# Pacific Application Server for OpenEdge

An Introduction

David Cleary
Principal Software Engineer
October 7, 2014

PROGRESS EXCHANGE 2014

# Disclaimer

- This presentation is for informational purposes only. You are cautioned that any information contained in this presentation may change in the course of product development.
- This presentation may not be interpreted as any commitment on behalf of Progress, and future development, timing and release of any products, features or functionality described in this presentation remains at the sole discretion of Progress.

© 2014 Progress Software Corporation. All rights reserved.

# Agenda

- Introduction to the Pacific Application Server for OpenEdge
- Pacific Application Server for OpenEdge Architecture
- Performance and Scalability

© 2014 Progress Software Corporation. All rights reserved.

# Introduction to PASOE

PROGRESS EXCHANGE 2014

# Pacific Application Server Platform

- **Created from Apache Tomcat 7.0.55 distribution**
- **Configured for production by default**
  - Default ROOT application replaced
  - Tomcat manager web applications not installed
  - Auto deployment disabled by default
  - Shutdown port disabled on Unix
  - JMX not enabled by default
  - Web crawler filtering enabled
- **Spring Security Framework included**
- **Realms and roles defined to implement access control**
- **Enhanced command line tool to configure and manage server**
- **Will be default implementation for Progress Rollbase and Progress Corticon**

© 2014 Progress Software Corporation. All rights reserved.

# Pacific Application Server for OpenEdge (PASOE)

- **Installable web server product that merges into a single package the functionality of:**
  - Tomcat
  - Classic AppServer (the one that currently exists with OpenEdge)
  - AppServer Adapters
- **Runs in Progress's unified Pacific Application Server (PAS) platform**
  - Same web server installed with Rollbase-private installation and with Corticon
  - Common server administration and configuration functionality
- **Supported on only 64 bit platforms** (Linux, Solaris, HPUX-IA, AIX, Windows 2008/2012)
- **Two products:  Development server and Production server**

© 2014 Progress Software Corporation. All rights reserved.

# Architectural Drivers

- **Secure** production web server
  - Installation, administration
- **Simpler**
  - Administration, scalability, application migration, deployment
  - AppServer connection and operating STATEs
- **Customer Extensible**
  - Open REST APIs for customer developed metrics, monitoring, and administration
  - Installation tailoring
- **Better analysis tools**
  - Built-in metrics gathering, current state queries
- **Faster and optimizes resources**
  - Runs same ABL application and client load with less memory and CPU consumption

© 2014 Progress Software Corporation. All rights reserved.

# PAS for OpenEdge Production versus Development Products

## PAS for OE Development

- Non-secure configuration
- Test server instance in $WRKDIR
- Remote administration included
  - Tomcat remote admin enabled
  - OpenEdge remote admin enabled
- Built-in oeabl web application (ROOT)
- Restricted # of concurrent requests

## PAS for OE Production

- Secure configuration
- No test server instances
- Remote administration optional
  - Tomcat remote admin optional
  - OpenEdge remote admin optional
- Built-in oeabl web application (ROOT)
- Unrestricted

PROGRESS © 2014 Progress Software Corporation. All rights reserved.

# Pacific Application Server for OpenEdge Architecture (PASOE)

PROGRESS EXCHANGE 2014

# PASOE Architectural Concepts and Terms

- **PAS** is a Java web application server with Progress extensions
  - Optional web application for remote administration using text, html, or JMX proxy APIs

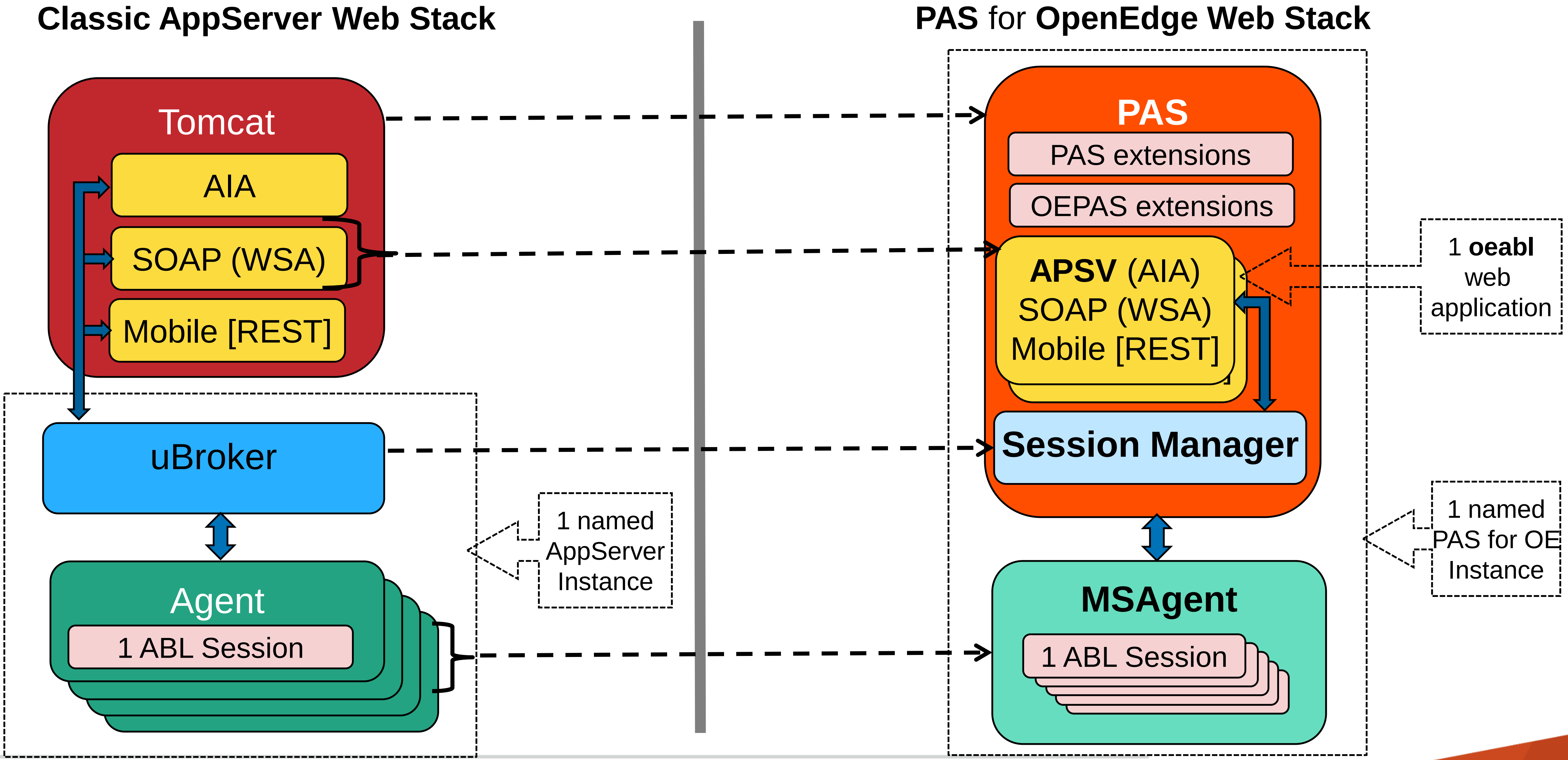
- **ABL services for Pacific Application Server (ABLPAS)**
  - An collection of Java web applications and resources installed and into a **PAS**
  - Java web applications use multi-session agent OS process (**MSAgent**)
  - *Optional* web application for remote administration using REST APIs
  - ***ABLPAS*** web services can be installed into the **PAS** of other PSC product installations

- **PASOE** is an OpenEdge installed **PAS** with a pre-installed **ABLPAS** services

- You design, package, deploy, configure, debug, and control access to your ABL application in the context of a web application running in a web server

© 2014 Progress Software Corporation. All rights reserved.

# PAS for OpenEdge Architectural Concepts and Terms



PROGRESS © 2014 Progress Software Corporation. All rights reserved.

# Classic AppServer Instances versus PAS for OpenEdge Instances

## Classic AppServer

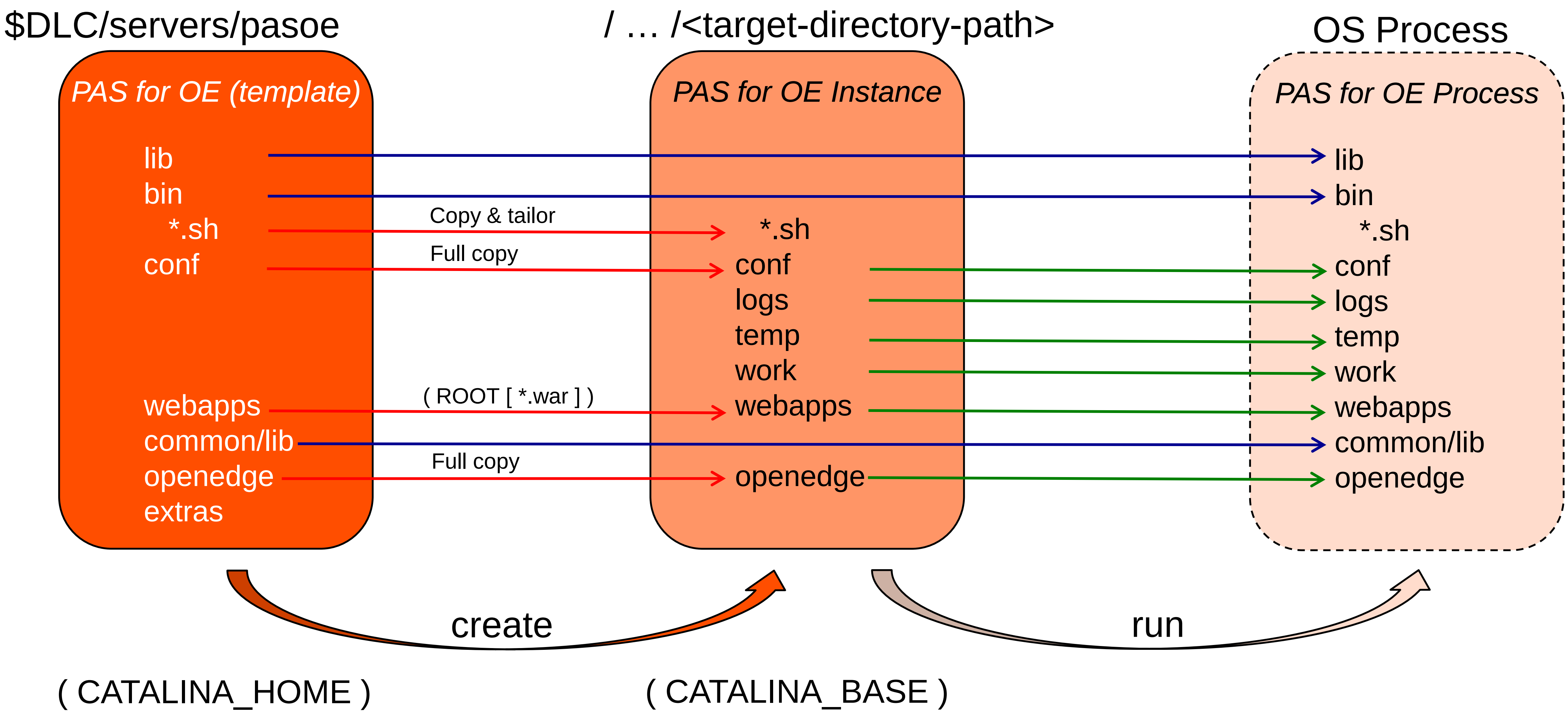
- Each AppServer instance has a name
- AppServers instance does not have defined file space outside OE install
- AppServer instance dies at OE uninstall
- Broker and adapter instances are non transferable to other OE installs
- Cannot package and redeploy an instance

## PAS for OpenEdge

- Each PAS for OE instance has a name
- PAS for OE instance has private file space outside the OE install
- PAS for OE instance lives beyond OE uninstall
- PAS for OE instances are transferrable between OE installs
- An instance can be packaged and redeployed

© 2014 Progress Software Corporation. All rights reserved.

# Understanding PAS for OpenEdge Instance Run-time



PROGRESS

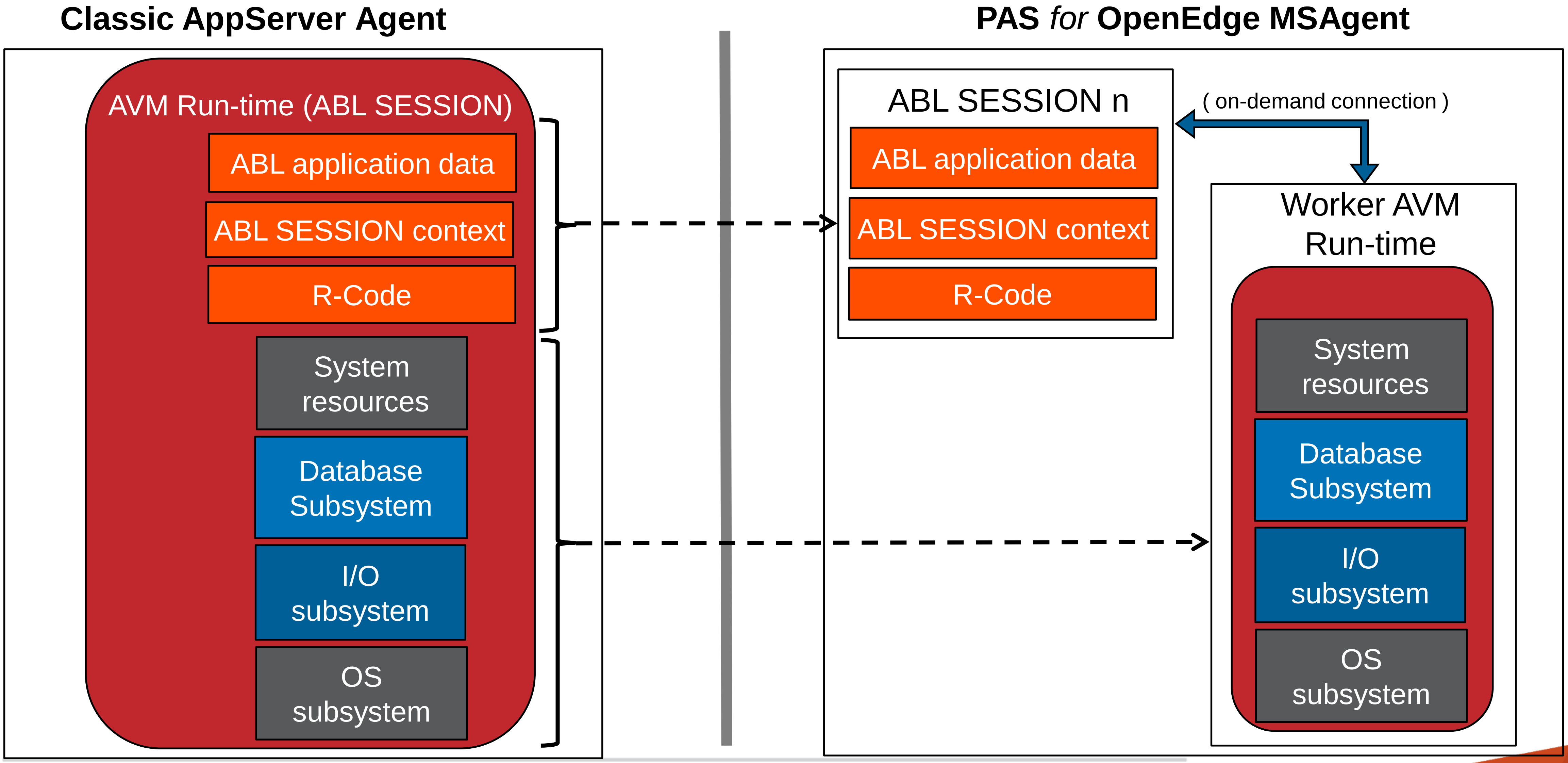
© 2014 Progress Software Corporation. All rights reserved.

# Classic AppServer Configuration versus PAS for OE Configuration

| Classic AppServer Instance | PAS for OE Instance |
|---|---|
| ▪ All instances located in common ubroker.properties file | ▪ Each instance located in its conf/openedge.properties file |
| ▪ All properties in ubroker.properties | ▪ Properties in multiple property files<br>Tomcat, PAS, & openedge |
| ▪ No named service(s) | ▪ Named service(s) |
| ▪ Fixed STATE Model | ▪ No STATE |
| ▪ Environment variables defined in common ubroker.properties | ▪ Environment variables defined in instance’s<br>bin/<app-name>_setenv.{sh\|bat} |

© 2014 Progress Software Corporation. All rights reserved.

# ABL Sessions and AVM Run-times as Independent Resources



PROGRESS © 2014 Progress Software Corporation. All rights reserved.

# PAS for OpenEdge ABL Application Architecture Models

- **Client controls ABL session model via traditional AppServer –*sessionModel* option**
- **Stateless session model** (i.e. Session-Free)
  - Client's request can be executed in any  ABL session, in any Agent, in any PAS for OE server
  - A client can execute concurrent ABL requests
  - User context managed entirely by the server application and client code
- **Stateful session model**  (i.e. Session-Managed)
  - Used for classic AppServer State-Reset, State-Aware, and Stateless
  - Each client's request routed to same PAS for OE server, MSAgent, and ABL session
  - A user's context is stored within an Agent's ABL session between requests
  - Supports Automatic Transactions [that span multiple requests]
  - A client can execute pipelined async requests [to single ABL session]

© 2014 Progress Software Corporation. All rights reserved.

# RDBMS Self-service Connections

| Classic AppServer | PAS for OpenEdge |
|---|---|
| One connection per DB per Agent process: no ABL SESSION sharing | One connection per DB per Agent process: shared by all ABL SESSIONs |
| Connected @ ABL SESSION startup or CONNECT | Connected on 1st SESSION startup or CONNECT statement |
| Disconnected @ ABL SESSION shutdown or DISCONNECT | Disconnected when **last** SESSION shuts down or **last** DISCONNECT |
| PROMON show one connection per ABL SESSION | PROMON shows one connection per SESSION + 1 Agent (admin) SESSION |
| PROMON disconnect one ABL SESSION at a time | PROMON disconnects ALL SESSIONs when Agent (admin) SESSION disconnected |

© 2014 Progress Software Corporation. All rights reserved.

# Configuring PAS for OpenEdge Client Connections

- **REST/Mobile clients:** No differences ( change URL in http clients )
- **SOAP clients:** No differences ( redeploy WSDL with new port URL )
- **OpenEdge clients**
  - PAS for OpenEdge only has one connection model : HTTP(S)
  - Reference: *Connecting to AppServers Using a URL*
  - The Classic AppServer's ***aia-path*** field becomes the PAS for OpenEdge's oeable **web application** name
    - Default service : ROOT web application "/"
    - *sales service : sales web application "/sales"*
  - All PAS for OpenEdge connections are specified using the URL connection format
    - *-url* ***http***[***s***]***://host***[:***port***]***/oeabl-path***

PROGRESS © 2014 Progress Software Corporation. All rights reserved.

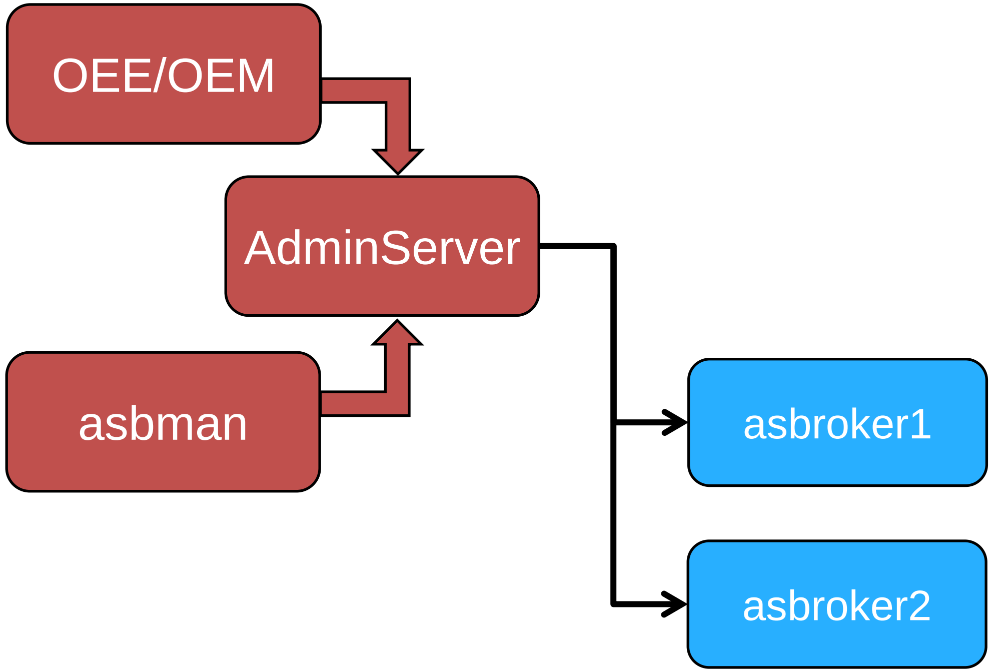
# Configuring and Using AppServer Event Procedures

- **agentStartupProc & agentShutdownProc**
  - **Executes one time when starting / stopping an MSAgent OS process**
- **PAS for OpenEdge renamed classic AppServer event procedures:** srvrXxxxx → sessionXxxxx
- **sessionStartupProc & sessionShutdownProc**
  - Executed in classic AppServer when the Agent's single ABL SESSION started/stopped
  - Executes in PAS for OE when the MSAgent starts/stops each ABL SESSION
- **sessionConnectProc & sessionDisconnectProc**
  - Same as classic AppServer for all Session-Managed client connections
- **sessionActivateProc & sessionDeactivateProc**
  - Executed in classic AppServer on every Stateless & State-Free client request
  - Follows traditional Stateless model

© 2014 Progress Software Corporation. All rights reserved.

# Classic AppServer versus PAS for OpenEdge Administration

## Classic AppServer

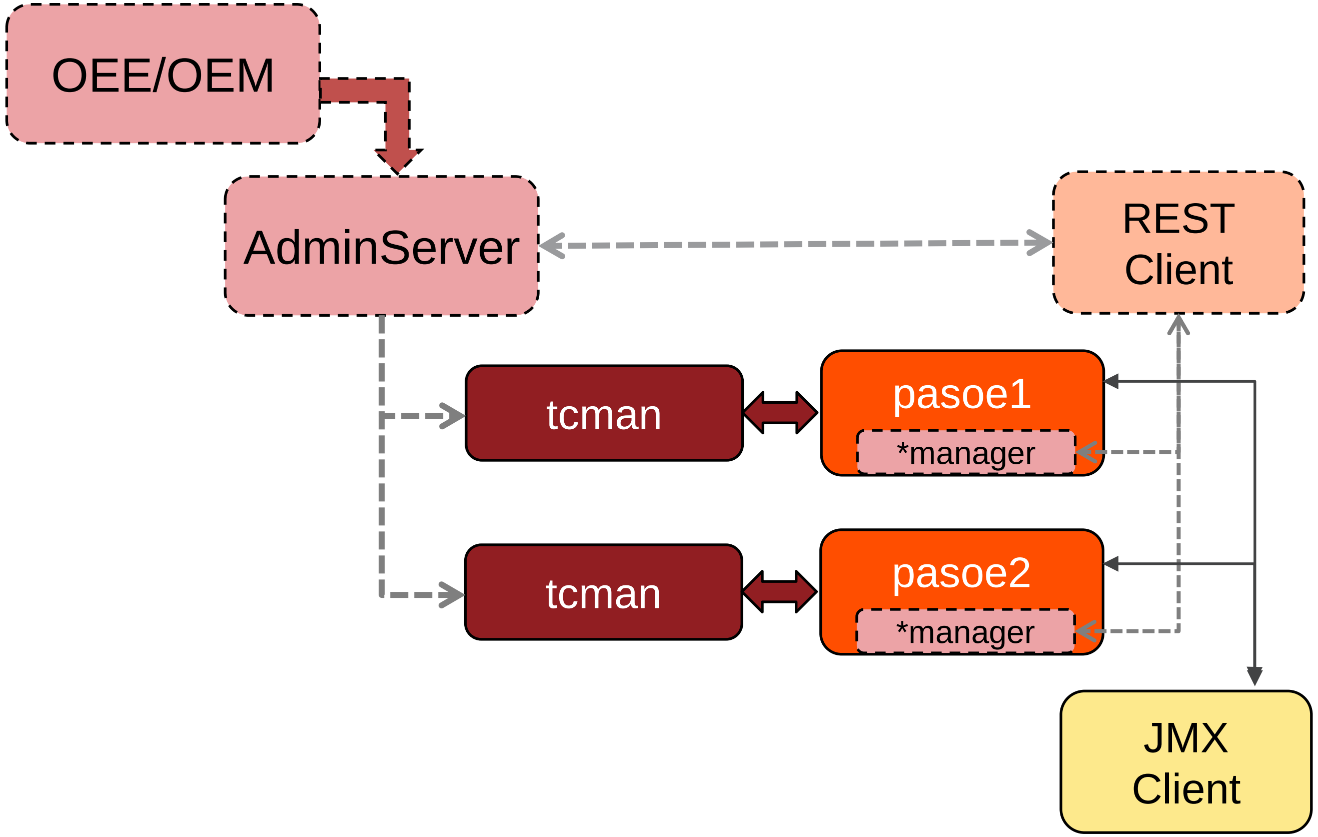


Legend:

— always exists

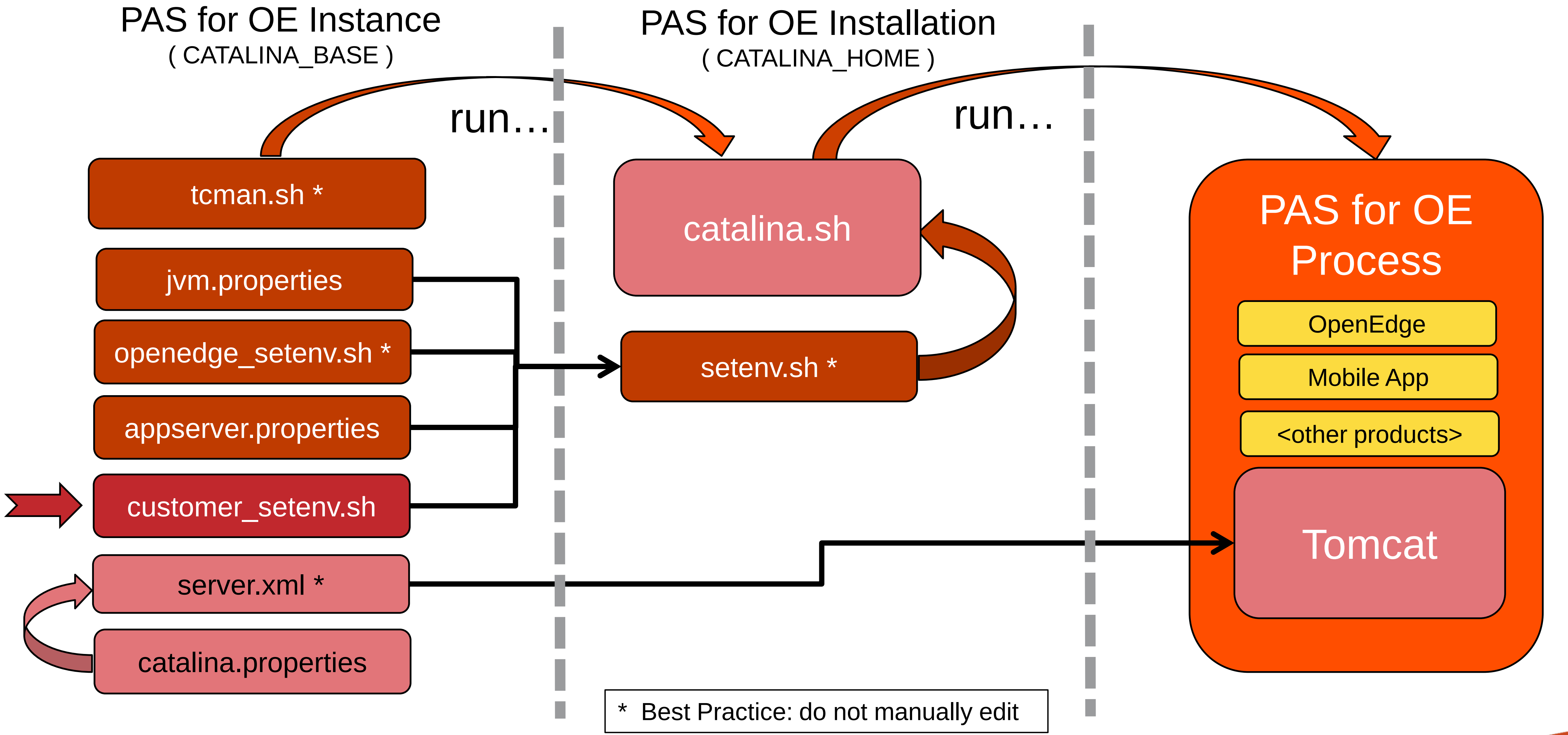
------ optional install & use

## PAS for OpenEdge



© 2014 Progress Software Corporation. All rights reserved.

# PAS for OpenEdge Instance Startup Process (or What comes from Where…)



* Best Practice: do not manually edit

PROGRESS © 2014 Progress Software Corporation. All rights reserved.

# Where Do I Find My…

| | |
|---|---|
| PAS for OE's DLC & WRKDIR environment variable definition | $CATALINA_BASE/bin/openedge_setenv.sh |
| Application's environment variable definitions | $CATALINA_BASE/bin/<app-name>_setenv.sh |
| PAS for OE installation path environment variable definition<br>PAS for OE instance's path environment variable definition<br>PAS for OE instance's temporary file directory path definition | $CATALINA_BASE/bin/{tcman\|startup\|shutdown\|configtest\|version }.sh |
| PAS for OE configuration properties | $CATALINA_BASE/conf/appserver.properties<br>$CATALINA_BASE/conf/catalina.properties<br>$CATALINA_BASE/conf/jvm.properties |
| Optional deployment files (web applications & other files) | $CATALINA_HOME/extras |
| PAS for OE & web application log files | $CATALINA_BASE/logs |
| PAS logging configuration | $CATALINA_BASE/conf/logging.xml (ref Tomcat logging) |
| PAS for OE session manager & MSAgent logging configuration | $CATALINA_BASE/conf/openedge.properties |
| oeabl web application logging configuration | $CATALINA_BASE/ROOT/WEB-INF/logging.xml |
| oemanager remote admin web application loggin configuration | $CATALINA_BASE/oemanager/WEB-INF/logging.xml |
| Test user accounts and roles | $CATALINA_BASE/conf/tomcat-users.xml |
| PAS for OE instance registration list | $CATALINA_HOME/conf/instances.unix |
| JAVA_HOME & JSE_HOME environment variable definition | $CATALINA_BASE/bin/javacfg.sh |

PROGRESS © 2014 Progress Software Corporation. All rights reserved.

# Resource Sharing in Initial Release

## Shared

- Self-service OpenEdge database connections
- Procedure libraries
- R-code
- Promsg files
- OS threads

## Not Shared

- Temp-tables / ProDatasets
- Sockets (including SOAP and AppServer connections)
- Network OpenEdge database connections
- LBI & DBI files
- ABL session memory

© 2014 Progress Software Corporation. All rights reserved.

# Application Deployment Options

- **SOAP service**
  - SOAP service descriptor .wsm generated by Proxygen
  - Deploy .wsm file via PASOE command line tool ***deploySOAP***
- **REST service**
  - REST/Mobile service descriptor .paar file exported from PDSOE (same as 11.3)
  - Deploy .paar file from PASOE command line tool ***deployREST***
- **ABL r-code / libraries**
  - Same as traditional AppServer ( it's all about PROPATH )
- **As a OEABL Java web application (.war)**
  - Create .war file from OEABL service with embedded ABL code and SOAP/REST services
- **Deploy PASOE instance as a ZIP file with pre-installed OEABL services (manual)**

© 2014 Progress Software Corporation. All rights reserved.

# Performance and Scalability

PROGRESS EXCHANGE 2014

# Pacific Application Server for OpenEdge - Performance

| | Classic AppServer | PAS for OE | Difference |
|---|---|---|---|
| Scalability | | | |
| Client connections | 221 | 1312 | 493% |
| Server Resources | | | |
| CPU | 10 CPUs | 5.2 CPUs | 192% |
| Memory | 2.1 GB | 670 MB | 313% |
| Transactions | 203 tps | 1698 tps | 736% |
| Client performance | | | |
| OpenEdge | 472ms | 340ms | 138% |

© 2014 Progress Software Corporation. All rights reserved.

# Early Access Available

Interested?

Contact [Early-Software-Admin@progress.com](mailto:Early-Software-Admin@progress.com)

PROGRESS EXCHANGE 2014

## Visit the Resource Portal

- Get **session details** & presentation **downloads**
- Complete a **survey**
- Access the latest Progress **product literature**

**www.progress.com/exchange2014**

PROGRESS