

# One Year On: Field Experiences of Oracle Fusion Middleware 11g

Simon Haslam  
*Veriton Limited*

[www.oug.org/techebs](http://www.oug.org/techebs)

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**UKOUG**  
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BUSINESS SYSTEMS INTEGRATION

# Simon Haslam / Veriton

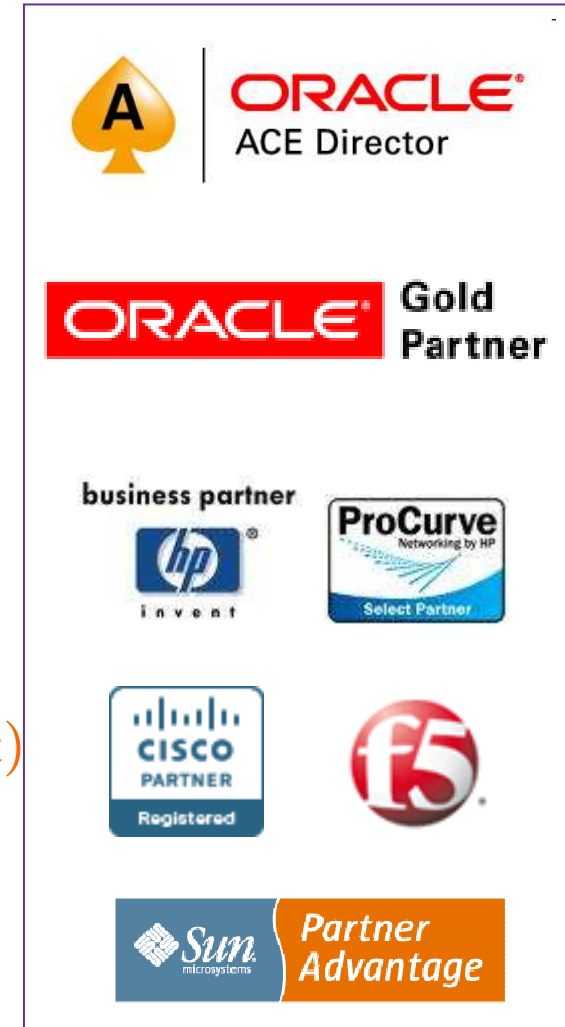
Specialised consultant & Oracle Partner,  
established for 14 years

Demanding **web & call-centre** applications

Architecture & development strategy;  
health-checks; disaster recovery; tuning

Oracle Fusion Middleware  
(clusters, J(2)EE, ADF, SSO, OID, Reports, etc)  
ADF Application (esp. strategy & admin)

Database & related technologies  
(OS, load balancers, firewalls, ...)



# Agenda

- ① The Big Changes
- ② Common Configurations & Lessons Learnt
- ③ Migration Tools
- ④ General Considerations

# The Big Changes in a Nutshell



Photo credit: <http://www.iamdarius.com/>

4 (2.0h)

# The Big Changes for iAS Users

- OC4J has been replaced by WebLogic Server
- New, separate, installers
- ASC has gone – replaced by a combination of WL Console and EM FMC
- OPMN only manages non-Java stuff
- Node Manager should be used to manage Java stuff
- Structuring of Domains and Oracle Instances
- OSSO is being replaced by OAM (and lots of additional IdM products available)
- JRockit JVM on several platforms

# OFM | Ig Benefits

- Oracle's strategic enterprise platform
- Middleware consolidation (especially skills)
- JEE platform standards
- Performance, clustering, caching (e.g. Coherence\*Web)
- Instrumentation (e.g. JRMC FR, WLDF)
- Advanced management & control
- Exciting future (e.g. JR VE, OVAB)

# Common Configurations\*

- Web + Java, single host
- Web + Java (+ F/R), separate hosts
- Web + Java, active-passive (3<sup>rd</sup> part clusterware)
- Web + Java, active-active
- Web + Java + SSO + OID active-active
- In the pipeline:
  - Web + Java + OAM etc + OID active-active
  - Web + Java ASCRS?

