ORACLE®

Java Virtualization with WebLogic Suite

High Performance, High Density and Operationally Efficient Java Virtualization

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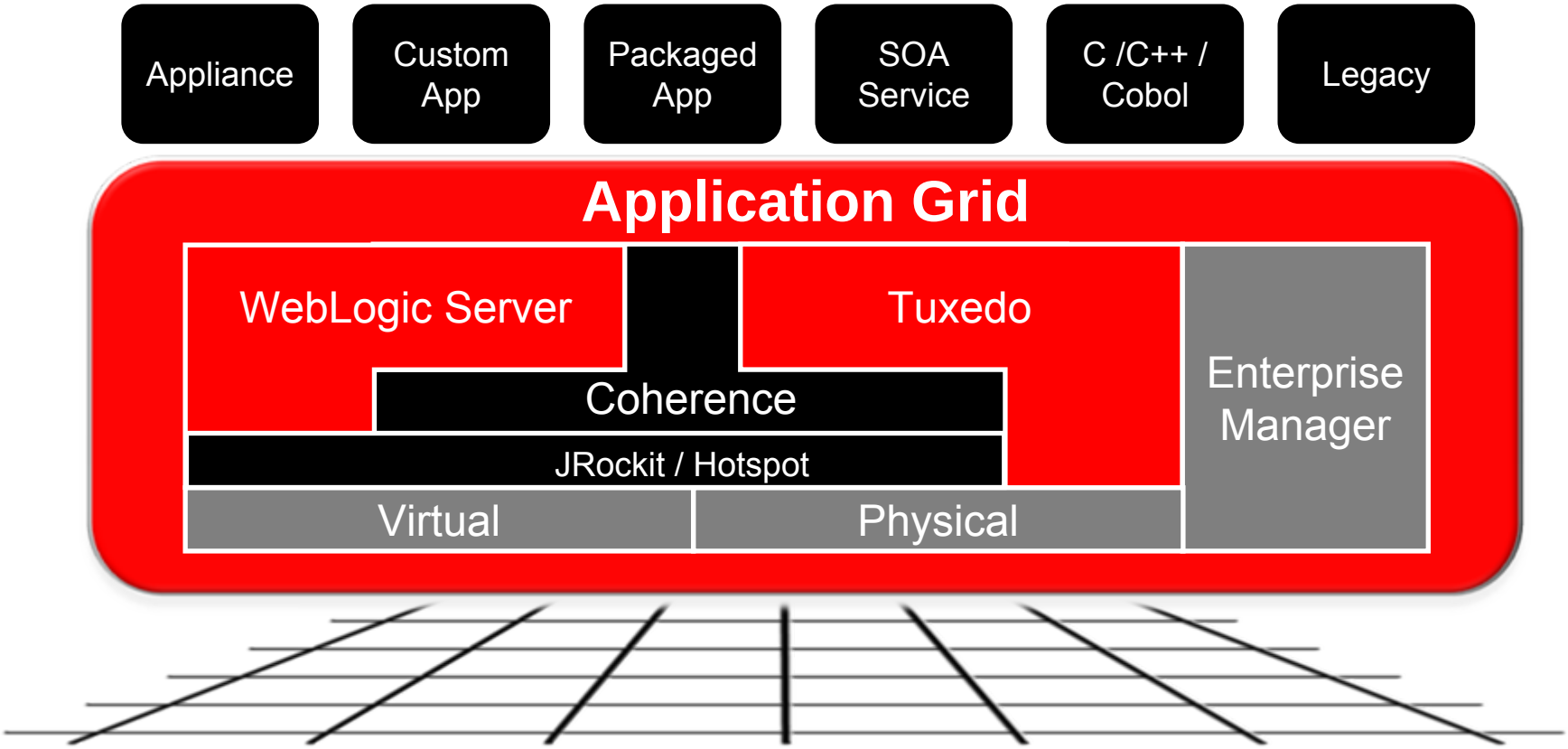
ORACLE

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions.
The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Oracle Application Grid



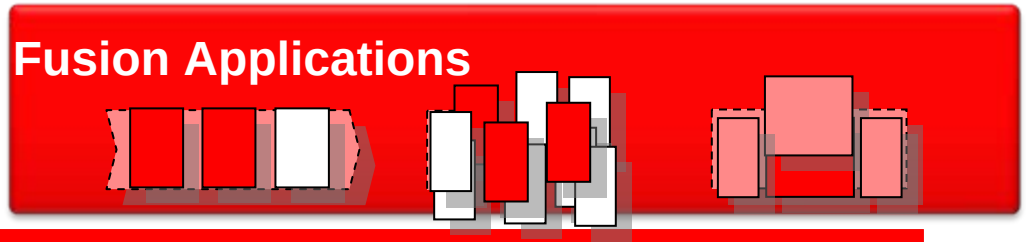
Efficiency
Lowest operational costs

Competitiveness
Outperform with speed and flexibility

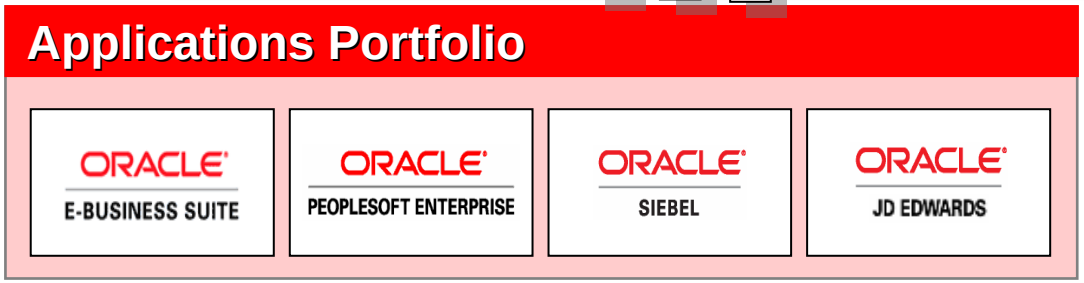
Simplification
Best foundation for entire software stack

