



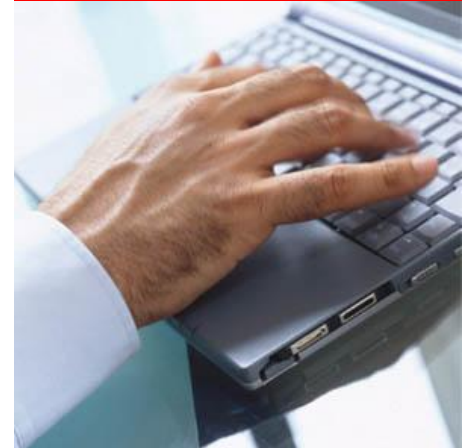
WebLogic Innovation Seminar

ORACLE[®]

**WebLogic Server Clustering, High
Availability, Node Manager**

Agenda

- Need for Zero-Downtime Architecture
- WebLogic Features to address:
 - Unplanned Downtime
 - Clustering
 - Load Balancing
 - Failover
 - Node Manager
 - Planned Downtime
 - Side-by-Side Deployment
 - Rolling Upgrades
- Summary & Benefits



Need for Zero-Downtime Architecture

Address unplanned downtime

- Hardware Failures
- Software Failures
- Site Disaster



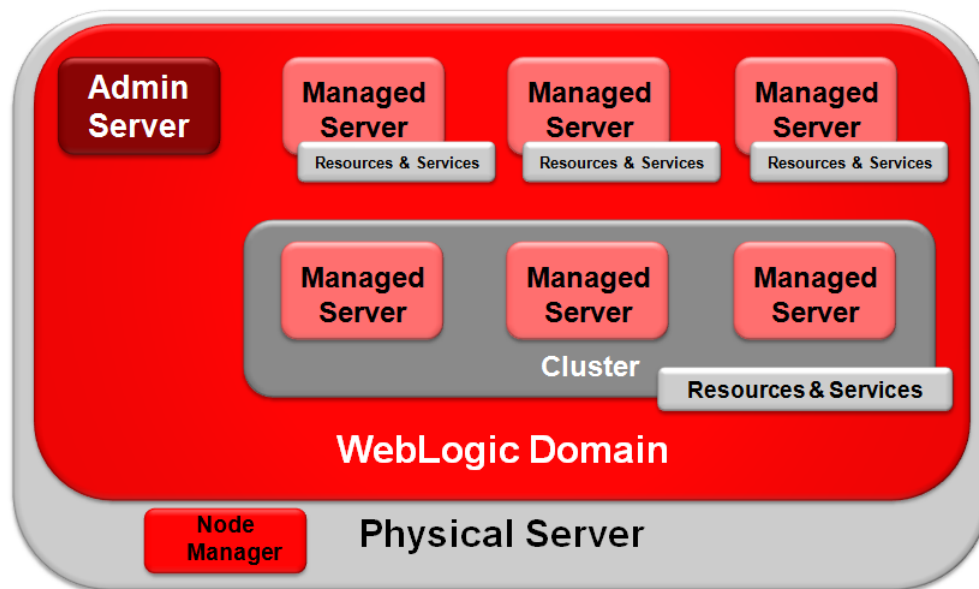
Address planned downtime

- Application Upgrades
- Server Upgrades
- Configuration Changes



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Administrative Concepts including Clustering



WebLogic Server

Domain

Admin Server

Managed Server

Cluster

Node Manager

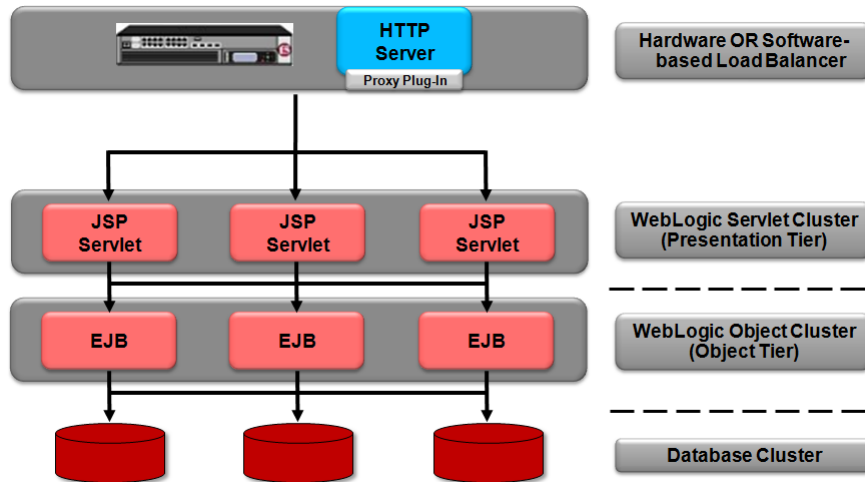
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What is a WebLogic Cluster?

