



# Best Practices for Installing Oracle Fusion Middleware Products

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# Agenda

## Prepare



- Documentation
- Software

## Install & configure



- Location
- Java
- Less is more
- Silent

## Maintenance



- Support
- Patching
- Stay current
- Data Source
- Backup
- + Miscellaneous



# Documentation – Preparing

- FMW Download, Installation, and Configuration Readme Files
  - FMW 12.1.2
  - FMW 11.1.1.8.0
  - FMW 11.1.1.7.0
  - ...
- FMW System Requirements and Specifications
- FMW Installation Planning Guide



# Documentation - Installing

- FMW product installation guides
  - Oracle Portal, Forms, Reports and Discoverer
  - Oracle Service Bus
  - Oracle SOA Suite and Oracle BPM Suite
  - ...
- Release Notes
- FMW Repository Creation Utility User's Guide



# Documentation – Next steps

- FMW Securing a Production Environment for Oracle WebLogic Server
- Enterprise Deployment Guides
  - Oracle SOA Suite
  - Oracle Identity Management
  - ...
- FMW High Availability Guide



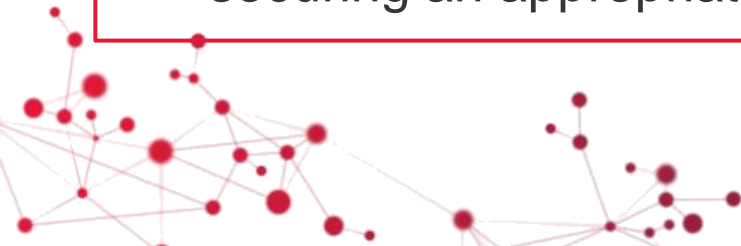
# Software – Oracle Technology Network



- OTN
  - <http://www.oracle.com/technetwork/indexes/downloads>
  - All software downloads are free
  - Most come with a OTN Developer License

You may not:

- use the programs for your own internal data processing or for any commercial or production purposes
- use the application you develop for any internal data processing or commercial or production purposes without securing an appropriate license from us
- **continue to develop** your application after you have used it for any internal data processing, commercial or production purpose without securing an appropriate license from us



# Software – Oracle Technology Network

- OTN Free Developer License
  - Only covers the WebLogic Server
- “.. permits you to deploy the programs only on your single developer computer to be used and accessed by only 1 named developer..”
- You may continue to develop, test, prototype and demonstrate your application with the programs under this license after you have deployed the application for any internal data processing, commercial or production purposes.



# Software - Oracle Software Delivery Cloud

- Oracle Software Delivery Cloud
  - <https://edelivery.oracle.com>
  - “...By accessing the software on this portal, you agree that you have already obtained a license...”
  - You are not required to use the site





# Software - My Oracle Support

- MOS - <https://support.oracle.com>
  - Require valid support agreement
  - Patches, updates and fixes
  - Old software releases



# “Location, Location, Location”

- Follow a strict scheme for directory locations
  - Oracle Base - /u01/app/oracle
  - Products - /u01/app/oracle/products
  - Domains - /u01/app/oracle/domains
- For example
  - MW\_HOME - /u01/app/oracle/product/wls1212
  - DOMAIN\_HOME - /u01/app/oracle/domains/myDomain
- Do not keep domains under MW\_HOME
  - **/u01/app/oracle/product/wls1212/user\_projects/myDomain**
- The exception being Portal, Forms, Reports and Discoverer
  - **/u01/app/oracle/product/pfrd11.1/user\_projects/myDomain**



# Java



- Use soft links

```
/u01/app/oracle/product/jdk1.7.0_45
```

```
cd /u01/app/oracle/product
```

```
ln -s jdk1.7.0_45 java_current
```

```
/u01/app/oracle/product/java_current
```



# Java



- Use symlinks

```
D:\oracle\product\jdk1.7.0_45
```

```
cd D:\oracle\product
```

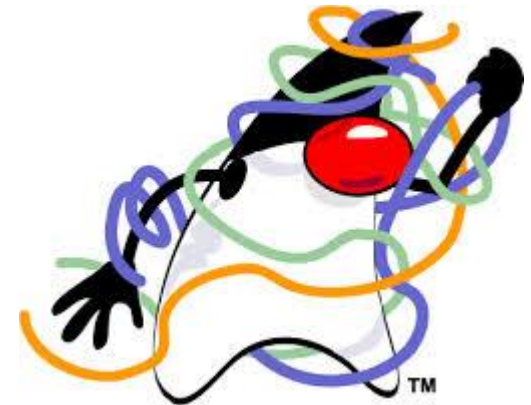
```
mklink /d java_current jdk1.7.0_45
```

```
D:\oracle\product\java_current
```