Oracle WebLogic Suite

Strategic Platform Across Oracle Product Lines

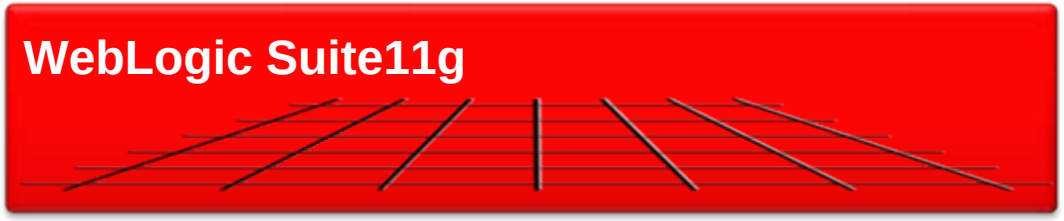


Fusion Applications
Building on Fusion Middleware 11g



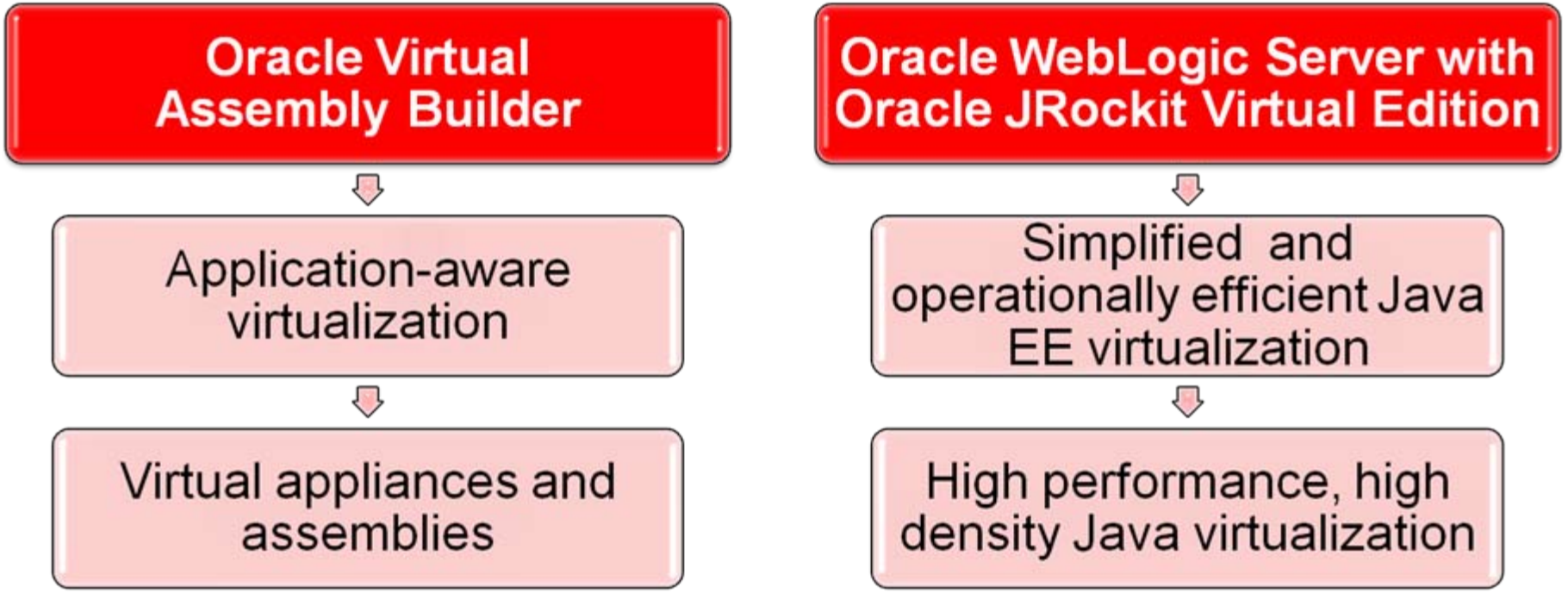
Applications
Certified/Building with WebLogic

