


**WebLogic Server
Virtual Edition in Action**

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Simon Haslam / Veriton

Specialised consultant & Oracle Partner,
established for 15 years

Demanding **web & call-centre** applications

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

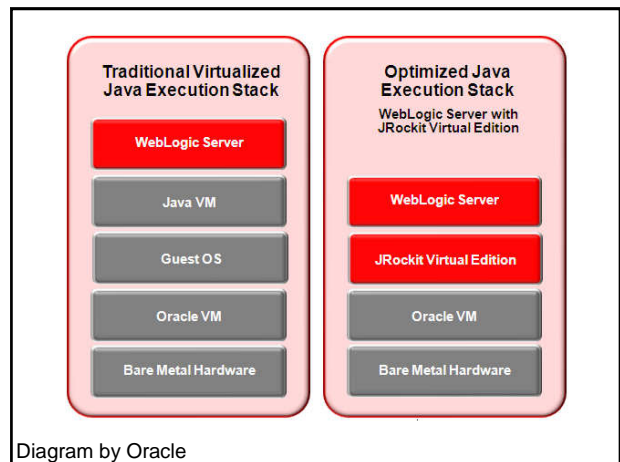
Oracle Fusion Middleware
(JEE, SSO, OAM, OID, SOA, OSB, clustering)
ADF Applications (esp. strategy & admin)

Database & related technologies
(Solaris/Linux, load balancers, firewalls, ...)

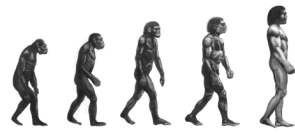



Agenda

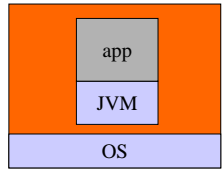

1. Overview & Motivation
2. Digging Deeper
3. Thoughts & Conclusions



Evolution of "Virtualisation"

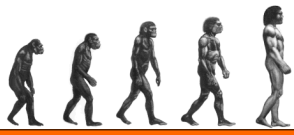
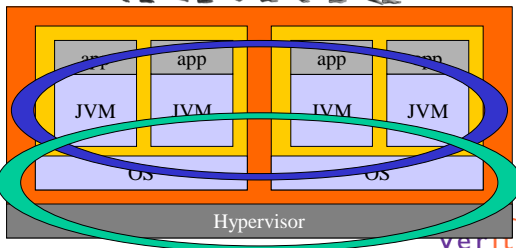



Java abstracted the operating system and hardware

Evolution of "Virtualisation"

Some bright spark comes up with (commodity h/w) virtualisation

Evolution of "Virtualisation"

reduction of overheads plus integration of resource management

7 (1.00)

Cut to the Chase!

- JRockit Virtual Edition = JRockit JVM + 'mini' kernel + utilities*
- WebLogic Server Virtual Edition = WebLogic Server* + JRockit Virtual Edition
- Delivered as a Oracle VM Template (almost) ready to go (for demo)

* plus a bit of package tooling

8 (1.00)

DEMO
Deploying to OVM and starting WLS-VE

9 (1.00)

Agenda

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A little history...

- First rumours ~2005
- BEA announced JRockit Liquid VM at end 2006
- BEA released WLS-VE at end of 2007 (~WLS 9.2)
- Originally the only supported hypervisor was VMware ESX
- Oracle buys BEA at start 2008 (& starts porting JR-VE to OVM?)
- WLS-VE released in April 2010 (10.3.2)
- Now the only supported hypervisor is OVM
- WLS has console & WLST extensions to integrate with OVMM

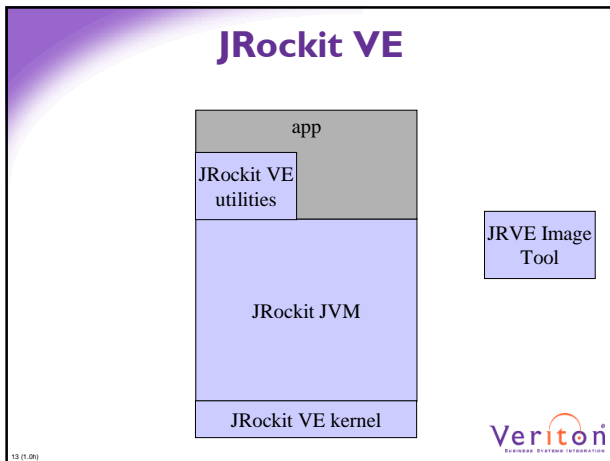
11 (1.00)

4 Licensing

- Need the Virtualization Option on top of WebLogic Suite
 - WLS Suite £30,164* per Oracle Processor
 - Virtualization Option £6,703* “
- A good time to discuss would be when upgrading/paying to go from iAS EE to WLS Suite
- Offer to be a customer reference for WLS-VE...

