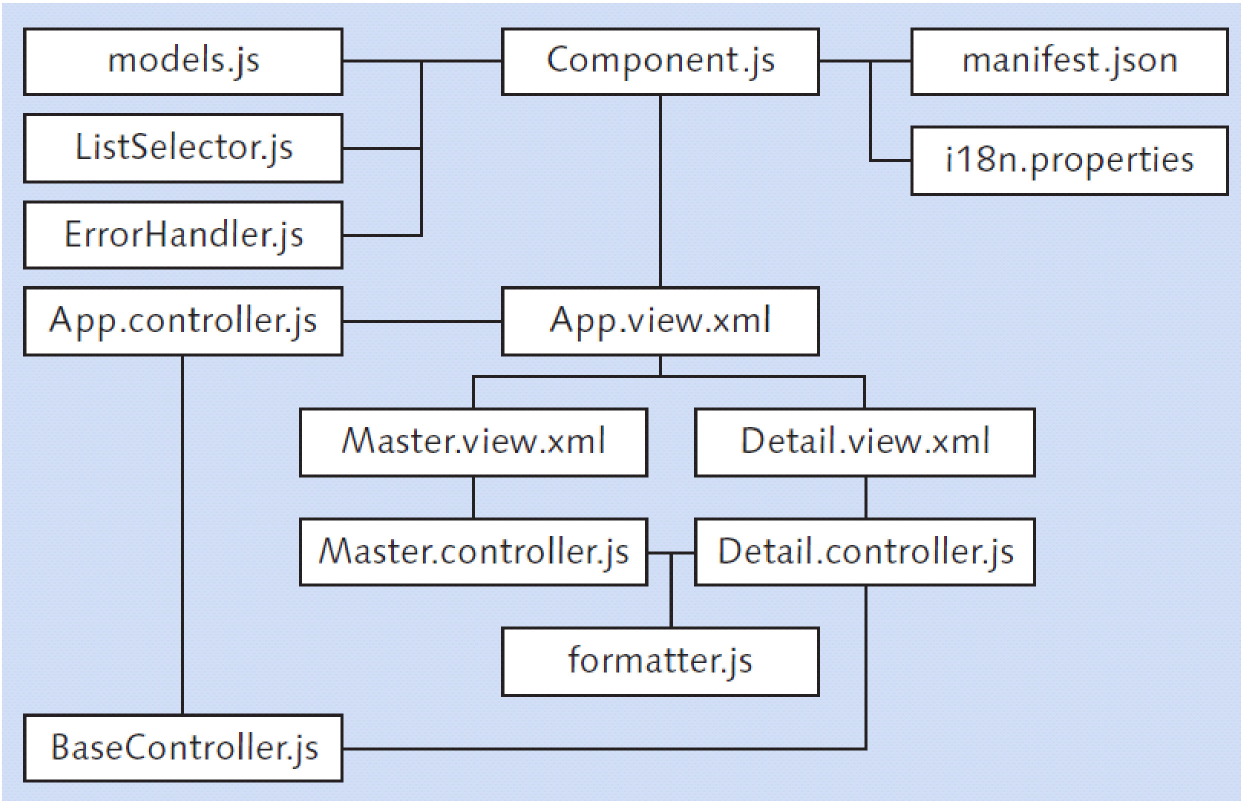

Figure 19 App Artifact Relationships

Display SAP Gateway Logs - SAP Help Portal

Friday, June 5, 2020 12:47 PM

https://help.sap.com/viewer/a7b390faab1140c087b8926571e942b7/7.51.4/en-US/d13ca7548c124e8986df37c0821a9ce5.html

Thank you for your feedback

Home/SAP Fiori Launchpad/Troubleshooting/Support Tools/Logging and Tracing for Launchpad and Launchpad Designer/

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Highlighting results for ""

NoteSorry, machine translation for this topic has failed, please try again later. Note

Display SAP Gateway Logs

Errors occurring in the launchpad or launchpad designer are written into an SAP Gateway message container.

You can use one of the SAP Gateway logs if you cannot analyse the error in the UI2 log (for example, for errors occurring because the user does not have the required authorization to call a service or because the service is inactive).

Application Log: Display Logs for the SAP Gateway Runtime (transaction SLG1)

1. Start Application Log: Display Logs (transaction SLG1) in the ABAP system.
2. Enter the following data:
    - Object: /IWBEP/
    - Subobject: RUNTIM
    - External ID
      This is the transaction ID displayed in the error details in the browser.
3. Choose Execute.

GW Backend Error Log (transaction /IWBEP/ERROR_LOG)

1. Start GW Backend Error Log (transaction /IWBEP/ERROR_LOG) in the ABAP system.
2. Choose Re-Select.
3. Enter the following data:
    - User ID
    - Date
    - Time interval
4. Choose Execute.

SAP Gateway Error Log (transaction /IWFND/ERROR_LOG)

1. Log on to the SAP Gateway server in case it is not installed in the back end.
   If SAP Gateway is installed in the back end, you can start the transaction directly in the back end.
2. Start Gateway Error Log (transaction /IWFND/ERROR_LOG) in the ABAP system.
3. Choose Re-Select.
4. Enter the following data:
    - User ID
    - Date
    - Time interval
5. Choose Execute.

6. Select an error message.
7. To display the application log of SAP Gateway, choose Application Log.

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Gateway OData Service – troubleshooting and detailed tracing in ABAP | SAP Blogs

Friday, June 5, 2020 12:59 PM

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[Søren Hansen](#)

Posted on September 9, 2018 7 minute read

Gateway OData Service – troubleshooting and detailed tracing in ABAP

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Hi Experts,

I have recently come across a situation, where bad performance of one of my custom developed OData service caused a lot of issues, and where I was forced to think out-of-the-box to come up with ways to perform detailed tracing. And now I want to share these with you guys.

In this blog post I will show some tools for logging and tracing OData calls in the Gateway as well as in the SAP Backend. Furthermore, I will show how OData calls can be captured in the ABAP Runtime Analysis tool (SAT) in the SAP backend for very detailed analysis of all steps being carried out in the backend.

The Runtime Analysis Tool is known by most ABAP developers, but I will show how a capture can be scheduled, so an OData call from a browser can trigger the creation of a measurement for further analysis.

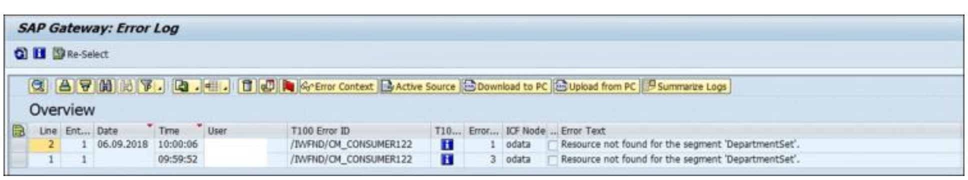
In SAT it is possible to view things like: Which DB tables are being updated, which coding blocks are being called, and how many times, as well as runtime in microseconds for each call, and much more.

SAP Gateway Tracing

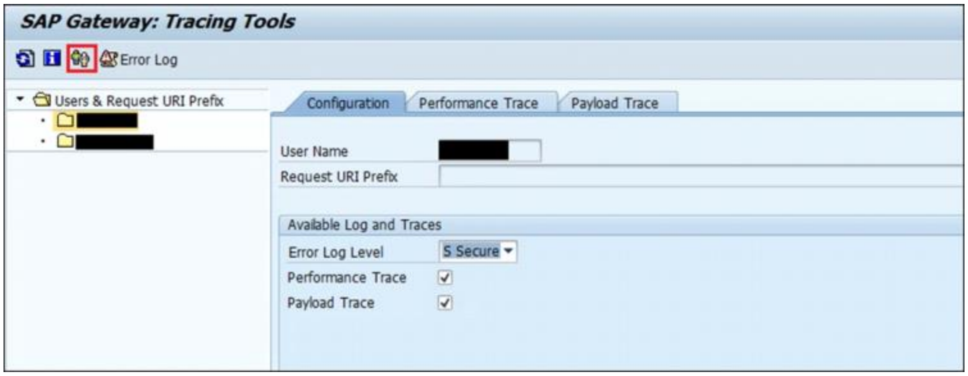
When working with SAP gateway OData services, most people come across the two most commonly used transactions for logging and tracing in SAP Gateway.

- /IWFND/ERROR_LOG: Displays erroneous OData calls to the Gateway
- /IWFND/TRACES: Display Performance and Payload traces

In environments where the SAP Gateway and the SAP Backend system are in two distinct systems (using a Gateway Hub), these utilities are used on the SAP Gateway Hub (not the backend).