- Multiple WebLogic managed servers running simultaneously and working together
- Cluster members can run in same machine or be located on different machines
- Clients view a cluster as a single WLS unit
- Support for multicast or unicast communication among cluster members
- Support for state replication among cluster members for various artifacts (Session, EJB/RMI Objects)

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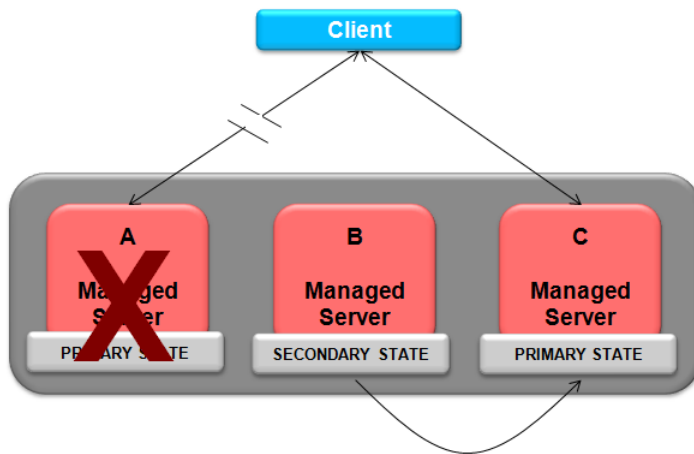
WebLogic Cluster Benefit: Load Balancing



- Span a WebLogic cluster across multiple physical servers
- Load-balance requests across servers
- Support different types of load balancers
 - Proxy plug-in within Apache, IIS, etc.
 - HttpClusterServlet within WLS
 - External load balancer (e.g. BigIP/F5)
- Avoid unplanned downtime related to software or hardware failures
- Provides ability to scale infrastructure horizontally

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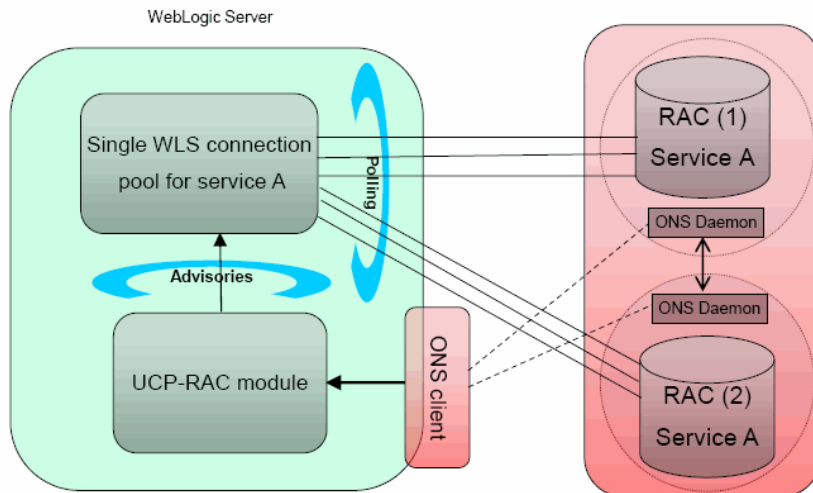
WebLogic Cluster Benefit: Failover & High Availability



- Continue application processing even if a Managed Server fails
- Provide ability for state to be re-created in a different Managed Server in-case of failure
- Support for HTTP Session replication, replica-aware EJB & RMI stubs, cluster-wide JNDI
- Avoid unplanned downtime related to software or hardware failures within a datacenter