* list price, Oracle Technology Global Price List (28 April 2011)

12 (1.00)



- ### JRokit VE kernel
- Low-level memory management
 - Thread-scheduling
 - Filesystem
 - Networking
 - Interaction with the hypervisor

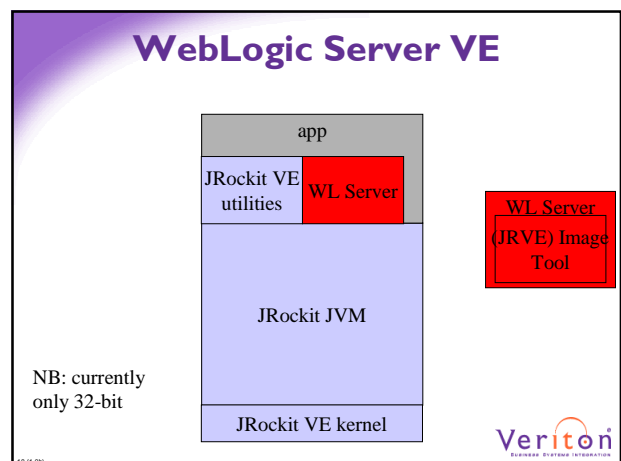
- ### JRokit VE Utilities
- SSH service
 - Provides SCP and SFTP only
 - Uses clear text passwords at start-up or use certificates for production
 - Heap resizer*
 - Syslog publisher*
- * not yet investigated

- ### Image Tool
- A utility to manipulate configuration and bundled filesystems within a Virtual Machine disk image
 - Uses the VM configuration and:
 - its own XML config file, or,
 - settings passed in on command line
 - Note: for WLS-VE you use a slightly extended version of the JR-VE one

Marcus² Comparison (Chapter 13, p485)


Approx no. of:	JR-VE	JeOS	Linux
Config Files	1	100	1,000
Commands	10	500	3,000
Cmd/Kernel Params	100	10,000	50,000
Admin tools	1	200	500
Size (MB)	3*	200	1,000
Avg ratio to JR-VE	1	50	500

* not including JRE since needed for all

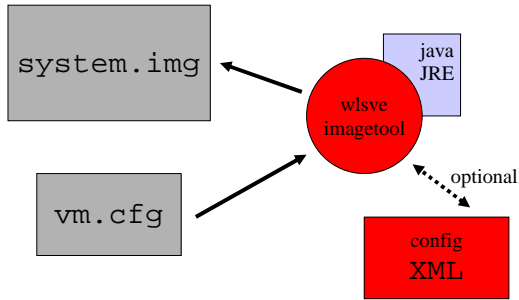


Getting Started


- Download WLS-VE (e.g. wlsvePackage.zip from OTN or V26054-01.zip from E-Delivery)
- unzip – main components are
 - /wlsve - directory contains the Oracle VM template files:
 - vm.cfg
 - system.img
 - wlsveimagetool.jar




Changing Parameters



NB: the config file is NOT part of the template; it just represents parameters within it



Example Usage




- Pull out the config


```
java -jar wlsveimagetool.jar -r vm.cfg \
get config wlsve.xml
```
- Change just one setting


```
java -jar wlsveimagetool.jar -r vm.cfg \
set network-hostname ms1.hq.veriton.co.uk
```

Tip! to start with I found it handy to keep a copy of <wlsve.xml> in the template for ease of reference




Update the Config

1. Create a working copy of the wlsve dir
2. Pull out the config


```
java -jar wlsveimagetool.jar -r vm.cfg \
get config wlsve.xml
```
3. Update it (see next slide)
4. Push the config back into the template


```
java -jar wlsveimagetool.jar -r vm.cfg \
set config wlsve.xml
```
5. Copy the template (vm.cfg and system.img files) to the Oracle VM server, under the /OVS/seed_pool/vm-name directory