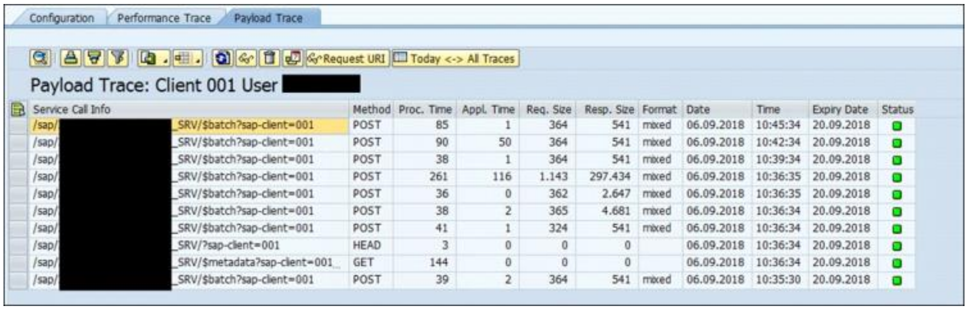
The Error Log is a continuous log, that will display framework errors.



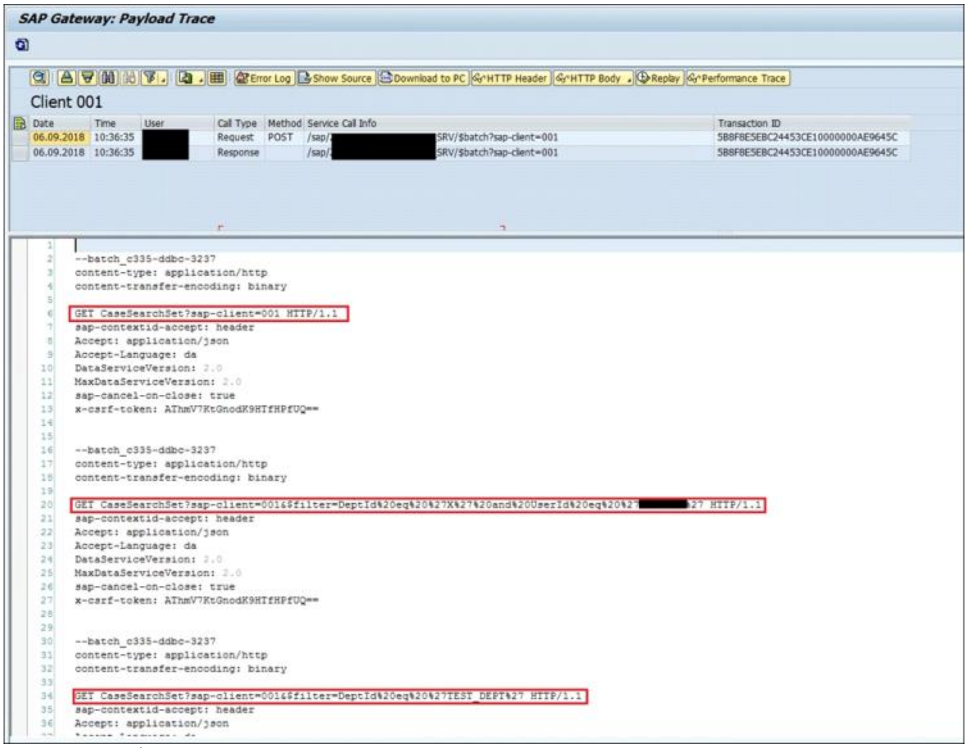
Traces, which are user specific, must be enabled before they can be displayed.

The login user will be selected by default, but other users may be added by using the marked button.

Traces are active for a period of two hours, after which they will automatically be inactivated.



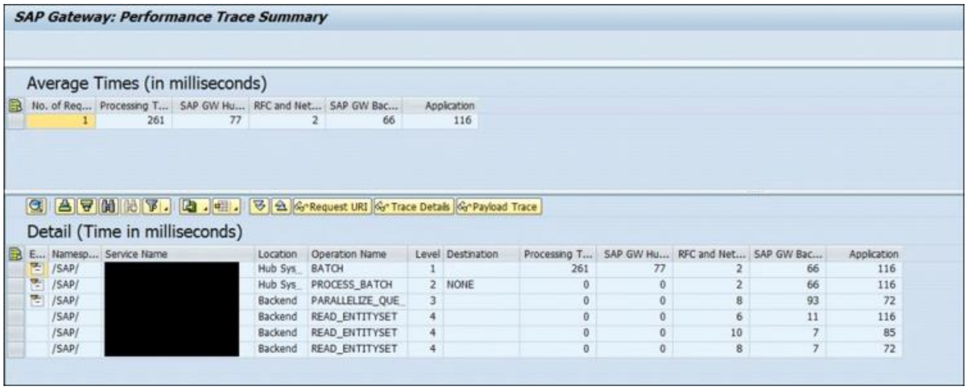
Payload Trace is an excellent tool for displaying the raw OData requests (and responses) being performed on the system.



In case of $batch calls being used one http request may contain multiple OData requests. This makes it harder, in error situations, to pinpoint where the problem is.

In the above call 3 separate GET calls are being carried in one request.

In this view we see the raw data being passed from (request) and to (response) the client.



The corresponding Performance Trace display the 3 GetEntitySet calls, but with no details from the backend. Only the total processing time for each call

SAP Backend

In the backend system there are 2 similar utilities for logging and tracing.

- /IWBEP/ERROR_LOG: Displays erroneous OData calls to the Gateway
- /IWBEP/TRACES: Display Performance and Payload traces

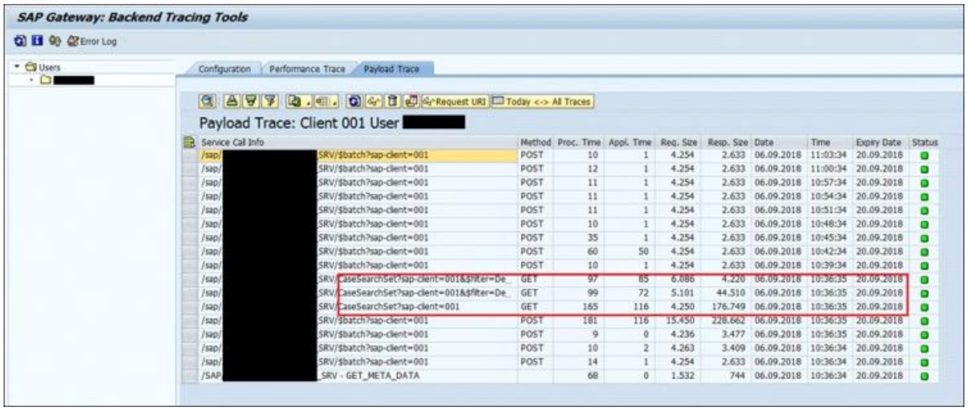
These will show similar info from the SAP Gateway framework, but in the backend system.

Note:

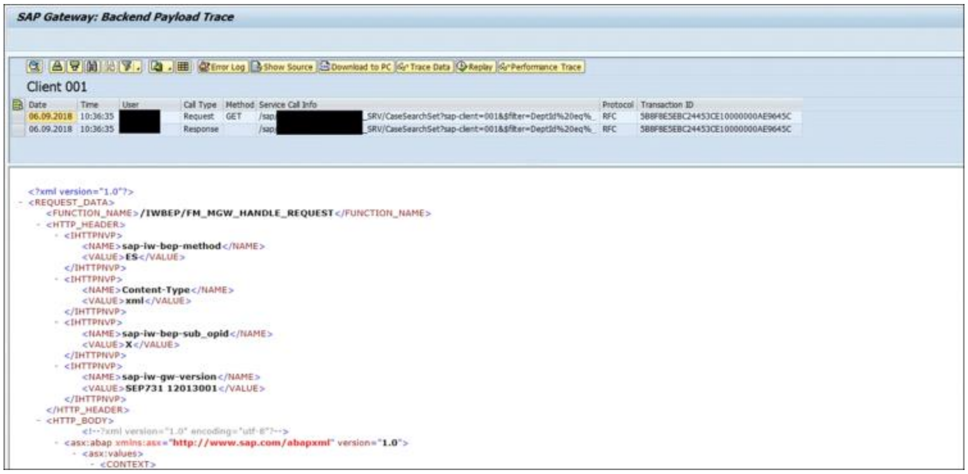
I have found that, on older SAP versions, these may not start properly from the startscreen, but for some weird reasons they can be started from SE93 or by adding them as favorites.

It is important to understand the way the Gateway framework works, to understand what we can use these tools for. When the SAP Gateway receives an OData request from a client it validates and de-serialize the JSON request data into ABAP data. Then it identifies which Backend system the call should be routed to and calls the backend system via an RFC (function module), passing data in a mapped format. On the backend system, the Data Provider Class is called to execute the request.