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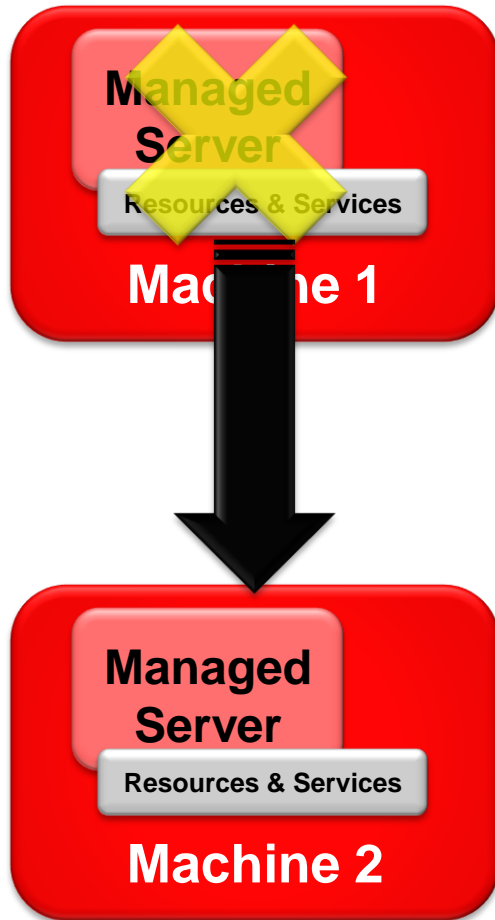
Highly Available Database Connectivity using Active GridLink for RAC



- Provide highly available connectivity from any JEE application to an Oracle RAC infrastructure with **zero code changes**
- Enables support to RAC for:
 - Fast Connection Failover
 - Runtime Connection Load Balancing
 - Graceful handling of RAC outages
 - Transaction (XA) affinity
 - SCAN Addresses
 - Security using Oracle Wallet
- Continue application processing even during Oracle RAC node outage

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Whole Server Migration & Service Migration

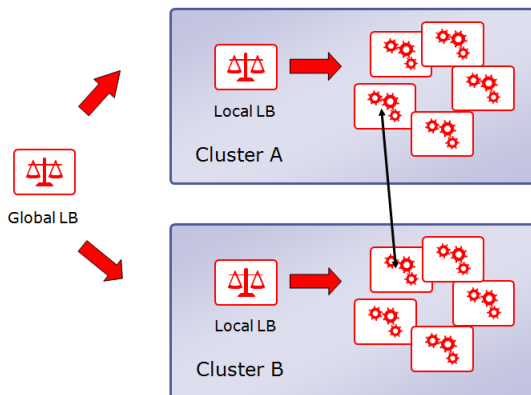


- Automated or Manual migration of a failed managed server instance on a different physical server
 - Useful for “pinned services” (e.g. JMS and the JTA transaction recovery system targeted at individual server instances within a cluster)
- Automated or Manual migration of failed services from one managed server to another
- Enables ability to do rolling hardware upgrades

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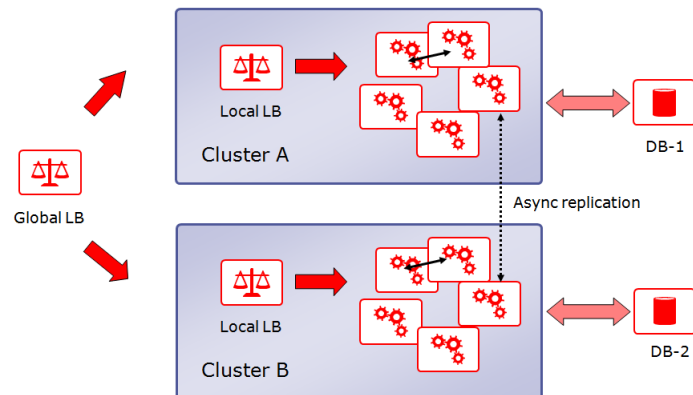
Address Site Disaster with MAN & WAN Replication

MAN Replication



- Synchronous in-memory session replication of HTTP session state between clusters
- Assumes a low-latency network between clusters

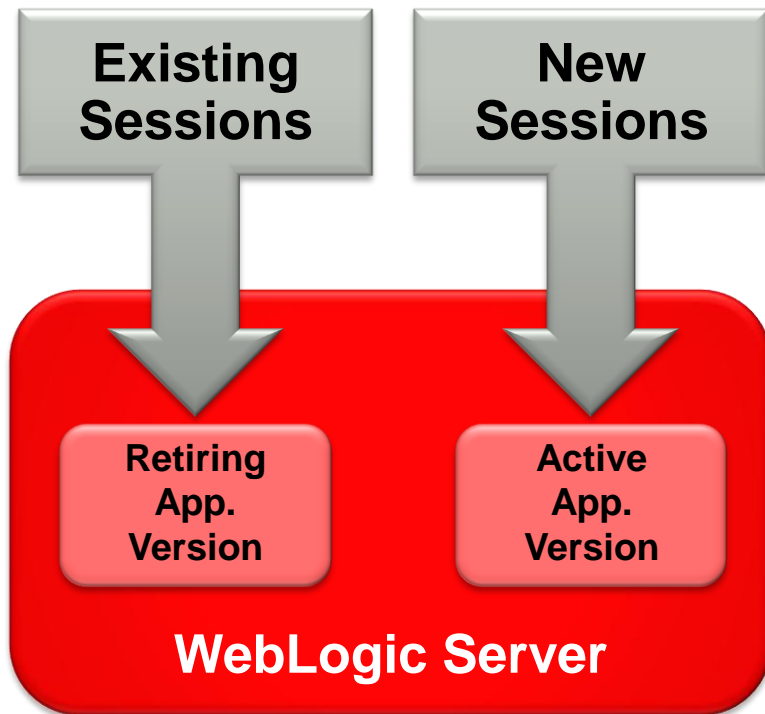
WAN Replication



- Asynchronous, persistent replication of HTTP session state between clusters
- Tolerant of high latency networks, but requires a database
- State consistent per last time a flush occurs between sites

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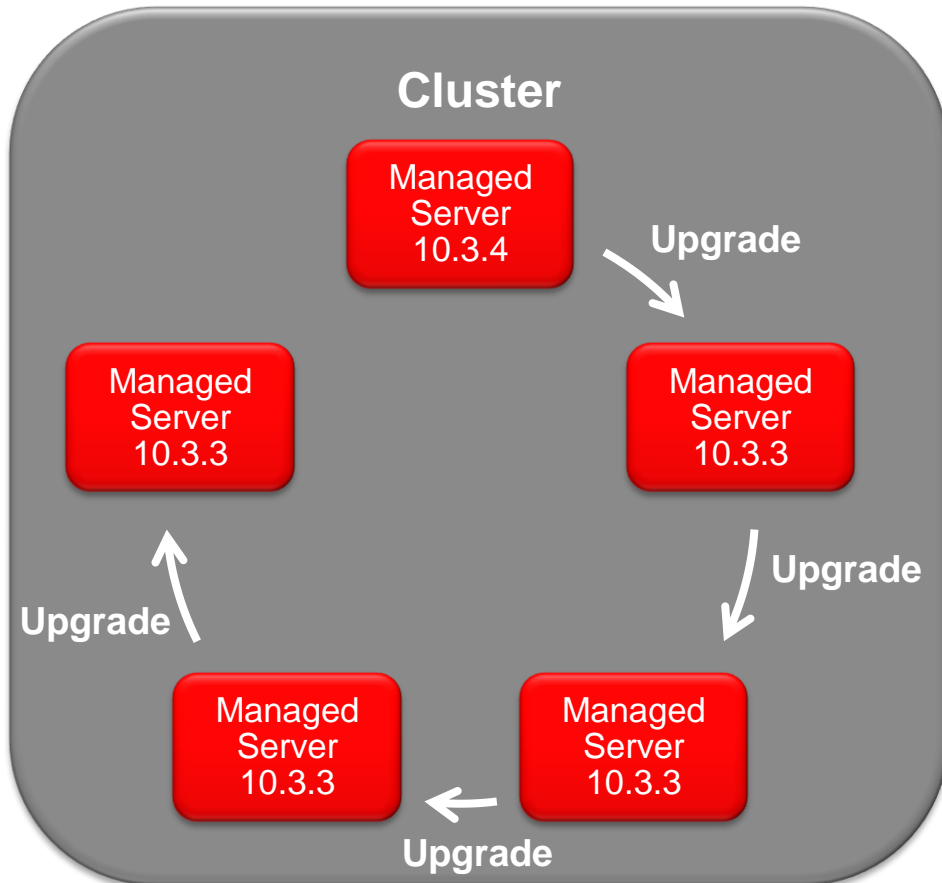
Application Upgrades using Side-By-Side Deployment



- Multiple application versions can co-exist
 - New sessions routed to active version
 - Existing sessions finish up with retiring version
- Automatic Retirement Policy: Graceful, Timeout
- Test application version before opening up for business
- Rollback to previous application version
- Two versions of the application can be active at any given point of time