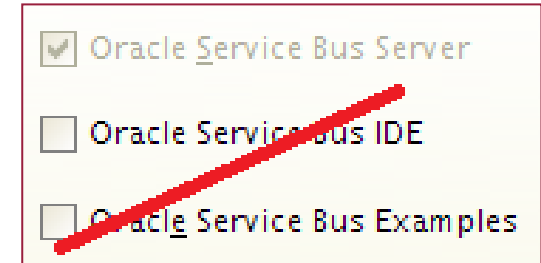
# Java

- Never use cacerts in JAVA\_HOME/jre/lib/security
- A better alternative is DOMAIN\_HOME/keystores



# Less is more

- Install as little as possible
  - Maintenance
  - Security
- Create domain with as few products as possible
  - SOA Suite conflicts with the SIP Server
- Production servers
  - No examples
  - No OSB IDE etc.



## ☉ Generate a domain configured automatically to support the following products:

- Basic WebLogic Server Domain - 10.3.6.0 [wserver\_10.3] \*
- Oracle BPM Suite for developers - 11.1.1.0 [Oracle\_SOA1]
- Oracle BPM Suite - 11.1.1.0 [Oracle\_SOA1]
- Oracle SOA Suite for developers - 11.1.1.0 [Oracle\_SOA1]
- Oracle SOA Suite - 11.1.1.0 [Oracle\_SOA1]
- Oracle Enterprise Manager - 11.1.1.0 [oracle\_common]
- Oracle Business Activity Monitoring - 11.1.1.0 [Oracle\_SOA1]
- SOA Bridge Portlet Container - 11.1.1.0 [Oracle\_SOA1]
- Oracle WSM Policy Manager - 11.1.1.0 [oracle\_common]
- Oracle JRF WebServices Asynchronous services - 11.1.1.0 [oracle\_common]
- Oracle JRF - 11.1.1.0 [oracle\_common]
- Basic WebLogic SIP Server Domain - 10.3.6.0 [wserver\_10.3]
- Oracle Platform Security Service for Audit - 11.1.1.0 [oracle\_common]
- WebLogic Advanced Web Services for JAX-RPC Extension - 10.3.6.0 [wserver\_10.3]
- WebLogic Advanced Web Services for JAX-WS Extension - 10.3.6.0 [wserver\_10.3]



# Silence is gold

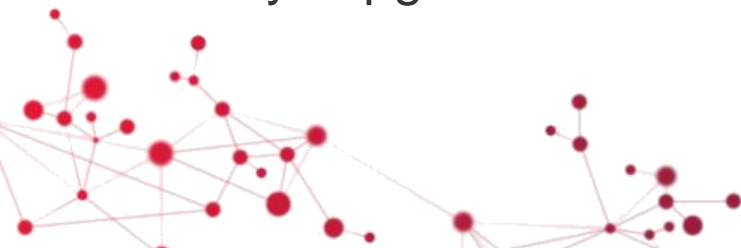
- Keep installations identical = Maximize predictability
- Only way is scripting everything
  - Silent installation
  - Domain creation (WLST Offline)
  - Deployments (WLST, Ant, Maven)
  - Services – Data Sources, JMS etc.
- For all environments also development



# Oracle Lifetime Support



- Premier => Extended => Sustaining
- WebLogic Server 11g (10.3.x) Premier Support to December 2018
- Error Correction Support Policy
  - Grace period
  - The time where fixes are created for both the new and previous patch set
  - Between 3 months and 2 years
- WebLogic Server 10.3.6 is the latest Patch Set
- WebLogic Server 10.3.5 is out of Error Correction Support
- Always upgrade to the latest minor release e.g. Patch Set

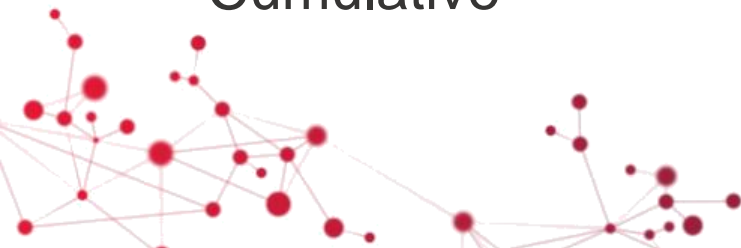




# Patching

You need to know the patching terminology

- Critical Patch Update (CPU)
  - Quarterly patch program
  - All Oracle products including Java
- Security Patch Update (SPU)
  - Security patches
  - Cumulative
- Patch Set Updates (PSU)
  - Security patches + other stabilizing patches
  - No enhancements
  - Cumulative