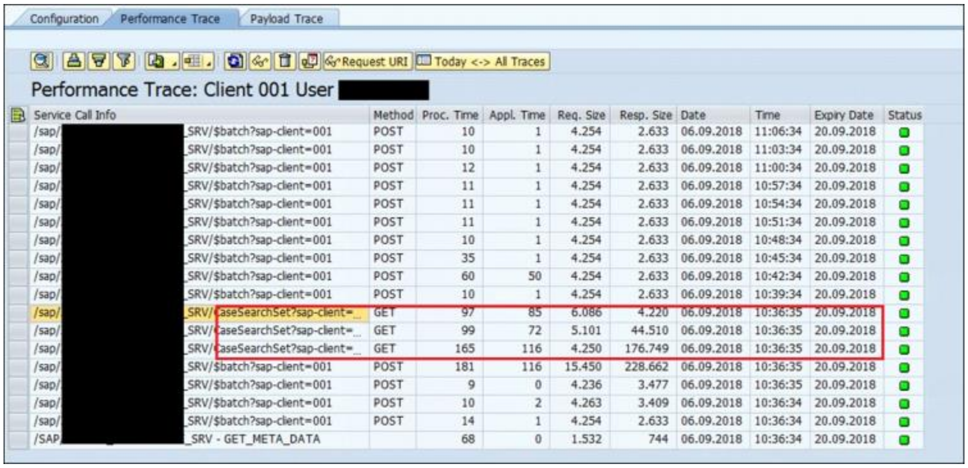
The Backend Traces can be enabled the same way as on the SAP Gateway.



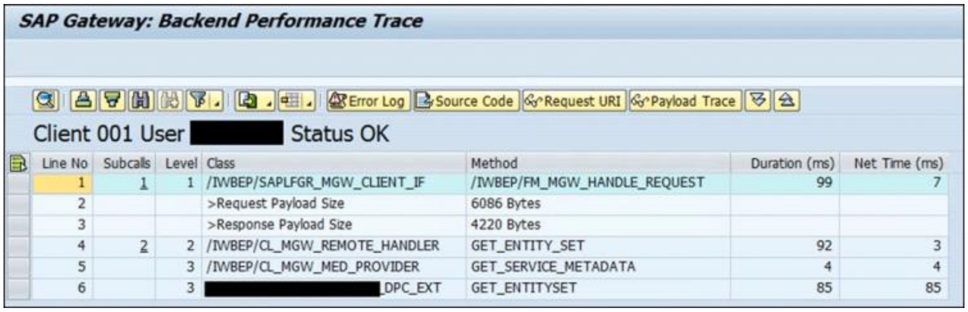
In the backend Payload Trace we will see separate measures for each OData call contained in $batch multi requests. This will give us a little more detailed info than we got on the SAP Gateway. Requests of type $batch with only a single measure in this list contains only one OData request.



When the payload is examined, we will now see request payloads in XML format. This is the data format being passed to the RFC Function Module from the SAP Gateway, after the json request has been deserialized.



In the Performance Trace, we will also see distinct measures for each OData sub request of a $batch request containing multiple requests.



SAP Gateway: Backend Performance Trace

Client 001 User [redacted] Status OK

Line No	Subcalls	Level	Class	Method	Duration (ms)	Net Time (ms)
1	1	1	/IWBEP/SAPLFGR_MGW_CLIENT_IF	/IWBEP/FM_MGW_HANDLE_REQUEST	99	7
2			>Request Payload Size	6086 Bytes		
3			>Response Payload Size	4220 Bytes		
4	2	2	/IWBEP/CL_MGW_REMOTE_HANDLER	GET_ENTITY_SET	92	3
5		3	/IWBEP/CL_MGW_MED_PROVIDER	GET_SERVICE_METADATA	4	4
6		3	[redacted]DPC_EXT	GET_ENTITYSET	85	85

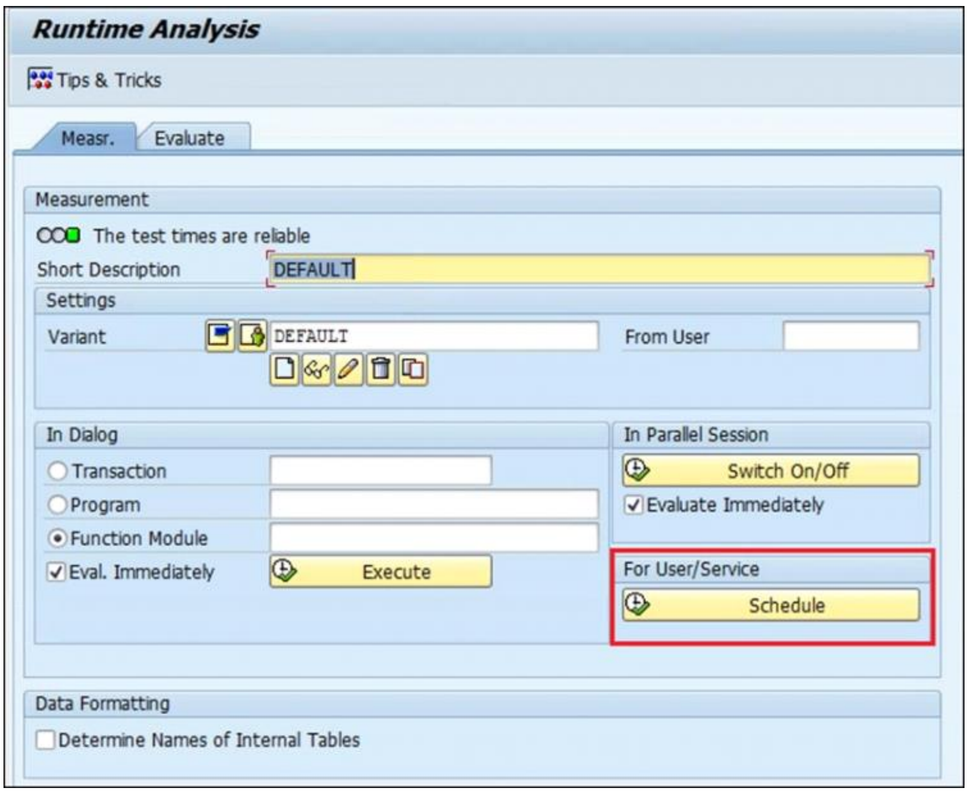
By double clicking an entry we can examine the path to the Data Provider Class executing the request call.

But still we cannot get detailed analysis data on what is happening in the Data Provider Class.

ABAP Runtime Analysis (SAT)

To get very detailed runtime analysis data, of what actions are being performed in the Data Provider Class we can use the ABAP Runtime Analysis tool.

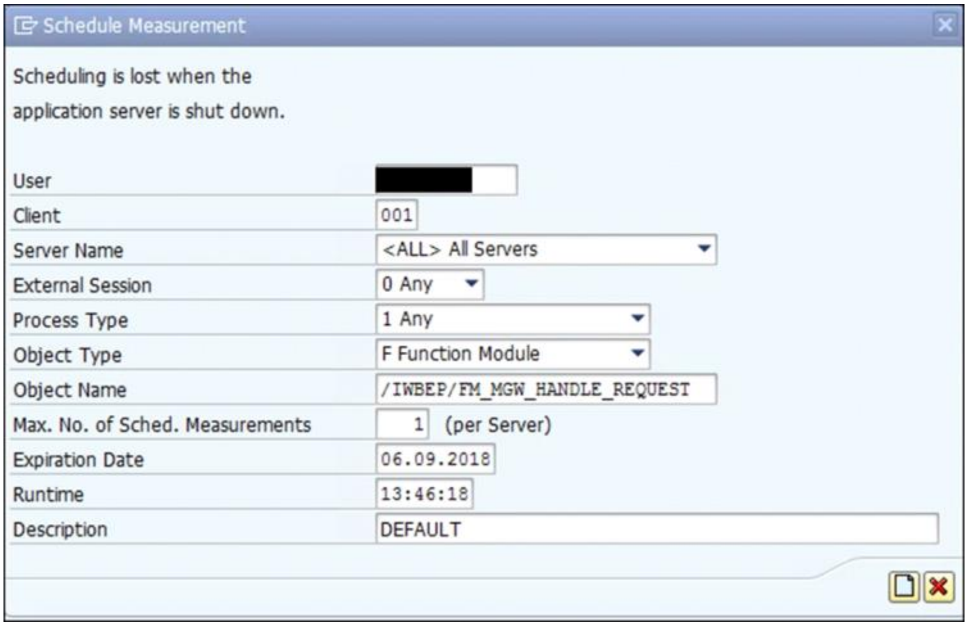
This is done in transaction SAT in the backend system.



