ODATA INTERVIEW QUESTIONS AND ANSWER MADE EASY

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Morning ABAP Ritual – Get Mastery in ABAP related Technology

Why ABAP Ritual?

- ❖ **Self growth**
- ❖ **No Ignorance – Never ignore your potential**
- ❖ **Self esteem and Self confidence**
- ❖ **Be Competent in the Market Place**
- ❖ **Get Mastery In Interview Questions and Answer**
- ❖ **Have Strong Fundamentals**
- ❖ **Be more productive and Effective in Daily Project work**
- ❖ **Help and Contribution**
- ❖ **Health**

Affirmation

- ❖ Easy and Frequently Asked question – Never Ignore.
- ❖ Niche Question – Have regular practice
- ❖ Facebook/WhatsApp/Instagram/or Any Social Media – Use Intelligently
- ❖ Declutter the Digital Space – Turn off the unnecessary notification(**unroll.me**)
- ❖ **Soft Skill(80%)** is more important the **Technical Skill(20%)**
- ❖ **Helping** and **Contributing** to society is the key for success
- ❖ Health(Physical and Mental Health) – **Never ignore**
  - ❖ Physical Health – Yoga, Walking, Gym, Marathon, Game etc.
  - ❖ Mental Health – Pranayama, Meditation, Spiritual Practices, Association with the right people

1

ABAP in Detail

OOPS ABAP in Detail

ABAP ON HANA in Detail

GOOGLE CHROME
LIST OF ALL PURCHASE
ORDER

S A P N W G A T E W A Y

APPLICATION
SERVER

DATABASE

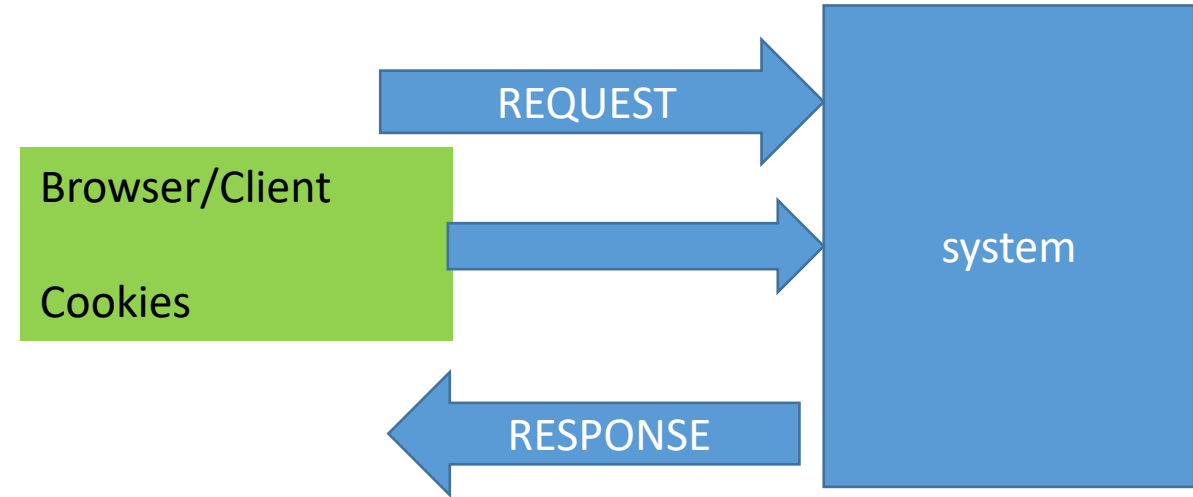## OData Interview Questions And Answer

Protocol -> set of rules

Web Services?
->One which provides the service on the web / to the web

What is web service?

How web services generated by protocol

REQUEST

Browser/Client

Cookies

RESPONSE

system

Web services

SOAP PROTOCOL	REST PROTOCOL 1995
Xml(WSDL) http/ftp/smtp	No WSDL(XML/JSON)/ EDMX http/https
ENVELOP MORE SECURITY SLOWER HEAVY WEIGHT **STATEFUL SESSION** SIMPLE OBJECT ACCESS PROTOCOL	POSTCARD LESS SECURITY FASTER LIGHTWEIGHT **STATELESS SESSION** REPRESENTATIONAL STATE TRANSFER

ENVELOPE- ADDRESS

PAGE

What is Protocol?

Protocol is set of Rules

What is web services?

One which serves the web.
OR
A service made for the Web

What is O Data?

ODATA stands for Open Data Protocol.

- It is open standard to send the data back and forth between two system via REST using HTTP

- It follows the REST standard

- ODATA Contains the Service document which is a collection of entity Sets.

- Each Entity set is used to perform the CRUD operation.

- An Entity set is used to create with the help of Entity Type

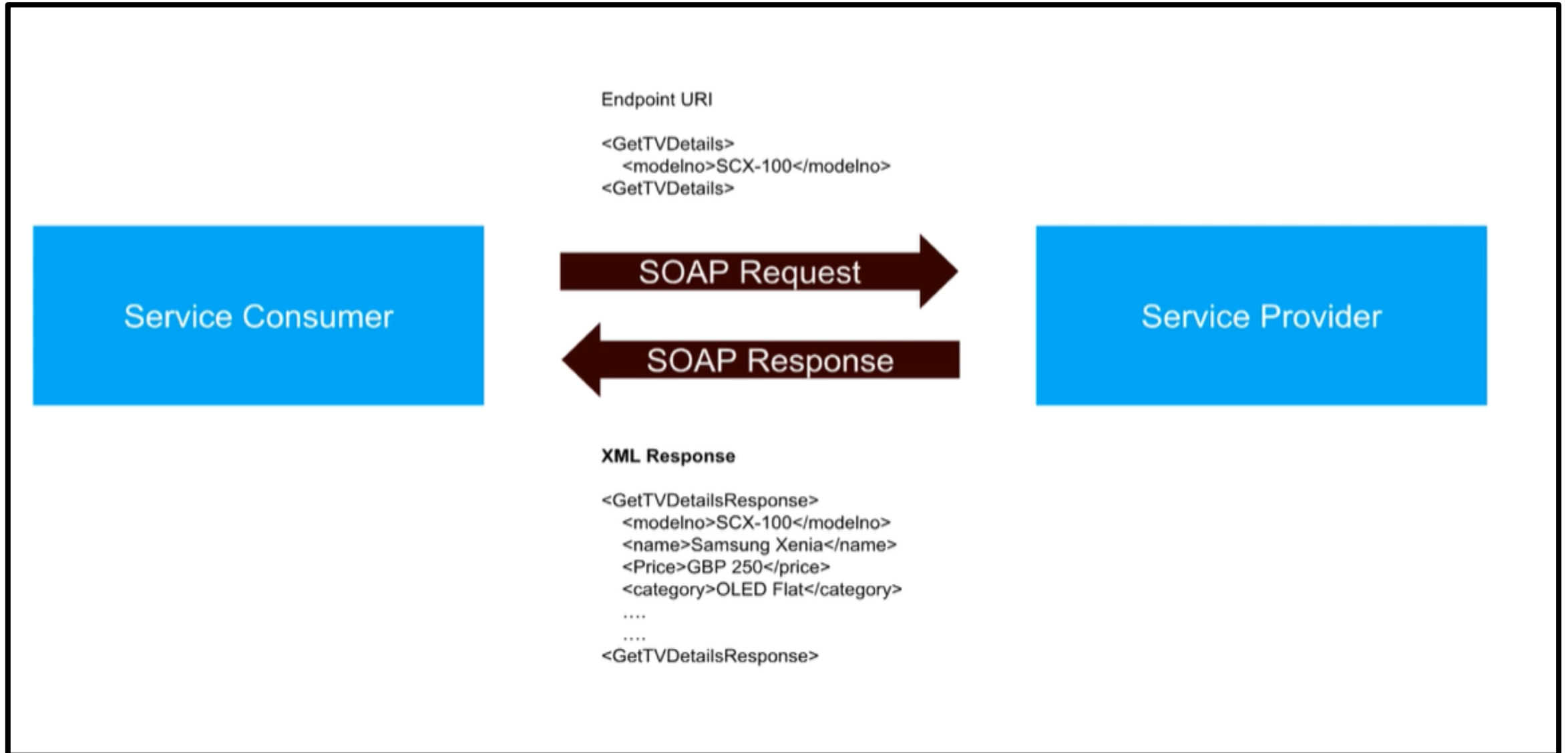- Entity type is template(Blueprint) of any entity set.

Q. What is the SOAP ?

SOAP full form is Simple Object Access Protocol. It is a state full protocol with below characteristics -

- Like Envelope
- Inbuilt high security feature
- Heavy
- No Good Performance
- HTTP/SMTP/FTP etc.
- XML(WSDL) Based protocol
- State full

An Illustration how SOAP works

Endpoint URI

```
<GetTVDetails>
    <modelno>SCX-100</modelno>
<GetTVDetails>
```

Service Consumer

SOAP Request →

← **SOAP Response**

Service Provider

XML Response

```
<GetTVDetailsResponse>
    <modelno>SCX-100</modelno>
    <name>Samsung Xenia</name>
    <Price>GBP 250</price>
    <category>OLED Flat</category>
    ....
    ....
<GetTVDetailsResponse>
```

An Wikipedia Example of SOAP

Example message (encapsulated in HTTP) [edit]

The message below requests a stock price for AT&T (stock ticker symbol "T").

```
POST /InStock HTTP/1.1
Host: www.example.org
Content-Type: application/soap+xml; charset=utf-8
Content-Length: 299
SOAPAction: "http://www.w3.org/2003/05/soap-envelope"

<?xml version="1.0"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2003/05/soap-envelope" xmlns:m="http://www.example.org">
  <soap:Header>
  </soap:Header>
  <soap:Body>
    <m:GetStockPrice>
      <m:StockName>T</m:StockName>
    </m:GetStockPrice>
  </soap:Body>
</soap:Envelope>
```

SOAP-ENV: Envelope

SOAP-ENV: Header

SOAP-ENV: Body

What is REST?

- **It is stateless protocol with below characteristics -**
  - **Like Post Card**
  - **No that much secured comparatively. Workaround is required**
  - **Light weight**
  - **Super Performance**
  - **Only HTTP**
  - **Architecture Based Protocol**
  - **Usage cookies to give the better user experience**

What is Stateless communication?

- The communication which doesn't store the user information in session permanently.

- When every time communication is established new session is loaded irrespective of previous session

An Illustration of REST

Soap VS REST

SOAP	REST
• Like Envelope	• Like Post Card
• Inbuilt high security feature	• No that much secured comparatively. Workaround is required
• Heavy	
• No Good Performance	• Light weight
• HTTP/SMTP/FTP etc.	• Super Performance
• State full	• Only HTTP
	• Stateless

Example 1 – SOAP vs ODATA

HTTP

REST

Rides directly on HTTP. Plain and simple. In reality, this is all you need to send data from point A to point B and get the required response. Catch: Until something that represents a service contract is put in to place, it's kinda "anything goes".

SOAP

The coach is your SOAP envelope: it wraps your data. Main strength is the presence of a contract: the WSDL. Gives you the "comfort" of easily generating artifacts. Catch: look at the complexity and added weight.