# Patching

- WebLogic Server
  - Only PSU, no SPU
  - PSU changes the 5 number in the version number
  - 10.3.6.0.**6** October 2013 PSU
- FMW version numbers
  - 11g
    - Major release **10**.3.6.0.6
    - Minor release 10.**3**.6.0.6
    - Patch set 10.3.**6**.0.6
    - CPU/PSU 10.3.6.0.**6**
  - 12c
    - Major release 12.1.1.0.6
    - Minor release 12.1.**1**.0.6
    - Patch set 12.1.1.**0**.6
    - CPU/PSU 12.1.1.0.**6**



# Patching

- Overlay patch
  - One-off patch that conflicts with a PSU
  - Patch must match PSU version

Patch Name	Description	Release 
13573621	SU Patch [KZKQ]: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6
13573621	SU Patch [2QYL] :10.3.6.0.1 Overlay: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.1
13573621	SU Patch [9DWQ] :10.3.6.0.2 Overlay: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.2
13573621	SU Patch [S1VX] :10.3.6.0.3 Overlay: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.3
13573621	SU Patch [USNC] :10.3.6.0.4 Overlay: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.4
13573621	SU Patch [9RDH] 10.3.6.0.5 Overlay : DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.5
13573621	SU Patch [TWMP] :10.3.6.0.6 Overlay: DELIVER PS5 RC1 WORKMANAGER AS A PATCH (Patch)	10.3.6.0.6



# Patching

- Bundle Patches (BP)
  - Bugs or important enhancements between Patch Sets
  - Cumulative
  - Changes the 5 number in the version number
- Examples
  - OSB
  - SOA Suite
  - WebCenter Portal + Content
  - ...

[Patch 14082705](#): PS5 Bundle Patch 3 (11.1.1.6.3)

[Patch 14406487](#): PS5 Bundle Patch 4 (11.1.1.6.4)

[Patch 15831614](#): PS5 Bundle Patch 5 (11.1.1.6.5)

[Patch 16271978](#): PS5 Bundle Patch 6 (11.1.1.6.6)

[Patch 16702086](#): PS5 Bundle Patch 7 (11.1.1.6.7)

[Patch 17014142](#): PS6 Bundle Patch 1 (11.1.1.7.1)



# Patching

- MOS Recommended Patch Advisor
  - Work-in-progress initiative

The screenshot shows the 'Patch Search' interface. At the top, there is a 'Patch Search' header with tabs for 'Search', 'Saved Searches', and 'Recent Searches'. Below this, a search bar contains the text 'Orade SOA Suite'. To the left of the search bar, there are three options: 'Number/Name or Bug Number (Simple)', 'Product or Family (Advanced)', and 'Recommended Patch Advisor' (which is highlighted with a red underline). A tooltip above the search bar says 'Search for recommended patches for products and releases listed or for combinations of products that you use together. Learn more'. A callout box above the search bar says 'Start typing your product name to narrow the list.' Below the search bar, there is a checkbox labeled 'Check recommendations when used with another product.' To the right of the search bar, a dropdown menu is open, showing a list of release versions: 'Select Release', '11.1.1.7.0', '11.1.1.6.0', '11.1.1.5.0', '10.1.3.4.0', '10.1.3.3.0', '10.1.3.1.0', and '10.1.2.2.0'.

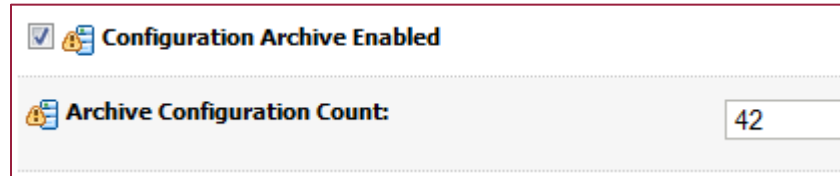


# Stay current

- What you know today might not be true tomorrow
  - Example - Java 7u51 on the clients will break Oracle Forms
- No silver bullet for information
- Critical Patch Update Alert E-mails
- MOS information centers
  - OSB [ID 1293368.2]
  - SOA Suite 11g [ID 1369339.2]
  - ...
- Master Note on FMW Proactive Patching – PSUs and BPs (Doc ID 1494151.1)
- Blogs, Twitter ...

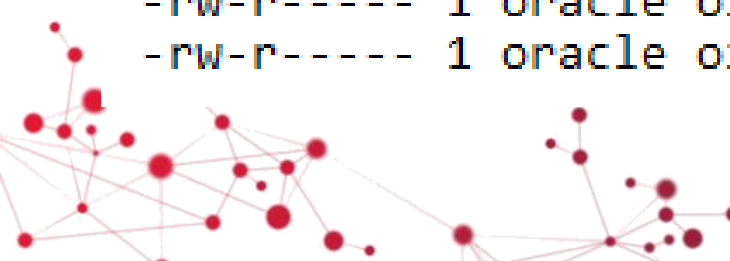
# Configuration File Archiving

- Automatic backup of configuration files every time changes are activated.