Fusion Middleware 11g
Certified and Differentiate on WebLogic Suite



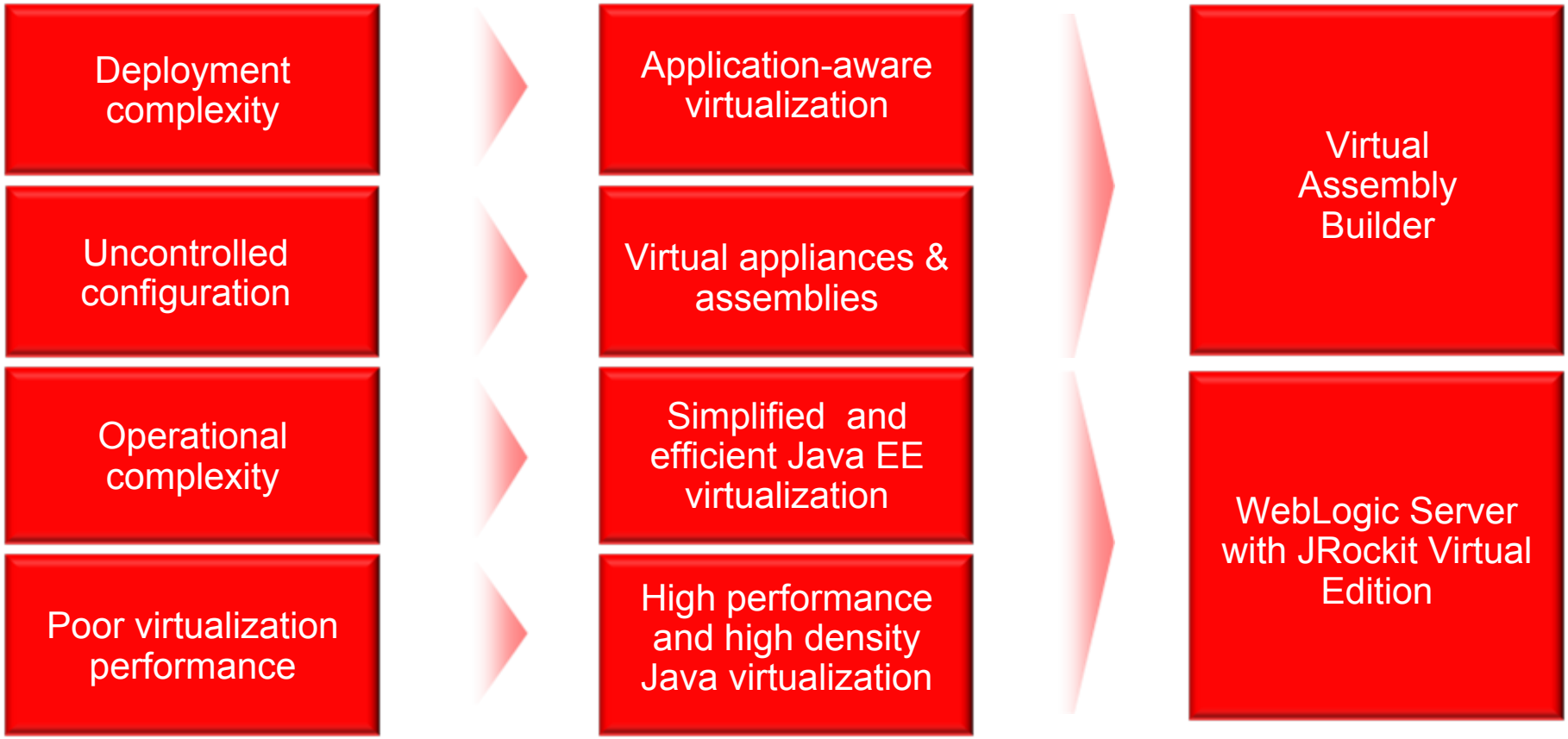
WebLogic Suite 11g
Grid Foundation

What We Are Announcing



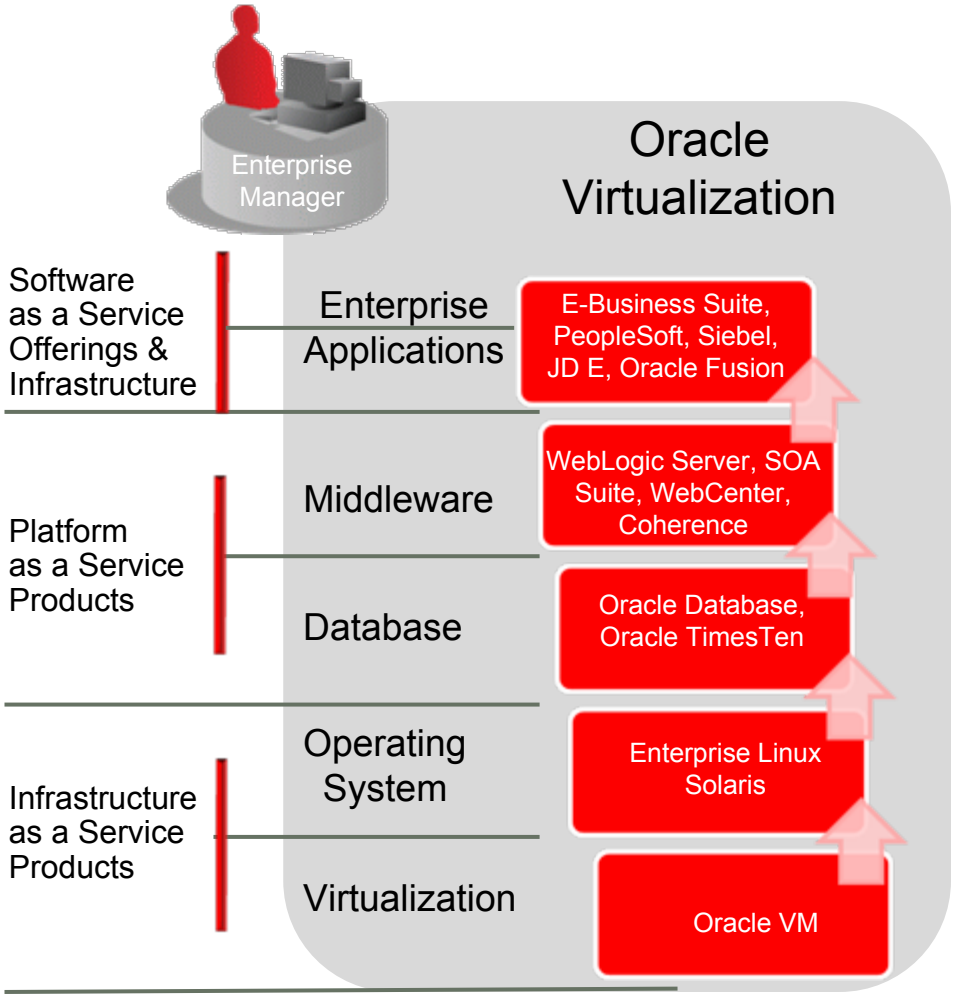
Product Motivation

High Performance, More Dense and Efficient Virtualized Java



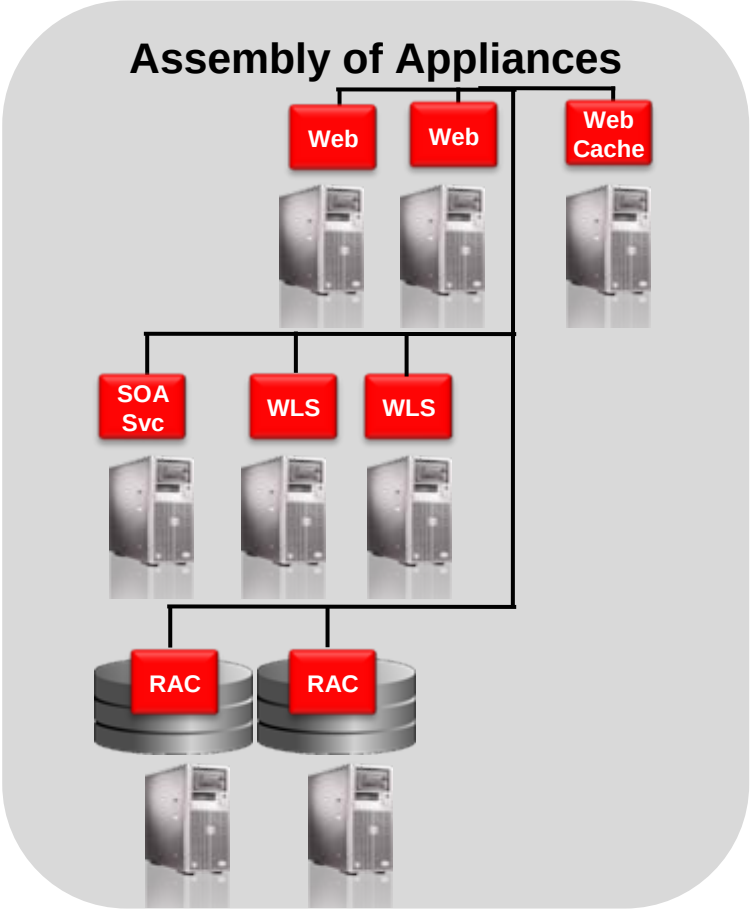
Oracle Virtualization Strategy

- **Only vendor to provide an integrated solution**
  - Virtualization *and* enterprise workloads managed together
- **End-to-end management**
  - Enterprise Manager integration across virtualized portfolio
- **Optimized full stack performance**
  - Optimizing application, middleware, and database virtualization