In SAT you can analyze code being executed from a Transaction, Program or a Function Module. In Gateway context we don't really have any of these directly. But since SAP Gateway calls are always being passed to the backend system via an RFC (Function Module) call, even when the Gateway is located on the backend system, we can use this to enable the Runtime Analysis.

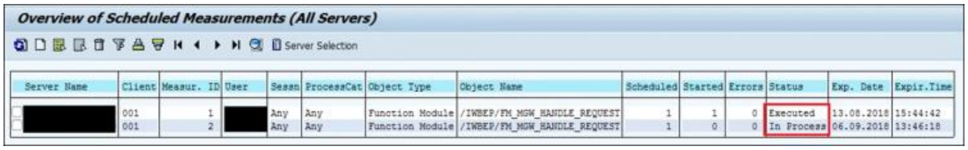
For this we use the scheduling utility (marked in red).

Click the create icon.



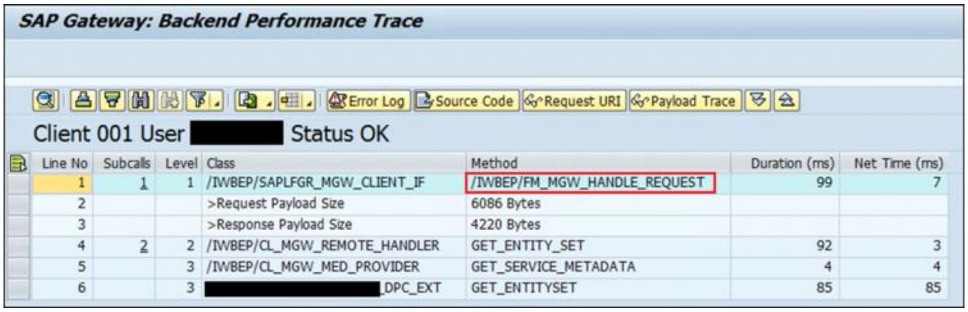
Enter the Function Module '/IWBEP/FM_MGW_HANDLE_REQUEST' and other values as shown above or change to suit your needs. (See below how to find this Function Module).

Press Enter.



From the overview, we now see an old measurement already executed, and our new one in status 'In Process', which means it is ready for capture.

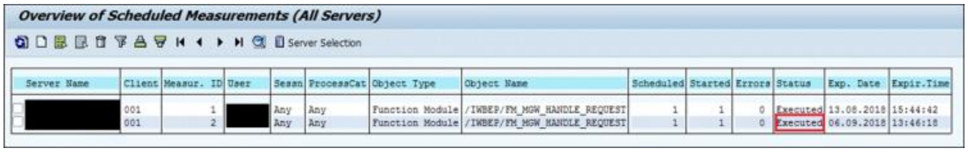
How to find the Function Module:



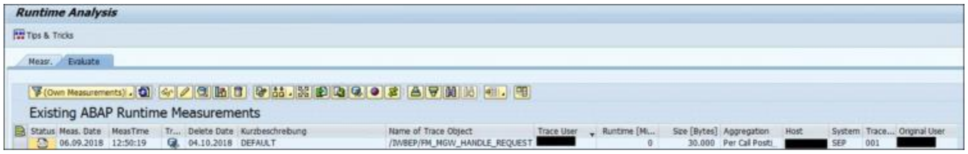
Previously we saw the call stack of the Backend Performance Trace. As explained earlier, the call stack on the backend always starts with the RFC Function Module, so from here we can find it in the Method column.

Start capture

Go to your browser or other client and make the OData call.

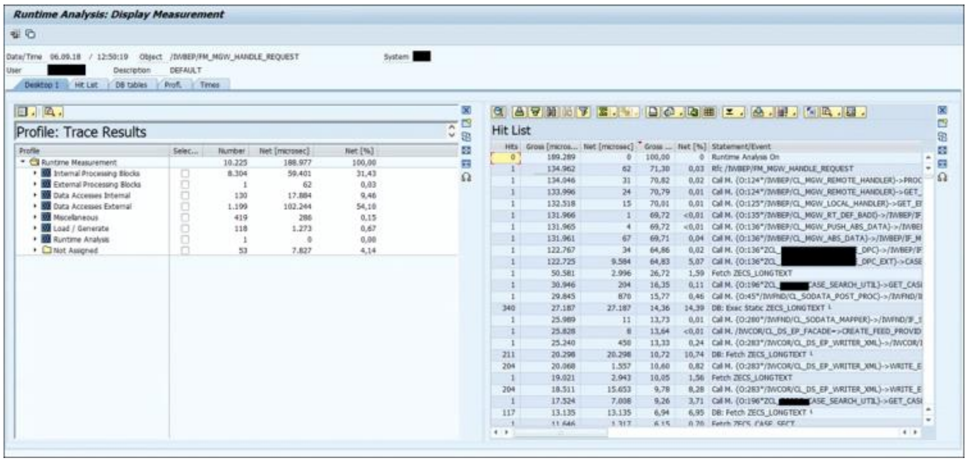


The status is now changed to ‘Executed’



Now go to the Evaluate tab of SAT, to find your measurement.

Double-click it.



Now you can make a deep dive into the measurement, and see how many times each coding block has used, as well as examining which coding blocks have been called, and much more.

This tool is a very advanced tool, providing very detailed info about the runtime details in the backend system.

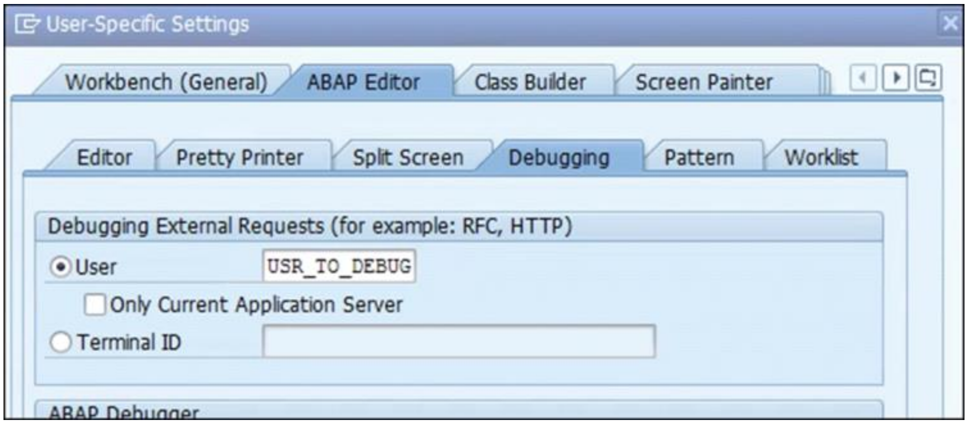
Debugging an Odata call

For completeness I will also show how you can debug an Odata call.

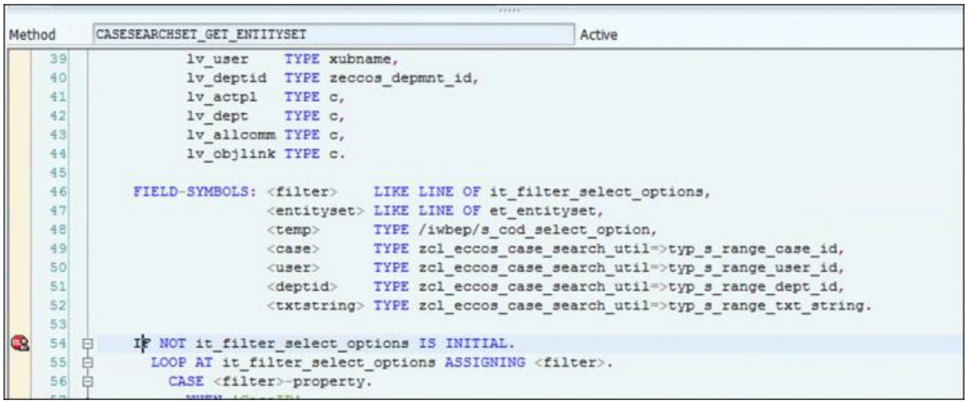
To perform external debugging in ABAP both the debug user (performing the debug) AND the debugee (user being debugged) must BOTH have debug authorizations, as displayed above.

It is not necessary to have authorization for all above activities, but I am not sure which are the minimum needed activities.

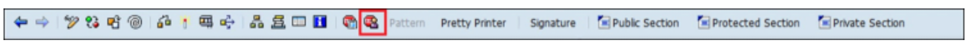
Go to transaction SE80, and choose Utilities -> Settings.



