Experiences with SOA Suite 12.2.1
OGh Tech 2017

Jon Petter Hjulstad
Sysco Middleware
Overview

- About Speaker / Sysco
- Why should you upgrade?
- When should you upgrade?
- How do you upgrade?
- How to maintain the installation?
- Experiences
- Q&A
About Sysco

• IT-company established in 2004
• Operations, development, consulting in technology and economics
  – Competence in database technology, middleware
  – Special focus in the energy sector
• More than 150 employees
• 9 Office Locations
  – Bergen, Haugesund, Lima, Oslo, Stavanger, Stord, Ølen, København, Stockholm
• Fusion Middleware Partner Community Award: “Outstanding WebLogic Contribution 2015”
• Fusion Middleware Partner of the year 2016 for Norway
• Partner of the year 5 times in a row
• Specialized Partner in 10+ areas
• Sysco is part of Red Expert Alliance
Information about me

- Jon Petter Hjulstad
- Dept Manager for Middleware at Sysco
- 20 years experience with Oracle Products
- Focusing on WLS, SOA Suite, BPM Suite ++
- SOA Partner Community Award 2012
- WLS Partner Community Award 2015
- Oracle ACE Associate
- Twitter: jphjulstad
- Blog: http://blog.sysco.no/
Why should you upgrade?
Experiences

- Types of experiences
  - SOA 11g => 12.1.3
  - OSB 11g => 12.2.1.2
  - OSB 12.1.3 => 12.2.1.0
  - SOA/OSB 12.2.1.0 => 12.2.1.2
- Different people from Sysco have been involved
Why upgrade?

• New Features
  • Improved developer experience & administration capabilities
  • REST / JSON capabilities
  • MFT (Managed File Transfer), ESS (Enterprise Scheduler Service)
  • Cloud Adapters
  • Enriched OOB exception handling framework (Error hospital)
  • Improved BAM with multi-browser support
  • Based on Java 8
  • OOB Maven support
  • 12.2.1: Continuous Availability, Circuit Breaker, In-Memory SOA, XSLT Debugger++

• Supportability
Support (overview)

- Premier Support
  - First 5 years from GA
- Error Correction Support
- Extended Support
  - Additional fee – 3 years
- Sustaining Support
  - Additional fee
  - Limited support on existing product bugs but no new developments
- Grace Period (new+prev)
Supportability documents 11g

• Extended Fusion Middleware 11g Lifetime Support Policy Dates (Doc ID 1585582.1)
  – The Lifetime Support Policy (LSP) dates for a number of Oracle Fusion Middleware 11gR1 (11.1.1.7) releases have been extended from their original end of premier/extended support dates of June 2014/June 2017 to December 2018/December 2021
Supportability documents 12c

- Error Correction Support Dates for Oracle Fusion Middleware 12c - FMW/WLS (Doc ID 1933372.1)

When should you upgrade?
When should you upgrade?

- New features
  - When new features give you advantages
  - When new development will benefit from them
- Change of topology
- Supportability
  - Premier Support vs Extended/Sustaining Support
  - Upgrade to which version?
- How long will the upgrade take?
  - Preparation, Install, Code migration,
- Big Bang vs Service By Service
- Licence considerations
  - New features may trigger new licence
  - Running 2 versions at same time
How do you upgrade?
History

• 10g to 11g was a major change
  – Weblogic and SCA
• 11g to 12c was evolution
  – OSB development in JDeveloper
• 12.1.3 and 12.2.1 are very similar
  – Source code – smaller changes

• With 12.2 Cloud has a big focus from Oracle
• Releases so far on on-premise: 12.2.1.0, 12.2.1.1, 12.2.1.2
  – Next: 12.2.1.3?
• These are new releases – not patches as on 11g
Upgrade strategies

• SOA 10g to 12c
  – Migration to 11g – and in-place upgrade – or
  – Redesign and migrate to 12c
• SOA 11g to 12c
  – In-place upgrade - or
  – Migration

• AIA in 11g is SOA core extension 12.1.3, is removed from 12.2.1
# Upgrade overview

## Preparation
- Understand Upgrade
- Define To-Be Topology
- Defining an upgrade strategy
- Performing pre-upgrade tasks

## Infrastructure
- Pre-upgrade tasks
- Installing 12c software
- Create / Upgrade Schemas
- Domain (Re-)Configuration

## Code Upgrade
- Upgrade projects
- Post-Upgrade Steps
- Verify Upgrade Results

*) From Opitz – Danilo Schmiedel*
Defining an upgrade strategy

• In-Place Upgrade
  – Schemas and domain directory upgrades are performed «in place»
  – Oracle home binaries are upgraded «out of place»
  – No need to redeploy composites
  – Long running instances resume after upgrade