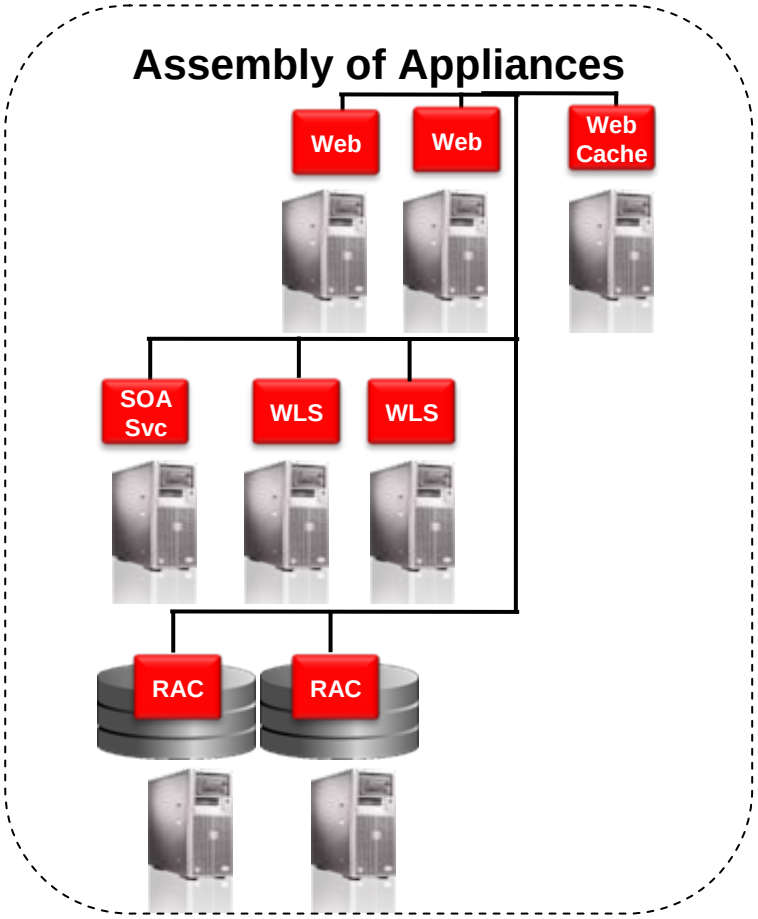
Oracle Virtual Assembly Builder

- **Application-aware virtualization**
  - Package software components into collections of software appliances
- **Standardized building blocks**
  - Create multi-tier application assemblies using virtualized appliances
- **Simplified and rapid provisioning**
  - Single step, template-based deployment of multi-tier applications to virtualized environments

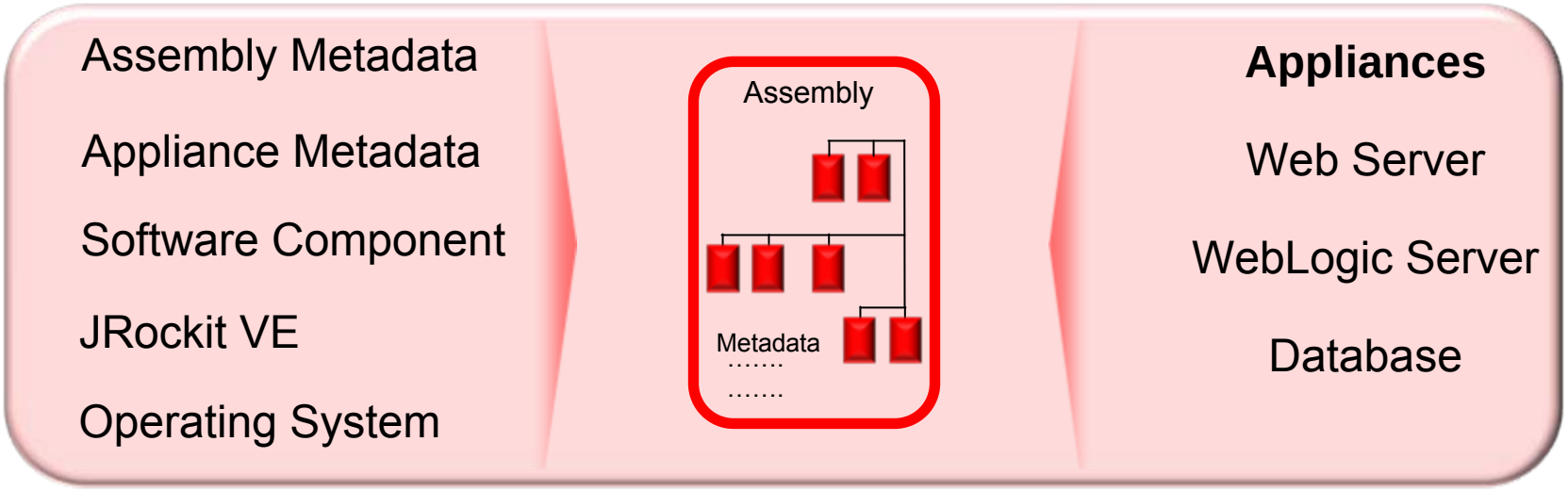


Why an Assembly of Appliances?

- **Repeatedly provision entire application environments**
  - Allowing customization without adding complexity
- **Reduce configuration errors**
  - Change only what needs customization
- **Reuse standardized building blocks**
  - Turn infrastructure into appliances
- **Accelerate deployment of new applications**
  - Single step, template-based deployments



Assembly Structure



Assembly Metadata

- Deployment plan for entire N-tier application
- Wiring connections describing relationships of multiple Appliances
- Appliance start-order dependencies
- SLA and policy framework
- Input/output connections

Appliance Metadata

- Component-specific default config. params.
- User-specified & dynamic late binding parameters
- Input/output connections
- Scaling requirements
- VM resource requirements