Default config (10.3.5)


```
<?xml version="1.0" encoding="UTF-8" ...>
<jrockitve-imagetool-config xmlns="http://xmlns.oracle.com/rockitve/imagetool" ...>
  <ssi:namespaceSchemaLoc ...>
  <jrockitve-config memory="1024" ...>
    <storage>
      <disks> <disk id="root" size="1024" ...>
      <mounts> <mount> <mount-point> ...>
    </storage>
    <vm-name>wlsve_domain_WlsveAdmin</vm-name>
    <working-dir>/application/user_projects/domains/wlsve_domain</working-dir>
    <java-arguments>-cp $JAVA_HOME/lib/tools.jar:
/jrockitve/lib/common.jar:
/application/patch_wls1035/profiles/default/sys_manifest_classpath/weblogic_patch.jar
/application/wlserver_10.3/server/lib/weblogic.jar
-Dweblogic.Name=WlsveAdmin
-Dweblogic.Domain=wlsve_domain weblogic.Server
</java-arguments>
  <network>
    <nics>
      <nic type="eth0" ...>
    </nics>
  </network>
  <to-get-started>
    -Dweblogic.management.username=weblogic
    -Dweblogic.management.password=welcomel
    -Dweblogic.management.GenerateDefaultConfig=true
  </to-get-started>
</jrockitve-config>
</jrockitve-imagetool-config>
```

You'll soon also want:

```
<services>
  <service name="ssh" />
</services>
```


To get started:

```
-Dweblogic.management.username=weblogic
-Dweblogic.management.password=welcomel
-Dweblogic.management.GenerateDefaultConfig=true
```



Default vm.cfg

```
name="wlsve_domain_WlsveAdmin"
bootloader="/usr/bin/pygrub"
memory=1024
disk=['tap:aio:/OVS/seed_pool/wlsve_domain_WlsveAdmin/system.img,sdal,w']
vif=['']
on_crash="coredump-destroy"
```



Reminder

- Each VM instance is a single JVM (either managed server or admin server)

DEMO
Running wlsveimagetool.jar



26 (1.0)

Adding SSH

- Add SSH service to <wlsve.cfg>/image
- Through WLS admin console enable/target SSH as startup class:
 - name: ssh-startup
 - class name: weblogic.wlsve.sshserver.SSHStartup
 - target to, say, admin server
 - now shutdown and restart



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Adding NFS

- Can mount NFS exports within WLS-VE, e.g.

```
java -jar wlsveimagetool.jar \
-r vm.cfg add mount nfs \
/application/user_projects/domains/wlsve_
test2 bignas /volumes/voll/admin \
uid=500 gid=500
```

DEMO
Using SCP client to look at WLS-VE filesystem
NFS shared directory



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From here on WLS-VE server is like regular WLS...

- Except
 - no Java Native Interface (JNI) support
 - JRockit Console
 - no Node Manager (NM)
- But
 - Oracle VM Manager is used in place of NM and can decide where to run it (& other VM features)
 - OVMM looks like NM except new Machine type of “Virtual”
 - So you can start a WLS-VE server from either admin console or WLST

⇒ This is very elegant!



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Agenda

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What I like about WLS-VE


- Brilliant design – can minimise the VM to as little as possible
 - especially if you use shared storage
 - extends my preferred design of minimal state compute resource plus centralised storage
- Speed (subjective at moment)
- Resource management – handing over MS to VM merges two resource virtualisation layers into one
- Neat integration between Admin Server/console/WLST and OVM VMM
- It's WebLogic... JRM etc!



30 (1.0)


What I don't like about WLS-VE

- One template to one managed server
 - lots of steps (unless script it) to create a new managed server
- Initial debugging takes a bit of getting used to (tip: use `--get-log`)
- I suspect WLS part not as cut-down as I'd like (e.g. config wizard etc?)
- Oracle dropped support for  **vmware** ☹️



Final Demo


DEMO
Adding new WLS-VE Managed Server to existing cluster



I Highly Recommend:


(see Chapter 13)

Can virtual be faster than real?



Oracle JRockit: The Definitive Guide

To celebrate Oracle's recent announcement that *Oracle JRockit is now available absolutely free* Packt has introduced an exclusive **22% discount** for a limited time only! Simply enter the discount code: **JRockit-celebrations** at checkout





- Architecturally WLS VE is a great idea
- Current hybrid environments mean it's not suitable for everyone
- The MS template mechanism needs improving
- Stable/useable today if scripted, otherwise wait for the next major release IMO



But, if you're mature WLS site

- Lots of interesting challenges:
 - deployment
 - WLS patching
- Could be plenty of benefits for high load WebLogic websites/call centre apps
- Don't go it alone (hint!)



Thanks for listening!

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