Note: WLS can deliver HTTP directly but not common config. for most Oracle customers (security)

\* biased towards mid-sized customers

# Web Tier + Java (single and 2 hosts)

- What you need:
  - WLS installer (10.3.3 / 11gR1 PS2 = full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier Utilities (11.1.1.2.0 & 11.1.1.3.0)
- Lessons:
  - SmartUpgrade is a useful supporting tool
  - Libraries and class loader (had to rework app a little)
  - EM issues in production mode on 11gR1 & PS1
  - Node manager configuration
  - A couple of bugs in config scripts on Solaris only
  
  - OHS wallet compatibility ☺
  - HA with OHS (+mod\_wl\_ohs) as front-end works well
  - Note: I generally don't install Web Cache

# Web Tier + Java, active-passive 3<sup>rd</sup> Party Clusterware

- What you need:
  - WLS installer (10.3.3 / 11gR1 PS2 = full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier Utilities (11.1.1.2.0 & 11.1.1.3.0)
  - OFM Companion DVD (11.1.1.3.0) for ASCRS examples
- Lessons:
  - No automated configuration for WLS on Virtual Host (e.g. field, command line param or env variable)
  - WLS Certificate management is very different from iAS/OC4J
  - A bug in cfcStartNodeManager on HP-UX
  - Tried to use ASCRS as basis for 3<sup>rd</sup> Party scripts but not really ready in PS2 so wrote own startup scripts

# Web Tier + Java, active-passive Oracle Clusterware plus ASCRS

- What you need:
  - Oracle Clusterware 11gR1
  - WLS installer (10.3.3 / 11gR1 PS2 = full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier Utilities (11.1.1.2.0 & 11.1.1.3.0)
  - OFM Companion DVD (11.1.1.3.0) for ASCRS
- Lessons:
  - Difficulty getting a managed server to be started once in production mode and admin channel
  - (OHS appears to be supported but still to go)
  - Currently using ASCRS for disk (but with tried/tested Veriton scripts written for 10g iAS CFC) and own script for NM/OPMN startup
  - For RAC back-end: multi-data sources aren't pretty

# Oracle SSO

- ‘traditional’ SSO ends with OAS 10.1.4
- OID 11g available in July 2009 launch
- You can build a 11g infrastructure but call out from OHS 11g to SSO 10.1.4
- SSO 10.1.4 will work with OID 10g or 11g
- OAM etc 11g (inc. management rewritten in Java & on main platforms) – available since July 2010 (11.1.1.3) (F/R not yet integrated)

# Web Tier + Java + existing OSSO 10g

- What you need:
  - WLS installer (11.1.1.3 full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier Utilities (11.1.1.2.0 & 11.1.1.3.0)
  - Existing 10g iAS Infrastructure
  
- Lessons:
  - 10.1.2 may work (very old anyway) but safer if can upgrade to 10.1.4.3

# Web Tier + Java + OSSO 10g/OID 11g

- What you need:
  - WLS installer (11.1.1.3 full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier Utilities (11.1.1.2.0 & 11.1.1.3.0)
  - Repository Creation Utility (11.1.1.3.3 full) \*
  - Identity Management (11.1.1.2.0 & 11.1.1.3.0)
  - SSO MRCS (10.1.4.3.1)
  - Identify Management 10.1.4

# Web Tier + Java + OAM & OID IIg

- What you need:
  - WLS installer (11.1.1.3 full)
  - ADR installer (11.1.1.2.0 & 11.1.1.3.0)
  - Web Tier installer (11.1.1.2.0 & 11.1.1.3.0)
  - Repository Creation Utility (11.1.1.3.3 full) \*
  - Identity Management (11.1.1.2.0 & 11.1.1.3.0)
  - Oracle Identity and Access Management (11.1.1.3.0 only)
  - Oracle Access Manager WebGates (11.1.1.3.0)
- Lessons:
  - Installation takes time – allow several days
  - Incremental test as much as possible
  - Make sure IP addresses are planned and set up from the start
  - Consider “pseudo-VIPs” is starting non-HA

\* runs on client (Windows or Linux)

# Migration Tools

- WebLogic SmartUpgrade
  - I have used this on almost every project
  - Ideal for giving you an idea of scope
  - Useful suggestions, even if you don't use generated artifacts

Oracle JDeveloper 11g Release 1 - roller.jws : Project1.jpr : /mnt/ls-work/80\_Projects/ukoug\_wls\_su/roller/Project1/findings/UpgradeReport

File Edit View Application Refactor Search Navigate Build Run Versioning Tools Window Help

roller

Projects

- Project1
  - Application Sources
    - roller.ear
      - UpgradeReport

Application Resources

Data Controls

Recently Opened Files

UpgradeReport - Structure

- Sort
- UpgradeReport
  - AbstractMethodDefinitionSource.class
  - AbstractSessionFactory\$ManagedClient
  - Agent.class
  - AnakiaElement.class
  - AvalonLogger.class
  - Cglib2AopProxy\$AdvisedDispatcher.cla
  - CSharpCodeGenerator.class
  - DebuggingClassWriter\$1.class
  - DocumentNavigator.class
  - FacesGetLocaleCommand.class

Overview History

Log

Resources

UpgradeReport

Report

The [upgrade report](#) identifies artifacts that need to be upgraded to WebLogic proprietary form and provides assistance where possible.