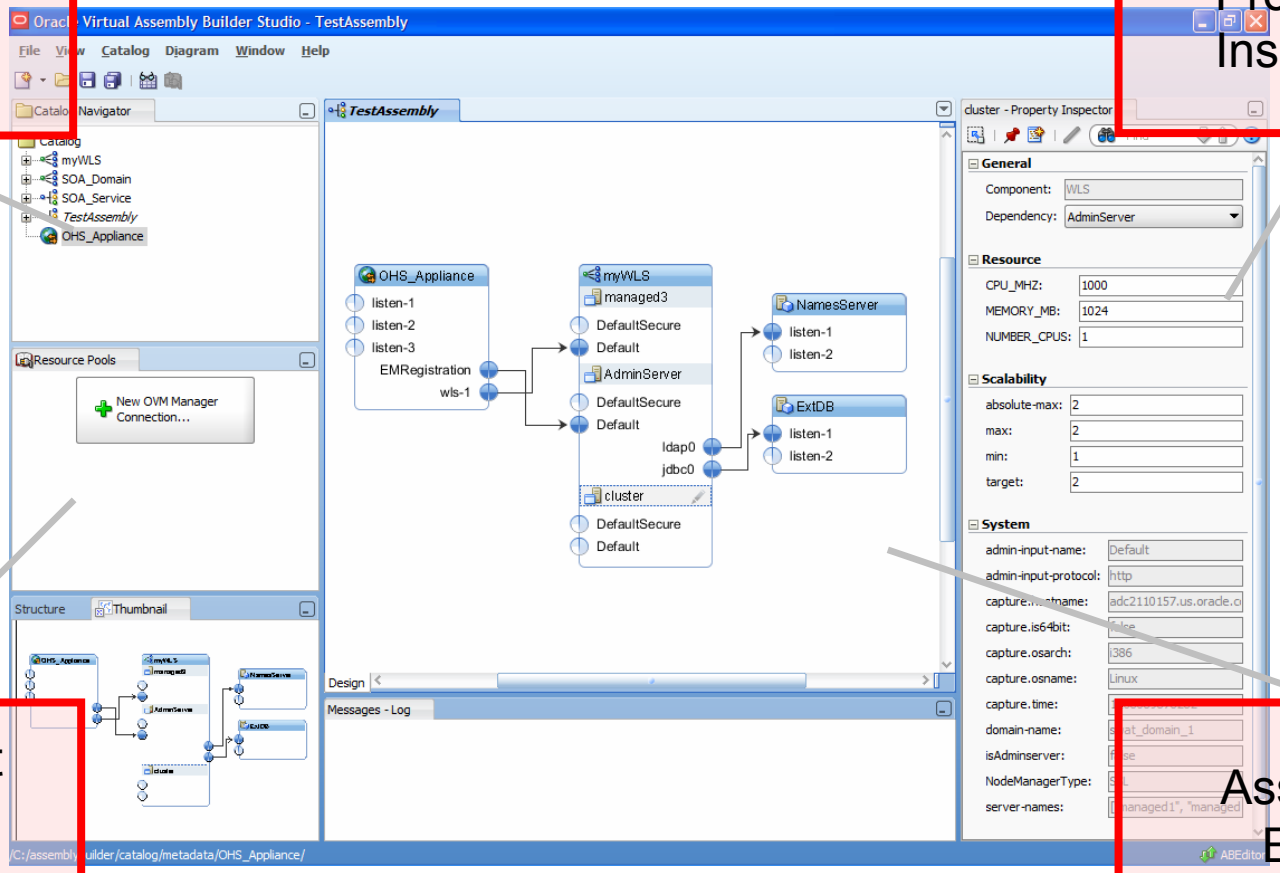
Appliance

- Bootable VM disk image containing all necessary s/w required to run single component instance
- Optimized for Oracle software
- Templatized for repeatable deployment into Assembly
- Final configuration completed upon start-up

