



Oracle WebLogic

Foundation of Oracle Fusion Middleware

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History of WebLogic

- WebLogic Inc started in 1995 was a company credited with creating the first J2EE application server, the WebLogic Application Server.
- BEA Systems acquired WebLogic, Inc in 1998.
- Oracle Corporation acquired BEA Systems in 2008.

What is WebLogic Server?

WebLogic Server is

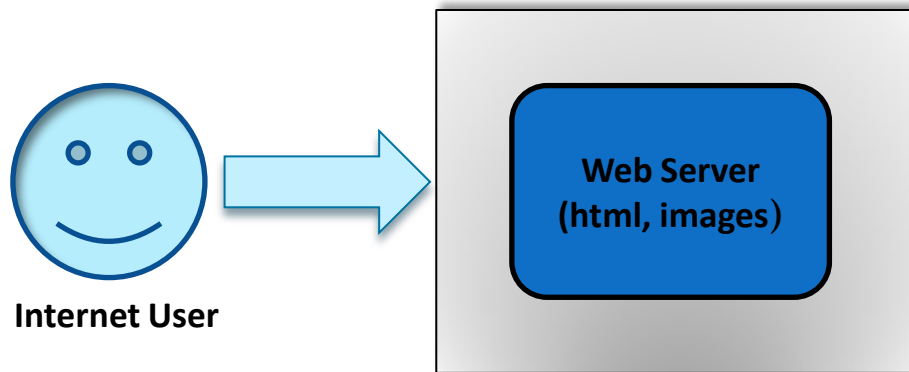
- An Application server (100% J2EE (Java EE))
- A transaction server
- A HTTP Web server
- A messaging server
- An EAI (Enterprise Application Integration) server

And

- WebLogic Server is the Foundation of Oracle Fusion Middleware

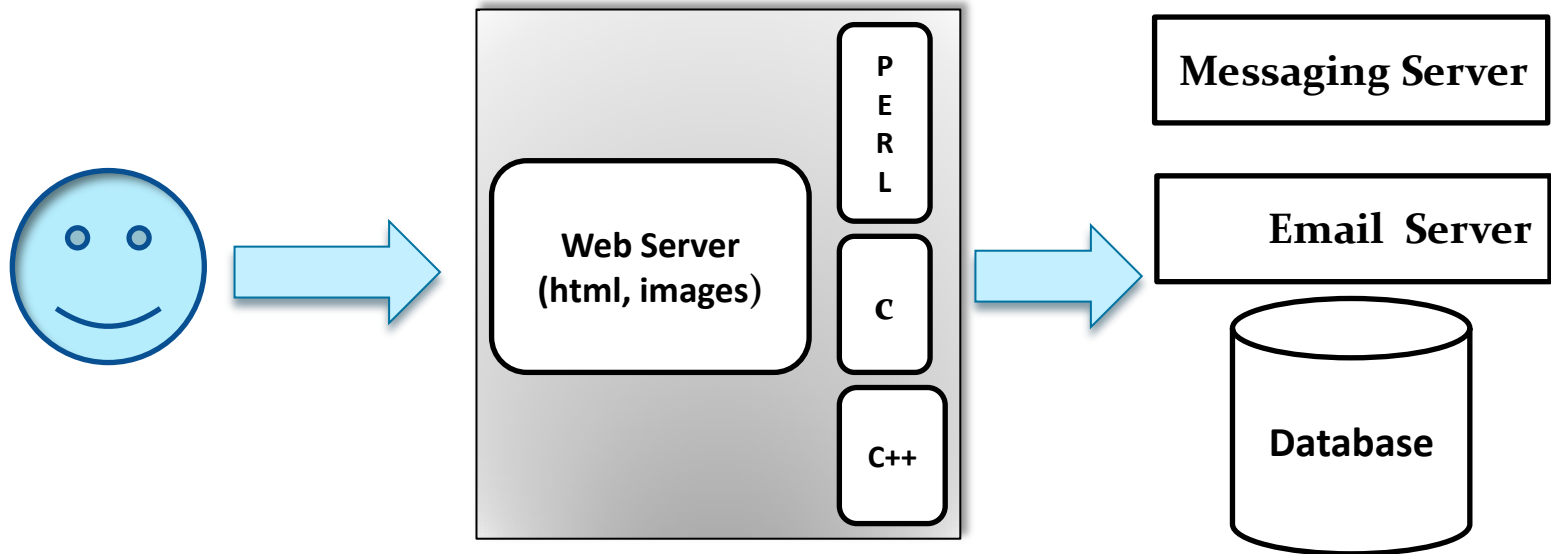
Internet Phase I – Information Web Sites

- During mid 90's, Web Servers were primarily used to host the web sites.
- A web server supports only static html pages, images and no support for dynamic application code and enterprise integration.



Internet Phase 2 - Ecommerce

When Ecommerce became popular in 1997, developers wrote their own code to connect the web server to the back end systems.





Issues

- Every company had their own set of standards and technology to connect to the backend systems
- Developers spent more time to develop code to connect to the backend system than focus on writing the code for business
- More time spent for knowledge transfer



How to solve?

- Sun Microsystems came up with J2EE to address the listed issues in 1998.
- Sun gave the rights to vendors to develop J2EE based application servers.
- Some of the J2EE Application Servers in the market are Oracle WebLogic, JBoss, IBM WebSphere and Oracle Glassfish.
- An Application Server bundles with standard coding modules (configurable) to connect to the backend systems and enable developers to focus on their business logic.

What is J2EE (Java EE)?

- J2EE (Hereinafter Java EE) is a framework which provides an API for developing and running multi tiered enterprise software components and web services, and other large-scale, scalable, reliable, and secure network applications.
- It extends J2SE (Java 2 Standard Edition)
- Oracle Corporation acquired Sun Microsystems in 2010.
- Oracle WebLogic is 100% Java EE platform

Java EE - Explained

The Java EE platform is built on top of the J2SE (Java 2 Standard Edition) platform and it contains 3 tiers



Web Tier

Business Tier

Enterprise
Information
Tier

Java EE – Web Tier

Web Tier consists of

- Servlets
- JSF (Java Server Faces)
- JSP (Java Server Pages)
- Java Beans

Java EE – Business Tier

Business Tier consists of

- EJB (Enterprise Java Beans)
- Web Services
- XML
- JNDI (Java Naming and Directory Interface)
- Java Mail
- JMS (Java Message Service)
- RMI (Remote Method Invocation)

Java EE - Enterprise Information Tier

Enterprise Information Tier consists of

- JDBC (Java Database Connectivity)
- JCA (Java EE Connector Architecture)
- JTA (Java Transaction API)
- Java Persistence API

Oracle Fusion Middleware

- Oracle Fusion Middleware is an Application Infrastructure Suite from Oracle which contains more than 100 products such as Identity Management, Portal, Grid, Business Intelligence and SOA.
- Oracle WebLogic Server is the core of Oracle Fusion Middleware

How WebLogic fits into?

The hub and spoke diagram shows how WebLogic fits into overall OFM Stack.



WebLogic System Architecture

The WebLogic System Architecture comprises of the following

- WebLogic Software
- WebLogic Domain
- WebLogic Server Instances
- WebLogic Cluster
- WebLogic Node Manager

WebLogic Software

The WebLogic Software is a self executable file and downloadable from Oracle site.

It contains EJB Container, Servlet Container, JDBC Drivers, Transactional components, Domain templates, Proxy Plugins, Smart update utilities, Security components, Configuration and Administration scripts.

Usually installed under /Oracle/Middleware in a system.

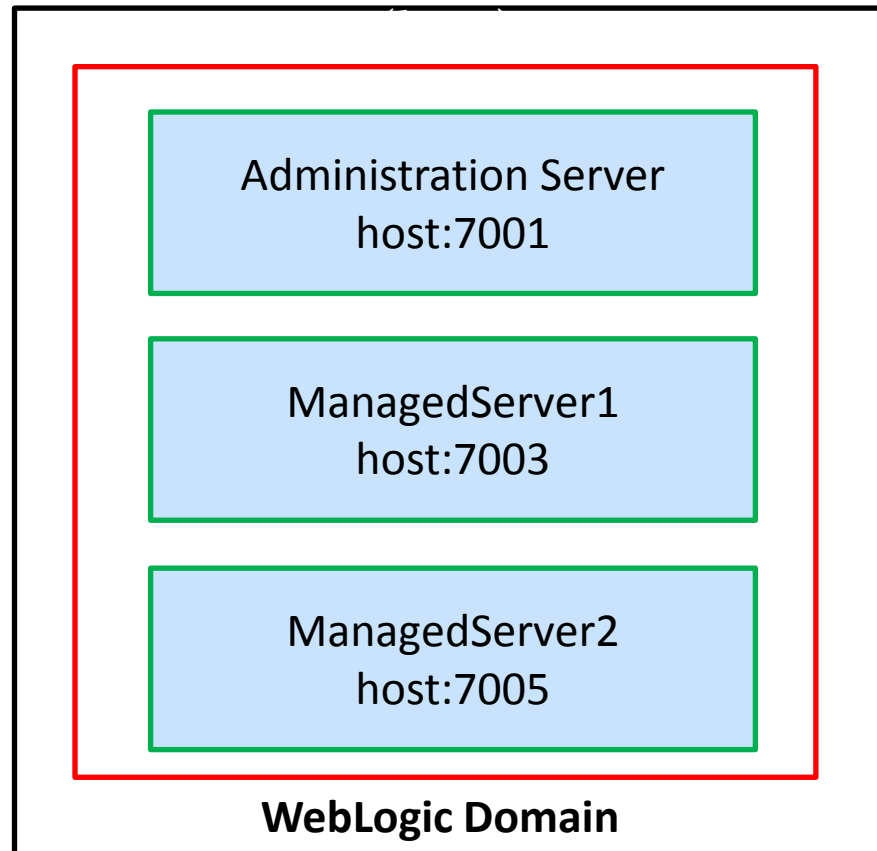
WebLogic Domain

- WebLogic Domain is a software folder
- A domain is the basic administration unit for WebLogic Server instances.
- A domain consists of one or more WebLogic Server instances (and their associated resources) that you manage with a single Administration Server.
- You can define multiple domains based on different system administrators' responsibilities, application boundaries, or geographical locations of servers.

WebLogic Server Instances

- WebLogic Server Instance is a run time JVM and it is part of WebLogic Domain.
- A Domain must have one Server Instance.
- A Server Instance listens on a logical port number.
- A domain can have more than one Server Instance.
- First Server Instance is called as Administration Server and it is used for Administering the domain.
- Other Server Instances in a domain are called Managed Servers and they are used for hosting the deployed applications.

The diagram below illustrates the domain and server instances.

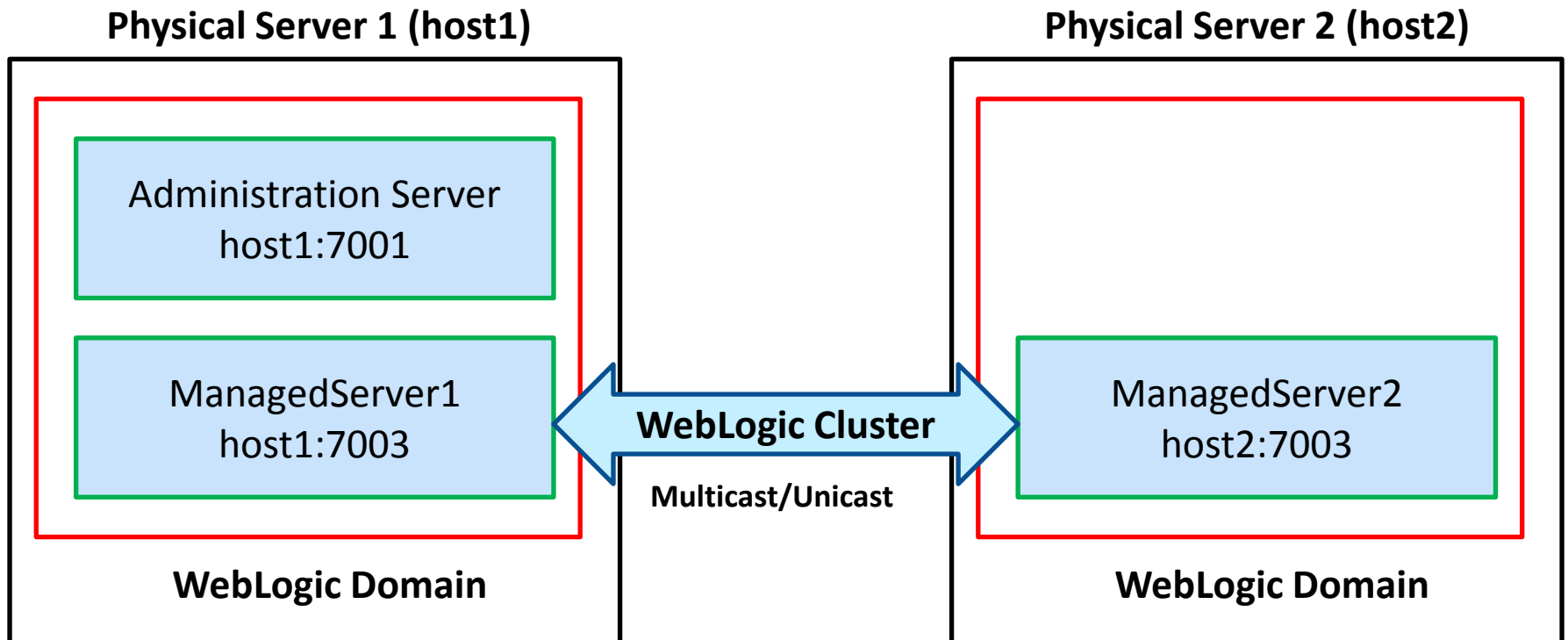


WebLogic Cluster

Two or more Managed Servers can be configured as a WebLogic Cluster to increase application scalability and availability.

- A cluster appears to clients to be a single WebLogic Server instance.
- A cluster is part of a particular WebLogic Server domain.
- Each server instance in a cluster must run the same version of WebLogic Server.
- All managed server instances in a cluster must reside in the same domain.
- You cannot split a cluster over multiple domains.
- IP Unicast or multicast, which server instances use to broadcast availability of services and heartbeats that indicate continued availability.

The diagram below illustrates the domain, server instances and cluster.



WebLogic Node Manager

Node Manager is a Java utility that runs as separate process from WebLogic Server and allows you to perform common operations tasks for a Managed Server regardless of its location with respect to its Administration Server.

- Node Manager is WebLogic Domain Independent.
- You can start and stop the Managed Servers remotely (Remote Start) using the Administration Console or from the command line.
- Node Manager can also automatically restart (Auto Restart) a Managed Server after an unexpected failure.
- Node Manager automatically kills (Auto Kill) a Managed Server that reports its health state as "failed".

Hands on Session

- WebLogic 12c Install
- Explain the folder hierarchy
- WebLogic Domain Configuration
- Run the Server Instance
- Deploying a simple application and access through browser



Q & A

Thank you