Microsoft

SAP and Azure
IoT Demo – „Hello World“

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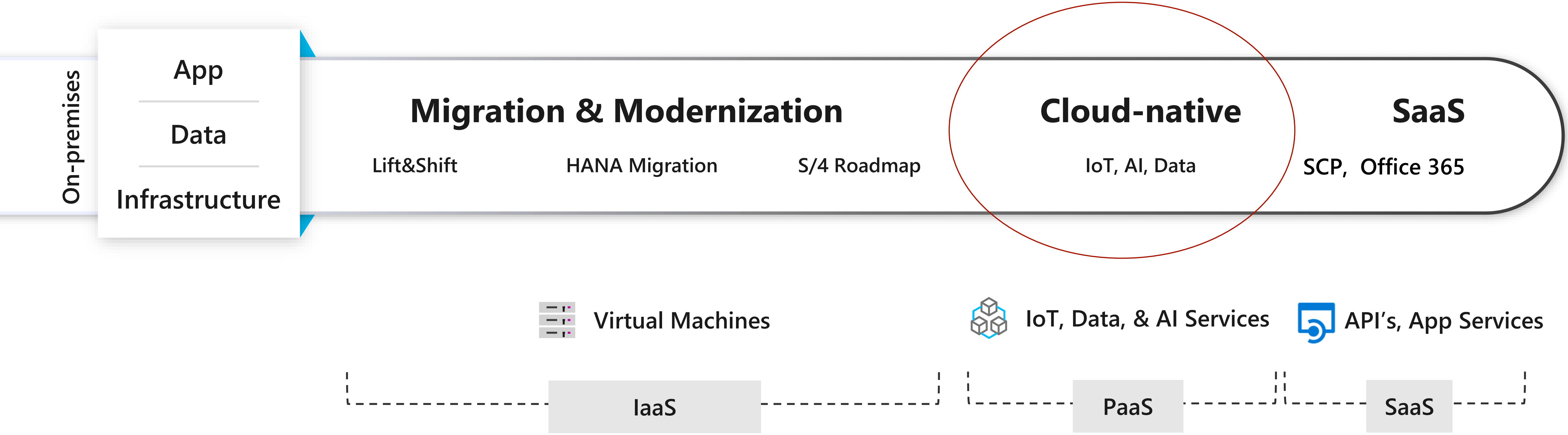
Demo introduction

The SAP on Azure customer cloud journey



On-premises

App

Data

Infrastructure

Migration & Modernization

Lift&Shift

HANA Migration

S/4 Roadmap

Cloud-native

IoT, AI, Data

SaaS

SCP, Office 365

Virtual Machines

IoT, Data, & AI Services

API's, App Services

IaaS

PaaS

SaaS

Demo motivation and positioning

- Demonstrate Lego-like integration between Azure IoT and SAP ECC based on SAP Gateway

- Public repeatble setup of the demo based on :
  - Public Azure Raspberry emulator
  - Public SAP demo system
  - Azure IoT Hub and Logic App

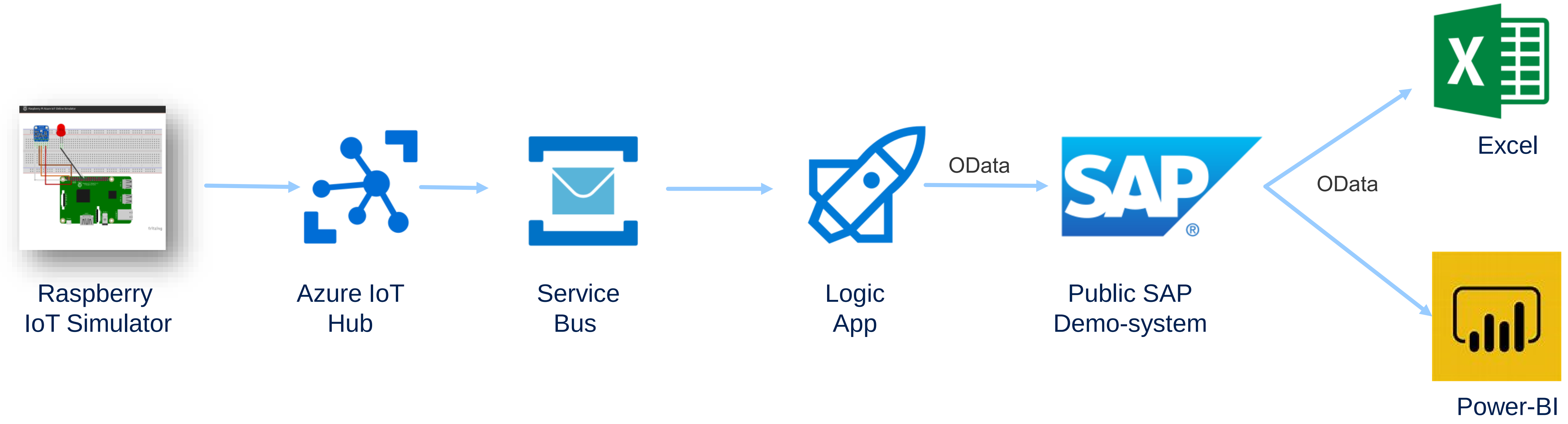
- Basic modification of existing Azure IoT tutorial to demonstrate SAP connectivity

- This is demo not Enterprise IT!

Demo scenario and basic storyline

- Imagine the Raspberry Emulator as a IoT device used in shipping of heat-sensitive vaccines
- If the temperature is measured above 30°, the vaccine is damaged and must be replaced
- To replace the vaccine, a sales order is automatically created in SAP ECC in case the measured temperature is above 30°
- For excel users the current sales order SAP ECC will be displayed in Excel

Demo scenario



Raspberry IoT Simulator

Azure IoT Hub

Service Bus

Logic App

OData

Public SAP Demo-system

OData

Excel

Power-BI

Microsoft

Demo implementation

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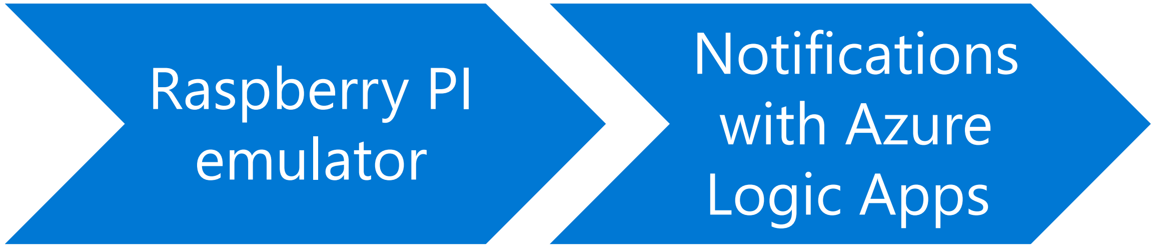
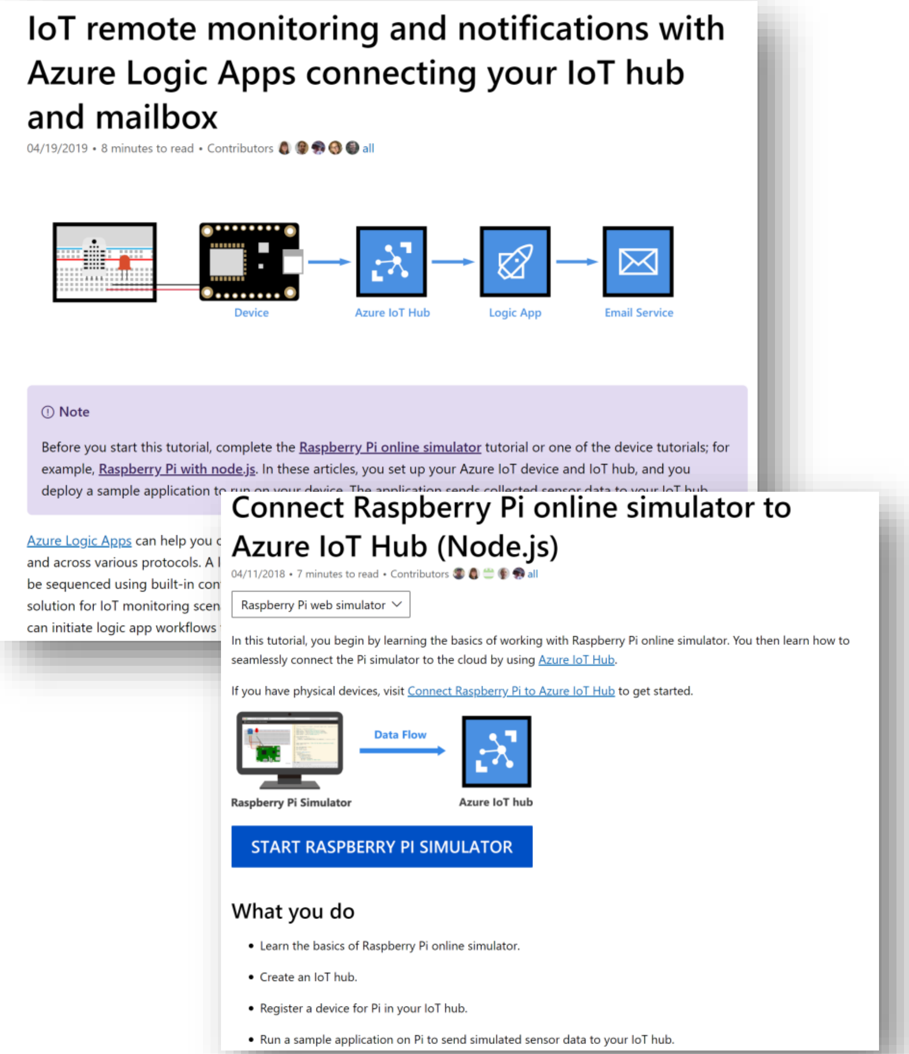
Demo implementation



Demo preparation: Raspberry PI emulator and IoT Hub

- Implement Raspberry PI emulator tutorial (Link)

- Implement IoT remote monitoring and notifications with Azure Logic Apps connecting your IoT hub and mailbox tutorial (Link)
  → Stop at the paragraph "Configure the logic app trigger"



IoT remote monitoring and notifications with Azure Logic Apps connecting your IoT hub and mailbox

04/19/2019 • 8 minutes to read • Contributors all

ⓘ Note

Before you start this tutorial, complete the Raspberry Pi online simulator tutorial or one of the device tutorials; for example, Raspberry Pi with node.js. In these articles, you set up your Azure IoT device and IoT hub, and you deploy a sample application to run on your device. The application sends collected sensor data to your IoT hub

Azure Logic Apps can help you c
and across various protocols. A l
be sequenced using built-in con
solution for IoT monitoring scen
can initiate logic app workflows

Connect Raspberry Pi online simulator to Azure IoT Hub (Node.js)

04/11/2018 • 7 minutes to read • Contributors all

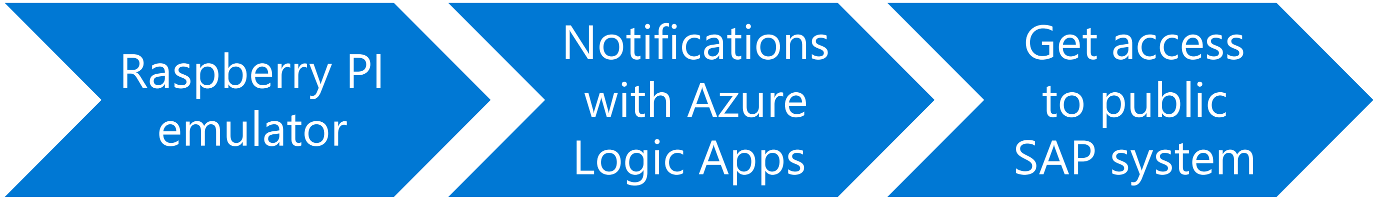
In this tutorial, you begin by learning the basics of working with Raspberry Pi online simulator. You then learn how to seamlessly connect the Pi simulator to the cloud by using Azure IoT Hub.

If you have physical devices, visit Connect Raspberry Pi to Azure IoT Hub to get started.

What you do

- Learn the basics of Raspberry Pi online simulator.
- Create an IoT hub.
- Register a device for Pi in your IoT hub.
- Run a sample application on Pi to send simulated sensor data to your IoT hub.

Demo implementation



Raspberry PI emulator

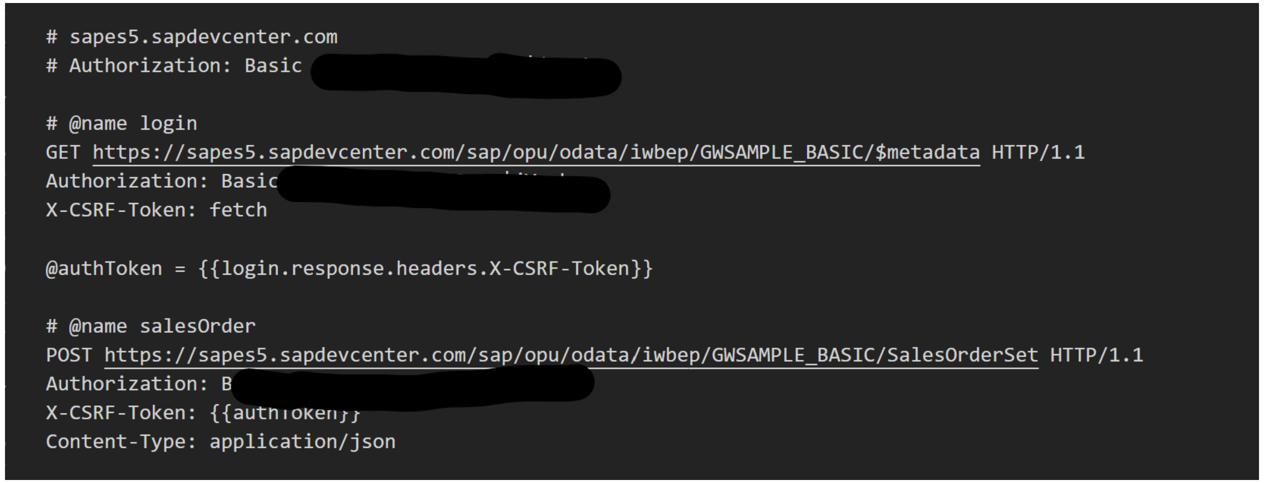
Notifications with Azure Logic Apps

Get access to public SAP system

Demo preparation: Access to public SAP demo system

- Get access to SAP Gateway demo system(Link)
- Get familiar with GWSampleBasic Odata Service (Visual-Code REST Client)
- Sample code:

REST_CLIENT_SAP_ODATA.txt

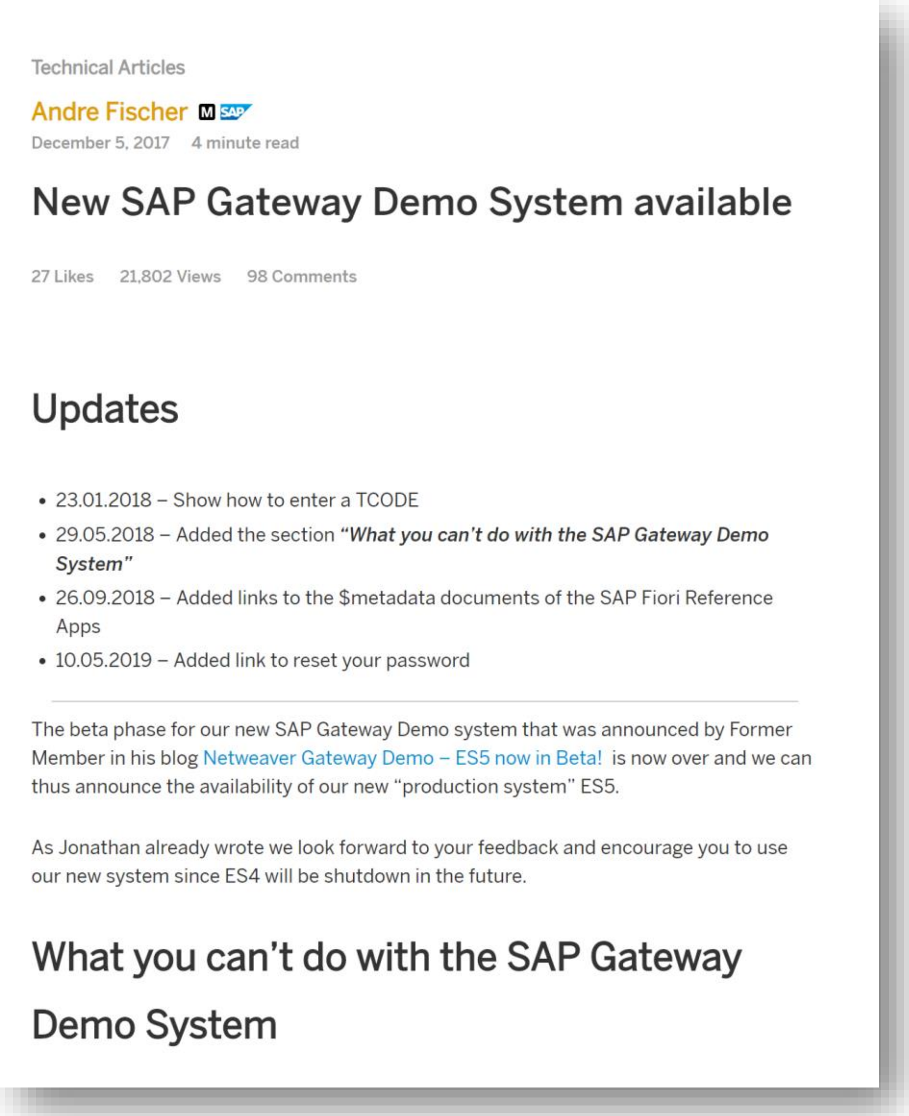


```
# sapes5.sapdevcenter.com
# Authorization: Basic [redacted]

# @name login
GET https://sapes5.sapdevcenter.com/sap/opu/odata/iwbep/GWSAMPLE_BASIC/$metadata HTTP/1.1
Authorization: Basic[redacted]
X-CSRF-Token: fetch

@authToken = {{login.response.headers.X-CSRF-Token}}

# @name salesOrder
POST https://sapes5.sapdevcenter.com/sap/opu/odata/iwbep/GWSAMPLE_BASIC/SalesOrderSet HTTP/1.1
Authorization: B[redacted]
X-CSRF-Token: {{authToken}}
Content-Type: application/json
```



Technical Articles

Andre Fischer

December 5, 2017 4 minute read

New SAP Gateway Demo System available

27 Likes 21,802 Views 98 Comments

Updates

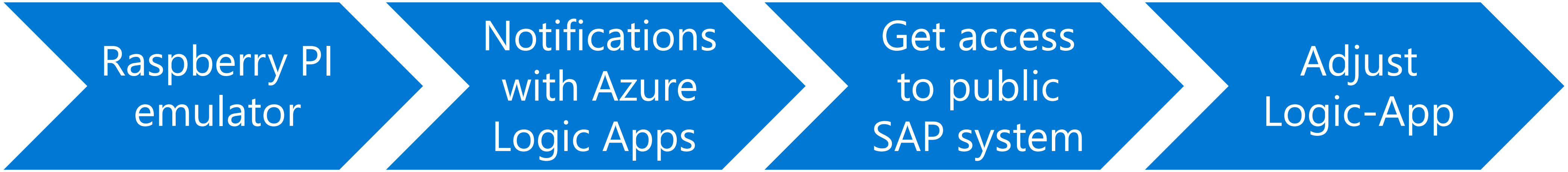
- 23.01.2018 – Show how to enter a TCODE
- 29.05.2018 – Added the section *"What you can't do with the SAP Gateway Demo System"*
- 26.09.2018 – Added links to the $metadata documents of the SAP Fiori Reference Apps
- 10.05.2019 – Added link to reset your password

The beta phase for our new SAP Gateway Demo system that was announced by Former Member in his blog Netweaver Gateway Demo – ES5 now in Beta! is now over and we can thus announce the availability of our new "production system" ES5.

As Jonathan already wrote we look forward to your feedback and encourage you to use our new system since ES4 will be shutdown in the future.

What you can't do with the SAP Gateway Demo System

Demo implementation



Raspberry PI emulator

Notifications with Azure Logic Apps

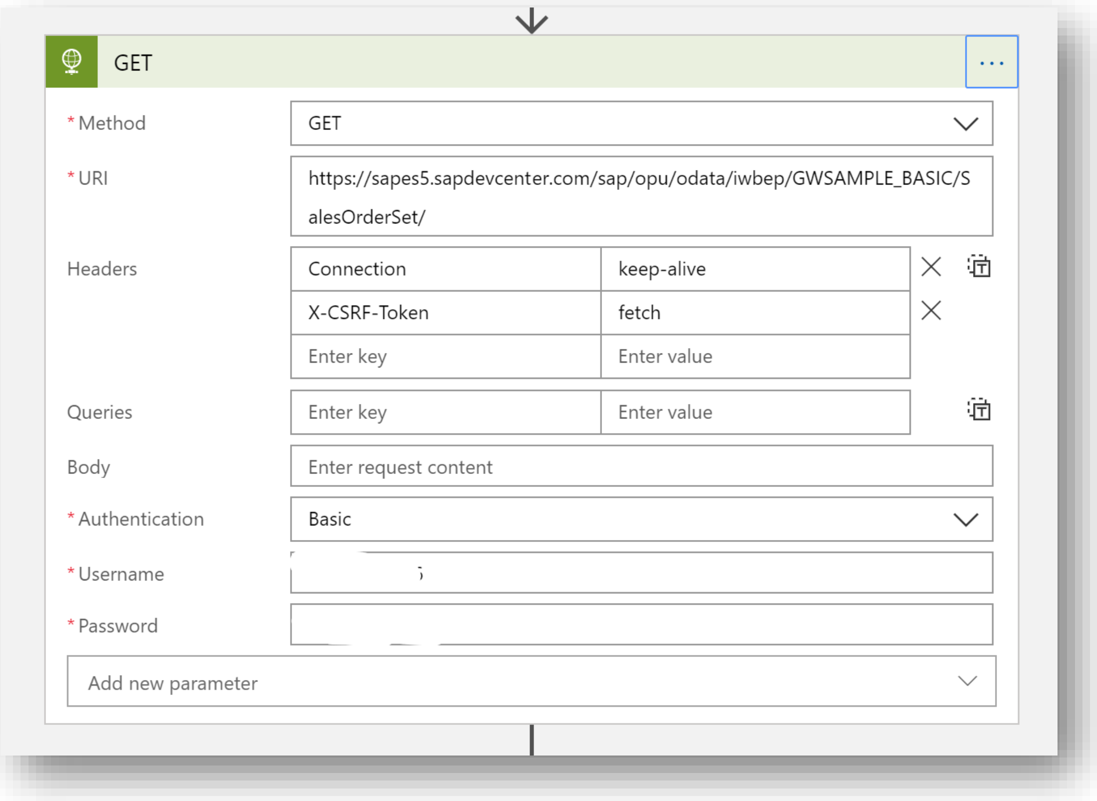
Get access to public SAP system

Adjust Logic-App

Demo implementation: Logic App 1/2

- Finish the tutorial until : Configure the logic app trigger / 5. Create a service bus connection.
- Instead of creating an STMP connection, create a HTTP GET Action

- URI: Link
- Header parameter:
  - Connection: keep-alive
  - X-CSRF-Token: fetch
  - Authentication: Basic
  - User/Pwd: Credentials for SAP demo system

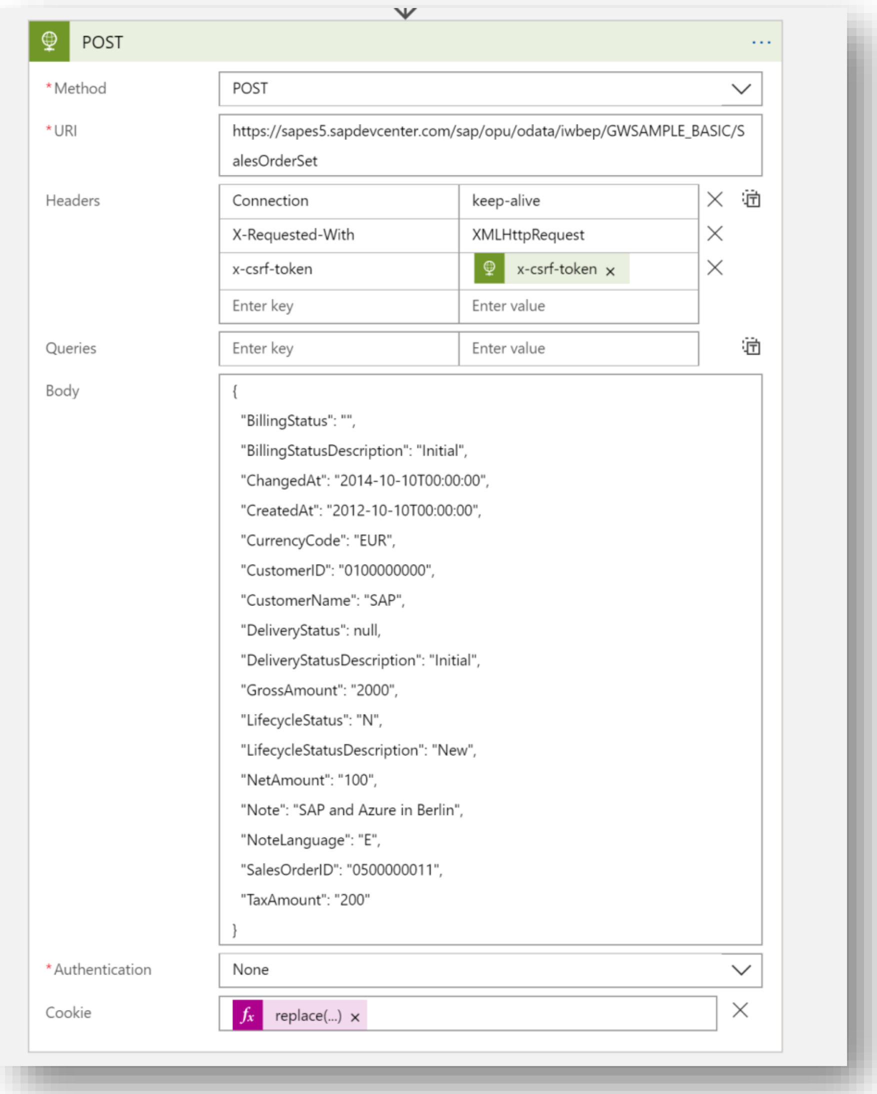


GET

* Method	GET	
* URI	https://sapes5.sapdevcenter.com/sap/opu/odata/iwbep/GWSAMPLE_BASIC/SalesOrderSet/	
Headers	Connection	keep-alive
	X-CSRF-Token	fetch
	Enter key	Enter value
Queries	Enter key	Enter value
Body	Enter request content	
* Authentication	Basic	
* Username		
* Password		

Demo implementation: Logic App 2/2

- Append a HTTP POST Action to the GET-request
- The logic app creates an SAP sales order via the Odata Gateway
- Sample code for Logic App: LOGIC_APP_SAP_ODATA_POST.txt
- Important parameters:
  - X-csrf-token: @outputs('GET')['headers']['x-csrf-token']
  - Function for cookie: **replace(**outputs**(**'GET'**)**['headers']['Set-cookie'], ',', ‘;’**)**
  - Further details in Bartosz’s Blog



POST

*Method: POST

*URI: https://sapes5.sapdevcenter.com/sap/opu/odata/iwbep/GWSAMPLE_BASIC/SalesOrderSet

Headers

Connection	keep-alive
X-Requested-With	XMLHttpRequest
x-csrf-token	x-csrf-token
Enter key	Enter value

Queries

Enter key	Enter value

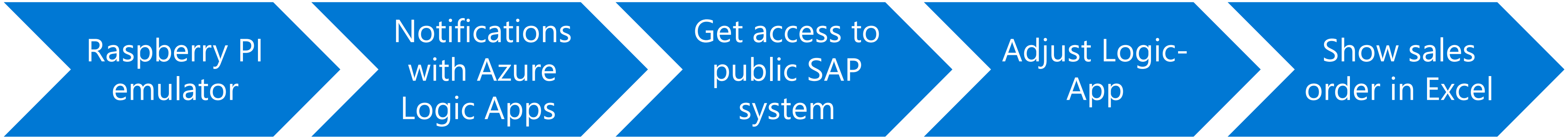
Body

```
{
  "BillingStatus": "",
  "BillingStatusDescription": "Initial",
  "ChangedAt": "2014-10-10T00:00:00",
  "CreatedAt": "2012-10-10T00:00:00",
  "CurrencyCode": "EUR",
  "CustomerID": "0100000000",
  "CustomerName": "SAP",
  "DeliveryStatus": null,
  "DeliveryStatusDescription": "Initial",
  "GrossAmount": "2000",
  "LifecycleStatus": "N",
  "LifecycleStatusDescription": "New",
  "NetAmount": "100",
  "Note": "SAP and Azure in Berlin",
  "NoteLanguage": "E",
  "SalesOrderID": "0500000011",
  "TaxAmount": "200"
}
```

*Authentication: None

Cookie: replace(...)

Demo implementation



Raspberry PI emulator

Notifications with Azure Logic Apps

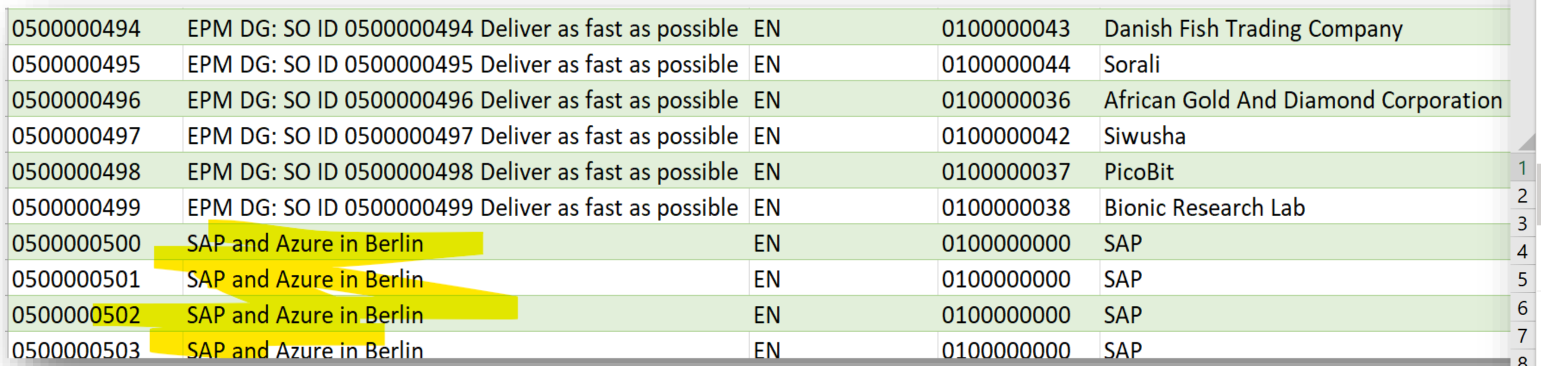
Get access to public SAP system

Adjust Logic-App

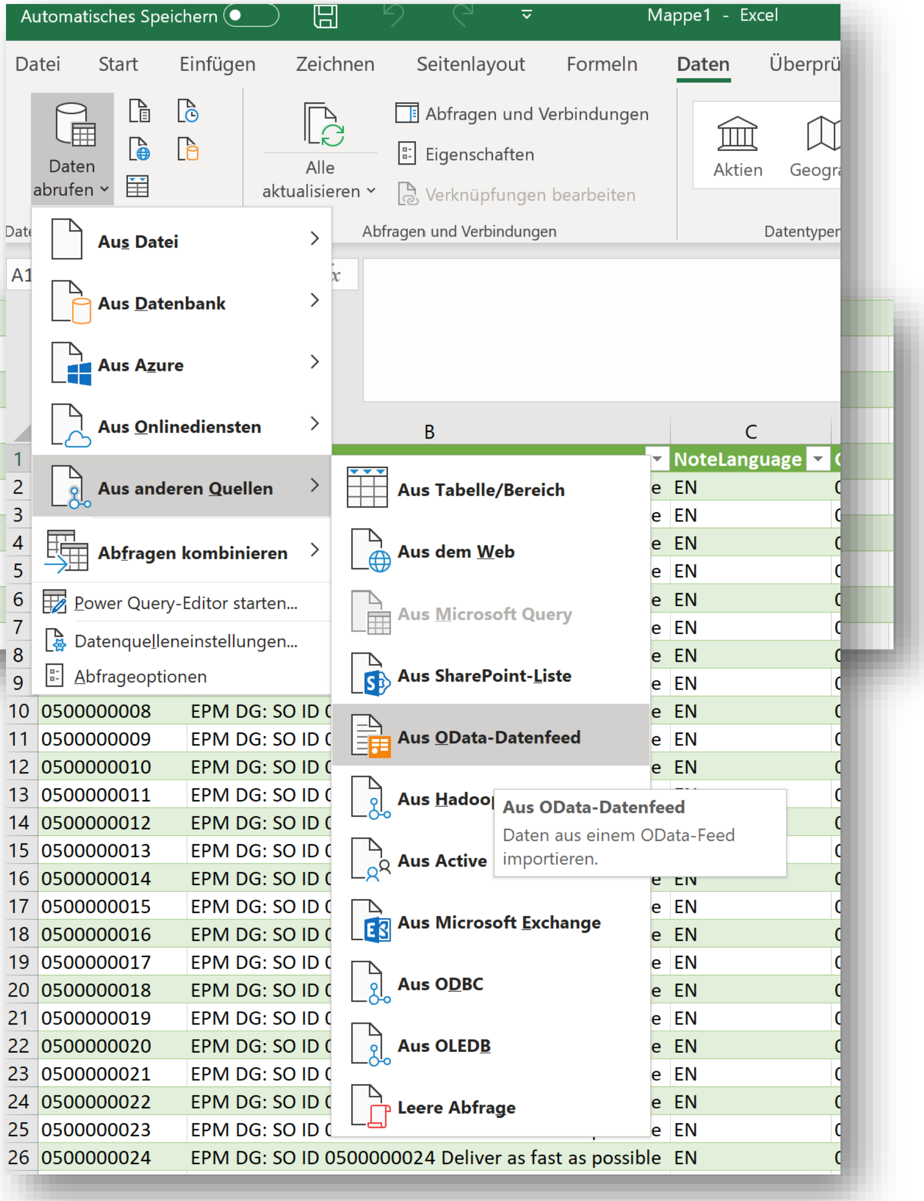
Show sales order in Excel

Demo implementation: Show sales order in Excel

- Connect to Odata datssource
- URL: Link
- Display results:



0500000494	EPM DG: SO ID 0500000494 Deliver as fast as possible	EN	0100000043	Danish Fish Trading Company
0500000495	EPM DG: SO ID 0500000495 Deliver as fast as possible	EN	0100000044	Sorali
0500000496	EPM DG: SO ID 0500000496 Deliver as fast as possible	EN	0100000036	African Gold And Diamond Corporation
0500000497	EPM DG: SO ID 0500000497 Deliver as fast as possible	EN	0100000042	Siwusha
0500000498	EPM DG: SO ID 0500000498 Deliver as fast as possible	EN	0100000037	PicoBit
0500000499	EPM DG: SO ID 0500000499 Deliver as fast as possible	EN	0100000038	Bionic Research Lab
0500000500	SAP and Azure in Berlin	EN	0100000000	SAP
0500000501	SAP and Azure in Berlin	EN	0100000000	SAP
0500000502	SAP and Azure in Berlin	EN	0100000000	SAP
0500000503	SAP and Azure in Berlin	EN	0100000000	SAP



		B	C
1			NoteLanguage
2			EN
3			EN
4			EN
5			EN
6			EN
7			EN
8			EN
9			EN
10	0500000008	EPM DG: SO ID (	EN
11	0500000009	EPM DG: SO ID (	EN
12	0500000010	EPM DG: SO ID (	EN
13	0500000011	EPM DG: SO ID (	
14	0500000012	EPM DG: SO ID (	
15	0500000013	EPM DG: SO ID (	
16	0500000014	EPM DG: SO ID (	EN
17	0500000015	EPM DG: SO ID (	EN
18	0500000016	EPM DG: SO ID (	EN
19	0500000017	EPM DG: SO ID (	EN
20	0500000018	EPM DG: SO ID (	EN
21	0500000019	EPM DG: SO ID (	EN
22	0500000020	EPM DG: SO ID (	EN
23	0500000021	EPM DG: SO ID (	EN
24	0500000022	EPM DG: SO ID (	EN
25	0500000023	EPM DG: SO ID (	EN
26	0500000024	EPM DG: SO ID 0500000024 Deliver as fast as possible	EN

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Run the demo

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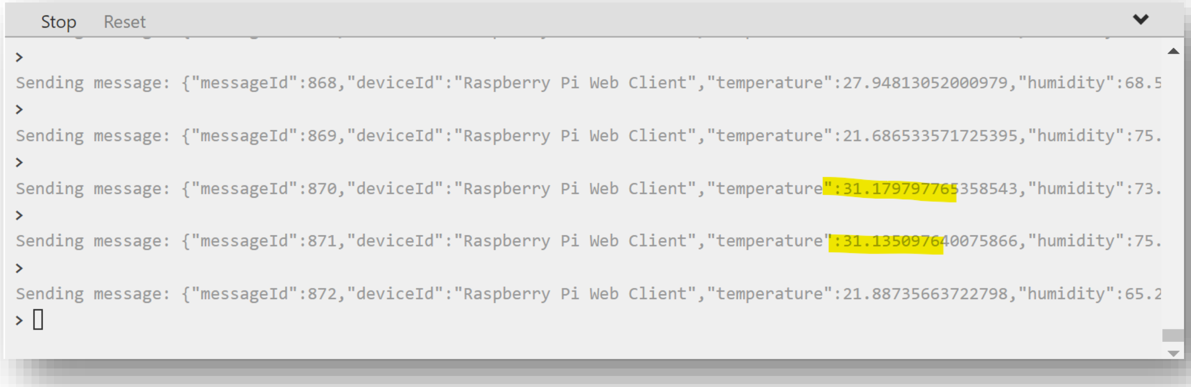
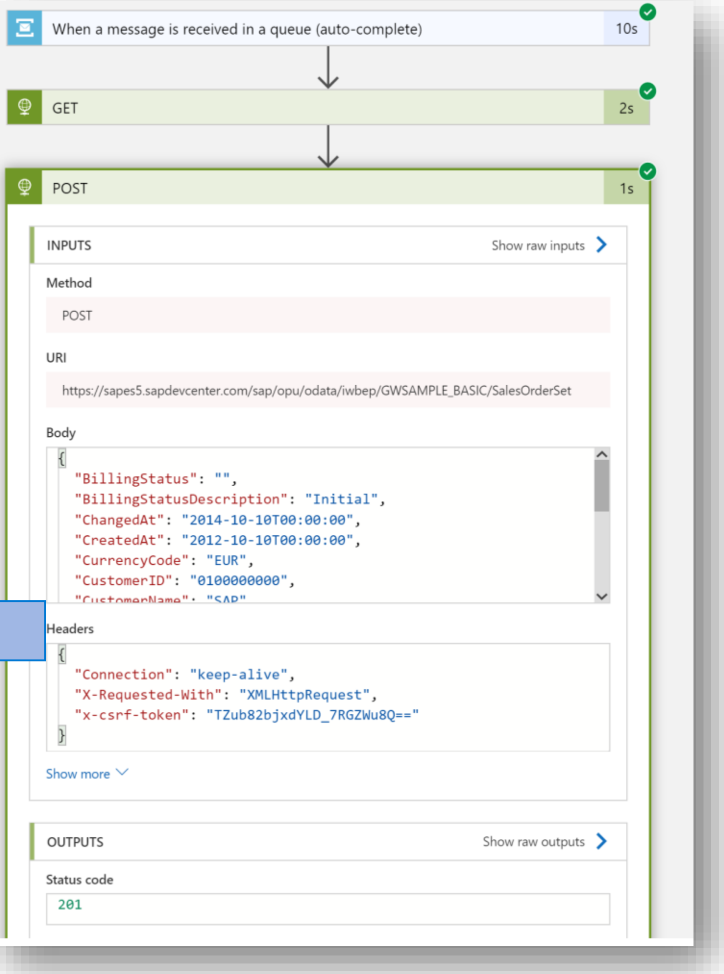
Run the demo

Temperature in IoT simulator is above 30°



```
>
Sending message: {"messageId":868,"deviceId":"Raspberry Pi Web Client","temperature":27.94813052000979,"humidity":68.5
>
Sending message: {"messageId":869,"deviceId":"Raspberry Pi Web Client","temperature":21.686533571725395,"humidity":75.
>
Sending message: {"messageId":870,"deviceId":"Raspberry Pi Web Client","temperature":31.179797765358543,"humidity":73.
>
Sending message: {"messageId":871,"deviceId":"Raspberry Pi Web Client","temperature":31.135097640075866,"humidity":75.
>
Sending message: {"messageId":872,"deviceId":"Raspberry Pi Web Client","temperature":21.88735663722798,"humidity":65.2
> 
```

Logic app creates new sales order



Method

POST

URI

https://sapes5.sapdevcenter.com/sap/opu/odata/iwbep/GWSAMPLE_BASIC/SalesOrderSet

Body

```
{
  "BillingStatus": "",
  "BillingStatusDescription": "Initial",
  "ChangedAt": "2014-10-10T00:00:00",
  "CreatedAt": "2012-10-10T00:00:00",
  "CurrencyCode": "EUR",
  "CustomerID": "0100000000",
  "CustomerName": "SAP"
```

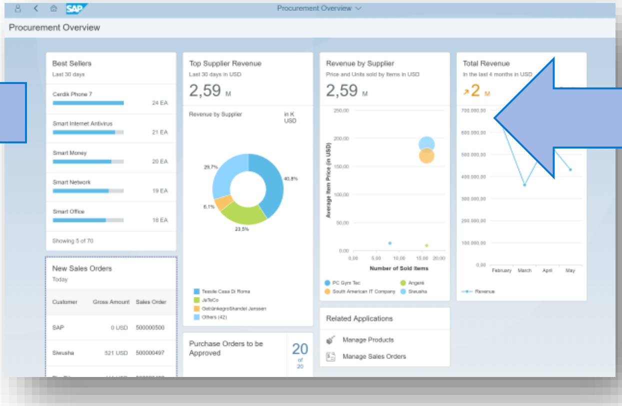
Headers

```
{
  "Connection": "keep-alive",
  "X-Requested-With": "XMLHttpRequest",
  "x-csrf-token": "TZub82bjxdYLD_7RGZWu8Q=="
}
```

Status code

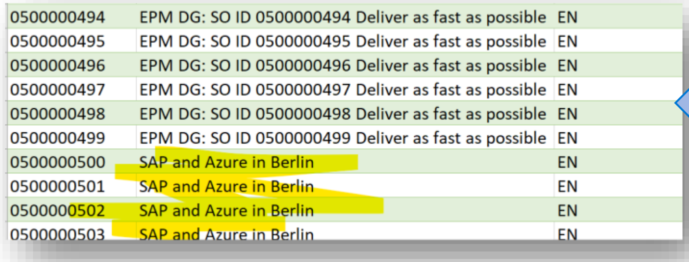
201

Sales order created in SAP



Customer	Gross Amount	Sales Order
SAP	0 USD	500000500
Siwusha	521 USD	500000497

Display created sales order in Excel



0500000494	EPM DG: SO ID 0500000494 Deliver as fast as possible	EN
0500000495	EPM DG: SO ID 0500000495 Deliver as fast as possible	EN
0500000496	EPM DG: SO ID 0500000496 Deliver as fast as possible	EN
0500000497	EPM DG: SO ID 0500000497 Deliver as fast as possible	EN
0500000498	EPM DG: SO ID 0500000498 Deliver as fast as possible	EN
0500000499	EPM DG: SO ID 0500000499 Deliver as fast as possible	EN
0500000500	SAP and Azure in Berlin	EN
0500000501	SAP and Azure in Berlin	EN
0500000502	SAP and Azure in Berlin	EN
0500000503	SAP and Azure in Berlin	EN

Questions?

Thank You!

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