Oracle Virtual Assembly Builder Tool

Assemblies, Appliances Catalog

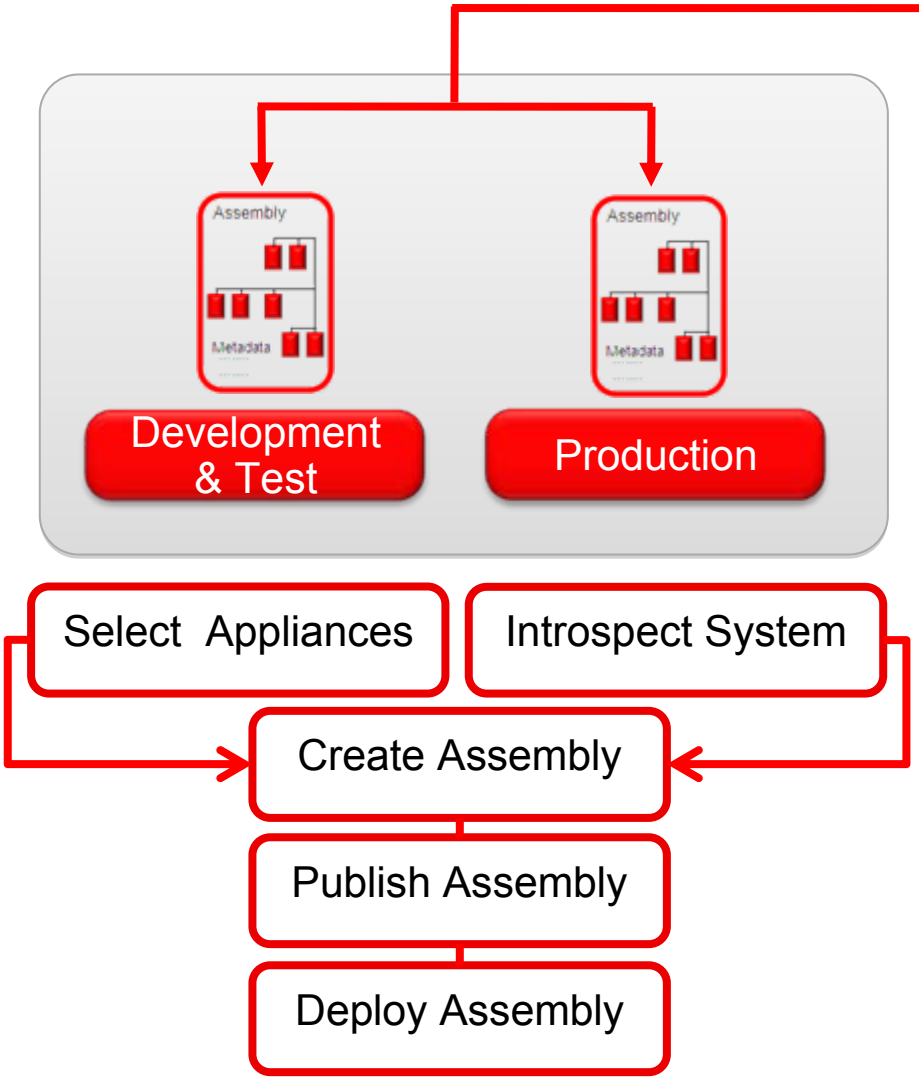
Properties Inspector

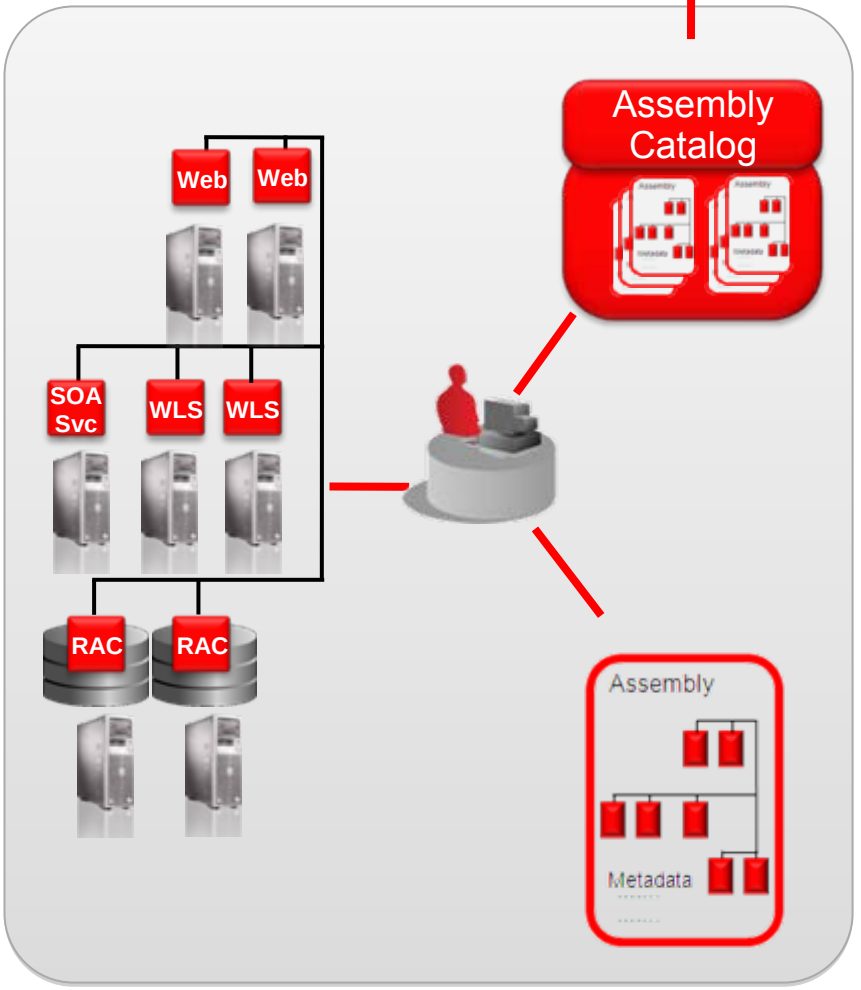


Deployment Resource Pools

Assembly Editor

Oracle Virtual Assembly Process Flow

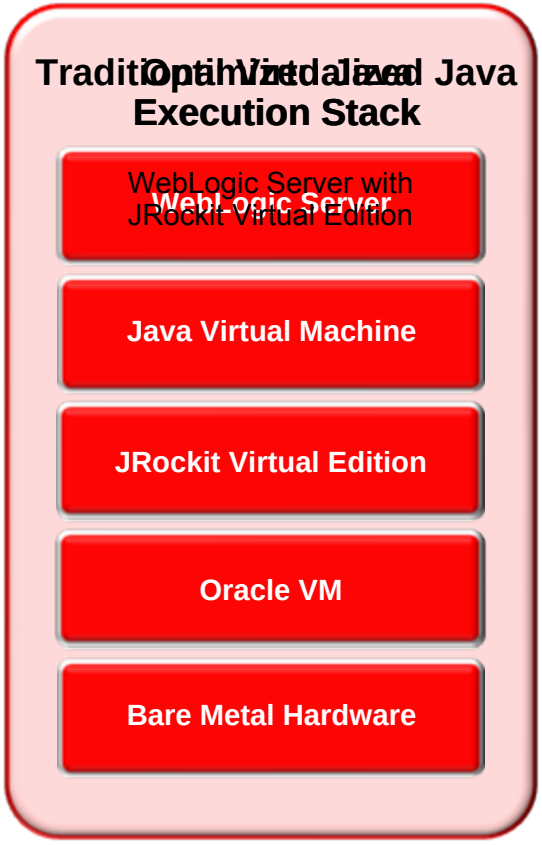




Oracle JRockit Virtual Edition

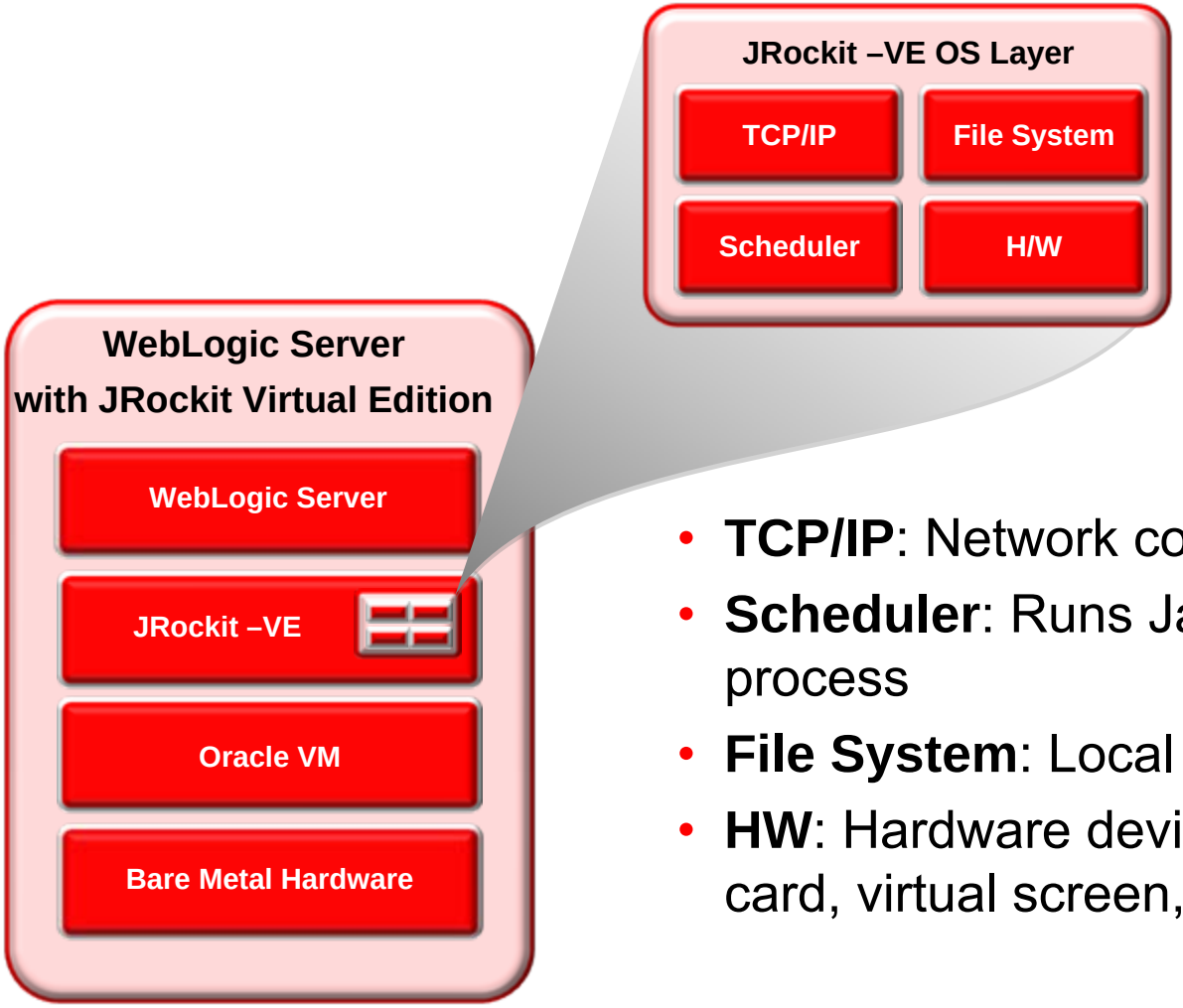
Optimized Java Infrastructure

- Runs natively on hypervisor
  - More efficient use of hardware resources
  - Higher density
  - Better performance
- Reduced operational cost
  - Simpler patching
  - Improved security
- Custom Java appliances
  - Building blocks for larger assemblies
  - Simple deployment



JRockit Virtual Edition

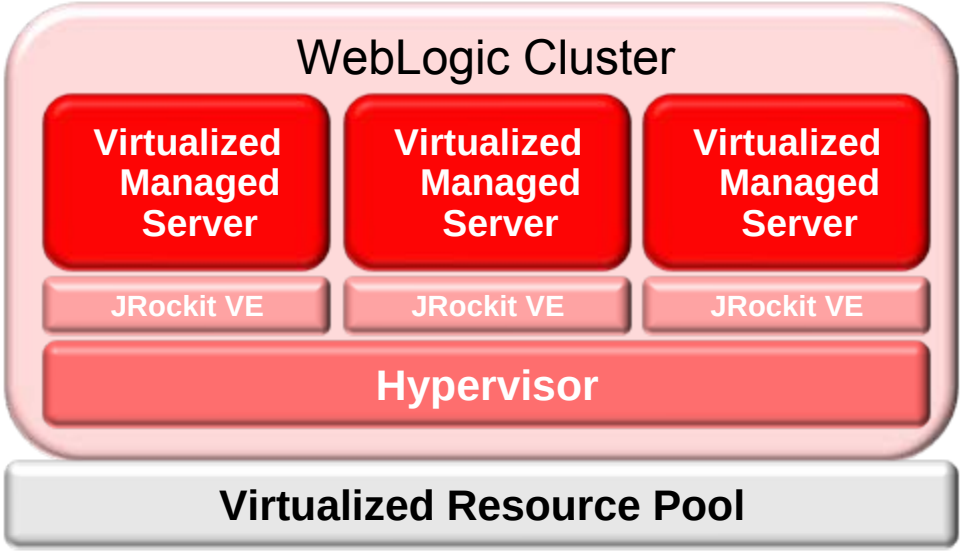
How does it work?



- **TCP/IP**: Network communication
- **Scheduler**: Runs Java threads. Single process
- **File System**: Local [virtual] disk
- **HW**: Hardware device interaction. Network card, virtual screen, etc.

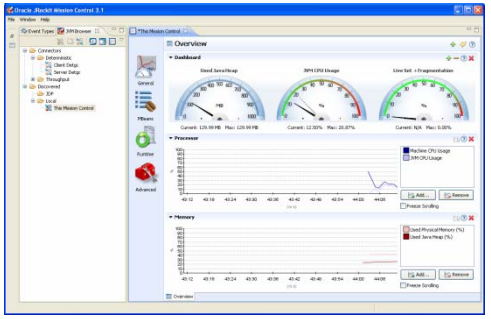
WebLogic Server with JRockit Virtual Edition

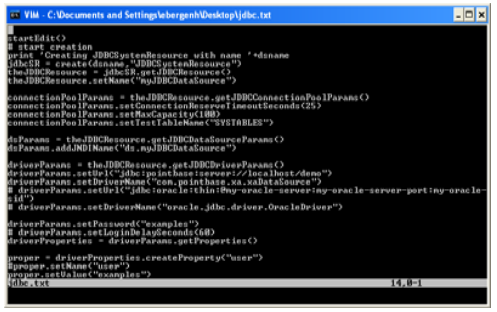
- **Standard WebLogic Server**
  - Running on JRockit VE
- **Simplified and efficient virtualized Java EE**
  - Administration and management is virtualization aware
- **Increased performance and density**
  - Virtualized Java EE applications run faster and with more instances on the same hardware

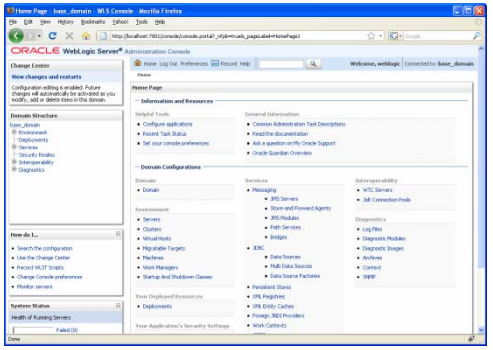


Builds on Customer's WebLogic Investment

- Leverage existing tools and scripts
  - WLST Scripts
  - JRockit Mission Control
  - JRockit Real Time
  - Enterprise Manager
- Lifecycle management integrated into Oracle VM Manager
  - Node manager integration
- Re-use of existing skills
- Identical programming paradigm (Java EE)







Simplified: WebLogic Server with JRockit Virtual Edition

(Approximate Numbers)	Linux	JeOS	WebLogic with JRockit VE
Config. Files	1000	200	1
Commands	3000	500	10
Command Params.	50,000	10,000	100
Admin Tools	500	200	1
Boot Time (s)	50	30	1
Size (MB)	1000	200	2
Reduction Ratio from Linux	1	~2	~300

Performance: WebLogic Server with JRockit Virtual Edition

Performance Issue	Standard JVM / OS	WebLogic with JRockit Virtual Edition
Java Aware Scheduling?	No	Yes
Kernel Mode Transitions?	Many	Very few
Shorter Switching Times?	No	Yes
Optimize size of Heap	No	Yes
Shorter I/O Path?	No	Yes