Example 2: SOAP Vs OData

REST
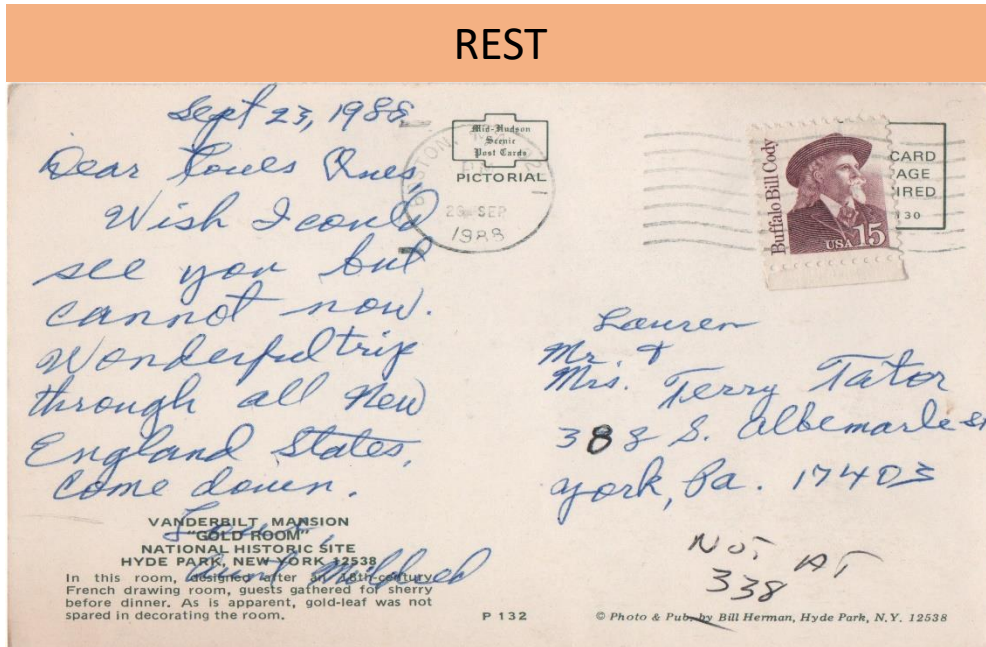
Post Card

SOAP
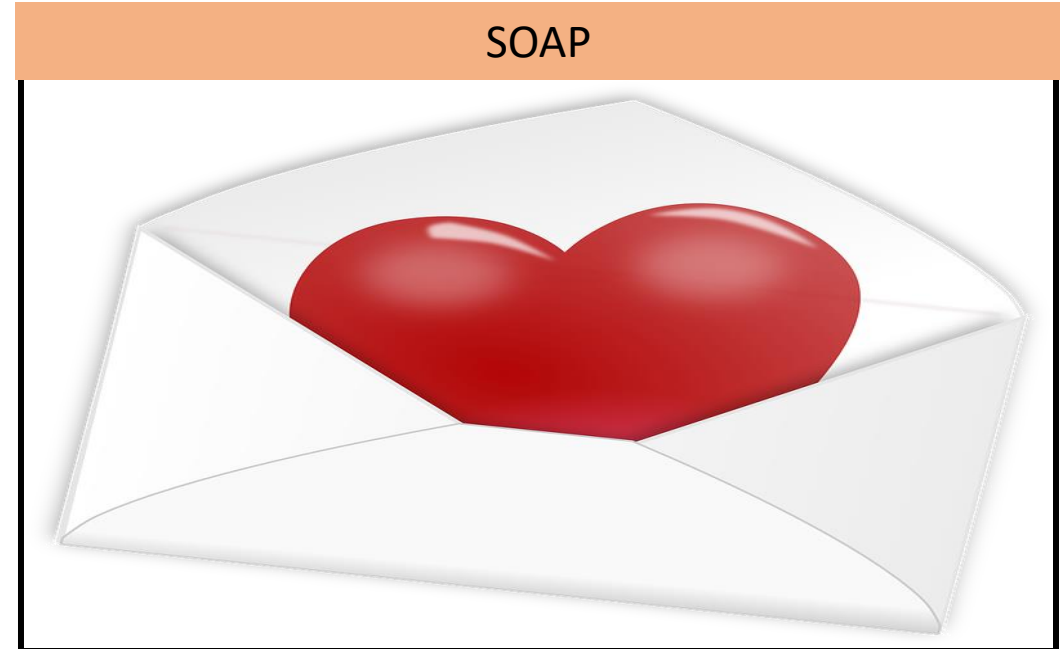
Envelop

Technical Comparison

01 Type

SOAP is XML based Message protocol but REST is Architectural Style, The OData is implemented using this style

02 Data Type

SOAP only usage XML type data but OData supports XML and JSON

03 INSERT

POST operation needs to fulfill exact contract with WSDL but OData can expect direct raw data

04 Readability

SOAP does not return Human Readable Format but OData return is Readable

05 Protocol Support

SOAP can be used with HTTP, FTP, SMTP but OData only works with HTTP, Easy to call OData

06 Performance

SOAP Performance is not that great as OData as server and client needs to parse XMLs, OData data is processed directly and can be bound to SAP UI5 directly

Where does industry stands?

SAP UI technologies like Webdynpro, Portal, BSP Backend support for classical Suite, Java based Apps
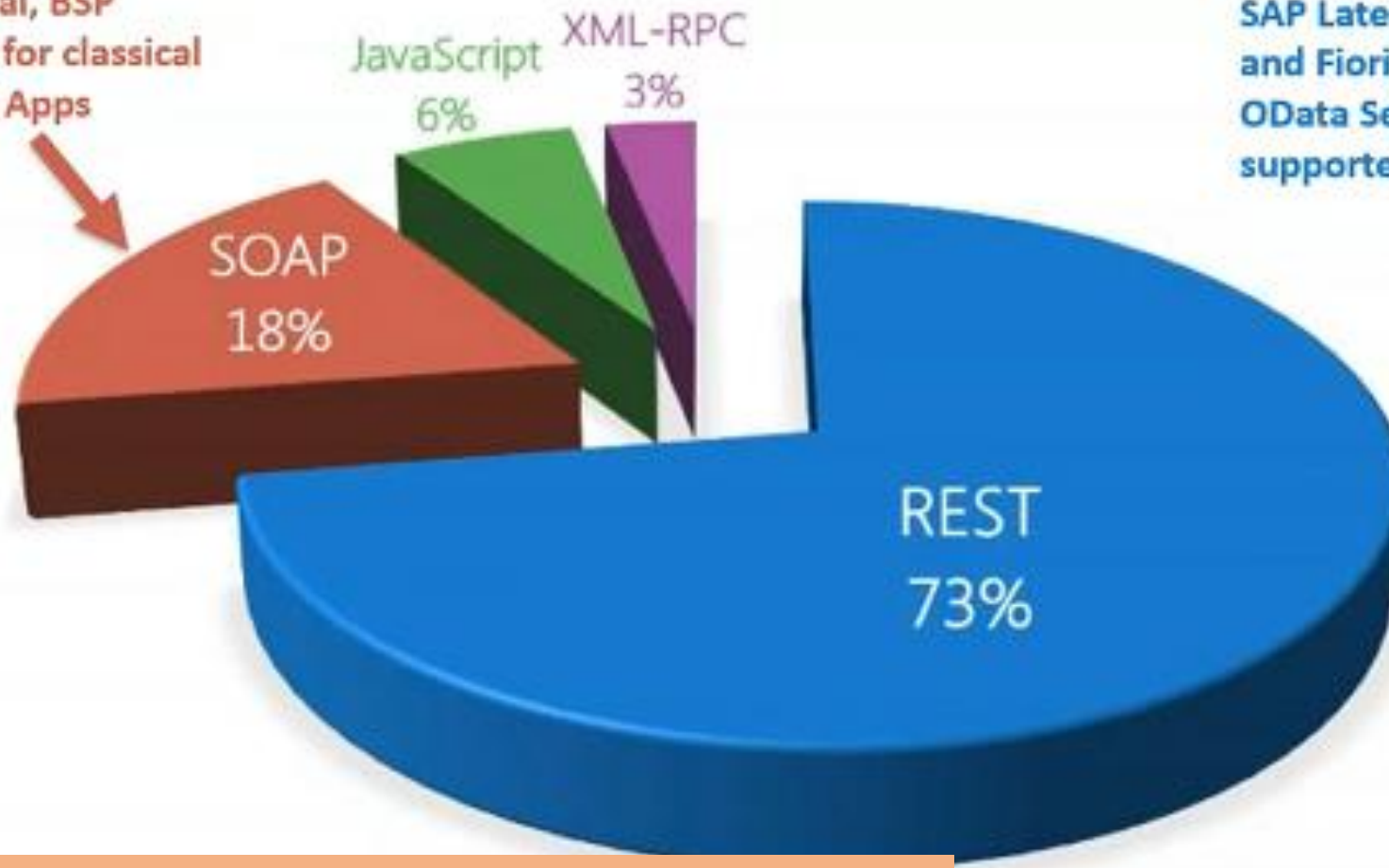
SAP Latest UI Technology UI5 and Fiori Usage REST based OData Services, Backend supported by SAP Gateway

JavaScript 6%

XML-RPC 3%

SOAP 18%

REST 73%

2

9th Feb

Why SAP needed OData?

Ans. Smooth, Fast and Great user Experience

What is the T-code to create an OData project?   VVI

Ans. SEGW

What is Entity

entity
ˈen(t)ədē

इकाई
ikaee

Translations of entity

noun

अस्तित्व
existence, being, entity

सत्ता
power, authority, entity, government

सत्व
entity, substance, nature, heart, core, keynote

- **One which has real existence is known as Entity.**
- **Let us say Ram is described by the Characteristics (Id, Name, Age).**
- **These set of sequential characteristics(i.e. Tuple) is nothing but Entity because it is having real time existence.**

It is real time existing object

Employee – Entity Type

Id, Name, Age, Salary

Ram(1, Ram, 20, 20000) - Entity 1
Mohan(2, Mohan, 30, 30000) – Entity 2
Rohan(3, Rohan, 40, 40000) – Entity 3

Q. What is the difference between Entity, **Entity type and Entity set** in OData?

Entity	Entity Type	Entity Set
• It is something which has real existence. • A tuple (Name, Id, Age) is having the real time existence. Hence it is called Entity • Work Area	• It is collection of entity having common attribute. As in Student table each row is an entity and have common attributes. So **STUDENT** is an entity type which contains entities having attributes id, name and Age • It is like "Types"	• It is a set of entities of same entity type. so a set of one or more entities of Student Entity type is an Entity Set. • It is like "Internal Table"

Are you confused between Entity type and Entity set difference?

Let us make it very simple in layman term –

Entity Type: It is blue print / Structure for Entity set. Entity type must have key defined.