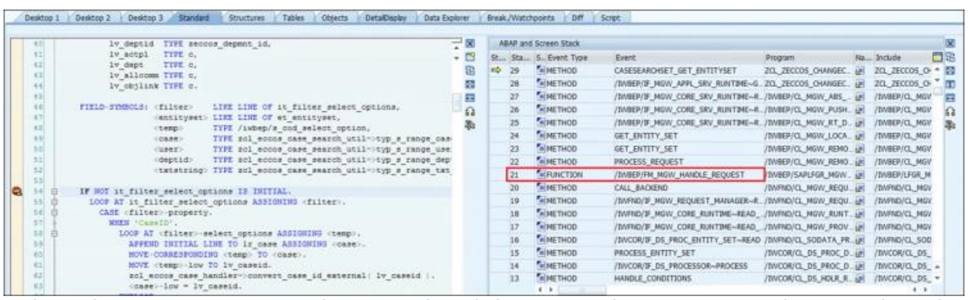
Set the user you want to debug and press Enter.



Find the Data Provider Class method you want to debug, and position the cursor on the line where the breakpoint should be placed.



Click the icon for External Break Point to set it.


When the user executes the call, the debugger will open once the Break Point is hit by the user.

In the above screen dump, it is shown where the RFC Function Module is located in the call stack. It can also be seen, that this system is a hybrid system, where the SAP Gateway and Backend is in the same system, since the call stack includes all the Gateway calls as well.

I hope some of these insights are useful for some of you guys.

Søren Hansen, Senior Mobile Consultant, 2BM A/S, Denmark

- Alert Moderator

Assigned tags

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- ABAP Testing and Analysis
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- OData Debugging
- OData Runtime Analysis
- OData trouble shoot
- tracing

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Syambabu Allu
September 11, 2018 at 4:14 am
Nice information..Thanks for Sharing

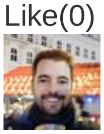
- Like(0)

Mike Doyle
September 13, 2018 at 3:46 am
Great work, this is a really well presented post. I will keep it for future reference. Thank you

- Like(0)

Andre Fischer
September 27, 2018 at 10:30 pm
Nice and very informative post.

- Like(0)



Jorge Cabanas
October 25, 2018 at 10:45 am
Good job, it is a very useful information

- Like(0)

Felix Ortiz
September 10, 2019 at 7:23 pm

Is there a transaction code (workload statistics) in ECC or a UPL/SCMON info provider that captures how many calls a particular gateway service is receiving per day, month year?

- Like(0)

Rainer Winkler
September 20, 2019 at 4:30 pm
Thank you for the helpful post.
I learned also that the entity tag contains the body of the http request encoded with base64.
BR Rainer

- Like(0)

Dharmesh Kumar
October 22, 2019 at 3:19 pm
Very useful information, Thank you for sharing.

- Like(0)

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Visual Text
Paragraph

Inserted from <https://blogs.sap.com/2018/09/09/gateway-odata-service-troubleshooting-and-detailed-tracing-in-abap/>

SAP GATEWAY:Performance Analysis of ODATA service call | SAP Blogs

Friday, June 5, 2020 1:00 PM

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S Chatterjee

Posted on January 13, 2016 1 minute read

SAP GATEWAY:Performance Analysis of ODATA service call

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Performance Trace Analysis

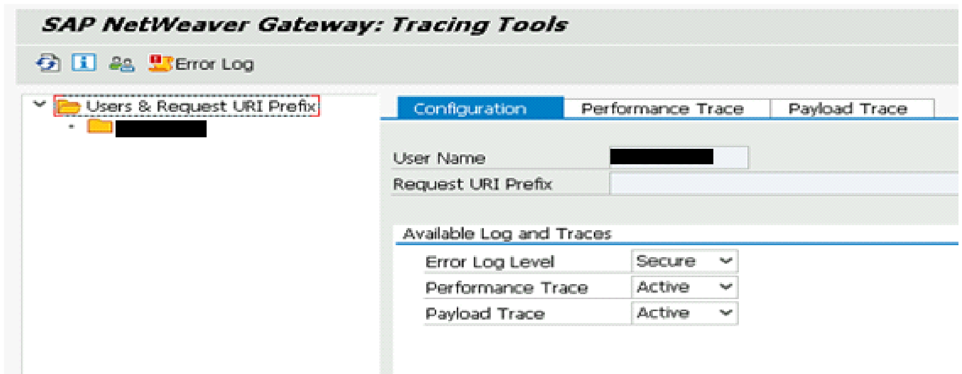
Performance trace analysis is a function used to display ODATA service call information.

Standard active trace is valid for two hours and hence records the information of all ODATA calls made within two hours from the activation of the trace.

All service calls listed contains information like triggering date and time of call, expiry date and the status.

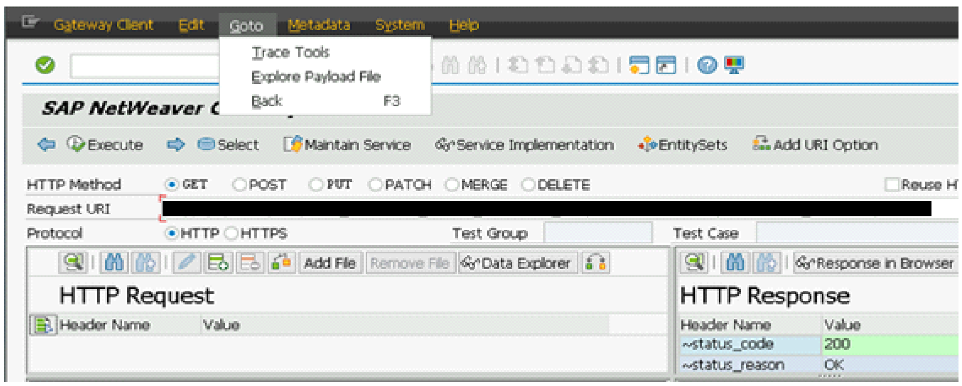
The status given by green traffic light resembles successful execution of the ODATA call and red light on the contrary resembles error with the execution of ODATA call.

1. Go to Tcode /IWFND/TRACES ,access **SAP Netweaver Gateway-Tracing Tools** and set Performance Trace **'Active'** and Payload Trace **'Active'** in the Configuration tab.

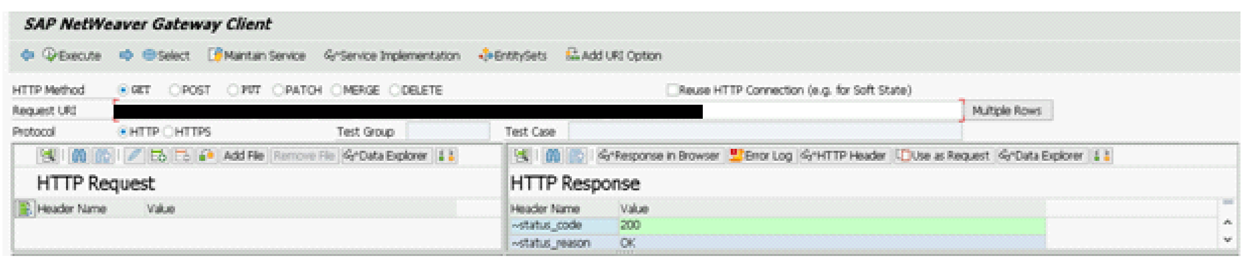


Alternatively, it can be accessed SAP Netweaver Client as below,

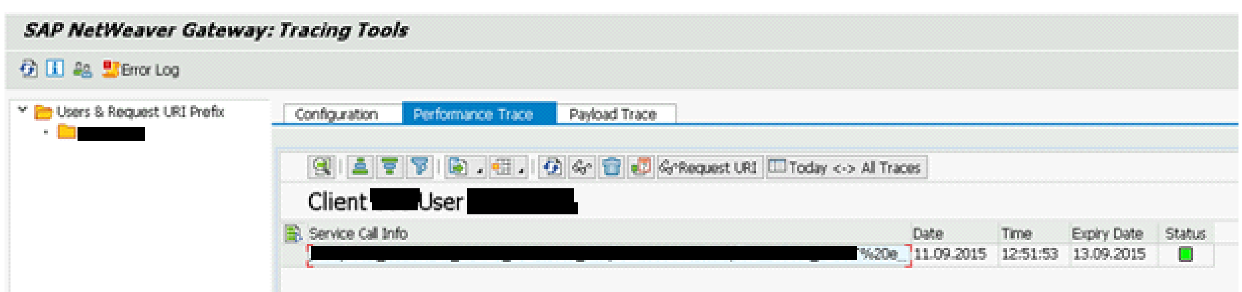
Goto -> Trace Tools,



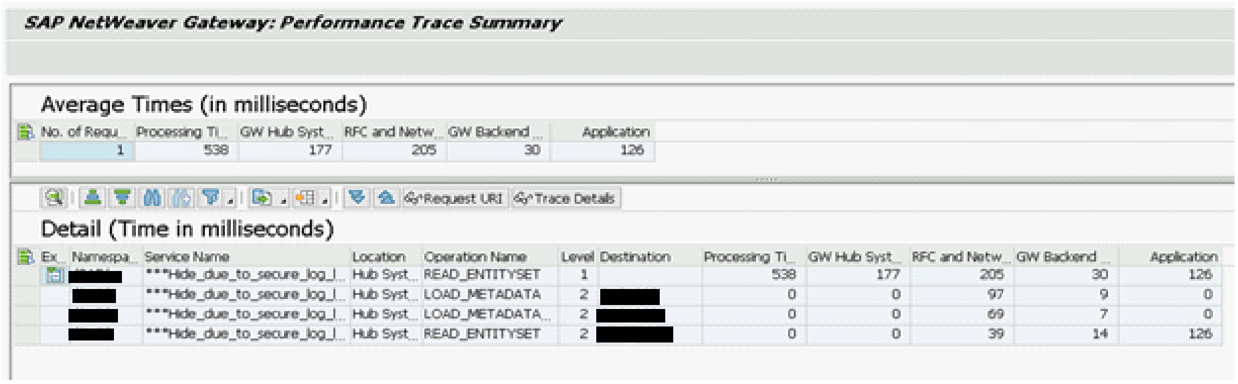
2. Go to Tcode /IWFND/GW_CLIENT and execute a url as,



