



# Oracle Business Intelligence Masterclass

## OBIEE 11g Overview and Architecture

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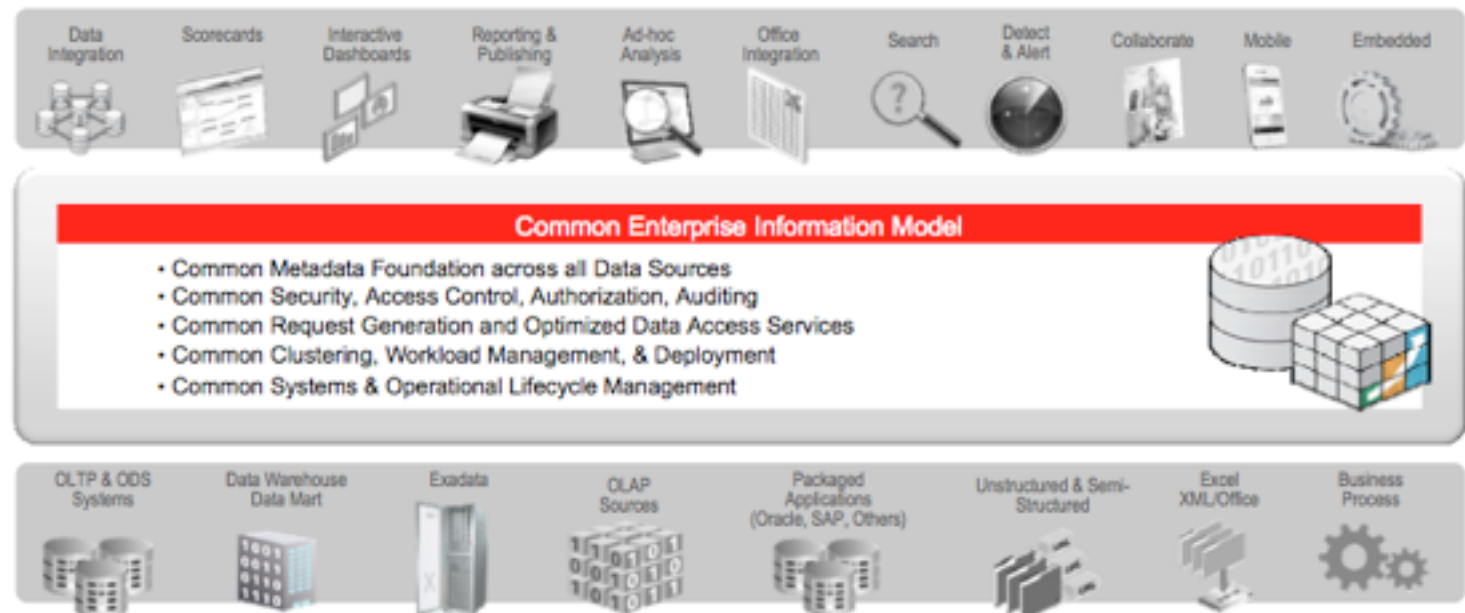
## Agenda

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- OBIEE 11g Product Overview
- OBIEE 11g Key Components
- OBIEE 11g Architectural Overview
- OBIEE 11g Installation Basics
- Installation Scenarios
- Installation Step by Step : Enterprise Install
- Alternative Installation Scenario Differences
- Post-Install Configuration Tasks
- Systems Management Overview
- Performing Key OBIEE Administration Tasks