Virtualized Performance: WebLogic Server with JRockit Virtual Edition

Configuration	WebLogic Server on Physical OS	WebLogic Server with JRockit Virtual Edition	WebLogic Server on Guest OS
WebLogic Server	10.3.2 GA	10.3.2 GA	10.3.2 GA
Clock Speed	2.8 GHz	2.8	
Memory	24GB		
Memory Speed (MHz)	1066	1	
Operating System	OEL5.4	OVM	
JRockit	R27.6.2-20	R27.6 40	R27 2-20
Heap (GB)	3.6	3.3	3.6
Operations / Sec	**348**	**300**	**225**

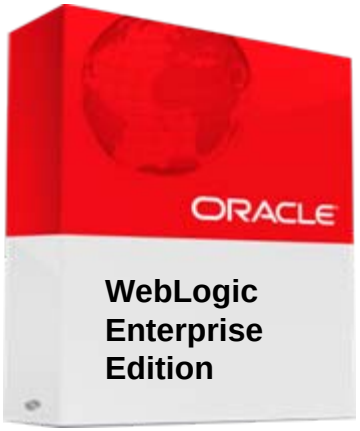
33% increased performance over a guest OS

Support for Standards

- Infrastructure layer
  - Ongoing standardization of the IaaS layer formats (OVF), models and protocols
- Application platform layer
  - Direction going forward
  - Natural step to application centric deployment and management
  - Java Community Process opportunities

Packaging and Roadmap

Packaging



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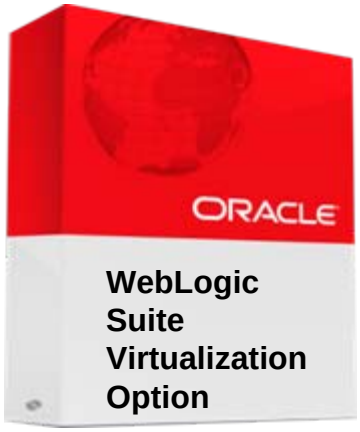
Oracle WebLogic Server EE + Oracle Virtual Assembly Builder

Java EE Installed Base

- Application-aware virtualization
- Virtual appliances & assemblies

ORACLE FUSION MIDDLEWARE



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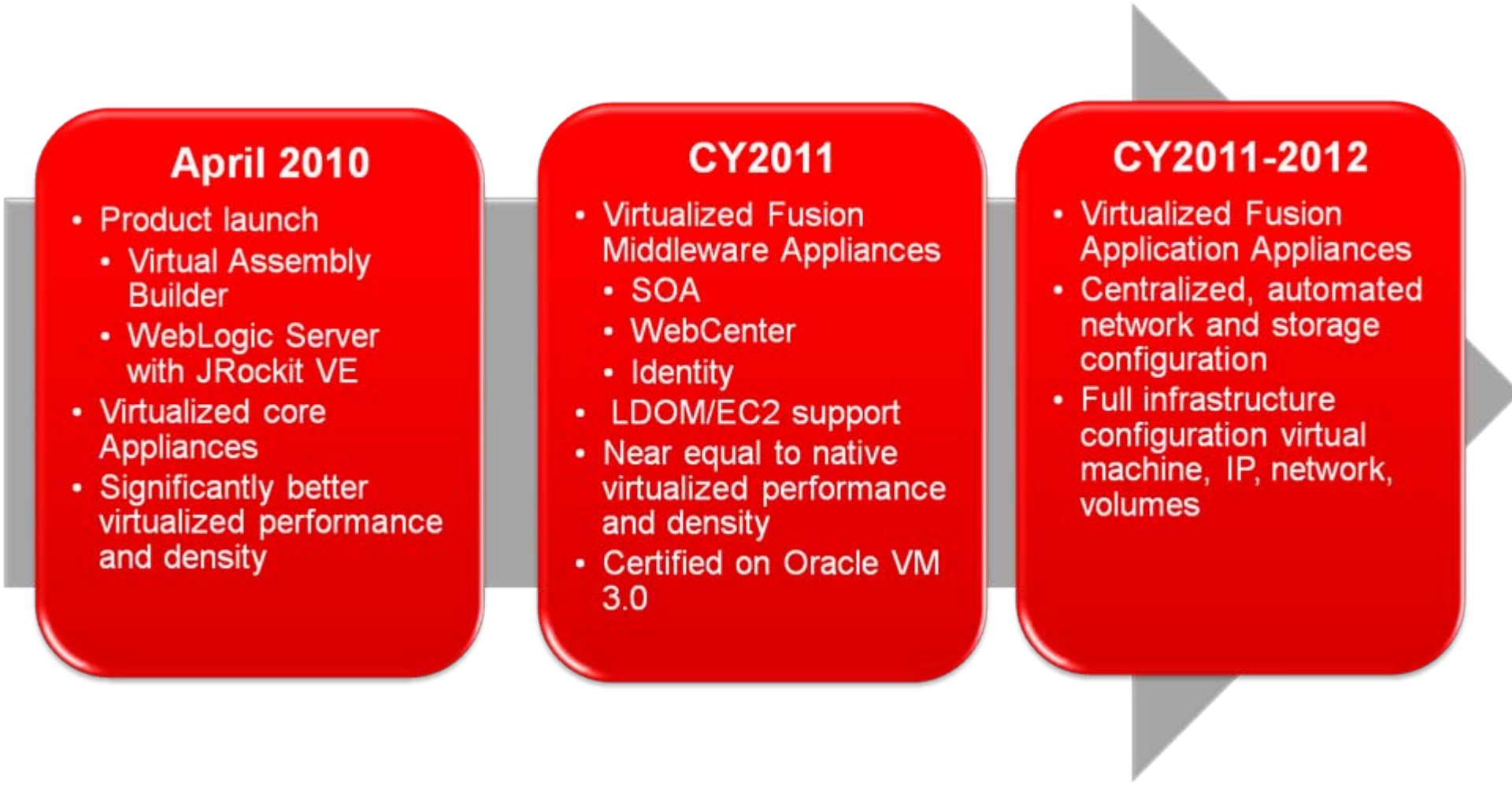
Oracle WebLogic Suite + Oracle JRockit Virtual Edition

Middleware Virtualization

- Simplified and operationally efficient Java virtualization
- Better virtualized performance and greater application server density

Middleware Virtualization Roadmap

12-24 Month Focus



Key Takeaway Messages

- Application aware virtualization
- Virtual appliances & assemblies
- Simplified and operationally efficient Java EE virtualization
- Higher performance, higher density for Java virtualization

ORACLE®

Java Virtualization with WebLogic Suite

Increasing Java Virtualization Density, Performance and Operational Efficiency