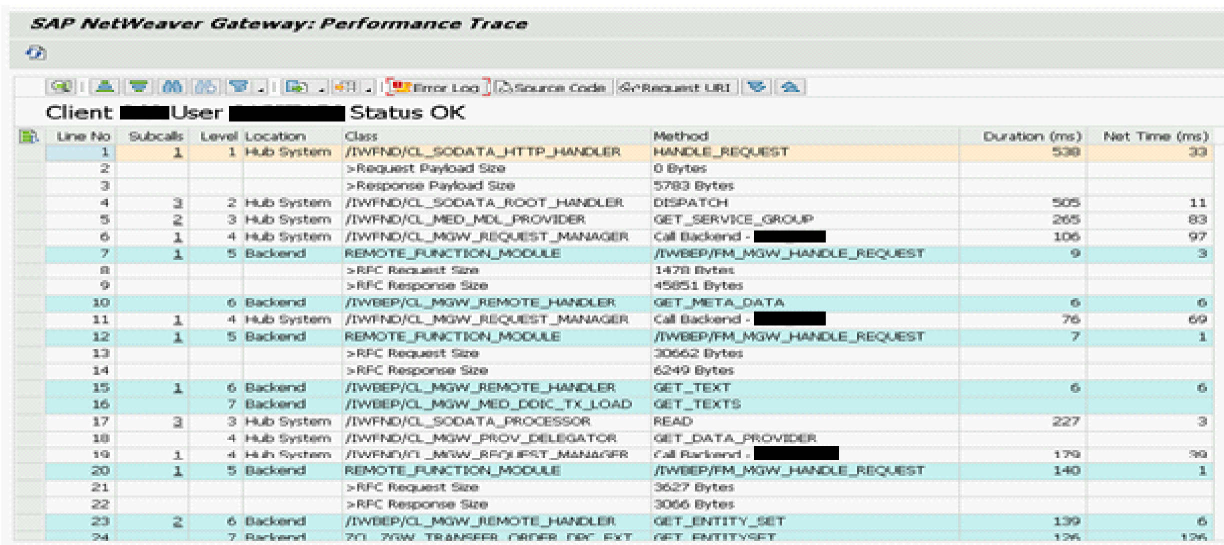
3. Revisit Tcode /IWFND/TRACES and check the Tab **Performance Trace** as,



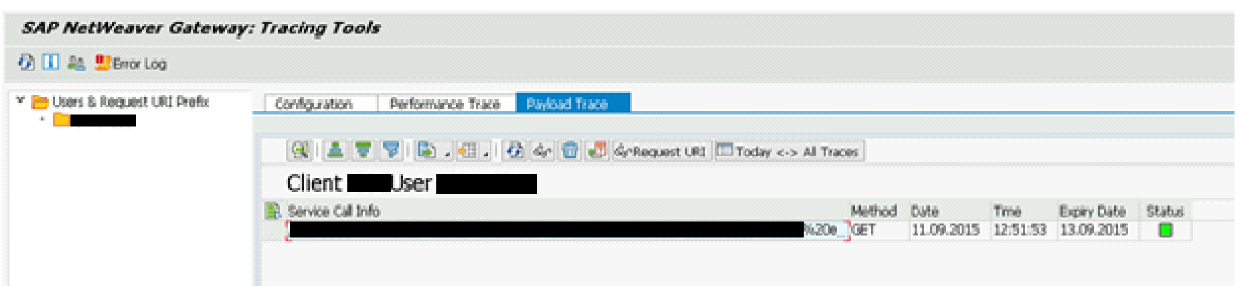
Double click the selected service call and generate the Performance Trace summary as below,



Click on Tab Trace Details and generate the detailed view as,



4. Similar approach for **Payload Trace Analysis**,



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Deborshi De Sarkar
January 14, 2016 at 7:50 am
Thanks Suprio. It is Very Useful Document.

- Like(1)

Yuvaraj Shanmugam
December 14, 2016 at 9:55 am
Hi Suprio,
Very clear and to the point.
Thanks for writing the blog.
Do you also know how to interpret the trace?
For eg., What is the difference between Duration and Net time?

- Like(0)

David Nguyen
March 10, 2020 at 9:22 pm
How would you use the same method setting up the trace in SAP Cloud Platform Integration?

Thanks
David

- Like(0)

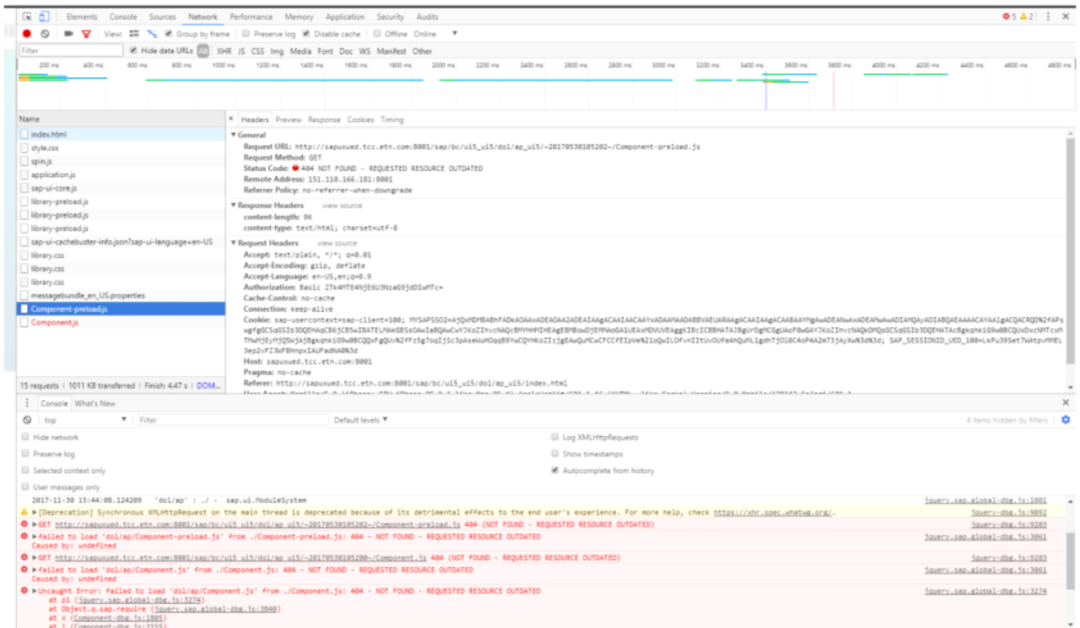
Inserted from <https://blogs.sap.com/2016/01/13/sap-gatewayperformance-analysis-of-odata-service-call/#:~:text=Performance%20trace%20analysis%20is%20a,the%20activation%20of%20the%20trace.>