Entity Set: It is similar to Internal table of type "ENTITY TYPE"

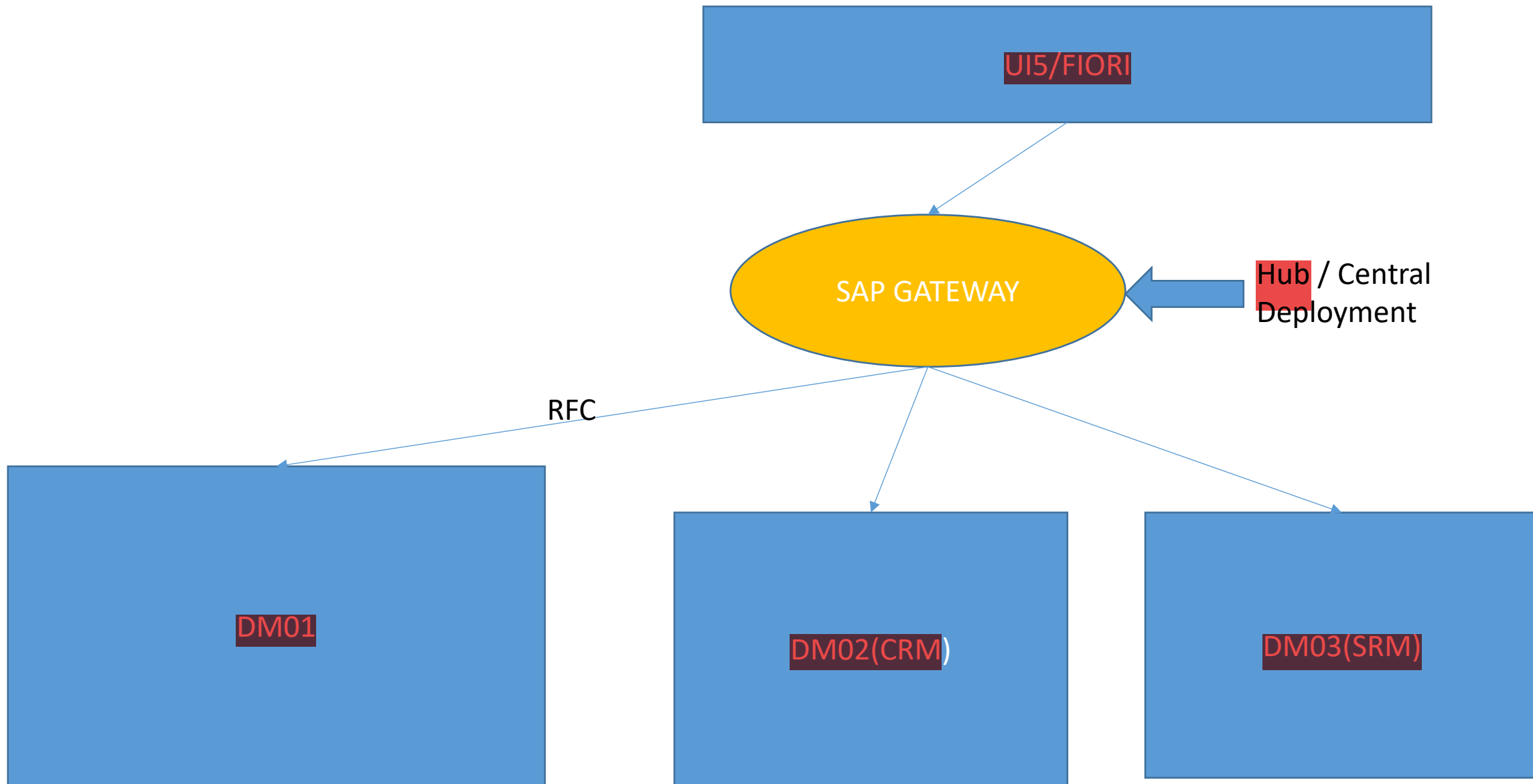Ans.

What is the other name of O Data ?

O Data is also known as ODBC of the Web

ODBC -> Open Database connectivity

What are the Gateway Deployment in order to generate the OData we have?

1. Hub Deployment

And

2. Embedded Deployment

```
                                         UI5/FIORI


                              SAP GATEWAY        ◄═══  Hub / Central
                                                       Deployment

                  RFC


         DM01                    DM02(CRM)              DM03(SRM)
```

If your system is on NW7.3 or Before what are the components need to be installed in order to enable the SAP Gateway?

Ans. -> There are three components –
1. GW_CORE
2. IW_FND
3. IW_BEP

Q. If you are on NW7.4 onwards release which component need to be installed in order to enable the GW

Ans. SAP_GWFND.

Q. How you will identify in your system if it is Hub Deployment or Embedded Deployment?

1. Go to SEGW.
2. Maintenance Service – if some artifact is there then that is Embedded otherwise it is HUB.

Session 3

10TH Feb

What is the t-Code to Register the Service? VVI

Ans. /IWFND/MAINT_SERVICE

What is the T-Code to Test the service?

Ans. /IWFND/GW_CLIENT

What is the T-Code to Troubleshoot any error occurred?

Ans. /IWFND/ERROR_LOG

Q. What are the classes generated when we create and activate a project?

Ans.

DPC

DPC_EXT

MPC

MPC_EXT

4 Major Parts of SAP Odata-

- **OData Model**
  - Used to represent the data form different sources into single format
- **OData Service**
  - Odata Model is exposed using Odata Services using Odata Protocol and Odata Libraries
- **OData Protocol**
  - Best on REST Principle
- **OData Client Libraries**
 - Used by Browser of Client application to access the data using O Data Protocol
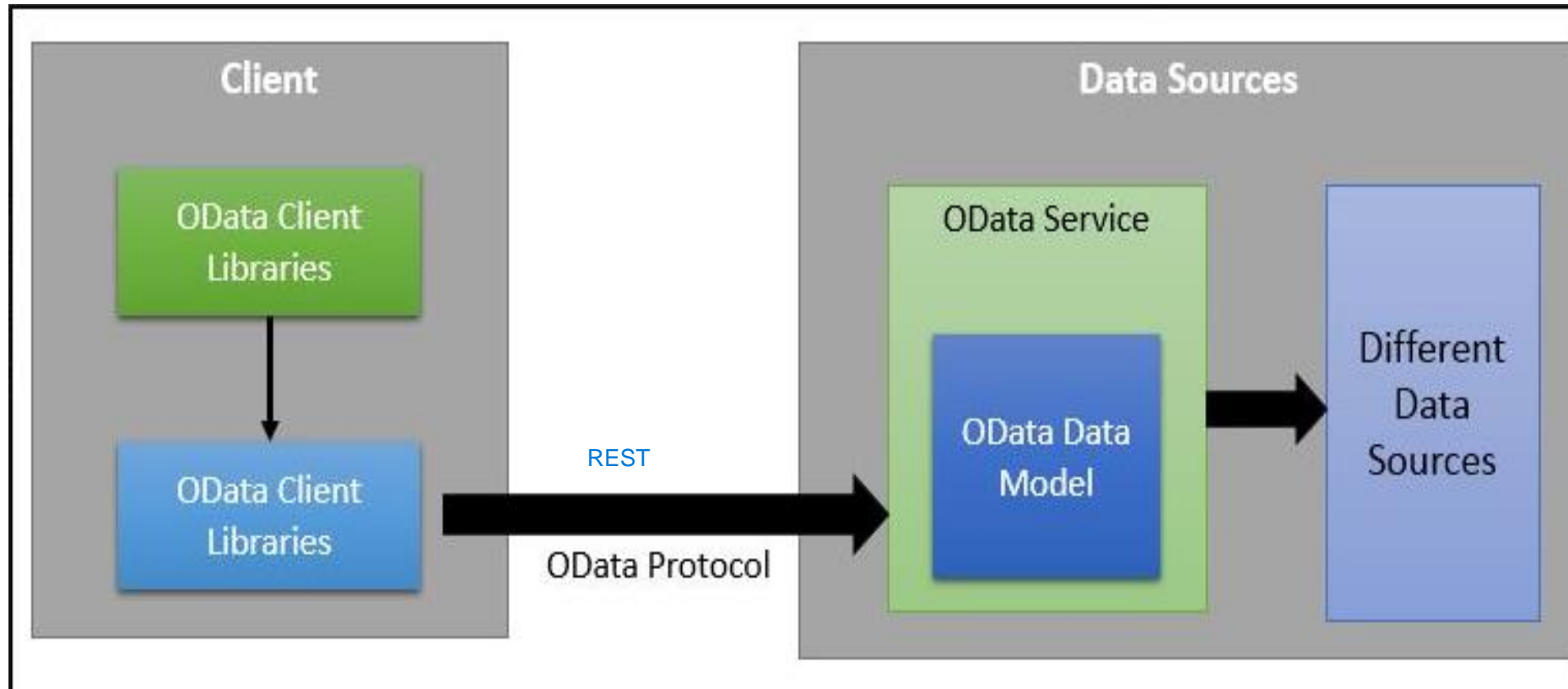
Session 4

11-Feb

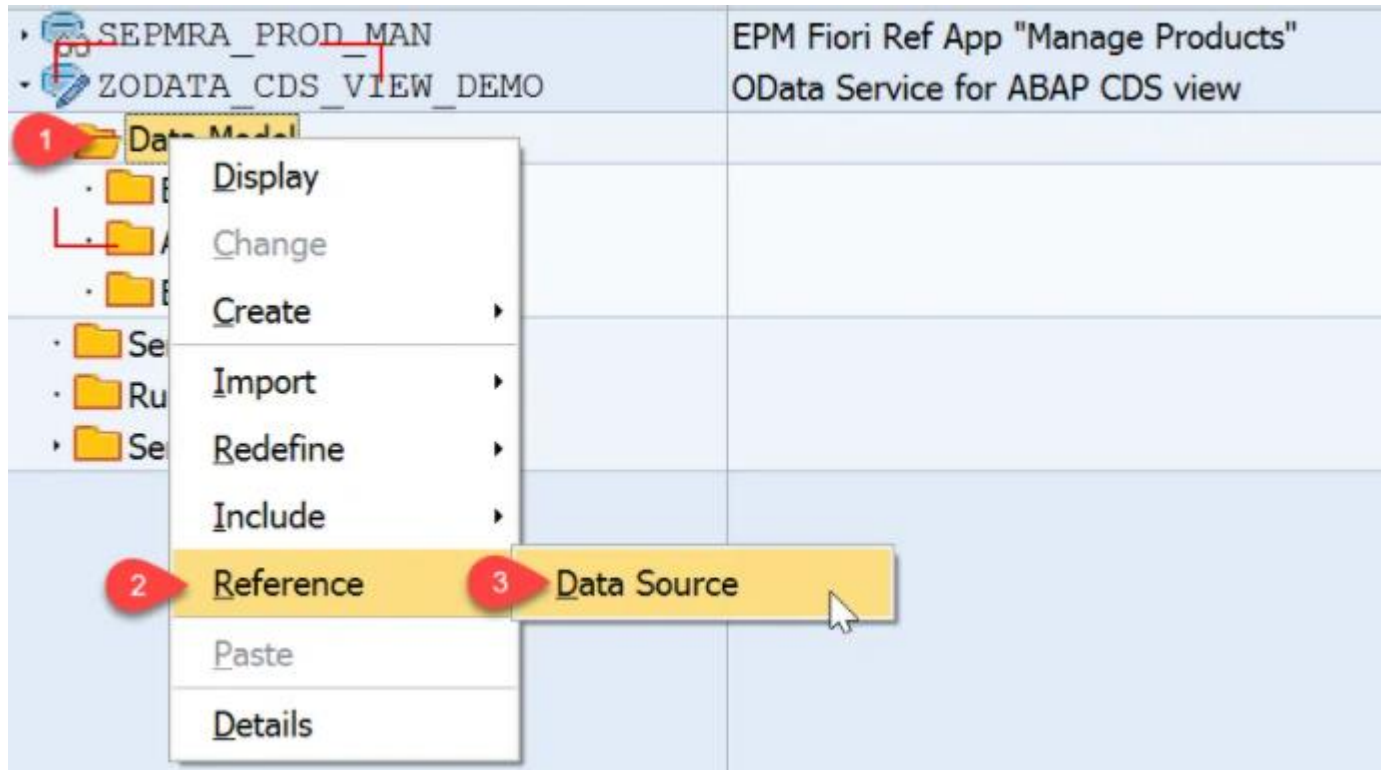**Q. What are the different way of generating O Data Service?**

Ans.
1. **ABAP Code based Implementation** -> Write the Code in typically in DPC Extension Class
2. **Mapping Editor** -> In SEGW gateway builder, you can map an ABAP CDS Views as a data source to the entity type properties. SADL Framework will generate the O data Service to retrieve the data from CDS.

Using Service Generation
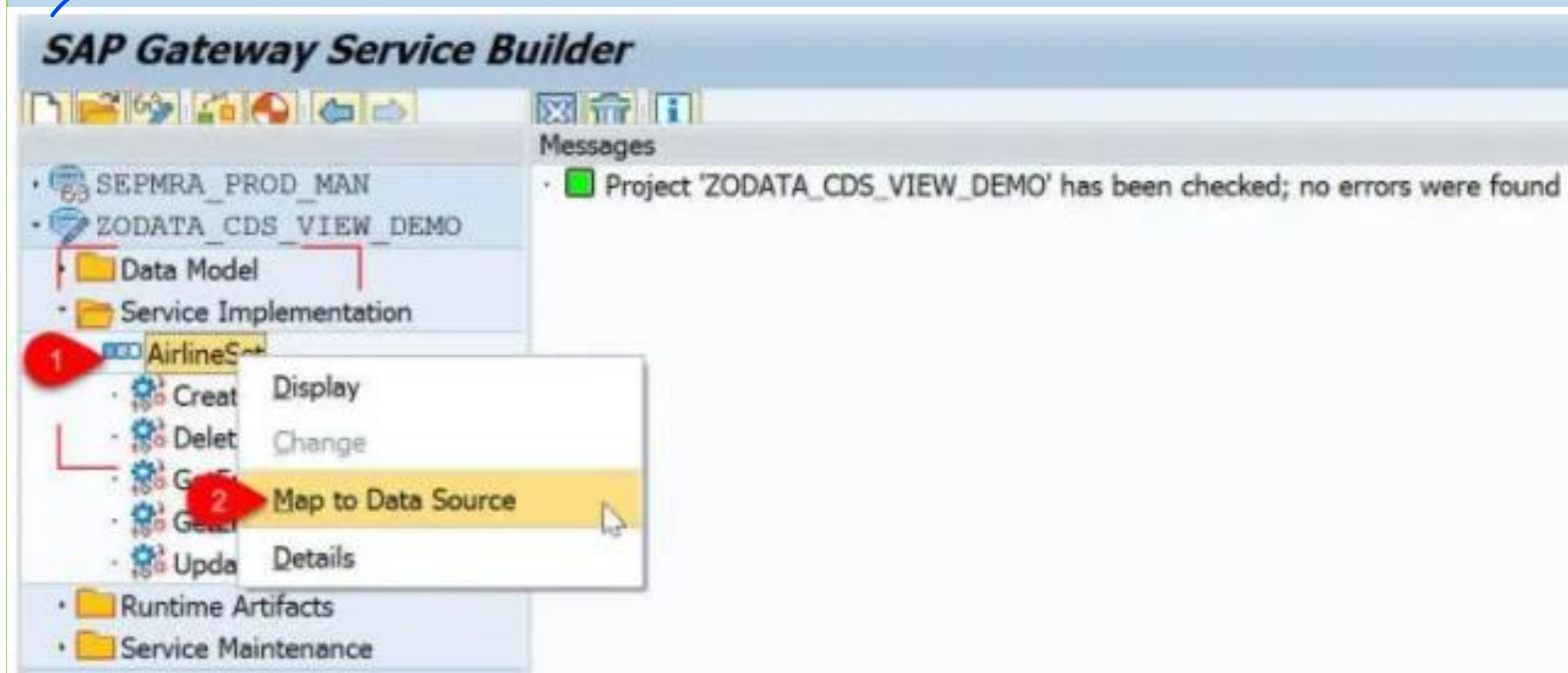
3. Data References -> Using the Referenced Data Source - In SEGW gateway builder, you can reference an ABAP CDS Views as a data source. Each entity type in OData service model corresponds to 1 ABAP CDS view.

▸ SEPMRA_PROD_MAN	EPM Fiori Ref App "Manage Products"
▾ ZODATA_CDS_VIEW_DEMO	OData Service for ABAP CDS view
1 Data Model	
Display	
Change	
Create ▸	
Import ▸	
Redefine ▸	
Include ▸	
2 Reference **3** Data Source	
Paste	
Details	

4. Using Annotation

@Odata.publish: true

Q. What is SADL?

Ans.

SADL – Service Adaptation Description Language

- This is a framework which generates the O Data service from the CDS

Below approaches uses SADL framework to generate service -

- @ODATA.PUBLISH: TRUE
- Mapping editor
- Data References

Q. What are the different methods for each entity set?

SAP NetWeaver Gateway Service Builder

ZSL_EPM_DEMO
- Data Model
- Service Implementation
  - SalesOrderSet
    - Create
    - Delete
    - GetEntity (Read)
    - GetEntitySet (Query)
    - Update
- Runtime Artifacts
- Service Maintenance

Sales Order Serivce

CURD
C-> CREATE
U-> UPDATE
R-> READ
D-> DELETE
CRUD

- Create – Includes the business logic to create data in the back-end system.
- Delete – to delete the data from the back-end system.
- GetEntity(Read) – to read the single record details from back-end system.
- GetEntitySet(Query) – to read the list of data from the back-end system
- Update- to update the data into back-end system.

Q. On top of which artifact you perform the CURD/CRUD operation?

1. **Entity - NOT**
2. **Entity Type – Not**
3. **Entity Set - Yes**

Q. What is Function Import?

Ans.

- **Function Imports** are the actions like **release of a sales order/purchase order** executed in the back-end system.

- Function Imports can be used when ever the given requirement does not fit into the CRUD-Q operations.

- They are defined at service level and you can have N number of function imports functions.

Function import is a service operation in the Open Data Protocol (OData) that allows users to perform custom operations that are not supported by the standard CRUD (Create, Retrieve, Update, and Delete) operations.

FI_PORELEASE
ET_eMPLOYEEseT

Q. In Odata, when you create and activate the project what are the classes generated?

There are 4 Classes generated –
1. **MPC –**
2. **MPC_EXT** -> Annotations
3. **DPC**
4. **DPC_EXT** -> **Write the logic to fetch the data**

Note: One Service and one Model also gets Created

Q. If you want to implement fetching logic for **header and item** which method need to be opted write

Ans. Get_Expanded_EntitySet

VVI

Q. If you want to implement record creation logic for **header and item**, which method to be opted.

Ans. Create_Deep_EntitySet

VVI

What are the HTTP methods

1. GET -> Read
2. POST -> Create New Record
3. PUT -> Update
4. **PATCH -> Modify**
5. DELETE -> Delete
6. **MERGE -> Modify**
7. HEAD ->

Patch -> This is the Actual HTTP Method. We are supposed to use the PATCH (SAP NetWeaver Gateway 2.0 SP05)

Merge -> it is given by Microsoft. Hence it is not global Standard. So the preferred approach should be PATCH.

Q. What is the Difference between **PUT**(Complete Update) and (**PATCH/Merge** => Partial Update)

EmpId(Key)	EmpName	Age
1	Pankaj	35
2	Ram	40
3	Jitendra	35
4	Adi	28
5	Jayant	30

need to be whole record , if we need to update a one field or many

PUT=> Complete Replacement

Patch => partial Update

Only field which needs to be updated are required

There is difference in terms of how we use?

PUT -> From the front end we are supposed to pass all the fields content. In if some value is not supplied then, it will take the initial value.

PATCH -> In patch from the frontend , all the fields are not required. We can send only specific field which need to be updated.

Session 5

12th Feb

Q. What is the T-Code for Cache Clean Up?
Ans. /n/**IWFND/CACHE_CLEANUP**

Q. What are the different way of cleaning the Cache?
Ans.

1. **Globally for all the services in case we have central hub scenario–**
   /n/**IWFND/CACHE_CLEANUP -> Gateway**
   /n/IWBEP/CACHE_CLEANUP-> BACKEND
   or IN case of Embedded Scenario-
   /n/IWBEP/CACHE_CLEANUP-> BACKEND

2. **Specific to Service**
   /iwfnd/gw_client-> More-> Metadata-> Clean up

3. **Using Class method -**
   /iwfnd/cl_sutil_moni=>cleanup_metadata_cache

Q. In case of Embedded Scenario, What is the T-Code to Clear the cache?

Ans. /n/IWBEP/CACHE_CLEANUP

Method Signature:

/iwfnd/cl_sutil_moni=>cleanup_metadata_cache(

```
  EXPORTING
    iv_mode          = 'A'
    iv_multi_origin   = abap_true
    iv_namespace      = '/SAP/'
    iv_service_name    = 'Your Service Name'
    iv_service_version = '0001'
  IMPORTING
    ev_error_text     = lv_error_text
  ).
```

In this method, we make use of the TCodes /n/iwfnd/maint_service and /n/iwfnd/gw_client to clear our metadata cache. Follow the below steps:
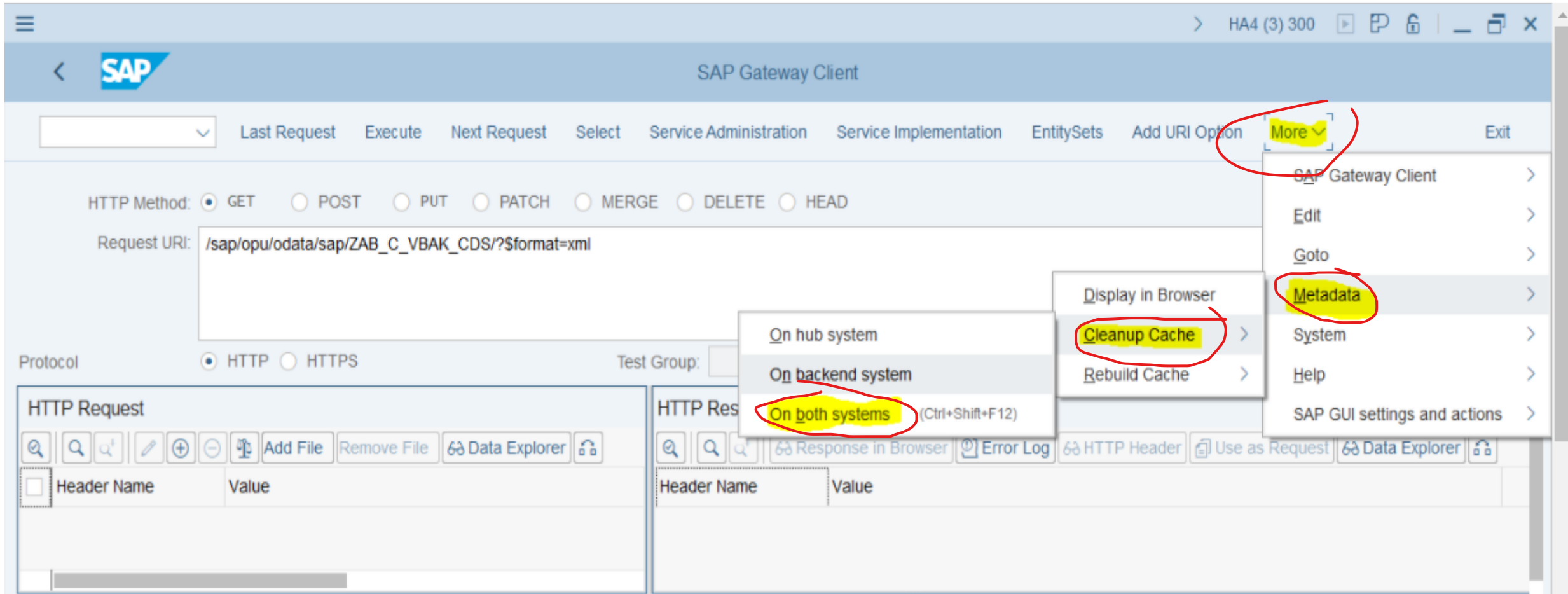
To clear the metadata cache using the above process, for the Embedded implementation, it is enough to clear only on **the back end system**, but in Hub implementation, it is mandatory to clear the cache on both systems to properly clear the metadata cache.

Q. When we have to clean the Cache?
Or
Q. When we need to clean up the Cache?

Ans.

Whenever we do any changes at service level and those changes are not reflecting then we are supposed to do both type of Cache Cleanup.

When we add / delete / modify any property in the entity set or an annotation in the CDS or any BOPF functionality such as Creatable, Updatable or Delectable, then we need to clear the metadata cache for our changes to be visible in the Metadata.xml file of the OData service, which can then be consumed in any UI5 application.

Session 6

13-Feb-2020

Q. How to do file / Image handling in Odata?   VVI

Ans. Using **Stream Method**.

VVI

What are the different stream methods to create/Update/Read the image/file/pdf?

Ans.

- */IWBEP/IF_MGW_APPL_SRV_RUNTIME~CREATE_STREAM.*

- */IWBEP/IF_MGW_APPL_SRV_RUNTIME~GET_STREAM.*

- /IWBEP/IF_MGW_APPL_SRV_RUNTIME~UPDATE_STREAM

What is Concurrency Control?

Ans. When at same time more than one people are going to perform some changes from UI side then need to implement the concurrency control in order to have the consistent data and not to have the data loss.

How to handle concurrency?

In Odata we generally use the concept of Optimistic Concurrency control.
Because O Data usage the HTTP method.
HTTP method generally use the Optimistic Concurrency control.

This is handled using the E-Tag=> Entity Tag

UI5

PO	QUANT	MATERIAL
1234	300	SWEET SUGAR

ABCD123

UI5

PO	QUANT	MATERIAL
1234	400	SWEET SUGAR

ABCD123SUGAR

SAP GATEWAY

E-TAG

Entity Tag

EKPO

1234	400	SWEET SUGAR

ABCD123SUGAR

Session 7

14-Feb-2020

What is the function module to generate the Hash Value for Etag?

Ans. FM is - 'CALCULATE_HASH_FOR_RAW'

Q. How to Troubleshoot if your break-point is not triggering which was already triggering sometimes back?

This is the steps we followed and started working
1. **Check if you have put the external break point**
2. Clean up the cache using the t-Code /n/**IWFND/CACHE_CLEANUP and** /n/**IWBEP/CACHE_CLEANUP**
3. **Srdebugger – Use this transaction in order to activate the remote debugger**
4. **Log out the session**
5. **Put the break point**
6. **Run the gateway client and check**

Q. What is the T-Code to take the Trace in Odata?

Ans. /n**IWFND/TRACES**

Q. Suppose you want to delete the Odata Service. Is it possible to delete directly.
Ans. No.

Q. What error it gives?

Ans. It will give the error – ICF Node will be deleted first
Note: when you will try to delete the ICF node it gives the error - "*Object directory entry cannot be deleted, the object is locked*".

Q. How to correct the "object is locked error"?
Ans. By deleting the System Alias

Delete Service

Service Catalog				
Type	Technical Service Name	V...	Service Description	External Ser...
BEP	YPK_CDS_SO_SRV	1	ODATA FROM CDS VIEW	YPK_CDS_S...
BEP	YPK_ODATA_CDS_CDS	1		YPK_ODAT...
BEP	Z_PK_SALES_ODATA_SRV	1	Sales Details	Z_P...
BEP	ZC_MATERIALPK_CDS	1		ZC_...
BEP	ZPK_C_FL_MEAL_CDS	1		ZPK...
BEP	ZPK_CUSSTOMER_ORDER_DETAILS_SRV	1	Customer Order details	ZPK...
BEP	ZPK_LTA_SRV	1	LTA	ZPK...
BEP	ZPK_MEAL_APP_SRV	1	MEAL APP	ZPK...

ICF Nodes

Status	ICF Node	Session Time-out Soft State	Description
OOO■	ODATA	00:00:00	Standard Mode

Turning Green To gray(White)

ICF Nodes

Status	ICF Node	Session Time-out Soft State	Description
OOO	ODATA	00:00:00	Standard Mode

ICF Node menu

- Activate
- Deactivate
- **Delete**
- Configure (SICF)

	Session Time-out Soft State	Description
	00:00:00	Standard Mode

Q. What are the steps need to be performed in order to delete the service?

1. Delete the Alias
2. Delete the ICF Node
3. Delete the Service

Q. What is System Alias

Jitendra -> Jitu

SAP1

Gateway Server
S1->SAP1
S2->SAP2
S3->SAP3

SAP2

SAP3
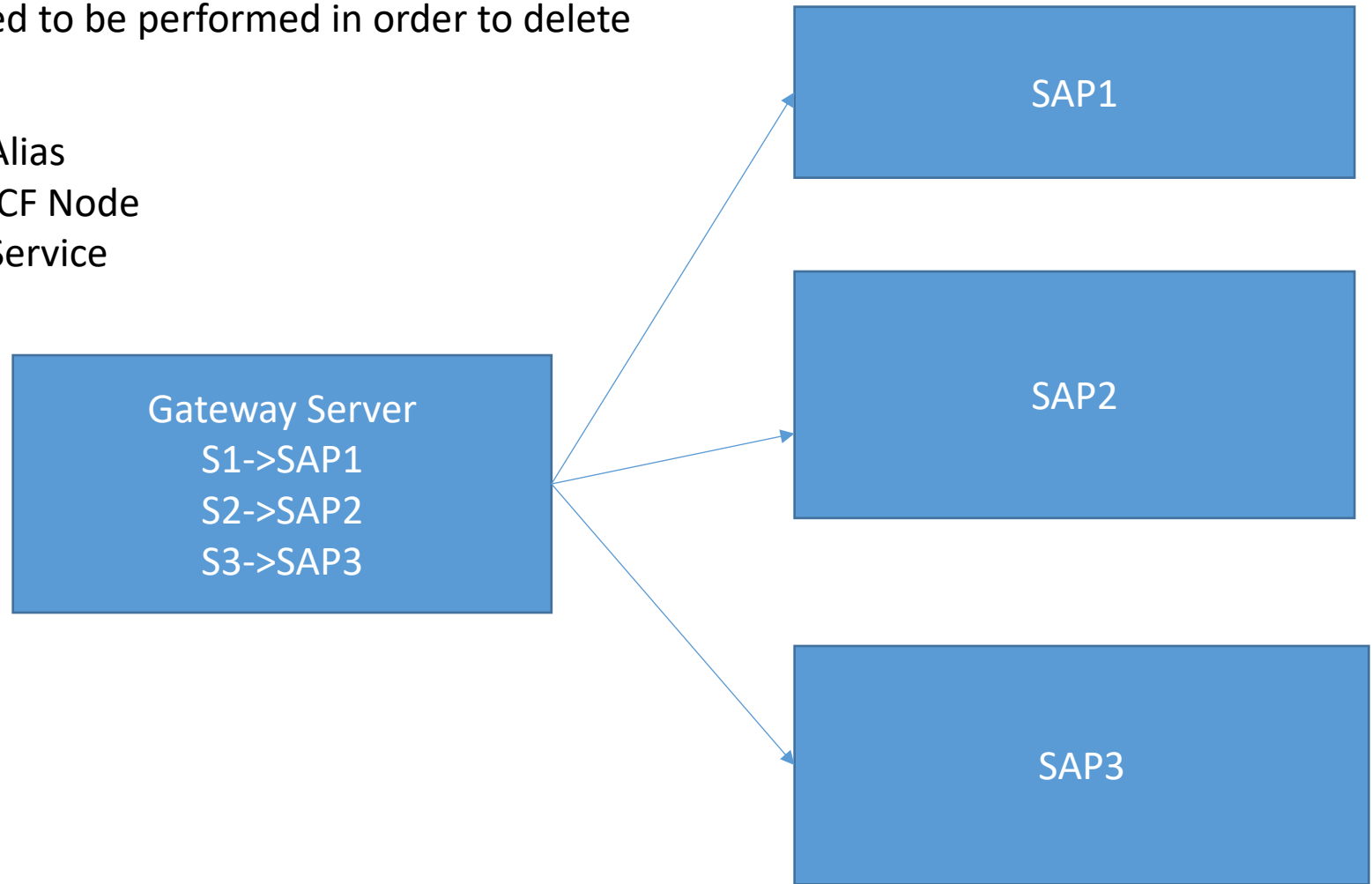
Again Tried Deleting but different error

Activate and Maintain Services

[🔍] | [📥] [📊] [🔍] [📋] | [📤▾] [📊▾] | [🔽 Filter] | [📥 Add Service] [🗑 Delete Service] [📋 Service Details] [🔄 Load Metadata] | [⚠ Error

Service Catalog

Type	Technical Service Name	V...	Service Description	External Service Name
BEP	YPK_CDS_SO_SRV	1	ODATA FROM CDS VIEW	YPK_CDS_SO_SRV
BEP	YPK_ODATA_CDS_CDS	1		YPK_ODATA_CDS_CDS
B				Z_PK_SALES_ODATA_SRV
B				ZC_MATERIALPK_CDS
B				ZPK_C_FL_MEAL_CDS
B				ZPK_CUSSTOMER_ORDER_DET
B				ZPK_LTA_SRV
B				ZPK_MEAL_APP_SRV

Information ⊠

ℹ️ Service cannot be deleted, delete Destination
Assignment(s) first

[✓] [❓]

Session 8

15th Feb

EKPO – ET_PO_ITEM

EKKO – ET_PO_HEADER

1..N

PO	TOTAL PRICE	ADDRESS
1	200	
2	300	
3	400	

Po No.	Item	material
1	10	Laptop
1	20	Mouse
1	30	CPU

2	10	CHAIR
2	20	TABLE
2	30	ROUND TABLE

3	10	PRINTER
3	20	INK

ET_PO_ITEM_DESC

Po No.	Item	Material Desc
1	10	Big Laptop
1	20	Big Mouse, Black
1	30	CPU, i7 processor

Q. What is Navigation?

Ans. In case one Entity set is associated with multiple entity set, then in order to determine from which entity set, data need to be fetched is determined by navigation properties.

Q. What is Association?

Ans. It is a relationship between two entity with cardinality.

Q. What is the difference between cardinality 'M' and 'N' of dependent entity in **OData Association**?

Ans.   M => 0..n
              N => 1..n

Q. What is Association and Navigation in OData

What are different frequently used URI Notations?

This is to get all the data from PO_HEADER
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/**Et_POHeaderSet**
Note: Name of the field should be used same as there in the properties

This is to get the specific header information
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/**Et_POHeaderSet('4400000000')/**

This is how to fetch a single field
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/**Et_POHeaderSet('4400000000')/**Statu?$format=json
Note: Name of the field should be used same as there in the properties

****

Get number of entries - /sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('4500000001')/$count
****

Extract only some fields of the Entity Type ($select=Field1,Field2,Field3)
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('4500000001')?$select=Ernam,Bukrs
****

Session 9

16 Feb 2021

Get all the PO Items(ET_POITEMSET_GET_ENTITYSET method should be implemented)
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet
****

Get the specific PO ITEM(ET_POITEMSET_GET_ENTITY method should be implemented)
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet(Ebeln='4500000002',Ebelp='00010')
****

Get few fields:
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet?$select=Ebeln,Ebelp,Werks
****

in json format
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet?$select=Ebeln,Ebelp,Werks&$format=json
****

get the count
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet/$count
****

Access a specific field
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POItemSet(Ebeln='4500000000',Ebelp='00010')/Menge

****

Multiple Values
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('5815000026')/HeadToItemNav?$format=json
/sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('5815000026')/?$expand=HeadToItemNav&$format=json

Q: What is the difference between the below two URIs?

1. /sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('5815000026')/HeadToItemNav

2. /sap/opu/odata/SAP/ZABAPRITUAL_SRV/Et_POHeaderSet('5815000026')/?$expand=HeadToItemNav

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/sap/opu/odata/SAP/ZABAPRITUAL_SRV/ => Resource Root
Et_POItemSet(Ebeln='4500000002',Ebelp='00010') => Resource
?

/sap/opu/odata/SAP/ZABAPRITUAL_SRV/ => Resource Root

Et_POItemSet => Resource Name

? $select=Ebeln,Ebelp,Werks => Query String

What are the different Query Option?

DPC_EXT Method	OData Query (URI)	DPC_EXT Method Key Parameter(s)
_GET_ENTITYSET	**<ENTITYSET Path>** = /sap/opu/odata/sap/<SERVICE NAME>/<ENTITYSET Name>	**Export:** ET_ENTITYSET
_GET_ENTITYSET	**<ENTITYSET Path>?$format=json**	
_GET_ENTITYSET	**<ENTITYSET Path>?$filter**=<Entity Property1> eq <value> and <Entity Property2> eq <value> **<ENTITYSET Path>?$filter**= Ebeln eq '4000000' and Bukrs = 'IN50'	**Import:** IT_FILTER_SELECT_OPTIONS and IV_FILTER_STRING **Export:** ET_ENTITYSET
_GET_ENTITYSET	**<ENTITYSET Path>?$orderby**=<Entity Property1>,<Entity Property2> /sap/opu/odata/sap/<SERVICE NAME>/<ENTITYSET Name>?$**orderby= Ebeln,Bukrs OR** **<ENTITYSET Path>?$orderby**=<Entity Property1> desc,<Entity Property2> desc	**Import:** IT_ORDER **Export:** ET_ENTITYSET

_GET_ENTITYSET	**<ENTITYSET Path>?$search**=<value>	**Import:** IV_SEARCH_STRING **Export:** ET_ENTITYSET
_GET_ENTITYSET	**<ENTITYSET Path>?$top=<value>** **Or** **<ENTITYSET Path>?$top=1000&$skip=10**	**Import:** IS_PAGING-TOP **Export:** ET_ENTITYSET
_GET_ENTITY	<ENTITYSET Path>(<Entity Property>='value') **OR <ENTITYSET Path>**('value')	**Import:** IT_KEY_TAB **Export:** ER_ENTITY
_GET_ENTITY	In case if we had association and navigation between 2 entities	**Import:** IT_NAVIGATION_PATH **Export:** ER_ENTITY
_EXPANDED_ENTITY	ReosouceRoot/<ENTITYSET Name1>(<'value')**/**<ENTITYSET Name2> **OR** ResourceRoot/<ENTITYSET Name1>(<'value') **?$expand=**<ENTITYSET Name2>	**Import:** IV_ENTITY_NAMEIV_ENTITY_S ET_NAMEIT_NAVIGATION_PAT HIT_KEY_TAB **Export:** ER_ENTITYSET

What are the different status codes and their Meaning?

Status Code	Text	Cause
200	OK	The request is successfully executed by GET method
201	OK	The request is successfully executed by POST method
203	OK	The request is successfully executed by UPDATE method
204	OK	The request is successfully executed by DELETE method
400	Bad Request	The request could not be parsed successfully because of a syntactically or semantically incorrect URI.
401	Unauthorized	Authentication is required and has not been provided.
403	Forbidden	User does not have privileges to access the entity
404	Record Not Found	The record does not exist for the given query.
405	Method Not Allowed	A request cannot be used for this record.
406	Not Acceptable	Self-explanatory
500	Internal Server Error	Internal Error
501	Not Implemented	Not Implemented
502	Bad Gateway	Gateway issue
503	Service Unavailable	Self-explanatory

Entity Name, Entity Type and Entity Sets are case sensitive or not?

Ans. - Yes

What is the difference between Bad request and Bad Gateway?

Ans.
Bad Request(400) – Incorrect URI
Bad Gateway(502) – SAP NW Issue

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18t – Feb

Q. What is Batch Call Processing?

If you want to perform the multiple operations on a single or multiple entity together then we go for Batch Call Processing.

It helps to improve the performance and to maintain the data integrity and consistency while processing. It gets processed normally in parallel
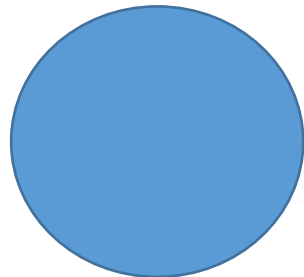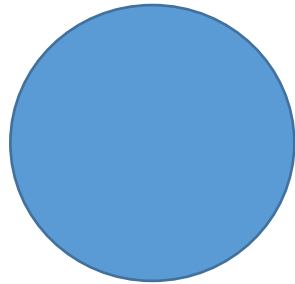
Q. What HTTP method need to be called in order to call the Batch Processing?

Ans. POST
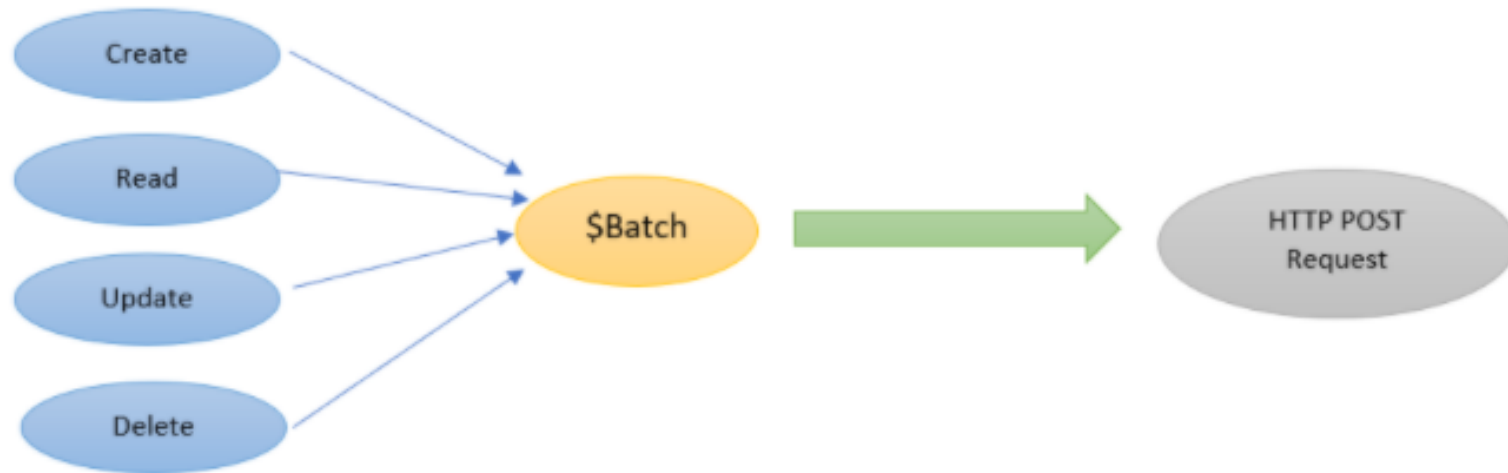
Q. Where we can define the number of parallel queries for Batch Call processing?

Ans.
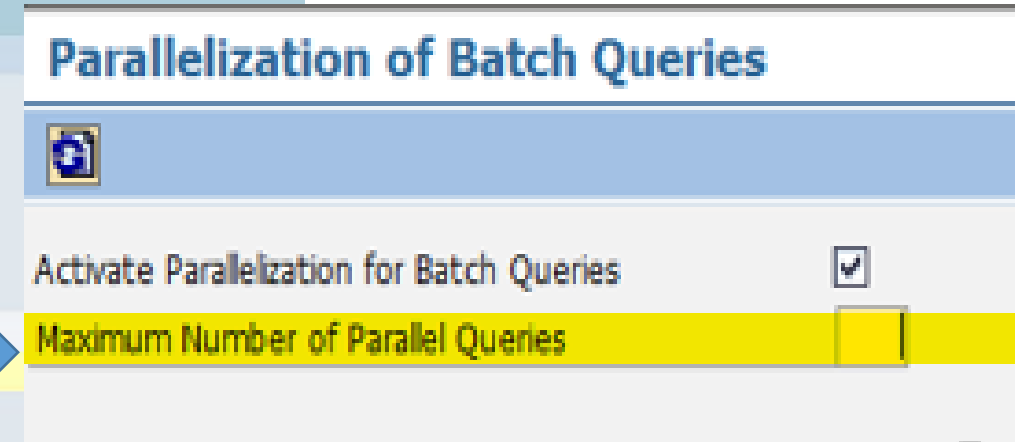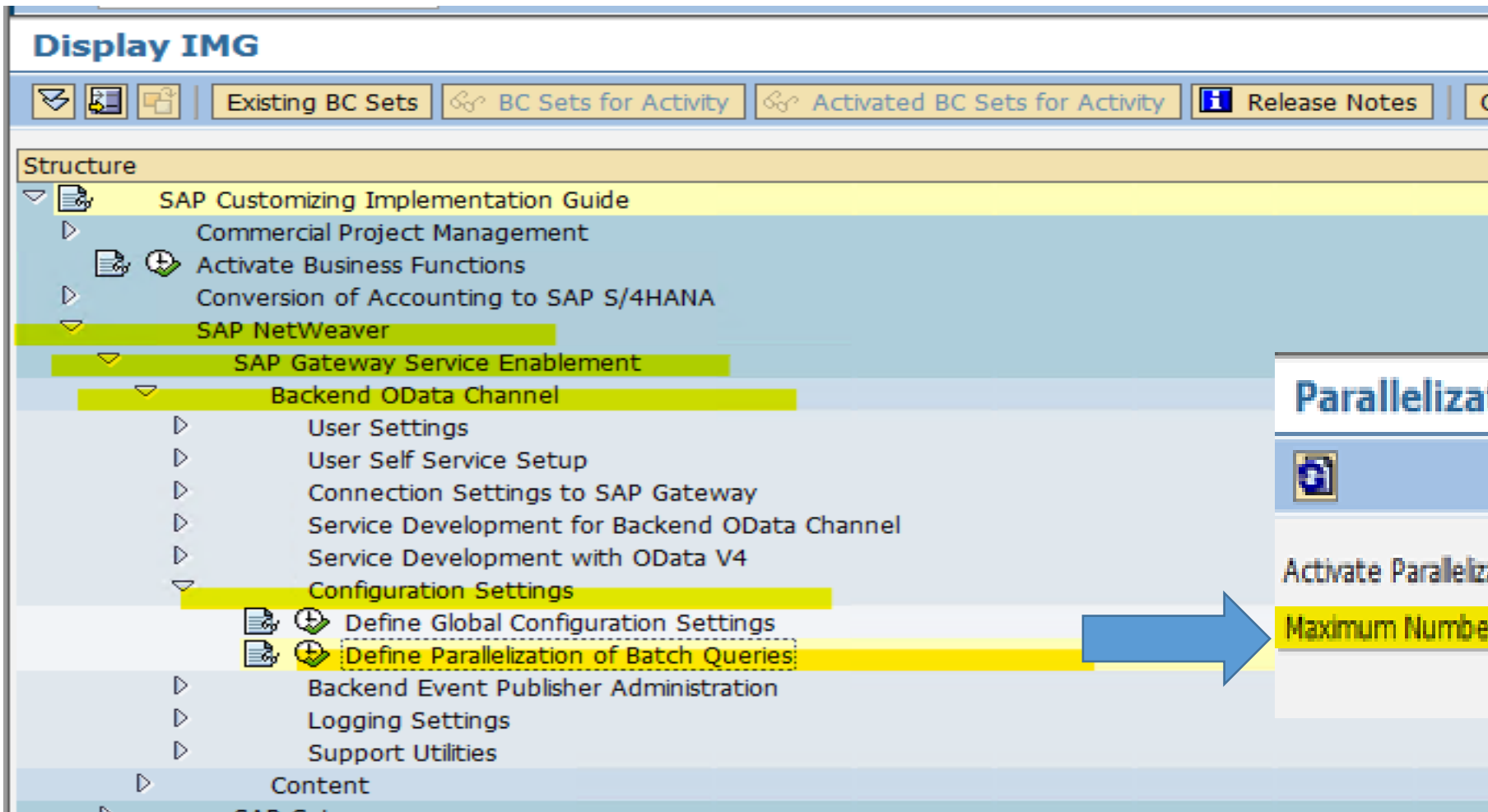
In case if you want to disable the activation of parallel batch request, how to do?