• Side-by-Side Upgrade
  – New installation
  – New deployments
  – Suitable in stateless and short-running scenarios
Upgrade strategies - Considerations

- Fresh install has less legacy
- Fresh install can be repeated
  - In-place is less repeatable – it has a starting state
- You will have to migrate code anyhow
- Some bugs are only seen in environments which has been patched

- Where possible – we have selected fresh install
- See how you can avoid long-running processes – or see if it is possible to «restart» them again
  - Maybe it can be split i for instance 3 processes
Sample in-place: SOA Suite 11g -> 12c Upgrade

• Starting point: SOA Suite 11.1.1.6 or 11.1.1.7 only
• 64-bit OS and JVM
• Dehydration store DB must be supported version – 11g or 12c
• OPSS must migrate to use DB or LDAP based policy store
• Long-running instances resume after upgrade
• For 12c features, open 11g projects in 12c JDeveloper
Domain Upgrade Process (as recommended by Oracle)

• Phase 1
  – Run **RCU** to create new 12c schemas

• Phase 2
  – Run upgrade assistant **UA** to upgrade 11g component schemas
    • Upgrades schemas and performs any data migrations

• Phase 3
  – Run **Re-configuration** wizard on 11g domain
    • Upgrades WLS “config.xml” and start-up scripts
    • Re-wires domain to point to 12c Oracle Home

• Phase 4
  – Run **UA** to upgrade product-specific (e.g. SOA) domain configuration
Domain Upgrade Topology (as recommended by Oracle)

- **Domain**
  - Admin Server

- **Cluster**
  - SOA Server

- **DB**
  - Upgraded 11g Schemas
  - + New 12c Schemas

- **11g Domain**
- **12c Home**
12c Upgrade with Continuous Build / Deployment & Infrastructure as Code
The binary repository is the interface between build and test.
## Tools

<table>
<thead>
<tr>
<th>Category</th>
<th>Tool(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version Control</td>
<td>git/gitlab - BitBucket</td>
</tr>
<tr>
<td>Build/Dependency Mgmt.</td>
<td>Maven</td>
</tr>
<tr>
<td>Binary Management</td>
<td>Artifactory, Flexdeploy</td>
</tr>
<tr>
<td>Continuous Integration</td>
<td>Hudson, Jenkins, Flexdeploy</td>
</tr>
<tr>
<td>Continuous Inspection</td>
<td>Sonar</td>
</tr>
<tr>
<td>Continuous Delivery</td>
<td>Hudson, Jenkins, Flexdeploy</td>
</tr>
<tr>
<td>Provisioning</td>
<td>Chef, Vagrant, Puppet</td>
</tr>
<tr>
<td>Mocking</td>
<td>SOAP UI, Mockito, OC Test</td>
</tr>
<tr>
<td>Acceptance Test</td>
<td>Robot / SOAP UI, OC Test</td>
</tr>
<tr>
<td>Issue Tracking / Planning</td>
<td>Jira</td>
</tr>
</tbody>
</table>
Automation

• Automate Build / Deployment
  – Jenkins/Hudson, FlexDeploy
• Automate Testing
  – Opitz Test Framework
• Automate Provisioning
  – Puppet, Chef, Cloud Control
  – WLST
Testing

Why testing?

- Validate that the upgrade was successful!
- Testing in SOA/Integration projects is essential
  - Ensure technical functionality and operational correctness
  - Improve code quality
  - Allow changes efficiently
  - Speed up development

Approaches

- Manual testing
- Oracle SOA Suite OOTB testing capabilities
- OC SOA Testing Framework

https://www.slideshare.net/bernhasv/test-driven-soa-suite-12c-upgrade
Test – Opitz Test Framework
Tests - phases

Faster   Time   Slower

Smaller  Scope  Larger

High     Probability of Failure  Low

## Test - Opitz Test Framework

### Comparison OOTB Testing vs. OC SOA Testing

<table>
<thead>
<tr>
<th></th>
<th>OOTB</th>
<th>OC SOA Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test-driven approach</td>
<td>(✓) only composites</td>
<td>✓</td>
</tr>
<tr>
<td>Runtime tests</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Possibility for test automation</td>
<td>✓ only for composites</td>
<td>✓</td>
</tr>
<tr>
<td>Mocking</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Support for test types</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>• Unit</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>• Isolation</td>
<td>✓ (only manual)</td>
<td>✓</td>
</tr>
<tr>
<td>• Integration</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Build/Deploy - FlexDeploy

• https://flexagon.com/flexdeploy/
Provisioning - Puppet

https://www.youtube.com/watch?v=-pWFBoZa3Lw
How to maintain the installation?
How to maintain the installation?

