Consultingwerk
software architecture and development

Is Your PAS Instance Ready for Production?

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Active member of the OpenEdge community and speaker at international conferences

Focusing on integration with OpenEdge applications, PASOE, software architecture and web technologies

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Outline

- Deployment "pipeline"
    - Instance creation vs. registration
    - How to release updates
- Double checking the instance configurations
    - Min/max/initial agents and sessions
    - Do you need oemanager?
    - noaccess.war
    - DB connections (11.7 vs 12.x)
- Progress installs
    - Versions (same in UAT/Prod?)
    - Licenses
    - ESAM
- Networking
    - Port numbers
    - DNS, reverse proxies
- Security
    - SSH certs
    - Spring / webapp authentication
        - Keycloak / OEAG
    - UMASK
    - Oemanager / manager ?
    - Tomcat/tomcat
- Scripts for start, stop
- Monitoring incl telemetry
    - X-FORWARDED-FOR header
- Disk space
    - Logging location
    - Logging levels

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The beginning

- ✓ You have a running PASOE instance in development and QA

- ✓ You have tested it, for functionality and under load

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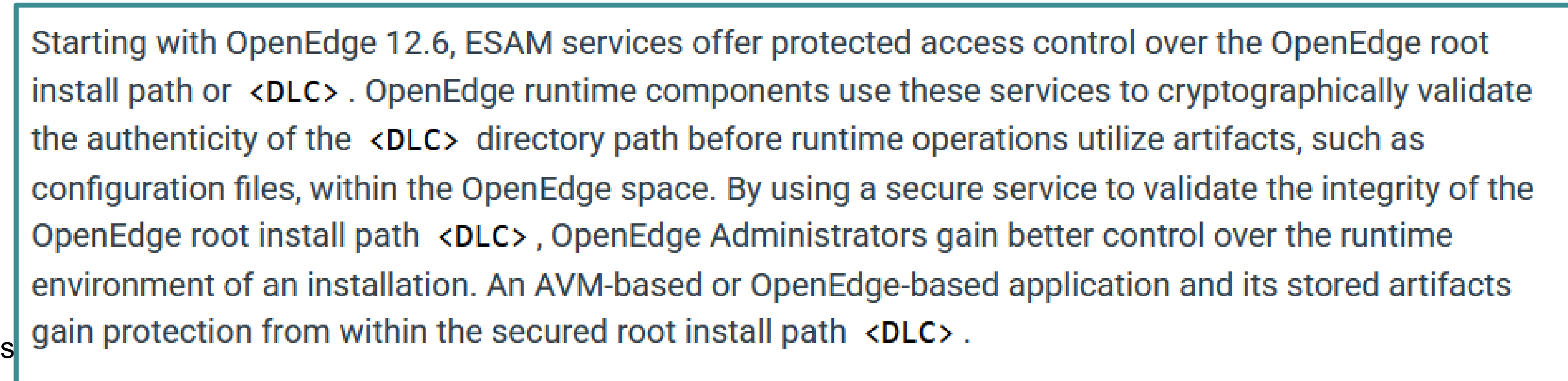
Installation and creation

OpenEdge installation

- Operating system per the Platform Compatibility Guide
- Prod version should be at least the same as in QA/UAT
  - Ideally the most-recent Update
  - Ideally 12.8.9
- Make sure you have a production license
- ESAM wrinkles
  - Cannot rename agent executables
  - Permissions on $DLC/install



Starting with OpenEdge 12.6, ESAM services offer protected access control over the OpenEdge root install path or `<DLC>` . OpenEdge runtime components use these services to cryptographically validate the authenticity of the `<DLC>` directory path before runtime operations utilize artifacts, such as configuration files, within the OpenEdge space. By using a secure service to validate the integrity of the OpenEdge root install path `<DLC>` , OpenEdge Administrators gain better control over the runtime environment of an installation. An AVM-based or OpenEdge-based application and its stored artifacts gain protection from within the secured root install path `<DLC>` .