Categories

Resources

**Upgrade Metrics Summary**

Number of Findings: 27

Priority: ! Required: 4, ★ Recommended: 22, i Info: 1

Complexity: ! High: 0, ↑ Medium: 26, ↓ Low: 1, i Info: 0

**Upgrade Findings**

Filter

Search

**AbstractMethodDefinitionSource.class**

**Third Party Dependencies**

Priority: Recommended

**Complexity:** Medium

Reason: acegi-security-1.0.3.jar contains the following Third Party dependencies:  
 org/acegisecurity/intercept/method/AbstractMethodDefinitionSource.class on [org.aspectj.lang.JoinPoint, org.aspectj.lang.reflect.CodeSignature, org.aspectj.lang.JoinPoint, org.aspectj.lang.Signature]  
 org/acegisecurity/providers/cas/ticketvalidator/CasProxyTicketValidator.class on [edu.yale.its.tp.cas.client.ProxyTicketValidator] org/acegisecurity/util/EncryptionUtils.class on [javax.crypto.spec.DESedeKeySpec, javax.crypto.SecretKeyFactory, javax.crypto.Cipher]  
 org/acegisecurity/util/FilterInvocationUtils.class on [org.springframework.mock.web.MockHttpServletRequest, org.springframework.mock.web.MockHttpServletResponse]  
 org/acegisecurity/vote/AbstractAclVoter.class on [org.aspectj.lang.JoinPoint, org.aspectj.lang.reflect.CodeSignature, org.aspectj.lang.JoinPoint]

Advice: To ensure the proper functioning of deployed applications, the libraries that provide the identified API need to be available in the Oracle WebLogic Server installation.

Implication: Features associated with the identified API may be broken, or the application itself may not function

Editing

# 3

# Further Examples

The screenshot displays a software report interface. On the left, a sidebar contains 'Report', 'Categories', and 'Resources'. The main content area features a 'Report' section with a document icon and text: 'The [upgrade report](#) identifies artifacts that need to be upgraded to WebLogic proprietary form and provides assistance where possible.'


Below this is the 'Upgrade Metrics Summary' section, which includes:

- Number of Findings: 1
- Priority: 0 Required (red exclamation mark), 0 Recommended (yellow star), 0 Info (blue 'i')
- Complexity: 0 High (red exclamation mark), 0 Medium (blue up arrow), 1 Low (blue down arrow), 0 Info (blue 'i')

The 'Upgrade Findings' section has a 'Filter' dropdown and a 'Search' input field. A finding is listed for 'ecard.ear' with the title 'Suppress Report for WS Upgrade Generation'. The finding details are:

- Priority: Info
- Complexity: Low
- Reason: Generation of upgraded web service artifacts was requested.
- Advice: **We have not detected any Web Services that can be upgraded by this tool.**
- Generated Artifacts: None available.
- Comment: [Comment icon]

3

 **Third Party Dependencies**

Priority: **Recommended**


**Complexity:** Medium

Reason: log4j-1.2.8.jar contains the following Third Party dependencies: org/apache/log4j/jmx/Agent.class on [com.sun.jdmk.comm.HtmlAdaptorServer] org/apache/log4j/jmx/Agent.class on [com.sun.jdmk.comm.HtmlAdaptorServer]



Advice: To ensure the proper functioning of deployed applications, the libraries that provide the identified API need to be available in the Oracle WebLogic Server installation.

Implication: Features associated with the identified API may be broken, or the application itself may not function properly if at all without the libraries that provide the identified functionality.

Generated Artifacts: None available.

 Comment

3

 **Classloading - Application Library** 

Priority: Recommended


**Complexity:** Medium

Reason: The configuration file **[REDACTED]**.ear:META-INF/orion-application.xml contains a <library> element with "path" - "/lib".

Advice: Select one of the following options to implement the <library> element in WebLogic Server: 1. Locate the directory specified in the path argument of the <library> element, and copy the jar files in that directory to the APP-INF/lib directory of the application. 2. Package the classes available in the <library> path directory into a jar file, deploy the jar file as a WebLogic Server shared library, and reference the library using the <library-ref> element in the application's weblogic-application.xml deployment descriptor. For more information, see [Overview of Shared Java EE Libraries and Optional Packages](#).

Implication: The <library> element allows OC4J applications to refer to code sources (for example, JAR files, ZIP file, or specific directories) inside and outside the application scope. Any valid code sources contained in these locations are added to the application's class-loader at runtime. Unlike OC4J, WebLogic Server applications must refer to code source located within the scope of the application and cannot refer to external locations.

Generated Artifacts: None available.