Debugging Dolphin UI5

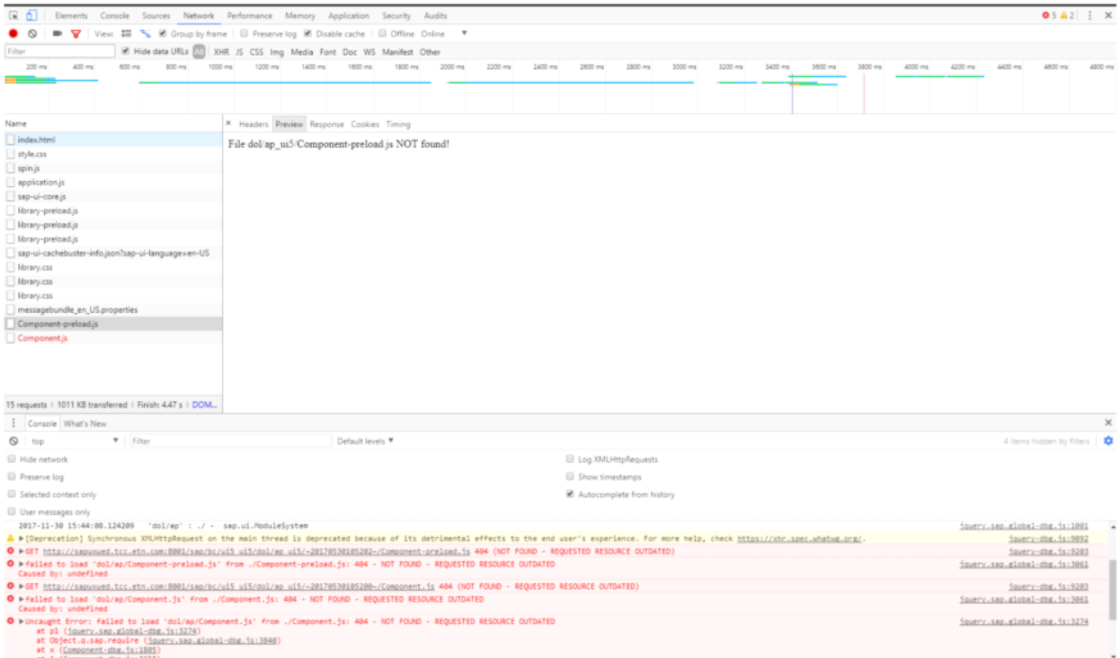
Tuesday, January 30, 2018 6:49 AM

Debugging
Dolphin UI5

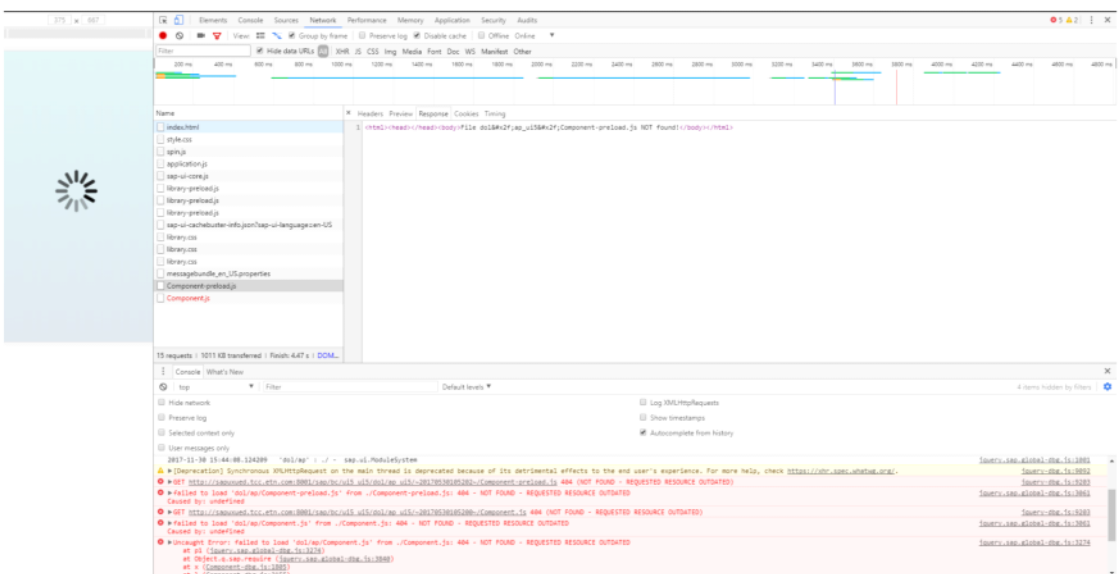
Component-preload.js (Headers)



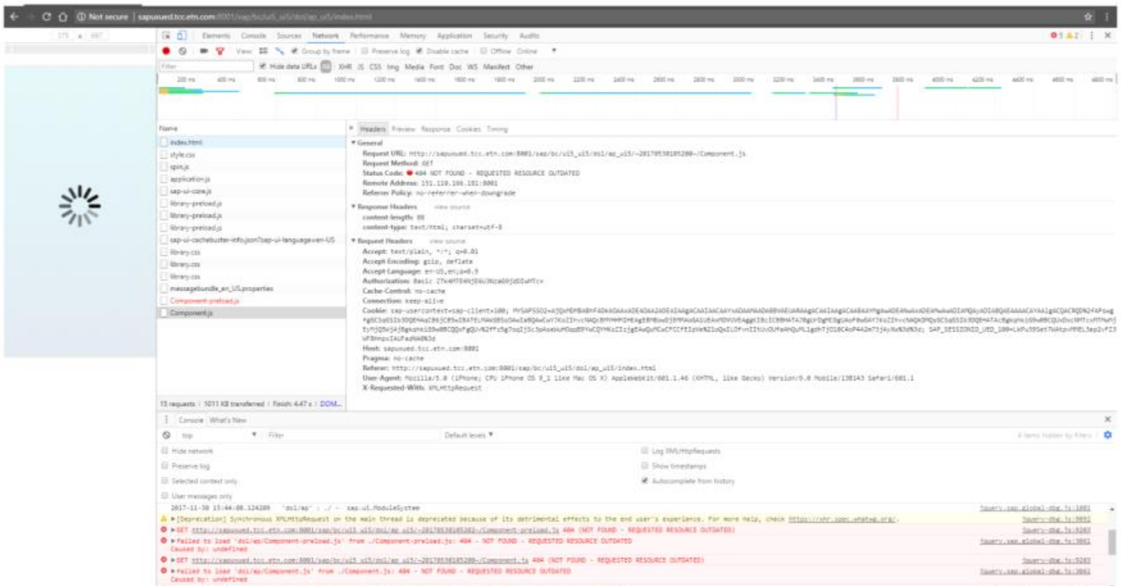
Component-preload.js (Preview)



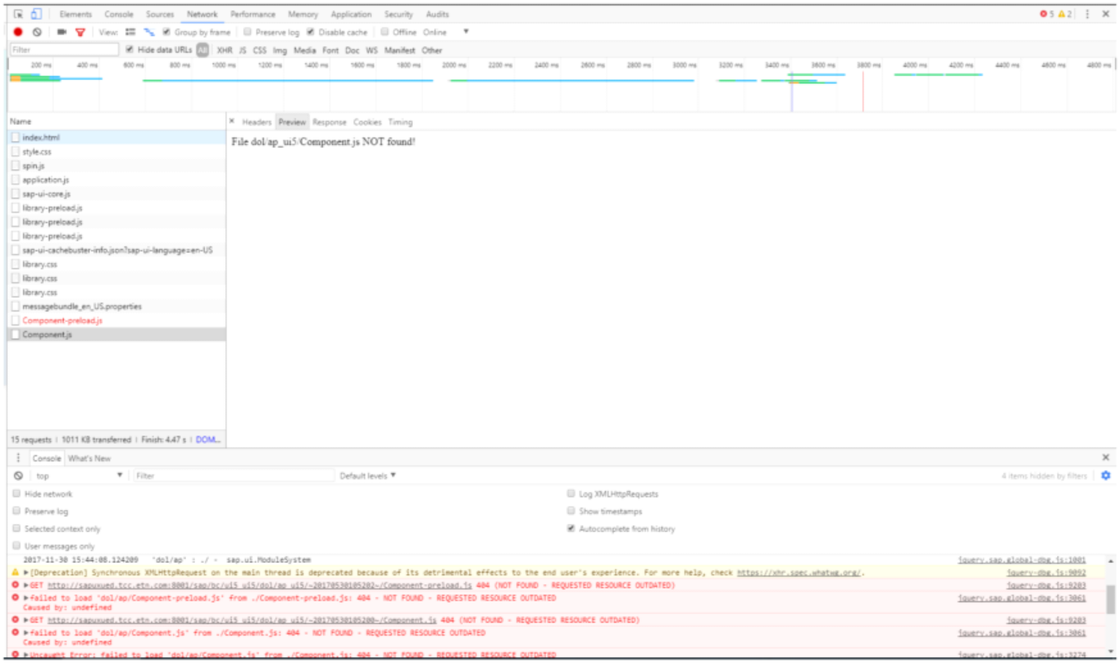
Component-preload.js (Response)