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Creating instances

1. Create instances on production host(s)
   - Using `pasman create` … with `-Z prod` or `-Z pas`
   - Configure in-situ

2. Create on a staging host / build server
   - Complete configuration & copy to production hosts(s)
   - Register using `pasman register`
   - Careful copying across operating systems

3. Containerization

- All can be used for horizontal scaling
- Use a dedicated user, not root to create and run the instance(s)

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Instance settings

The Santa Clause: check your configuration twice

- ABL session settings
  - Especially PROPATH and DB connections
  - PROPATH "inside" or "outside" the instance folder
  - Prod startup parameters vs. other environments

- Settings for capacity: scaling up ***and*** down
  - Baseline should be enough to deal with the standard load
  - Concurrent requests is a good starting point of a metric
  - Know how long a session takes to start
  - Use ablSession*Limit properties to scale down ABL sessions

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Capacity settings

```
[AppServer.SessMgr]
    maxABLSessionsPerAgent=200
    maxAgents=2
    maxConnectionsPerAgent=200
    minAgents=1
    numInitialAgents=1

[AppServer.Agent]
    ablSessionActiveMemoryLimitFinish=0
    ablSessionActiveMemoryLimitStop=0
    ablSessionFailureLimit=0
    ablSessionMemoryDump=0
    ablSessionMemoryLimit=0
    ablSessionRequestLimit=0
    minAvailableABLSessions=1
    numInitialSessions=5
```

Typically the same value, except for APSV clients

Doc: Manage Progress Application Server (PAS) for OpenEdge > Configure OpenEdge properties

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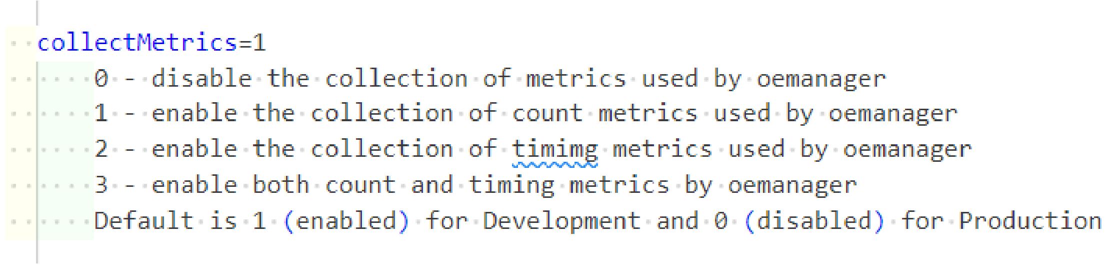
The Santa Clause: check your configuration twice

- Disable transports not in use
  - Regardless of which mode was used to create the instance, the values in openedge.properties determine which transports are used
- Validate environment variables in *_setenv.[bat|sh]
- Consider disabling runtime property updates (logging only)
- Metrics: collect time and count



```
  collectMetrics=1
      0 - disable the collection of metrics used by oemanager
      1 - enable the collection of count metrics used by oemanager
      2 - enable the collection of timimg metrics used by oemanager
      3 - enable both count and timing metrics by oemanager
      Default is 1 (enabled) for Development and 0 (disabled) for Production
```

https://docs.progress.com/bundle/pas-for-openedge-management/page/Collect-runtime-metrics.html

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XML-based configuration

- Take care when changing property values in XML files, especially server.xml
- Use custom properties to add values into the xml

```
<SSLHostConfig
  certificateVerification="${psc.as.https.clientauth}"
  certificateVerificationDepth="10"
  ciphers="${psc.as.https.ciphers}"
  hostName="_default_"
  protocols="${psc.as.https.protocol}"
  sessionCacheSize="0"
  sessionTimeout="${psc.as.https.sessiontimeout}"
  truststoreFile="conf/tomcat-certstore.p12"
  truststorePassword="${psc.as.https.trustpass}"
  truststoreType="${psc.as.https.trustType}" >
  <Certificate
    certificateKeyAlias="${psc.as.https.keyalias}"
    certificateKeystoreFile="${catalina.base}/conf/tomcat-keystore.p12"
    certificateKeystorePassword="${psc.as.https.keypass}"
    certificateKeystoreType="${psc.as.https.storeType}"
    type="UNDEFINED" />
</SSLHostConfig>
```

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  hostName="_default_"
  protocols="${psc.as.https.protocol}"
  sessionCacheSize="0"
  sessionTimeout="${psc.as.https.sessiontimeout}"
  truststoreFile="conf/tomcat-certstore.p12"
  truststorePassword="${psc.as.https.trustpass}"
  truststoreType="${psc.as.https.trustType}" >
  <Certificate
    certificateKeyAlias="${psc.as.https.keyalias}"
    certificateKeystoreFile="${psc.as.https.keystoreFile}"
    certificateKeystorePassword="${psc.as.https.keypass}"
    certificateKeystoreType="${psc.as.https.storeType}"
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</SSLHostConfig>
```

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XML-based configuration

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```
# Snippet of conf/catalina.properties

# JSSE keystore used by server.xml for its server key & certificates
psc.as.https.keypass=*************
psc.as.https.keyalias=consultingwerkcloudstar
psc.as.https.storeType=PKCS12
psc.as.https.keystoreFile=${catalina.base}/ssl/consultingwerkcloud.p12

# JSSE certificate store used by server.xml for validating client
certificates
psc.as.https.trustpass=password
psc.as.https.trustType=PKCS12
```

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Networking

- Port numbers
  - Multiple instances can have the same ports, just not while running
  - Consider disabling the shutdown port using a value of -1
- Load balancing and reverse proxies
  - Only map paths (URLs) that you know are used into the PAS instances
  - Ditto for authentication servers like Keycloak or OEAG
  - Heartbeat / ping services
- Disable HTTP access (careful of SOAP)
- DNS / SSH certificates
  - Java keystores are sensitive to Java versions, down to minor releases

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Security

- Webapp authentication
  - Ensure connection information is correct when using LDAP / Keycloak / OpenEdge Authentication Gateway
  - Use distinct ABL domain keystores to seal CLIENT-PRINCIPALs for each environment
- Consider use of the oemanager and manager webapps
  - If using, change login from default tomcat/tomcat even if those endpoints are only internally accessible

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Security

- The ROOT webapp: if not actively in use, use noaccess.war

```
    pasman undeploy –I pasProd ROOT
    pasman deploy –I pasProd -a ROOT %DLC%\servers\pasoe\extras\noaccess.war
```

- On Linux, set UMASK in _setenv.sh to control logfile and other temp-file creation permissions
  - Useful for troubleshooting as a normal user

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Runtime

Scripting startup and shutdown

- Use systemd and friends.
- Scheduled downtime
  - How often?
  - Archive previous logs

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Monitoring

- Monitoring most important when first deploying
  - Validate your capacity limits

- PASOE is an extremely efficient memory leak detector
  - ABLObjects monitoring must be started manually per agent
  - Results in using the agent refresh functionality over stopping agents

- Use telemetry (SmartComponent Library Telemetry Toolkit, OTel) to help identify and troubleshoot hotspots

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Heartbeats and healthchecks

- Allows a monitor (eg load balancer) to determine whether an instance is available to service requests
  - It must prove that it can run some ABL
  - Should be for the webapp(s) that service application requests
- In the box
  - Healthscanner : separate application, port in PASOE
  - Ping services
    - [rest|web]/_oepingService/_oeping
    - OpenEdge/ApplicationServer/Util/apsv_oeping.p
    - Requires customization of OpenEdge.Rest.Admin.AppServerStatus class
- Roll your own

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Logging

- grep "request-id" *.log > request.log
- When behind a firewall/load balancer, use X-FORWARDED-FOR header to identify the actual client IP
- Disk space considerations
  - Logging location
  - Logging levels & deferred logging
  - What about archives after restart?

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Questions

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