## Oracle Business Intelligence 11g

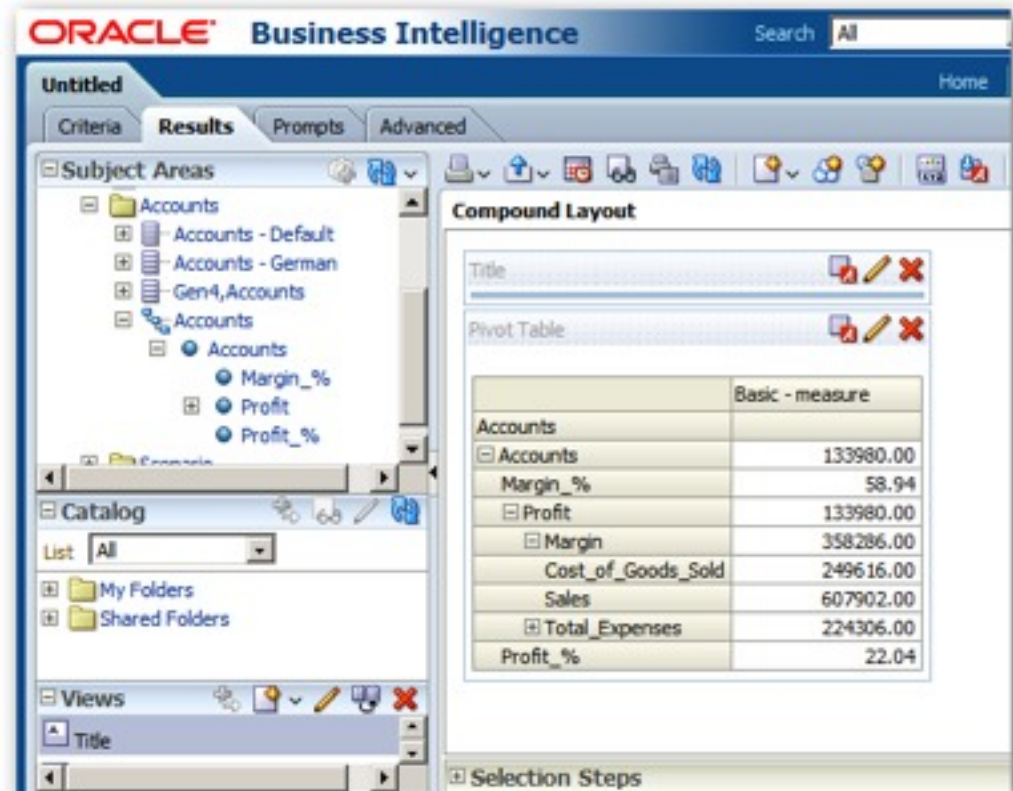
- The latest release of OBIEE (Oracle BI Enterprise Edition)
- Major changes to front-end, integration, architecture
- Objective is to make it more “enterprise-ready”
- Closely integrated with Oracle Fusion Middleware 11g



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## New User Interface, Ad-Hoc Querying, Scorecards, Dashboards

- Updated, task-based interface based on Oracle ADF
- Integrated reporting, ad-hoc analysis, dashboards, scorecard, alerting
- Reporting technology that will be embedded in Fusion Applications
- Web 2.0, fully thin-client



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## Action Framework, and Integration with Business Processes

- Web Service, HTTP and Java integration with applications, business processes
- “closed-loop” business intelligence
- Leverages Oracle/standard WS technologies
- “Actionable Intelligence”

**ORACLE Business Intelligence**

**Store Summary**

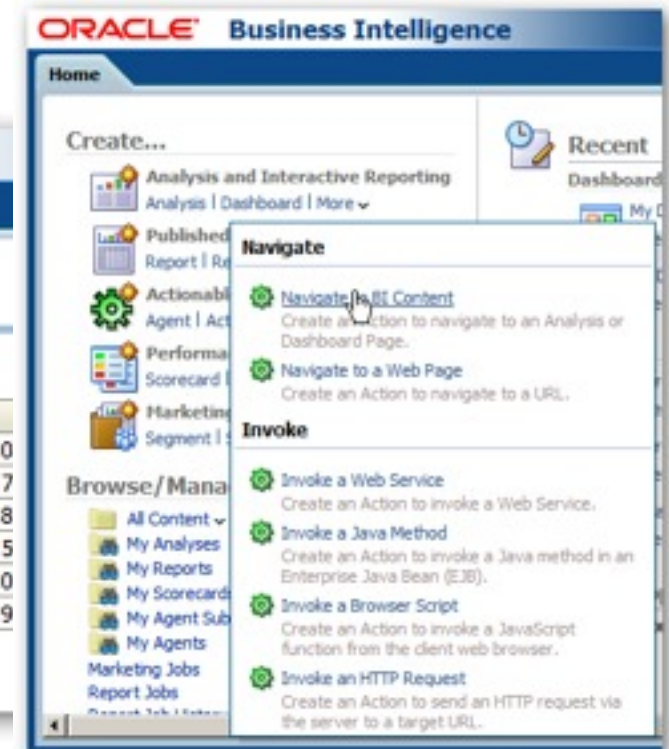


**Store Summary**

Region Name	Amount	Target	Performance to Target
Central SF	81.00	71.00	114.0
North CA	30.00	32.00	93.7
North S			107.8
Other L			112.5
South C			110.0
West S			106.9

[Edit](#) - [Refresh](#) - [Print](#) - [Export](#) - [Add to Favorites](#) - [Copy](#)

[Navigate to Store Performance Breakdown](#)  
[Navigate to Company Website](#)  
[Navigate to Store Scorecard](#)  
[Request Meeting at HQ with Regional Manager](#)