Source:
https://blogs.sap.com/2018/05/06/batch-request-in-sap-gateway/

```
15   --batch_00567
16   Content-Type: multipart/mixed; boundary=changeset
17
18   --changeset
19   Content-Type: application/http
20   Content-Transfer-Encoding: binary
21
22   DELETE ZEMPLOYEE_DETAILSet(EmpId='0000000002') HTTP/1.1
23
24
25   --changeset
26   Content-Type: application/http
27   Content-Transfer-Encoding: binary
28
29   PUT ZEMPLOYEE_DETAILSet(EmpId='0000000001') HTTP/1.1
30   CONTENT-Type: application/json
31
32   {
33       "EmpId" : "0000000001",
34       "Name" : "DONALD",
35       "Dept" : "DS ABAP",
36       "Designation" : "ASE",
37       "Skillset" : "ABAP",
38       "Experience" : "000002"
39       }
40
41   --changeset
42
43   --batch_00567--
```

FOR CHANGESET CONTENT TYPE HEADER

Q. Can we use multiple **one or more Update/delete/insert operation within a "Changeset"?**

Yes

Q. Can we use "**Commit work**" statement within any one UPDATE/CREATE/DELETE entity method.

No

Q. What will happen if you use Commit work?

Go into dump

Q. What prefix need to be used in HTTP header in order to segregate the multiple batch request separately?

Ans. By defining the **Boundry Value** for Batch requrest

Q. How to segregate the multiple action within a change set?

Ans. By defining **the boundary value** for Change set

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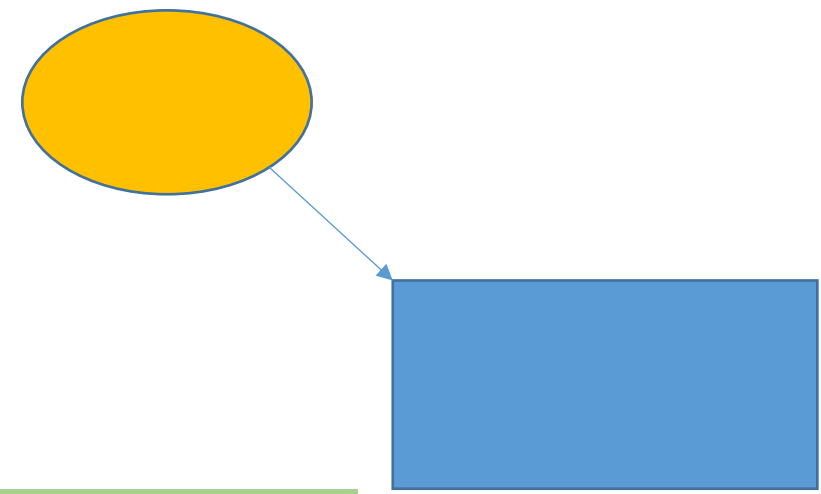
What is the correct Full form of CSRF ?

1. Cross site reference Forgery

2. **Cross site Request Forgery**

3. Cross significance random Forgery

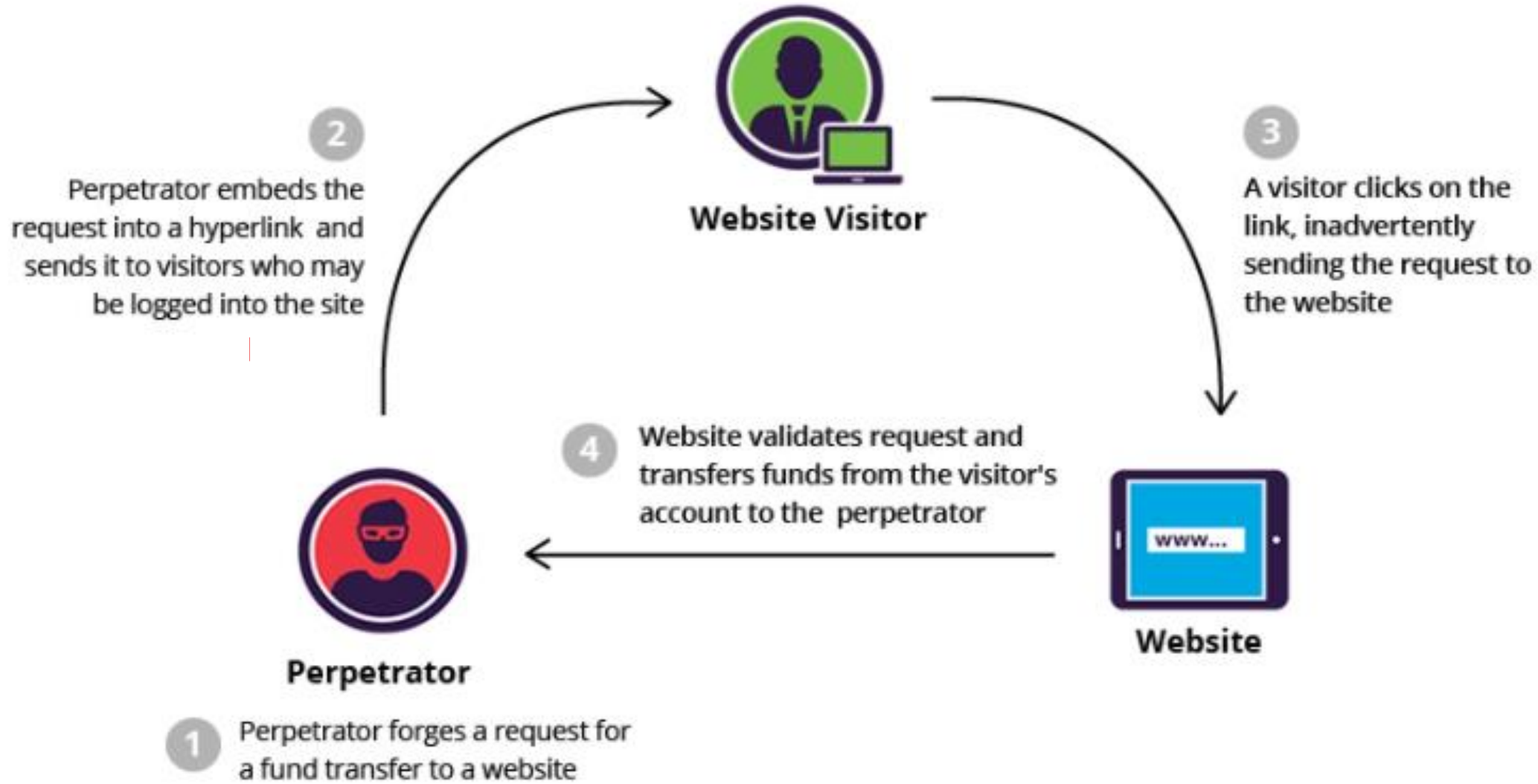4. Cross site rare Forgery

Explain XCSRF Token with example ?

or example, a typical GET request for a $100 bank transfer might look like:

GET http://netbank.com/transfer.do?acct=PersonB&amount=$100 HTTP/1.1

A hacker can modify this script so it results in a $100 transfer to their own account. Now the malicious request might look like:

GET http://netbank.com/transfer.do?acct=AttackerA&amount=$100 HTTP/1.1

2 Perpetrator embeds the request into a hyperlink and sends it to visitors who may be logged into the site

Website Visitor

3 A visitor clicks on the link, inadvertently sending the request to the website

4 Website validates request and transfers funds from the visitor's account to the perpetrator

Perpetrator

1 Perpetrator forges a request for a fund transfer to a website

Website

Cross site request forgery (CSRF), also known as XSRF, Sea Surf or Session Riding, is an attack that tricks a web browser into executing an unwanted action in an application to which a user is logged in.

Some Good Reference:-

https://www.youtube.com/watch?v=m0EHlfTgGUU => Animation 3 Minutes

https://www.youtube.com/watch?v=Y8-duChsYqI   =>20 Minutes, Anubhav Sir Video

OData and CSRF Token

- CSRF token is applicable on HTTP protocol only
- REST, SOAP supports the HTTP protocol so CSRF token can be used for REST and SOAP to validate the session for a specific user

Gateway(GET) → Response
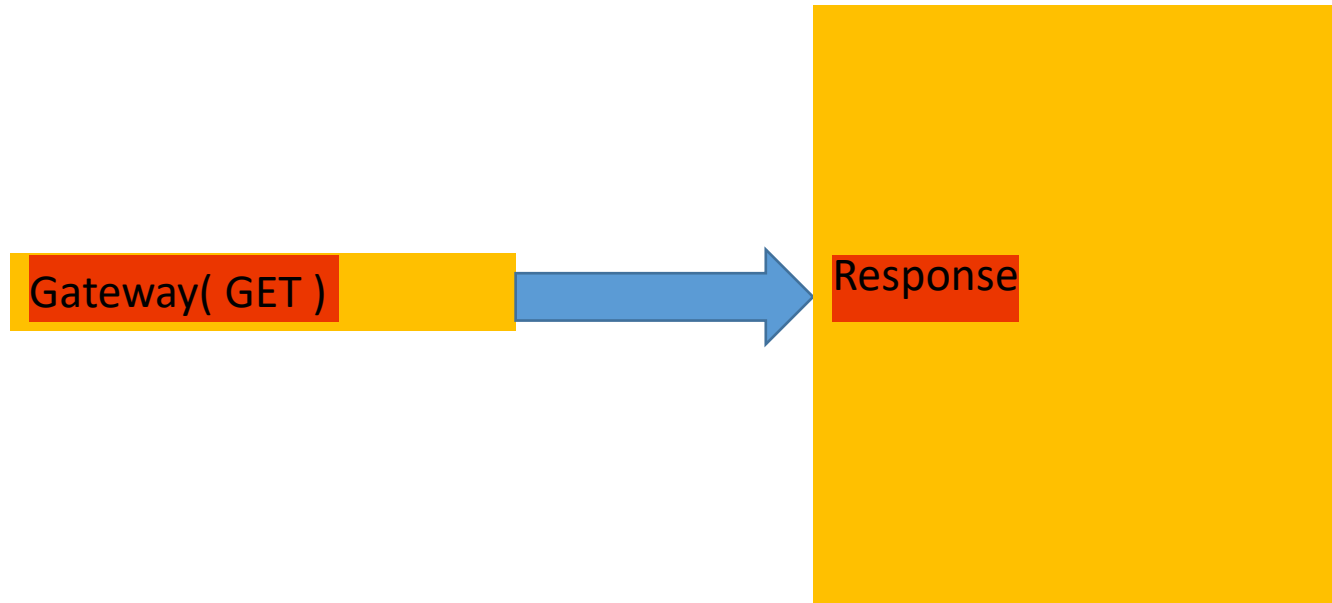
Q. Do we have to take care while performing the post call from Gateway/Fiori/UI5 Application?