- DOMAIN\_HOME/config => Jar file in configArchive

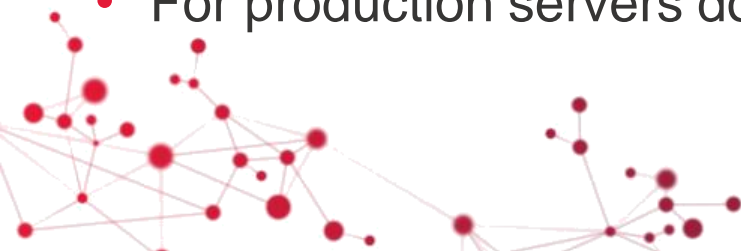
```
[oracle@wintermute configArchive]$ ll
total 48
-rw-r----- 1 oracle oinstall 6886 Aug 24 18:52 config-1.jar
-rw-r----- 1 oracle oinstall 6896 Aug 24 20:51 config-2.jar
-rw-r----- 1 oracle oinstall 6913 Aug 25 13:23 config-3.jar
-rw-r----- 1 oracle oinstall 6914 Aug 25 13:57 config-4.jar
-rw-r----- 1 oracle oinstall 6914 Aug 25 14:03 config-5.jar
-rw-r----- 1 oracle oinstall 7631 Aug 25 14:04 config-6.jar
```



# Data Sources

- Connection Pool
  - Initial Capacity
  - Maximum Capacity
  - Minimum Capacity
- Number of Connections
  - $\text{Data Sources} * \text{Initial Capacity} * \text{Targets} = \text{Lots of connections}$
- Only target Managed Servers or Clusters
- For non production set Initial and Minimum Capacity to 1
- Maybe even 0?
- For production servers do proper sizing of the 3 capacities

<b>Initial Capacity:</b>	<input type="text" value="1"/>
<b>Maximum Capacity:</b>	<input type="text" value="15"/>
<b>Minimum Capacity:</b>	<input type="text" value="1"/>





# Linux – Entropy problems

- WebLogic Server very slow to start, often because of low entropy
- /dev/random
  - Pool of random bits (Entropy pool)
  - Calculated from user-triggered events (keystroke, disk I/O etc.)
  - Blocking device – Process hangs until more bits are generated
- /dev/urandom
  - Does not block, but reuses bits
  - Not as secure so do not use on production servers
  - **Java treats /dev/urandom as /dev/random !?**  
So use /dev/./urandom



# Ways to use /dev/urandom

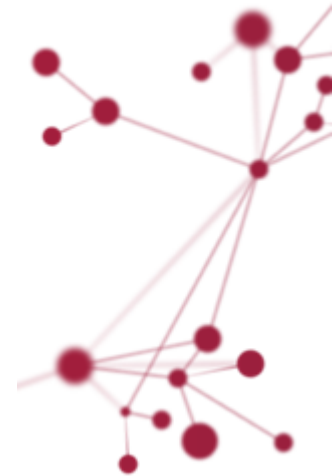
- Java parameter `-Djava.security.egd=file:/dev/./urandom`
- `$JAVA_HOME/jre/lib/security/java.security`
  - `securerandom.source=file:/dev/./urandom`
- rngd daemon
  - `/etc/sysconfig/rngd`
    - `EXTRAOPTIONS="-i -r /dev/urandom -o /dev/random -b"`
  - `service rngd start`
  - Every 60 sec. add bits to pool until size is 2048 bits
- For additional information
  - <http://theheat.dk/blog/?p=1539>



# Application Installation Directory

- Do not use DOMAIN\_HOME/servers/AdminServer/upload
- Create an Application Installation Directory
  - /u01/app/oracle/deployments/helloWorldApp/v1.0/app
  - /u01/app/oracle/deployments/helloWorldApp/v1.0/plan
- For additional information
  - Deploying Applications to Oracle WebLogic Server 12c (12.1.2)  
Section 3 Preparing Applications and Modules for Deployment





Please drop by

- Blog - <http://theheat.dk>
- Twitter - @theheatDK

Step by step instructions for how to install specific FWM products

- Installing ADF 11.1.2.4.0 on Red Hat 6 <http://theheat.dk/blog/?p=1541>
- Installing OSB on Red Hat 6 <http://theheat.dk/blog/?p=1140>
- Installing SOA Suite on Red Hat 6 <http://theheat.dk/blog/?p=1052>
- Installing Forms/Reports on Red Hat 6 <http://theheat.dk/blog/?p=422>

Thank you for your time!