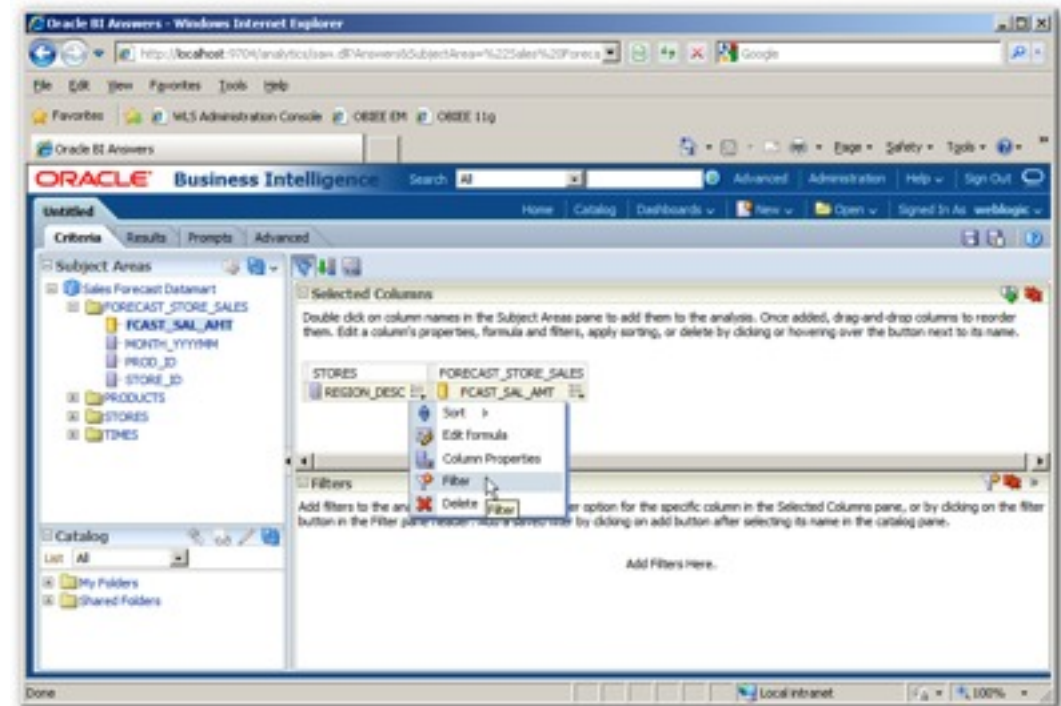
## OBIEE 11g End-User and Management Applications

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- Oracle BI Answers
- Oracle BI Dashboards
- Oracle BI Scorecard & Strategy Management
- Oracle BI Administration
- Oracle WebLogic Server Administration Console
- Oracle Enterprise Manager Fusion Middleware Control

## Oracle BI Answers

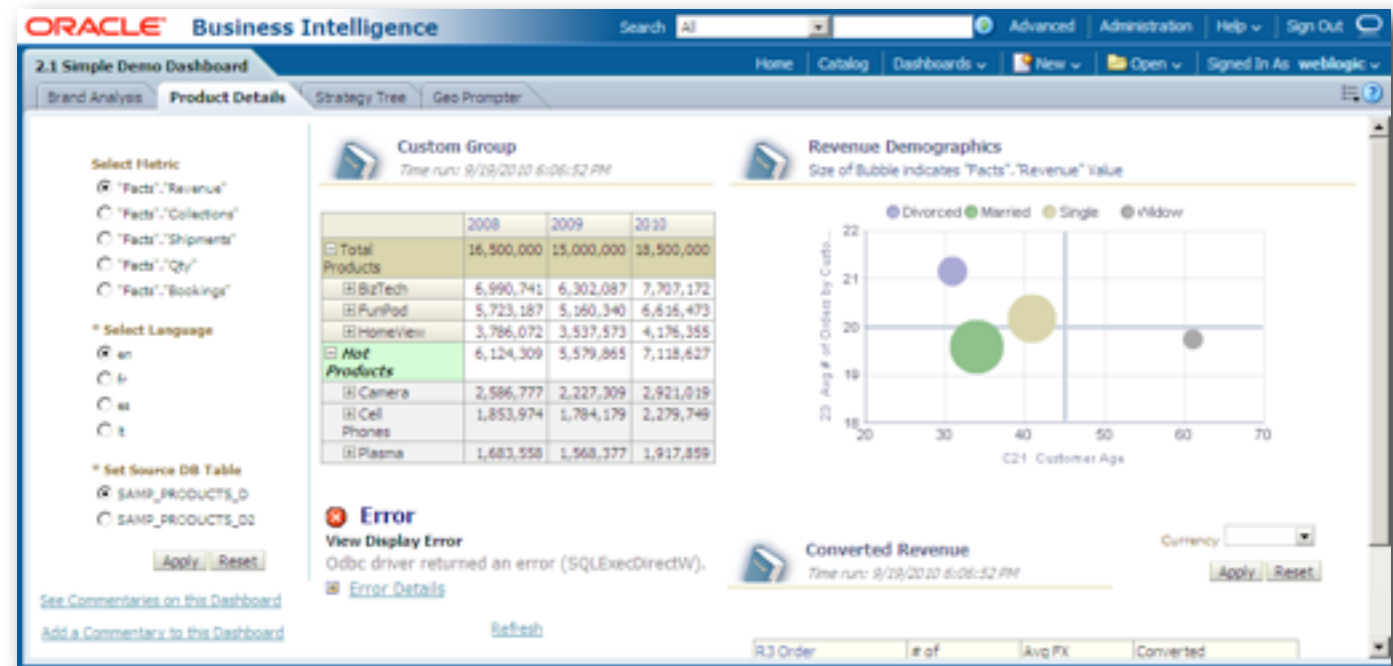
- Ad-hoc query tool for creating analyses
- Used by power-users, authors to create reports for others to consume
- Analyses are published to the dashboard for viewing
- 11gR1 version comes with additional OLAP capabilities
- Used for both relational and OLAP data sources