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Rolling Server Upgrades

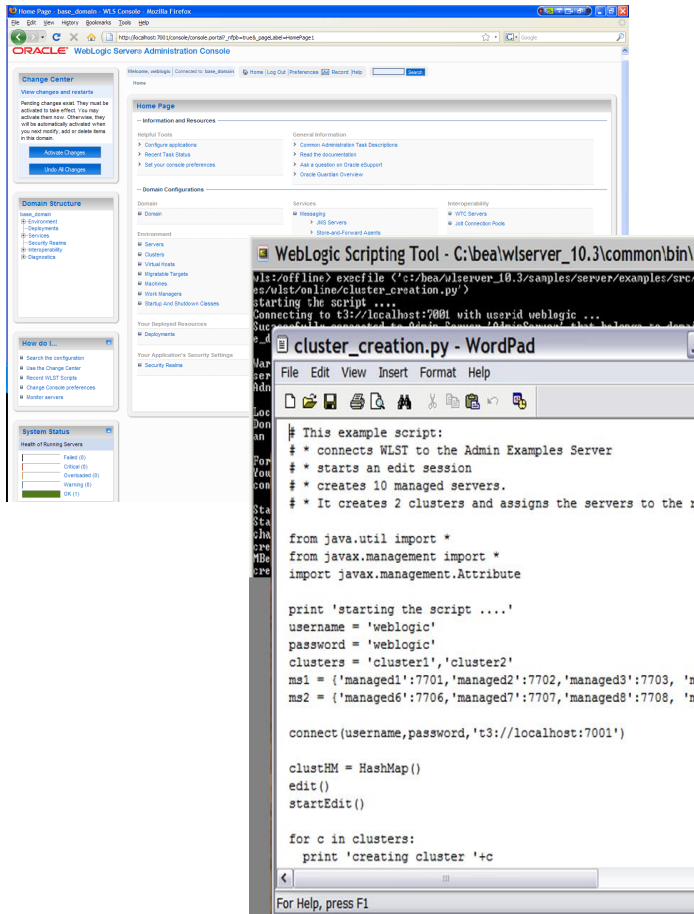


- Upgrade/Patch members of a running cluster without shutting down the entire cluster.
- Each server is individually upgraded and restarted while the other servers in the cluster continue to host your application.
- Certain limitations exist:
 - Example: Rolling upgrade applies only to upgrades within a product family. Upgrade from 10.x to 10.y, but not from 9.x to 10.x

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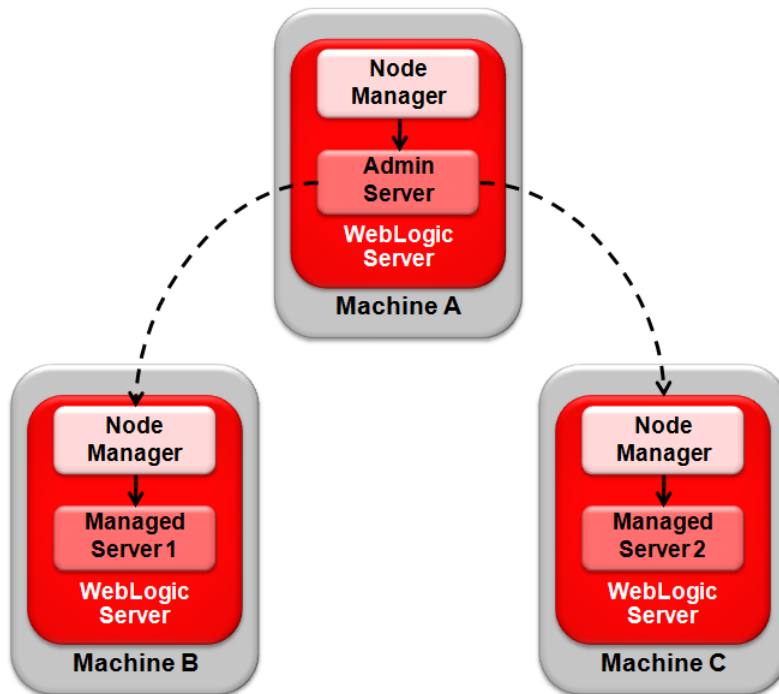
Configuration Changes without Server Restarts

- Configuration changes supported via Admin Console or WLST
- Batch Updates
 - User obtains a configuration lock
 - Makes multiple config changes and deployments
 - Activates or rolls back changes
 - Previous configurations archived
- Configuration Deployment
 - Configuration changes ‘deployed’ to managed servers or clusters
 - Static settings reflected on server restart
 - Dynamic configuration settings take effect when changes activated
 - Approximately 1,400 dynamic configuration settings



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Monitor and restart instances automatically with Node Manager



- Small 'agent' process running on host machine
- Monitors health of running WebLogic Server instances on the physical machine
- Enables the ability to Start/Stop instances remotely
- Can be configured to automatically re-start instances upon failure

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Clustering, High Availability & Node Manager Benefits

Features to create a zero-downtime architecture for mission-critical JEE applications

Continued up-time during unplanned and planned outages related to software or hardware failures

Add or remove servers to a cluster for superior scalability and high availability characteristics

Questions