 Comment

## ☰ Oracle SSO Configuration Settings in orion-application.xml

Priority: Required

**Complexity:** High

Reason: The configuration file **[REDACTED]**:META-INF/orion-application.xml contains a <jazn-web-app auth-method="SSO"> element.

Advice: The OC4J apps, wrt JAAS requirements, could be categorized in the following two buckets: 1. applications that do not need the JAAS subject; 2. applications that have a dependency on JAAS subject

Case 1: Apps that do not need the JAAS subject

These are the applications that typically do not want to integrate with the container session and use SSO purely as an authN engine. API calls() like request.getHeader() is typical of such applications. The migration to WLS would not affect these applications (except for the change in container and its wiring with OHS/SSO as documented)

1) No additional providers need to be configured.

2) Applications can continue to use the request.getHeader() API calls to get the required user information from the headers set by mod\_osso.

Case 2: Apps that need the JAAS subject These are the applications that typically integrate with the container session and have a dependency on the JAAS subject. API calls like request.getUserPrincipal() , request.getRemoteUser() is typical of such applications. During migration,

such applications need to do the following at their end 1) auth-method in web.xml should include client-cert (weblogic allows multiple auth-types to be specified in the auth-method, one of those should be client-cert) 2) osso assertion provider needs to be configured 3) apart from osso assertion provider, an ldap authenticator / OID authenticator also needs to be configured against the existing oid (that they have been using for sso) Note: Global Logout and Synchronization of OracleAS JAAS Provider User Context with Servlet Sessions

In the Weblogic world, to achieve single logout functionality, this synchronization is enabled by default (by virtue of SSO Synchronization filter which is active OOTB) 1) the filter can be disabled by toggling a system property sso.filter.enable (start wls with -Dssso.filter.enable=false) 2) If dynamic directives are being used, applications need to invalidate their sessions before making a call out to SSO logout (if not already doing so) Refer to [Configuring Single Sign-On in Oracle Fusion Middleware](#) for more details. [\[less\]](#)

Implication: An application is configured to use Oracle SSO for user authentication in OC4J.

Generated Artifacts: None available.

[+](#) Comment

- OFM Upgrade Assistant
  - upgrades in or out of place (depending on component)
  - expects upgrade to be on same hardware
  
- Masterclass – Wed. 11:10-13:10 (Hall 8a)  
**Frances Zhao & Doug Clarke** from Oracle

# Admin. Feedback

- Production Mode shenanigans
  - config management (lock and edit praised)
  - remember to activate changes!!!
- Console vs FMC
- Node manager / startup
- OEM / JRF (multiple versions of ADF)
- Certificates / security sophisticated but more complex
- Logging

# Simon says...

- Think about directory structure
  - read-only vs read-write directories
  - domain outside of MW\_HOME?
  - node manager config at same level as domain top (not under WL\_HOME... but ASCRS...)
  - keystores out of WL tree and at same level as domain top

- Get to grips with Node Manager
  - Use java node manger only
  - Use NM to start up AdminServer and then Managed Servers
  - Can be frustrating, especially with certificates... documentation is lacking... perseverance wins!

- Channels – flexible model
  - Admin channel is ideal for network segregation

- Server resources – partitioning by Managed Server comparable as by OC4J Instance (albeit num of JVM procs difference)
- Memory sizing as important as before
- In virtualized, demanding environments maybe one Managed Server per VM

- Proliferation of domains
- Put effort into learning WLST

# Politics

- Don't underestimate staff re-training \*
  - Java stuff “same but different”
  - The way you build Oracle middleware is different to 10g *iAS*
  - Beware of inertia & comfort zone
- Support period considerations
- But WLS will be very common in Oracle products over time



\* I've changed my mind!

# Timing



- OFM 11g out for 18 months (WLS & OHS much longer)
  - 11gR1 PS3 due out soon
  - OAM out now and replaces SSO, but if F&R SSO then wait for OAM integration
  - iAS 10.1.2 Premier Support ends Dec 2011
  - Good time to upgrade, especially once PS3 is out
- ⇒ **Is OFM 11g “production-ready”?**

Mostly, **yes!**

# Shameless Plug!



- UKOUG App Server & Middleware SIG  
Wed 2nd March 2011
  - Theme: Fusion Middleware 11g Upgrade
  - Dual venue... speakers at both plus broadcast
    - Oracle City Office, London
    - Fujitsu Office, Warrington
  - 1 FREE place for most UKOUG membership packages

Any questions ?

Thank you for listening !

[SimonH@veriton.co.uk](mailto:SimonH@veriton.co.uk)

Blog: [simonhaslam.co.uk](http://simonhaslam.co.uk)