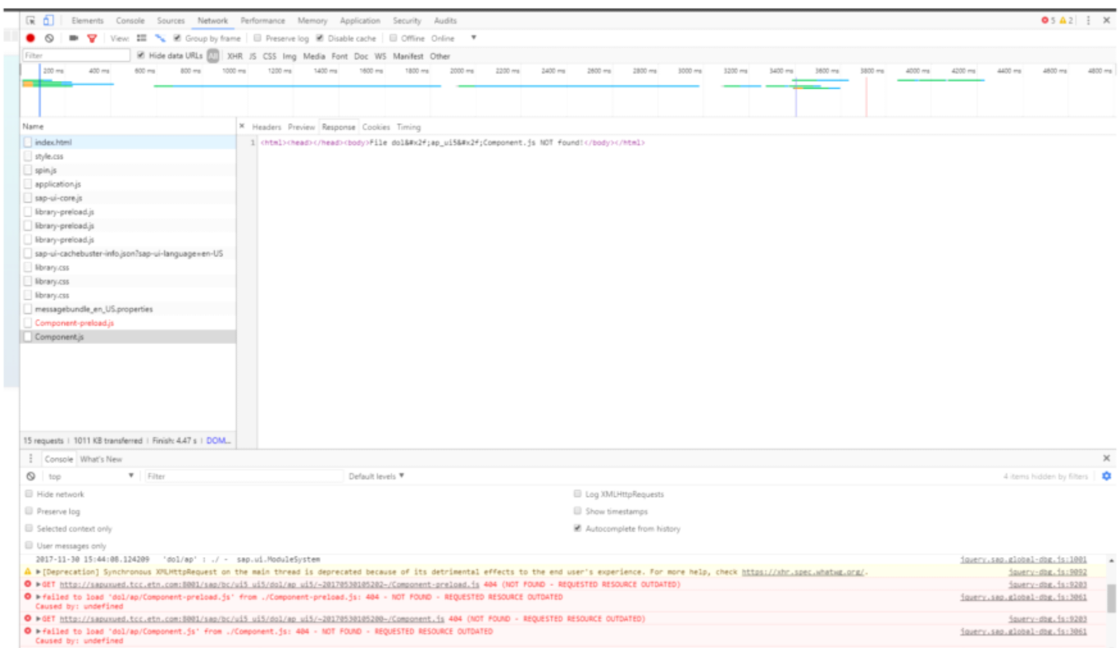
Component.js (Headers)



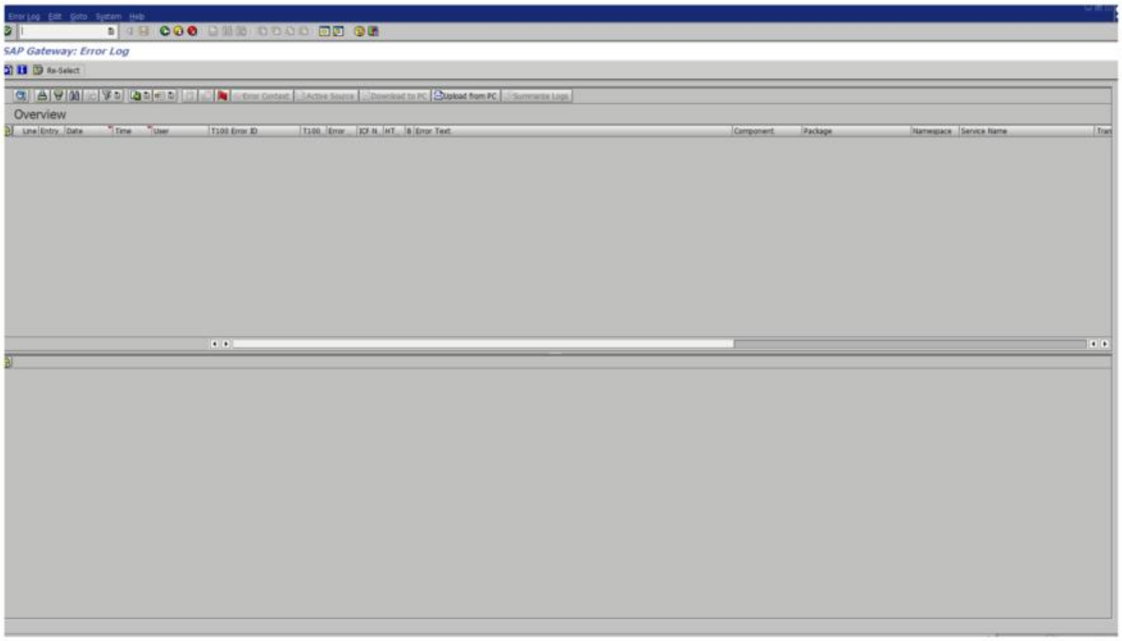
Component.js (Preview)



Component.js (Response)



Gateway error log :-



SAP Analytics Cloud Connectivity Guidelines - SAP Analytics Cloud - Community Wiki

Friday, March 5, 2021 12:30 PM

Clipped from: https://wiki.scn.sap.com/wiki/display/BOC/SAP+Analytics+Cloud+Connectivity+Guidelines

1. Foreword

SAP Analytics Cloud is a new generation of Software-as-a-Service (SaaS) that redefines analytics in the cloud by providing all analytics capabilities for all users in one product. It is built natively on the SAP HANA Cloud Platform for extreme performance, and it allows customers to simplify access to a new public cloud experience that they can trust.

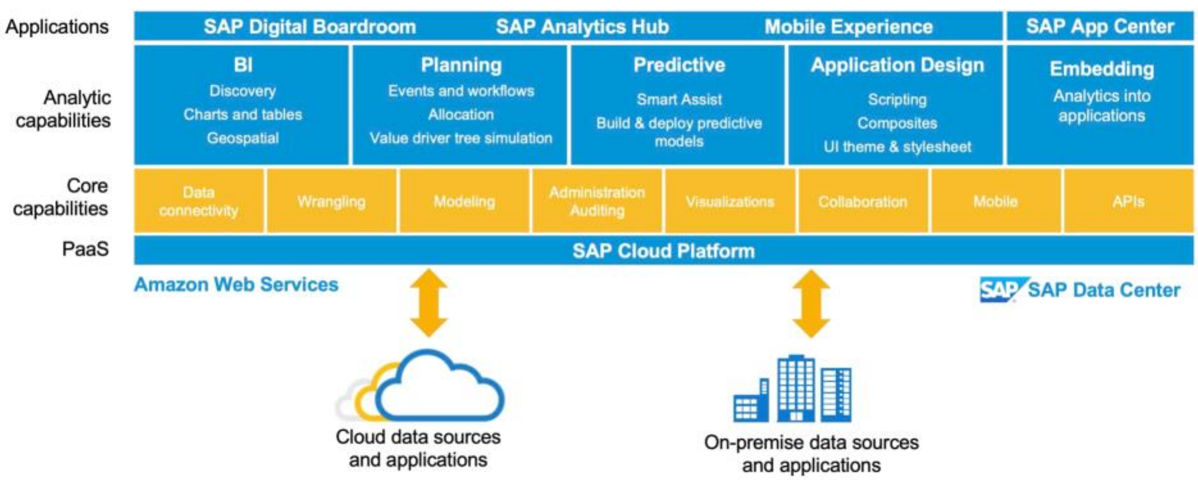


Figure 1 : SAP Analytics Cloud Overview

SAP Analytics Cloud combines Business Intelligence, Predictive, Planning and Digital Boardroom capabilities to analyze all data from your landscape, on-premise or in the cloud.

SAP Analytics Cloud (SAC) is a public **Software-as-a-Service (SaaS)** enabling access to on-premise and cloud data sources. Furthermore, SAP Analytics Cloud provides live connection (online) and data acquisition (batch) connectivity, two ways for accessing your data located anywhere in your information system landscape:

- In SAP Analytics Cloud, you can create models from data sources in on-premise or cloud systems, build stories based on those models, and perform online analysis without any data replication. This feature allows SAP Analytics Cloud to be used in scenarios where data cannot be moved into the cloud for security or privacy reasons, or your data already exists on a different cloud system.
- You can also create connections to remote systems to allow data acquisition by SAP Analytics Cloud. Data is imported (copied) to SAP Analytics Cloud HANA in-memory Database, and changes made to the data in the source system don't affect the imported data.
- Furthermore, SAP Analytics Cloud provides SAML 2 capabilities to enable Single Sign-on simplifying authentication to SAP Analytics Cloud but also to connected Data Sources from your landscape.

Most of our customers want to get all the benefits of such hybrid architecture. This document is intended to help you by explaining connectivity, gathering all required links and delivering tips & tricks, best practices, warnings, experienced by our customers and partners.

2. The importance of managing a Connectivity project

To get all above mentioned SAP Analytics Cloud benefits, you have first to connect your on-premise or cloud data sources. SAP Analytics Cloud is a public Cloud Software-as-a-Service you want to connect to your secured back-end. Then, connection settings require people within different areas of expertise from your organization to ensure a smooth and under controlled deployment: