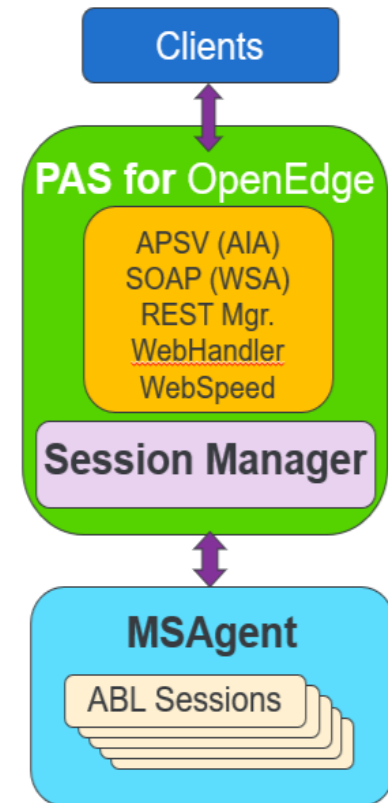


Progress Application Server

- **PAS** is a Tomcat Java web application server with Progress customizations and extensions
- Tomcat is a component of the J2EE Platform and provides:
 - Catalina to run Servlets
 - Coyote connector to provide an http-Server
 - Jasper to interpret Java Server Pages
 - Spring Security
- Provides optional web applications for remote administration using text, html, or JMX proxy APIs



- **PASOE** is a PAS with a pre-installed extension to run ABL Code in ABL Agents in the context of Tomcat Web Applications.
- The ABL Agents handle multiple sessions contexts using multiple threads to provide a multi-Sessioned Agent (MS-Agent)
- You design, package, deploy, configure, debug, and control access to your ABL application in the context of a Tomcat web application



Why creating a next generation AppServer?



Simplicity

- Administration, scalability, application migration, deployment
- AppServer connection and operating STATES



Security

- Spring Security
- Production license



Better monitoring and management

- Built-in metrics gathering, current state queries



Performance

- Runs same ABL application and client load with less memory and CPU



WebSpeed

- Runs classic code but also OOABL WebHandlers

Why a Web Application Server?



Today's Application Architecture needs to be ready

- to work with various UI Technologies, including GUI, Web Browser and Mobile
- Provide API-based access to business logic for „Client-Applications“ including Custom Extensions, Micro Apps and B2B-Integration
- Need for a standards-based, open and secure Interface in contrast to the proprietary binary OE GUI –AppServer protocol.



Software as a Service is the main growth path

- Developing „Web- and Cloud-native“ applications
- Secure and Scalable
- Easy deployment and management in virtualized environments (VMs, Containers)

Classic Appserver versus PASOE

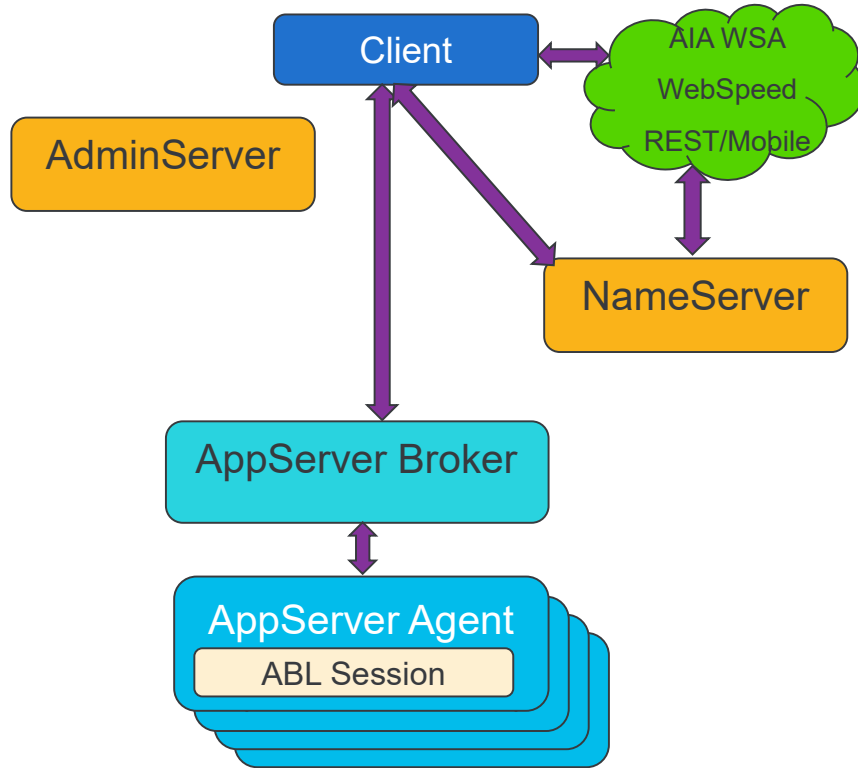
- Runs ABL code
 - Supports GUI Clients directly
 - Supports other Clients by Adapters
 - GUI Clients via http/s tunnel
 - REST Adapter
 - SOAP/WSA Adapter
 - WebSpeed w/ Messenger
 - Adapters based on a number of technologies
 - Needs external Servers
- Runs ABL code
 - Supports http-Clients
 - GUI Clients via http/s tunnel (APSV)
 - REST, SOAP
 - WEB (ABL)
 - WebSpeed Handler
 - REST Handler
 - PDS generated
 - PDS mapped
 - Less Resources, Higher Performance

Comparison Classic AppServer vs. PASOE

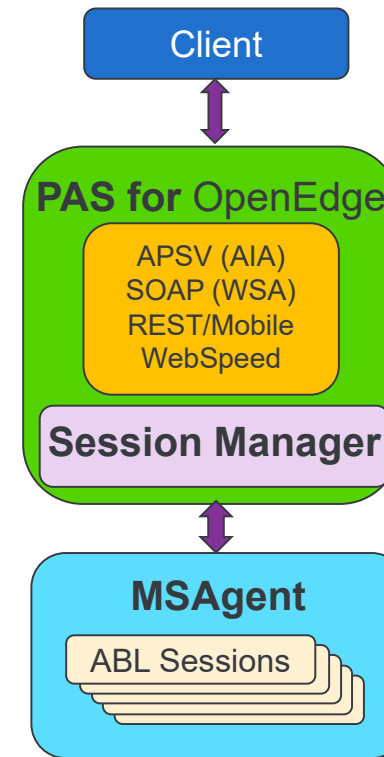
| Feature | Classic AppServer | PASOE |
|----------------------------|---|---|
| Is a Web Server | No | Yes |
| Security | No built-in | Built in Spring-Security |
| Built in Protocol Support | GUI | ASPV, REST, SOAP, Web Handler |
| External Protocol Adapters | AIA, WSA, REST Manager, WebSpeed Messenger | All built-in |
| Monitoring | OpenEdge Explorer/Mgt. | JMX, OEManager with OEE/OEM, HealthScanner |
| Requires AdminServer | Yes | No |
| Scalability | By number of Agents | By number of Sessions and Agents |
| Load Balancing | By Name Server Load Balancer | Standard Apache http Server AJP |
| Production Best-Practices | AppServer and DB on one Server, Shared Memory | Deploy PASOE on-prem or in the Cloud, physical, VM or Container |
| Works well with | OE 11 GUI Client | OE 12 RDBMS |

Architecture: Components

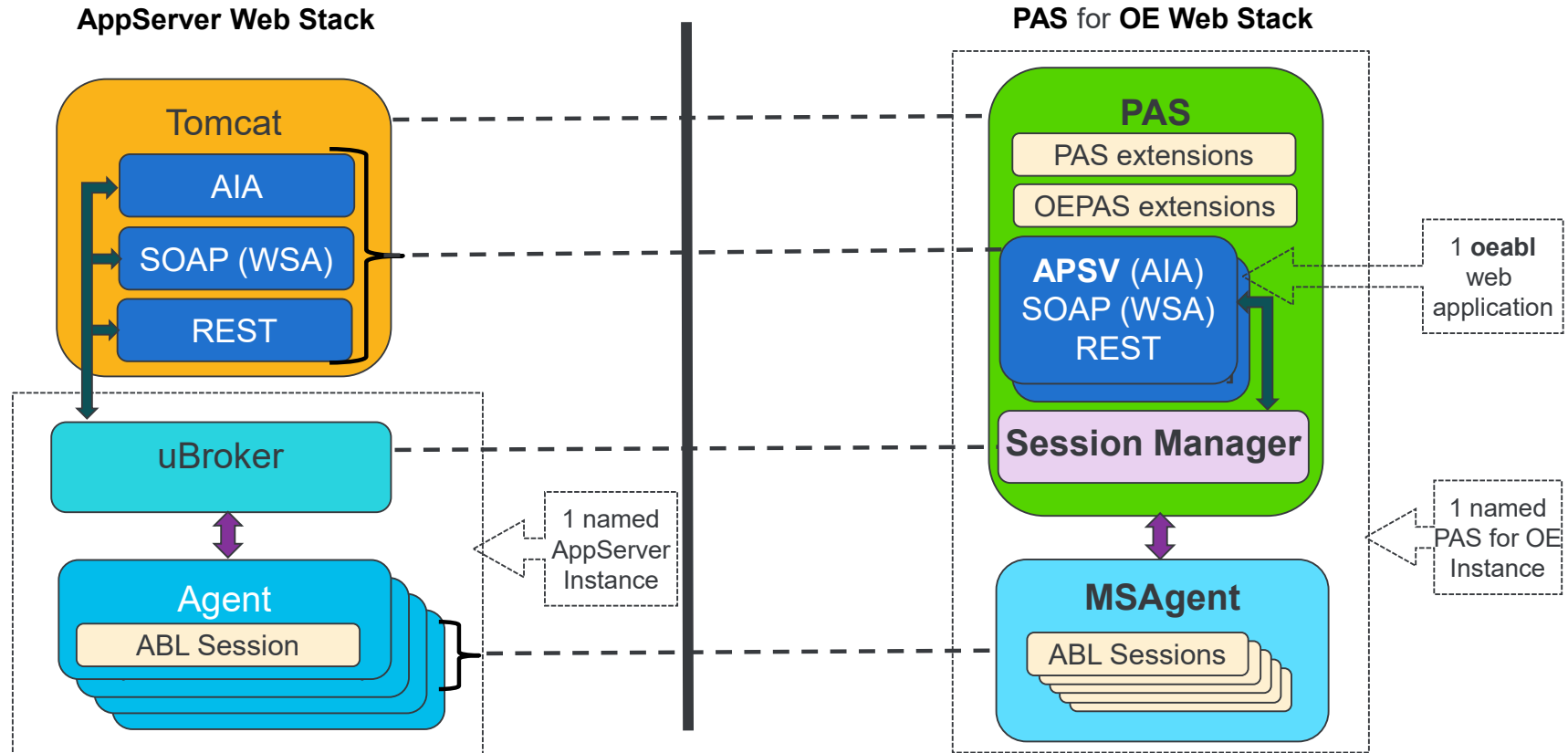
Classic AppServer Components



PAS for OpenEdge Components



PASOE – find the AppServer components



PASOE Development versus Production



PASOE for OE Development

Can compile ABL source code

Restricted: 5 concurrent requests and 1 agent

Non-secure configuration

Test server instance in \$WRKDIR

Remote administration included

Tomcat/Openedge Manager Apps

Built-in oeabl web application (ROOT)

All transport deployed and enabled

defaultHandler=

OpenEdge.Web.CompatibilityWebHandler

PASOE for OE Production

Cannot compile ABL source code

Unrestricted: concurrent requests and agents

Secure configuration

No test server instances

Remote administration optional

Tomcat/OpenEdge Manager Apps

When instance created oeabl web application (ROOT):

All transports deployed but disabled

defaultHandler=

OpenEdge.Web.DefaultWebHandler

PASOE Transport Layer Handler

- REST
 - the old REST Adapter of the classic Appserver
- SOAP
 - the old Web Service Adapter of classic AppServer
- APSV
 - the classic adapter OpenEdge client and OpenClient
- WEB
 - the new adapter for REST and SOAP web services
 - very flexible
 - easy to handle and configurate

Transport Layer

Progress OpenEdge Explorer

Resources

Database Administration

Resources / OpenEdge / Progress Application Server / oepas1 / ABL Application: oepas1 / ABL WebApp: ROOT

Progress Application Server: oepas1

AdminServer: iap-590
ABL WebApp: ROOT

Running
1 Minute

Not Polled
Poll Count: 0
Fail Count: 0 (0.0%)

REST Transport Summary

State: **ENABLED**
Access URL: <http://192.168.2.164:16405/rest>
Secure Access URL: <https://192.168.2.164:16406/rest>
Total # services: 1

SOAP Transport Summary

State: **ENABLED**
Access URL: <http://192.168.2.164:16405/soap>
Secure Access URL: <https://192.168.2.164:16406/soap>
Enabled services: 0
Disabled services: 0
Total # services: 0

APSV Transport Summary

State: **ENABLED**
Access URL: <http://192.168.2.164:16405/apsv>
Secure Access URL: <https://192.168.2.164:16406/apsv>

WEB Transport Summary

State: **ENABLED**
Access URL: <http://192.168.2.164:16405/web>
Secure Access URL: <https://192.168.2.164:16406/web>

REST Transport

REST transport configuration and services

Deploy
Deploy .paar file as REST service

Configuration
Properly configuration for REST transport

Metrics
Metrics for REST transport

Disable
Disable the REST transport.

Run-time Properties
Runtime property configuration for REST transport

| Name | Description | URI | Secure URI | Archive Name | Archive Location | Version |
|----------------|-------------------------------------|---|---|---------------------|--|--------------------|
| _oepingService | PAS OpenEdge REST Service Descripto | http://192.168.2.164:16405/rest/_oepe... | https://192.168.2.164:16406/rest/_oe... | _oepingService.paar | WEB-INF/adapters/rest/_oepingService/_oepingService.paar | v12.2.0 (2020-0... |

SOAP Transport

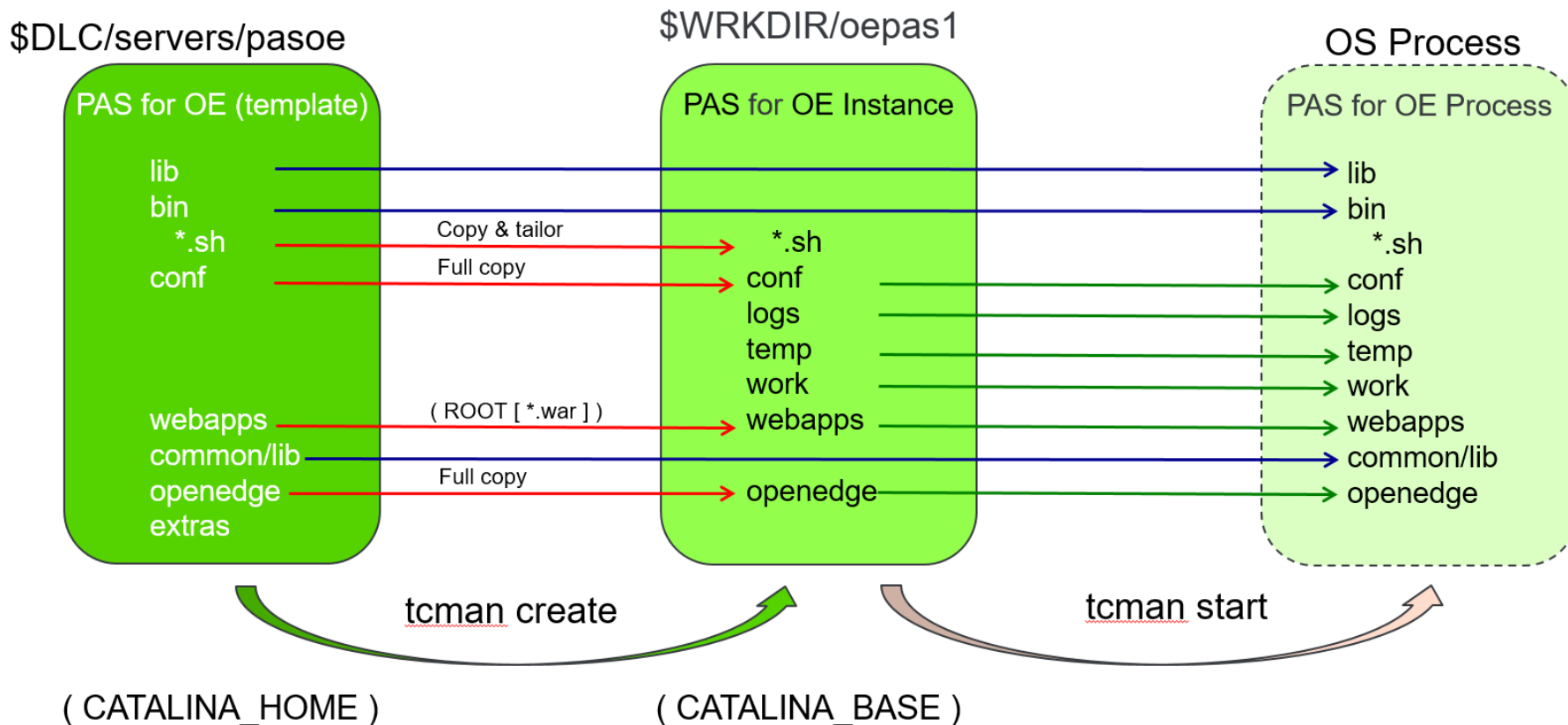
SOAP transport configuration and services

Deploy
Deploy .wsm file as SOAP service

Disable
Disable the SOAP transport.

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PASOE at Instance Create and Run-time



Important files and directories

- CATALINA_HOME
Template root
Contains also all Tomcat executables
Location \$DLC/severs/pasoe
- CATALINA_BASE
PASOE instance
Contains the web applications
Contains the instance related scripts and settings
Location i.e. oepas1 \$DLC_WRK/oepas1
- \$CATALINA_BASE/\$OEPAS_instance/logs/\$OEPAS_instance.agent.\$date.log
i.e. d:\dlc\122-wrk.64bit\oepas1\logs\oepas1.agent.2023-04-07.log
OpenEdge agent log file
- \$CATALINA_BASE/\$OEPAS_instance/logs/startupErrors
contains the error if an instance can't be started

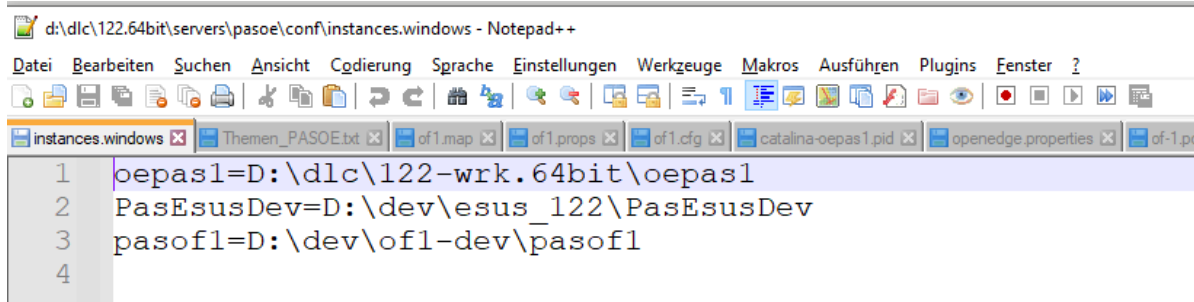
Important files and directories

- `$CATALINA_BASE/conf/openedge.properties`
Appserver configuration file
the former `ubroker.properties` file in the classic appserver
- `$CATALINA_BASE/conf/catalina.properties`
Contains all settings for the PASOE Tomcat instance like ports etc.
- `$CATALINA_BASE/conf/server.xml`
The Tomcat configuration file
Copy of `$CATALINA_BASE/conf/server.xml`
The settings are here variables set in `catalina.properties`

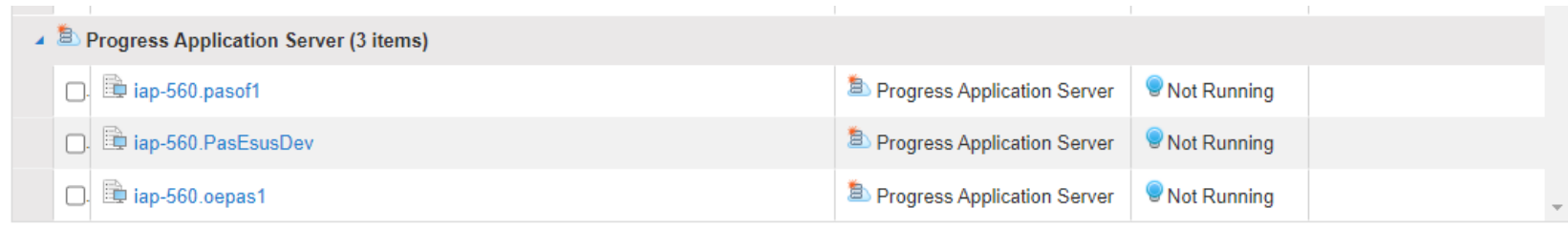
Important files and directories

- {\$CATALINA_HOME}\conf\instances.windows

Contains all known PASOE instances



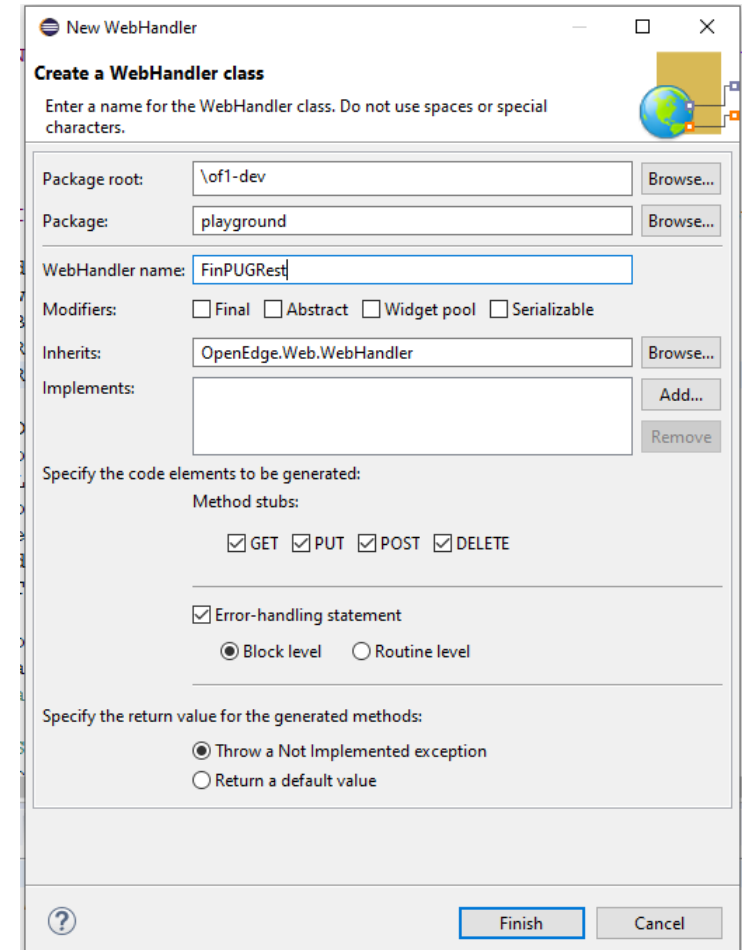
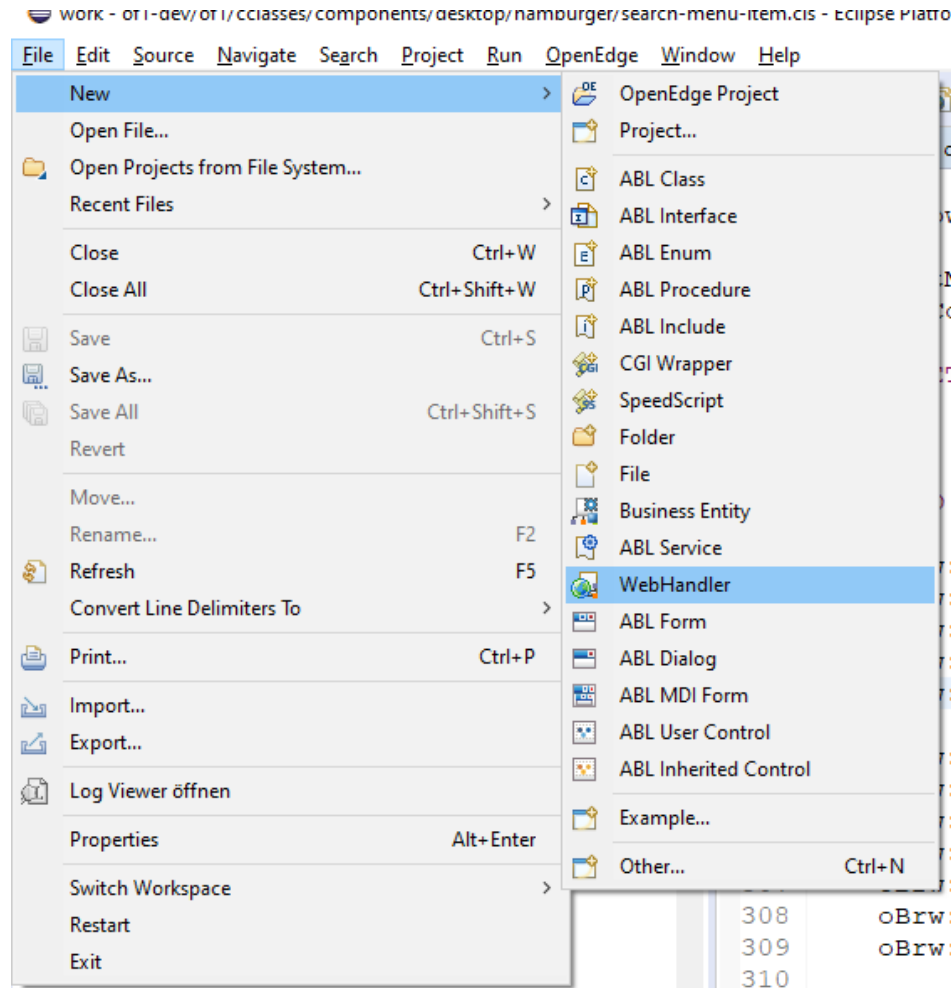
```
d:\dlc\122.64bit\servers\pasoe\conf\instances.windows - Notepad++  
Datei Bearbeiten Suchen Ansicht Codierung Sprache Einstellungen Werkzeuge Makros Ausführen Plugins Fenster ?  
instances.windows x Themen_PASOE.txt x of1.map x of1.props x of1.cfg x catalina-oepas1.pid x openedge.properties x of-1.post x  
1 oepas1=D:\dlc\122-wrk.64bit\oepas1  
2 PasEsusDev=D:\dev\esus_122\PasEsusDev  
3 pasof1=D:\dev\of1-dev\pasof1  
4
```



| Progress Application Server (3 items) | | | |
|---------------------------------------|--------------------|-----------------------------|-------------|
| <input type="checkbox"/> | iap-560.pasof1 | Progress Application Server | Not Running |
| <input type="checkbox"/> | iap-560.PasEsusDev | Progress Application Server | Not Running |
| <input type="checkbox"/> | iap-560.oepas1 | Progress Application Server | Not Running |

- TCMAN is a command-line utility for managing and administering a server instance.
- Syntax: `{ $CATALINA_HOME | $CATALINA_BASE }
/bin/tcman action [general_options] [action_options]`
- For Windows use `tcman.bat`, for UNIX use `tcman.sh`
- Frequent commands for developers
 - `create` Create a new server instance
 - `delete` Delete server instance
 - `start` Start an instance
 - `stop` Stop a running instance

Create a Rest service with PDS



Create a Rest service with PDS

```
7   Author(s)   : klaus.devries
8   Created    : Fri Apr 07 15:35:13 CEST 2023
9   Notes      :
10  -----*/
11
12* USING Progress.Lang.*.
13
14 BLOCK-LEVEL ON ERROR UNDO, THROW.
15
16 CLASS playground.FinPUGRest INHERITS WebHandler:
17
18 * METHOD OVERRIDE PROTECTED INTEGER HandleNotAllowedMethod( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
19
20 * METHOD OVERRIDE PROTECTED INTEGER HandleNotImplemented( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
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```

```

    Purpose: Default handler for the HTTP GET method. The request being
    serviced and an optional status code is returned. A zero or
    null value means this method will deal with all errors.
    Notes:
    -----*/
METHOD OVERRIDE PROTECTED INTEGER HandleGet( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
    Purpose:
    Notes:
    -----*/
METHOD OVERRIDE PROTECTED INTEGER HandlePut( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
    Purpose:
    Notes:
    -----*/
METHOD OVERRIDE PROTECTED INTEGER HandlePost( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
    Purpose:
    Notes:
    -----*/
METHOD OVERRIDE PROTECTED INTEGER HandleDelete( INPUT poRequest AS OpenEdge.Web.IWebRequest ):
    UNDO, THROW NEW Progress.Lang.AppError("METHOD NOT IMPLEMENTED").
    END METHOD.
END CLASS.
```

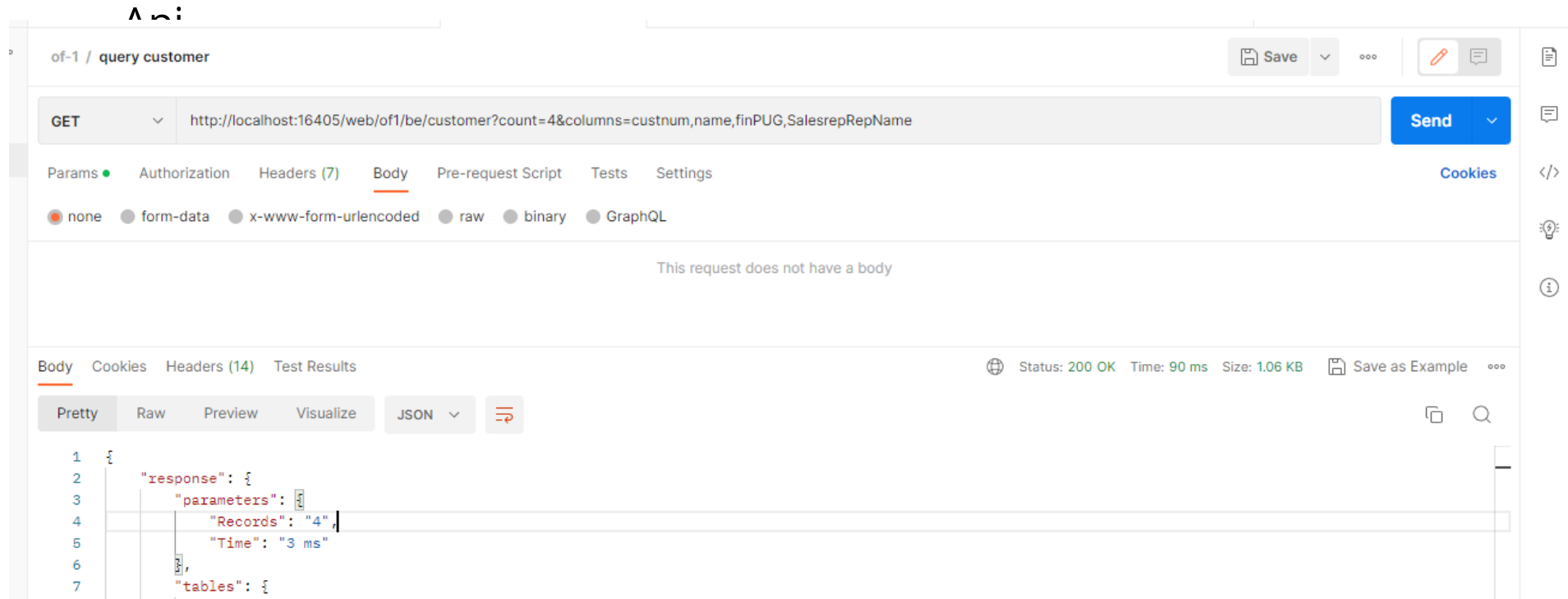
Create a Rest service Demo

- Create an entry in openedge.properties
- Create a handler for GET
- Parse parameter
- Access to the data base
- Send back a JSON file

–

Test with Postman

- Postman is very popular tool for testing REST



- Swagger is a collection of open source tools
- For designing, creating, documenting and using HTTP web services
- Swagger uses the OpenAPI description standard.



Swagger OF-1 Rest API Documentation

← → ↻ 🏠 ⚠ Nicht sicher | 192.168.2.164:16405/oemanager/doc/api-docs?url=/oemanager/doc/openapi.json#/ 🔍 📄 ☆ 🔧 ⚙️ 📖 👤 ⋮

📁 Drums 📁 IAP 📁 Rezepte 📁 Podcast 📁 Progress 📁 Privat

🔗 swagger /oemanager/doc/openapi.json **Explore**

PASOE Management APIs

[/oemanager/doc/openapi.json](#)

Monitor and manage a PASOE Instance with REST API calls. Expand each component to list the available APIs. Select the REST verbs (GET, PUT, DELETE, and POST) to view the details for a particular API. Within each reference, use the **Try it out** button to test. These APIs use JSON input/output payloads, so request body content will be JSON. Read more about [PASOE Administration](#). Ask questions and learn from the [OpenEdge Communities](#).

Server
/oemanager ▼

Agent Manager

▼

- DELETE** /applications/{appName}/agents/{agentID}/agentStatData Clear Agent Statistics
- GET** /applications/{appName}/agents/{agentID}/flushDeferredLog Flushes deferred log to agent log file.
- GET** /applications/{appName}/agents/{agentID}/ABLObject Get ABLObjects Report
- GET** /applications/{appName}/agents/{agentID}/ABLObject/sessions/{sessionID} Get ABL Objects Report per ABL Session
- GET** /applications/{appName}/agents/{agentID}/{component} Get Agent statistics
- GET** /applications/{appName}/agents/{agentID}/stacks Get MS-Agent Stacks
- GET** /applications/{appName}/agents Get Agents
- GET** /applications/{appName}/agents/{agentID}/dynamicSessionLimit Gets dynamic ABL session limit.

Swagger OF-1 Rest API Documentation

CONTENTVIEWER

classic2019_dash... ContentViewer

☐ Show only main fields in content viewer

| Quelle | Name |
|-------------------|-----------------|
| of1-sports.Be... | Benefits |
| of1-sports.Bil... | BillTo |
| of1-sports.Bin | Bin |
| of1-sports.Cu... | customer |
| of1-sports.De... | department |
| of1-sports.E... | employee |
| of1-sports.Fa... | family |
| fd.fdAddress | fdAddress |
| fd.fdCommun... | fdCommunication |
| fd.fdCustomer | fdCustomer |
| fd.fdEmployee | fdEmployee |
| fd.fdItem | fdItem |
| fd.fdOrder | fdOrder |
| fd.fdOrderLine | fdOrderLine |
| fd.fdStore | fdStore |
| of1-sports.Fe... | Feedback |
| of1-sports.In... | InventoryTrans |
| of1-sports.In... | invoice |
| of1-sports.Ite... | item |
| of1-sports.Lo... | LocalDefault |
| | logfile |
| | mycustomer |
| of1-dms.OD... | od_doc |

Swagger

http://localhost:16405/web/of1/oas/customer

Explore

OF-1 business entity 'customer' 4.3.0 OAS3

<http://localhost:16405/web/of1/oas/customer>

This is a OF-1 business entity class customer for the table.

Servers

/web/of1/be

Query

- GET** /customer Query content of business entity.
- GET** /customer/{resource} Query single record.

CUD

- PUT** /customer Create record in business entity.
- DELETE** /customer/{resource} Delete single record.
- PUT** /customer/{resource} Update single record.

Invoke

- POST** /customer/getInfo
- POST** /customer/calcMarketShare
- POST** /customer/CreSearchIdx

Additional infos

- https://pugchallenge.org/downloads2017/284_web_handlers_deep_dive.pdf
-
- Ask us
Klaus de Vries kdv@iap.de
Bernd Hellmann bh@iap.de

www.iap.de/of-1

info@iap.de