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## Oracle BI Dashboard

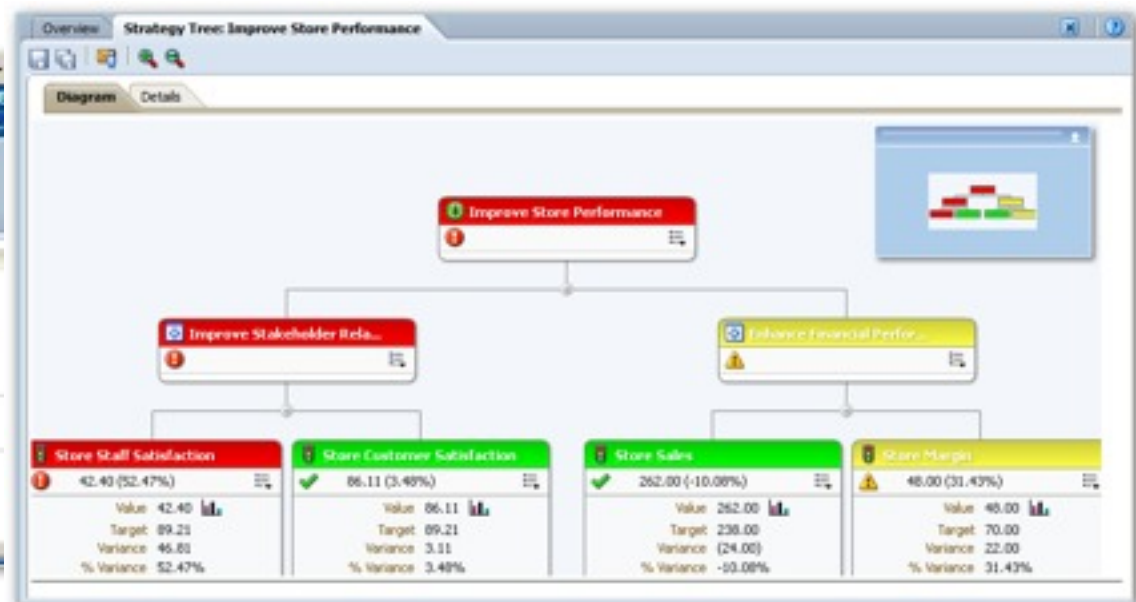
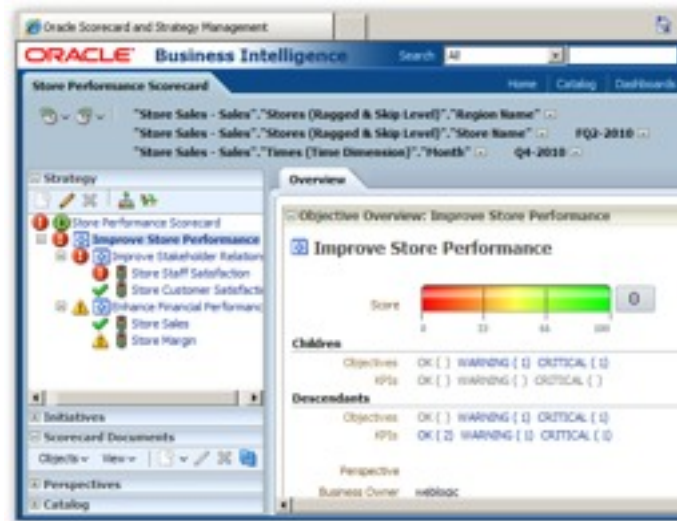
- Primary means of viewing Answers analyses
- Also integrates with BI Publisher, Scorecard, Agents etc
- Role-based access to BI content
- New dynamic analyses layout capabilities in 11gR1 provide increase interactivity





## Oracle Scorecard & Strategy Management

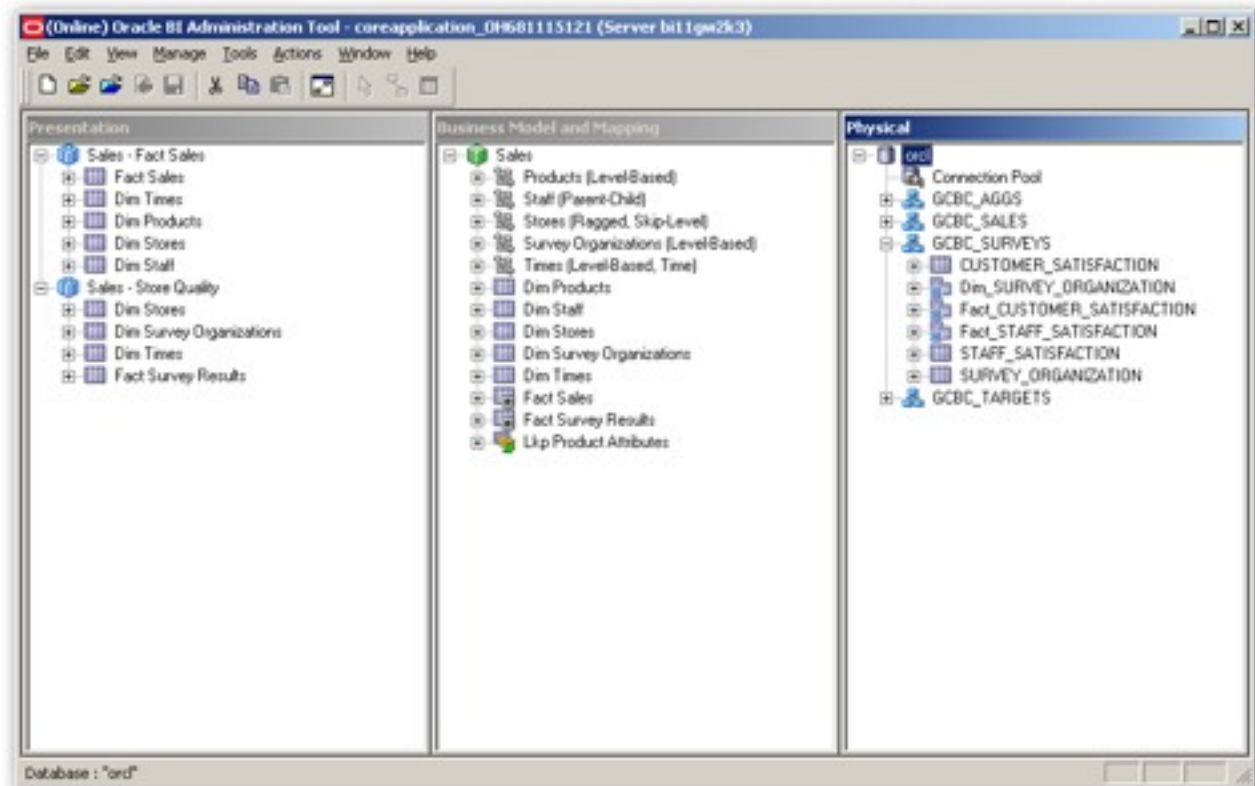
- Pay-extra option for OBIEE 11gR1
- Allows users to define strategies, objectives, KPIs and goals
- Integrates fully with OBIEE 11gR1 web catalog, RPD, actions, security etc
- Visualize as scorecards, cause-and-effect maps, strategy maps etc



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## Oracle BI Administration

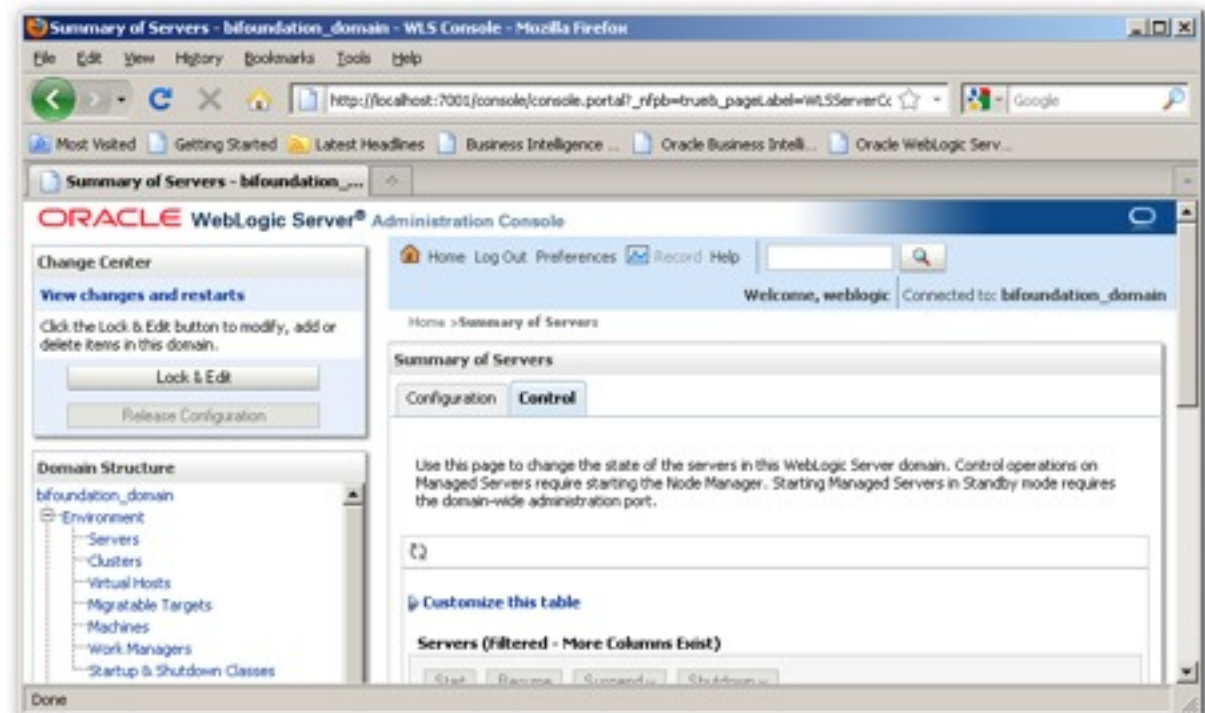
- Primarily a tool for managing the BI Server metadata layer (“semantic model”)
- Also manages BI Server artifacts such as variables, cache entries etc
- Windows-only (32-bit)
- Previous security functions now moved to WLS and WLS Admin Console



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## Oracle WebLogic Server Administration Console

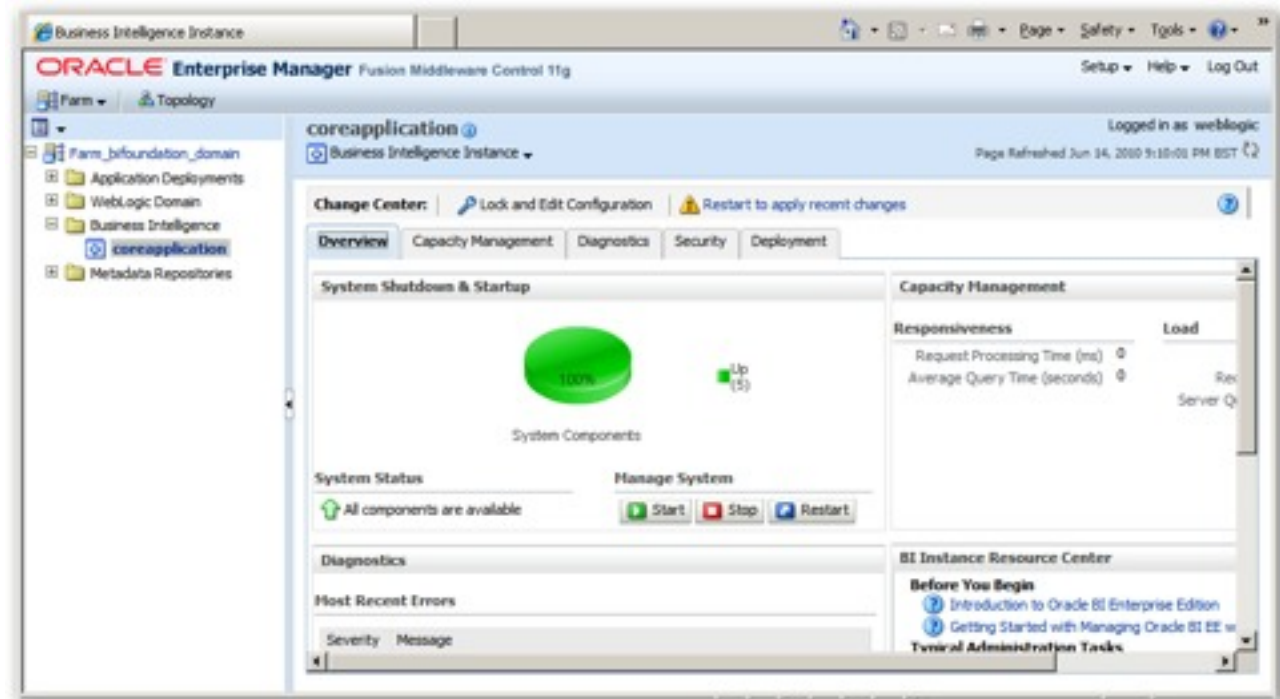
- Used for managing WLS domain
- Start, stop, restart, manage Admin Server and Managed Servers
- Configure security and other platform settings
- Perform other generic WLS admin tasks
- Tasks can also be scripted using WSLT



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## Oracle Enterprise Manager Fusion Middleware Control

- Used for managing OBIEE 11g BI domain
- Works in conjunction with OPMN to stop, start, manage System Components
- Configure security credentials used for inter-server authentication
- Manage RPD & catalog
- Manage vertical clustering of components
- View metrics and performance data





## Demonstration

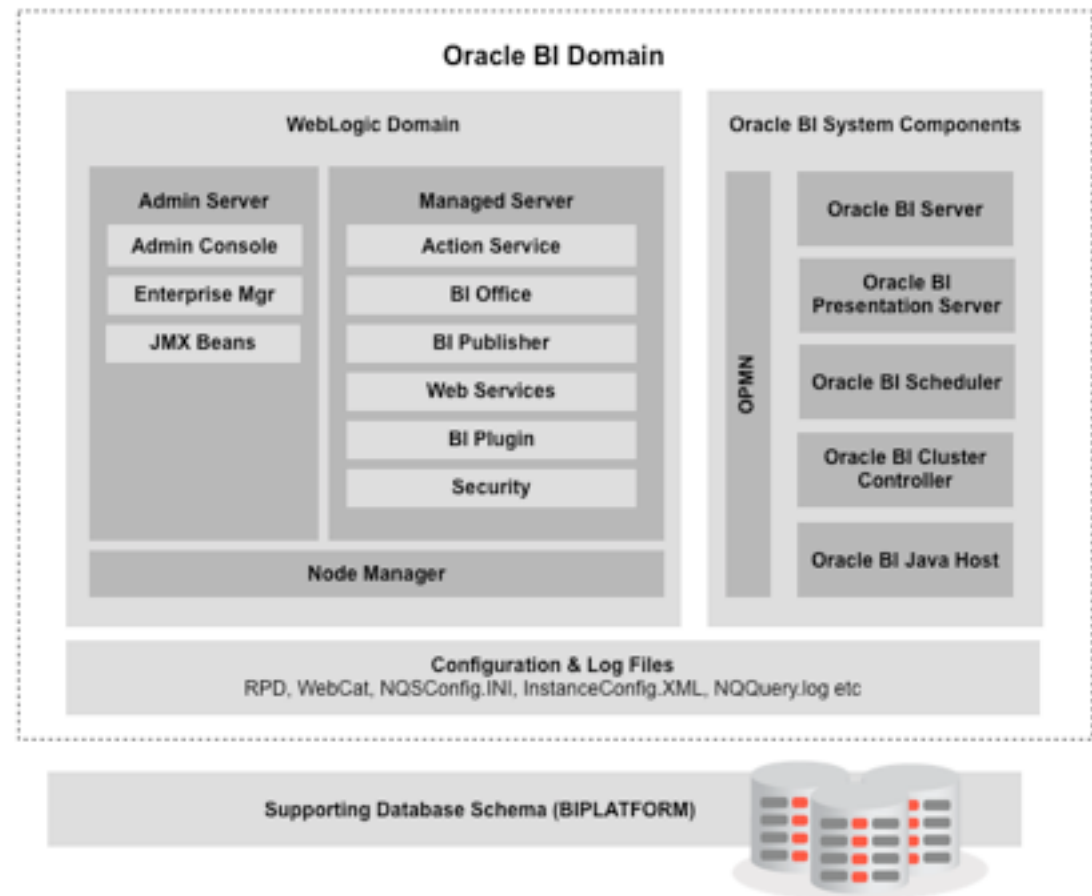
Oracle Business Intelligence 11g Sample Application

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## OBIEE 11g Basic Architecture

- Overall system called an “Oracle BI Domain”
- Made up of Java and non-Java components
- Java components hosted in WebLogic Server 11g
- Managed using OEM and WebLogic Admin Server
- Supporting database schema for repositories, metadata