No. It will be taken care by the ui5 Framework/Odata Gateway

When CSRF Token is required?

1. It is required when you are going to call the Odata Service from third Party Application – PostMan, Java Application, Any .Net Application

2. From UI5/Fiori also it can be required if you are not going to make the Odata Call. Rather you are making a REST based call using AJAX.

How to achieve this one?

Ans.   First make the Get call and the get the token.
        Once you get the token, pass this token during post call and then only you will be able to perform

What is the T-Code to set the parameter to enable or disable the CSRF Token Request?

Ans. T-Code is **SICF** Parameter Name: ~CHECK_CSRF_TOKEN . Here value =1 => Enable
and 0 => Disable

Q. If you are going to make that parameter(~CHECK_CSRF_TOKEN) disable then do you not have to do anything while posting from the third party application or using the AJAX Call?
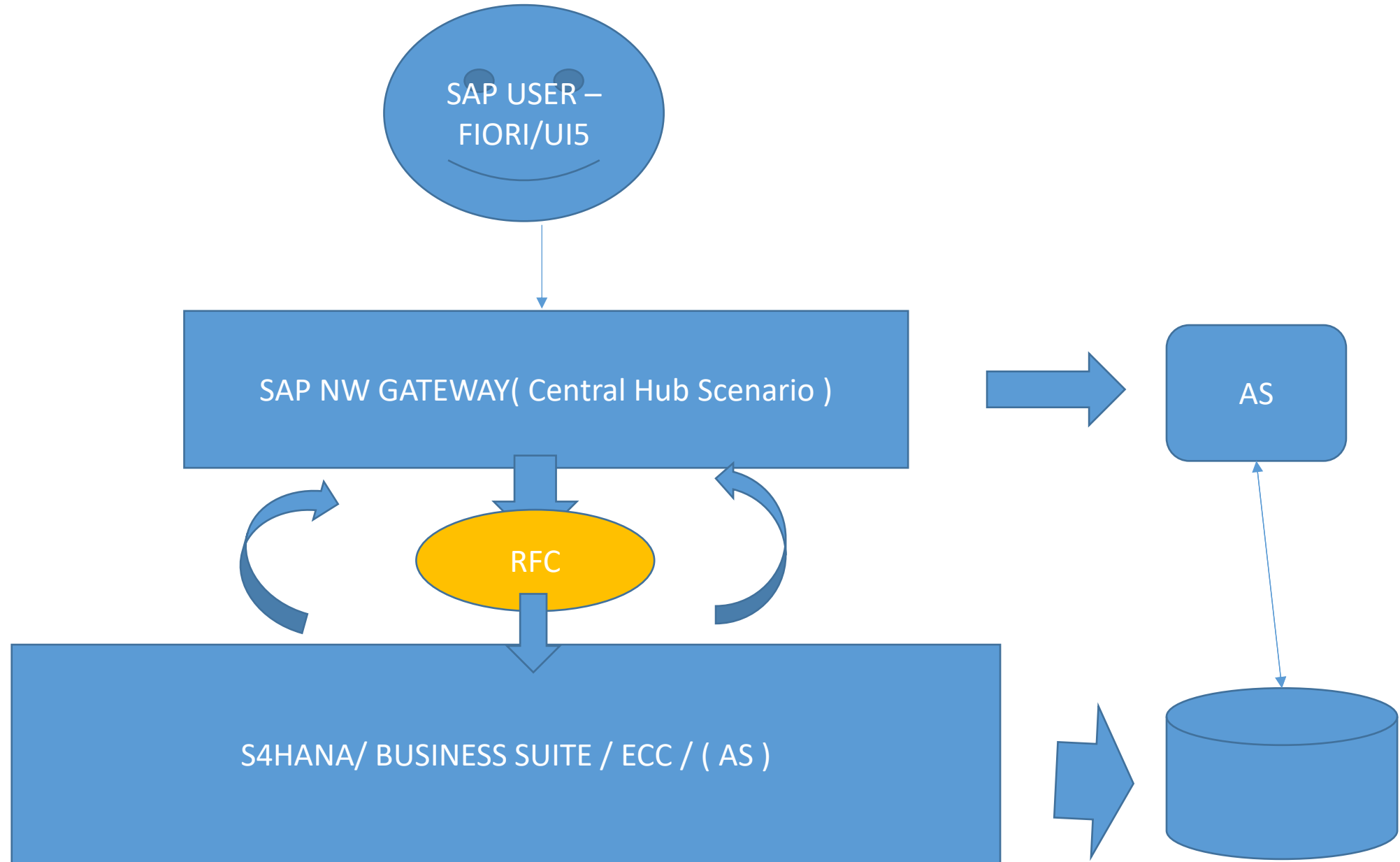
Ans. No We have to pass the below parameter. We have to do something.
X-SCRF-TOKEN = 'X'.

Session 13

20th Feb '21

Q. What is the performance improvement techniques in Odata?

1. Use the $expand in query string – It will reduce the roundtrip time

2. Use the Data provider expand Method in stead of default implementation -

    GET_EXPANDED_ENTITY
    GET_EXPANDED_ENTITYSET

3. **$Batch** Call – grouping the multiple operation together in one Odata call

4. **Deep Insert**

5. Delta Query – Instead of getting all get the difference

6. $select

7. $filter

8. $top and $skip

9. Avoid the coding at NW Gateway Layer. Do Maximum coding at Application Server

10. Whenever possible prefer for the Embedded scenario.
     In the embedded also prefer to Co-Deployment option.

Note:- There are two option to select in embedded scenario –
            1. Routing Based
            2. Co- Deployment

Sap suggests to use Co-Deployment whenever possible because 2nd option (Co-deployment) is 15%
is faster than 1st one(Routing Based)

NW Gateway(2ms)

sap-statistics=true

RFC(5)

dispatcher

AS(10)

wp1

wp2
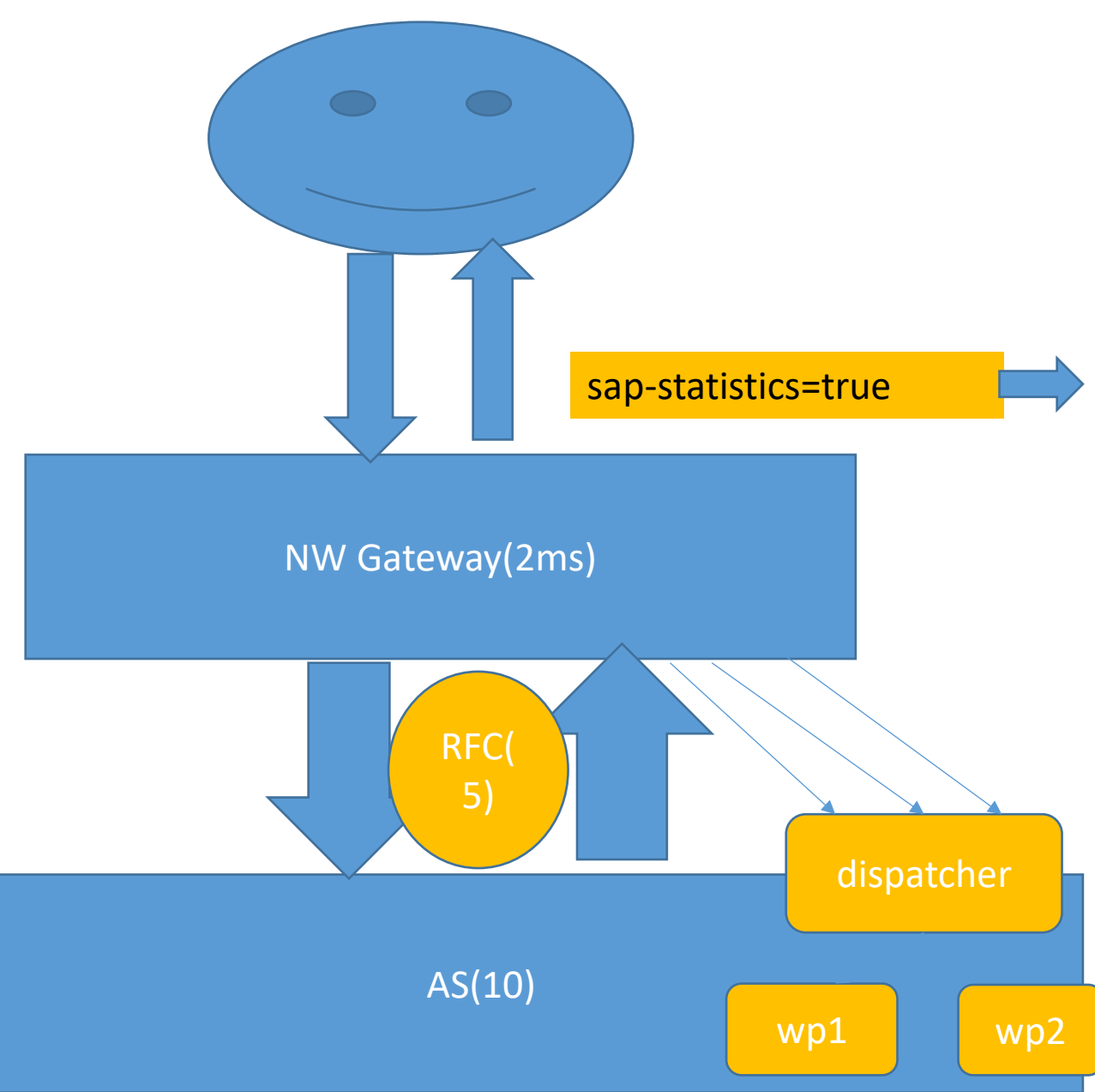
Total = 100ms, GWHUB = 50ms , GWRFCOH = 10ms, Gwbe = 20ms
Gwapp = 5ms,

Gwnongw = format conversion =
In case of json and xml = 0,
But in case of XLSX format = 30ms

Gwappssum = The complete time taken by the application in case
Batch parallelization.

Gwbewait = The time for which GWBE has to wait to become free
the work process

Fw = nw gateway time + rfc + as = 2 + 5 + 10 = 17ms

Gwtotal = fw + Service Implementation(Logic Execution)

Gwapplogic => 70ms

Different Parameters and their meaning

Parameter	Description
gwhub	Time spent at Gateway framework on the Hub system
gwrfcoh	Time spent on then network (between hub and backend)
gwbe	Time spent at Gateway framework in the backend
gwapp	Time consumed by implementation of the Gateway service itself
gwnongw	Time consumed by components other than SAP Gateway (e.g. RAL, Excel-format)
gwappsum	Only in case of batch parallelization: the sum of service implementations in the multiple operations (inside the batch)
gwbewait	Only in case of batch parallelization: the Gateway FWK has to wait for e.g. work process or operation to finish
fw	The sum of SAP Gateway framework. With other words: fw= gwhub + gwbe + gwrfcoh
gwtotal	The sum of SAP Gateway FWK and service implementation: gwtotal=fw+gwapp

Detail Carlos Roggan Blog Reference: Click Here
Anubhav Video : https://youtu.be/vYbd0IUd9Go

Thanks to Carlos Roggan(great blog) and Anubhav(for video)

Blog full link:- https://blogs.sap.com/2016/01/28/understanding-sap-performance-statistics-for-sap-netweaver-gateway-ser

What is the t-Code to have the performance Trace in GW?

Ans. **/IWFND/TRACES**

XS oDATA

In case of any Query of Feedback, Please feel free to reach out to pankajkumaram@gmail.com
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