• Patches for WLS
• Patches for JVM
• SOA 11g and 12c: Bundle Patch Reference (Doc ID 1485949.1)
  – Patch 24835839: 12.1.3 Bundle Patch 170117 (12.1.3.0.170117)
  – There have been no functional Bundle Patches released on 12.2.1. Updates to this version have instead been released as full releases (12.2.1.1.0, 12.2.1.2.0)
  – OSB Bundle Patch 12.2.1.2.170418 is security related
• Oracle Service Bus 11g and 12c: Bundle Patch Reference (Doc ID 1499170.1)
• Verify manually – or use Cloud Control
Serach for patches

• Create predefined searches
• Would be know which were
  – Recommended / compatible
  – Serverside / JDev

<table>
<thead>
<tr>
<th>Patch Name</th>
<th>Description</th>
<th>Release</th>
<th>Platform (Language)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25210622</td>
<td>OSB proxy service that calls BPM process in a loop (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>25457694</td>
<td>NullPointerException Exception when using local transport proxy (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>26219741</td>
<td>OOB38003-Exception on TransportStateCollector.UORStatCollector (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>25971887</td>
<td>FORWARD MERGE OF 25682168 FOR INCLUSION IN 12.2.1.3.0 (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>26090228</td>
<td>OSB 12c does not support error handler within error handler (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>25254389</td>
<td>OSB 12.2.1 - Changes in BS &gt; Performance &gt; Result Caching and not saved (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>25805608</td>
<td>EM Console does not report WLS Required Restart before/after failing OSB change (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>25688019</td>
<td>Unable to edit DVM with empty values on SBCConsole (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
<tr>
<td>23640745</td>
<td>OSB 11.1.1.6.2 - Slow response when BS URI is down in JEB Transport (Patch)</td>
<td>12.2.1.2.0</td>
<td>Generic Platform (American English)</td>
</tr>
</tbody>
</table>
Experiences
JDeveloper

- Quick Start is an advantage
- Frequent restarts
- Bugs – for example property panes empty, frequent validations
- Composite view in OSB had problems
- Keep dev-environment up to date
  - Blog: [http://blog.sysco.no/soa/Patching_JDev/](http://blog.sysco.no/soa/Patching_JDev/)
- Not easy to know which patches you should apply
JDeveloper - Patches

• Report bugs!
• Great story from MOS

APPLIES TO:

Oracle Service Bus - Version 12.2.1.0.0 and later
Information in this document applies to any platform.

SYMPTOMS

Unable To Create Business Services In JDeveloper 12c

When trying to create a simple business service in a OSB Project it is loading and gets stuck and in order to solve the issue had to close Jdeveloper and open again.

The issue can be reproduced at will with the following steps:

1. - Create A Service Bus project in JDeveloper 12.2.1
2. - Create Database adapter in the external services(right side).
3. - When click the button finish then a message is displayed 'Please Wait' and gets stuck

SOLUTION

Please go to the My Oracle Support (http://support.oracle.com/) to download the patches referenced below.

Patch 25527688 12.2.1.0.0 OSB Bundle Patch 12.2.1.0.170418
Patch 25254226 12.2.1.0.0 JDev UI stuck in 'Please Wait' state at the end of creating OSB Business Service
Patch 25918703 12.2.1.0.0 Tracking bug for PCBPEL fix for bug 25254226
Maven / Build

• Maven support is there – but buggy – and does not solve all

#Conclusion

Unfortunately there is a lot of manual work that has to be done in preparing our OSB environment to support Maven builds and deployment. Most of these tasks are one time job only. However due to the bug in JDeveloper each and every time we create new project or update project properties we have to check project pom.xml file and application pom.xml file and correct them as described it this article. Once that all the preparation and checking has been done correctly we can run our automated integration and build seamlessly.
SAF

• Change in SAF in 12.2.1.2 – so is not backwards compatible
• Blog: 5 Reasons to avoid WLS SAF Agents within your FMW Architecture by Arturo Viveros

• http://blog.sysco.no/oracle/soa/osb/weblogic/jms/SAF/
Consoles / Browser

• Have not two consoles:
  – /em
  – /console
• EM gets more functionality
• Not all functionality is EM
• Not all functionality in WLS Console
• Verify which functions works best in which console
• For instance: Change in security settings worked in /console – not /em

• Have seen challenges with login on Firefox
Other

• Xquery transformations
• REST service redesign
Q&A
Enjoy the O Gh Tech conference!