## Based on Fusion Middleware 11g Platform

- Fully-integrated with Oracle Fusion Middleware 11g
- Common security (Oracle Identity Management, Oracle Access Manager)
- Built on WebLogic Server
- Managed through Fusion Middleware Control (Enterprise Manager)
- Built using multiple technologies including JDeveloper (ADF)



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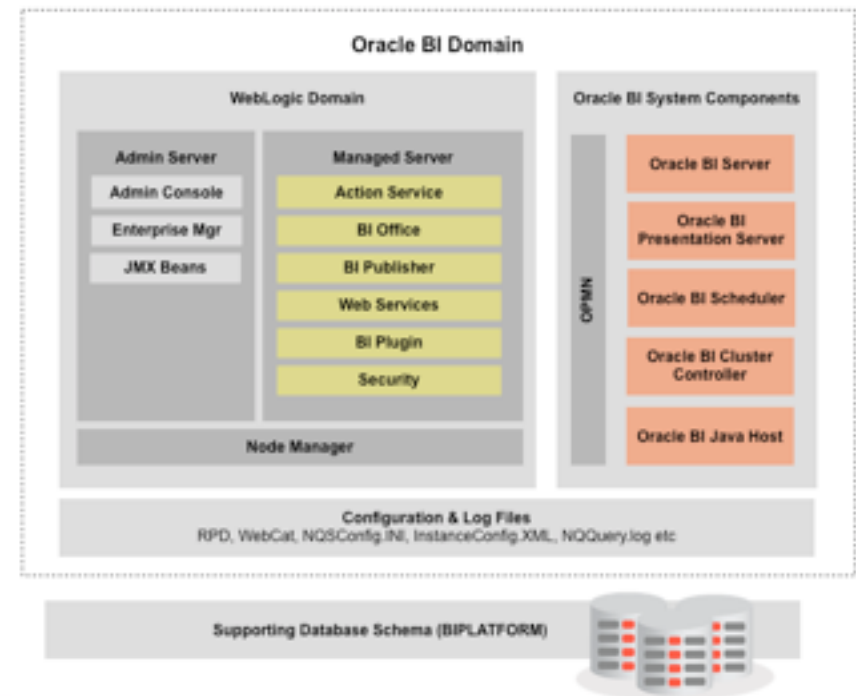
## Leveraging Oracle Fusion Middleware Technologies

- OBIEE 11g leverages many Fusion Middleware 11g technologies
  - ▶ **WLS** (**W**eb**L**ogic **S**erver)
  - ▶ **OPMN** (**O**racle **P**rocess **M**anager and **N**otification **S**erver)
  - ▶ **OPSS** (**O**racle **P**latform **S**ecurity **S**ervices)
  - ▶ **DMS** (**D**ynamic **M**onitoring **S**ystem)
  - ▶ **ODL** (**O**racle **D**iagnostic **L**ogging)
  - ▶ **JPS** (**J**ava **P**latform **S**ecurity)
  - ▶ **CSF** (**C**redential **S**tore **F**ramework)
  - ▶ **OPATCH / OPACK**
  - ▶ **UA** (**U**pgrade **A**ssistant)
  - ▶ **RCU** (**R**epository **C**reation **A**ssistant)

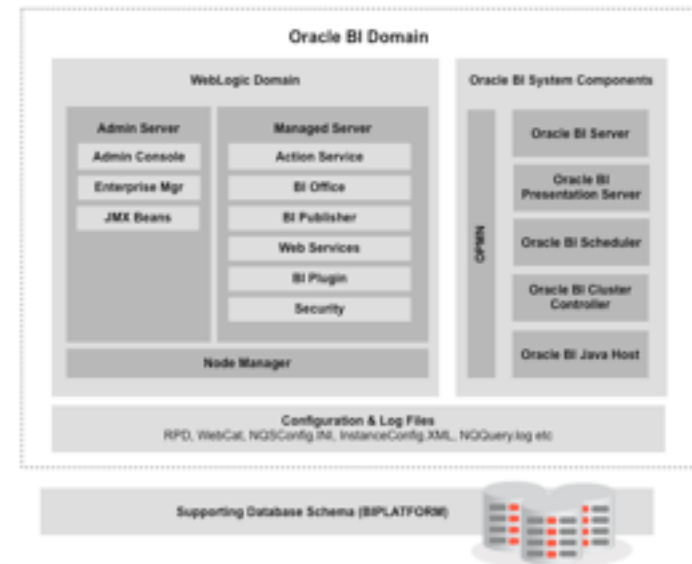


## OBIEE 11g System Components, Java Components and OPMN

- OBIEE components divided into System and Java components
- System components are still C/C++ executables, are controlled by OPMN, and are managed by Fusion Middleware Control
- Java Components are JEE applications, are installed in the managed server, and are controlled by FMW Control



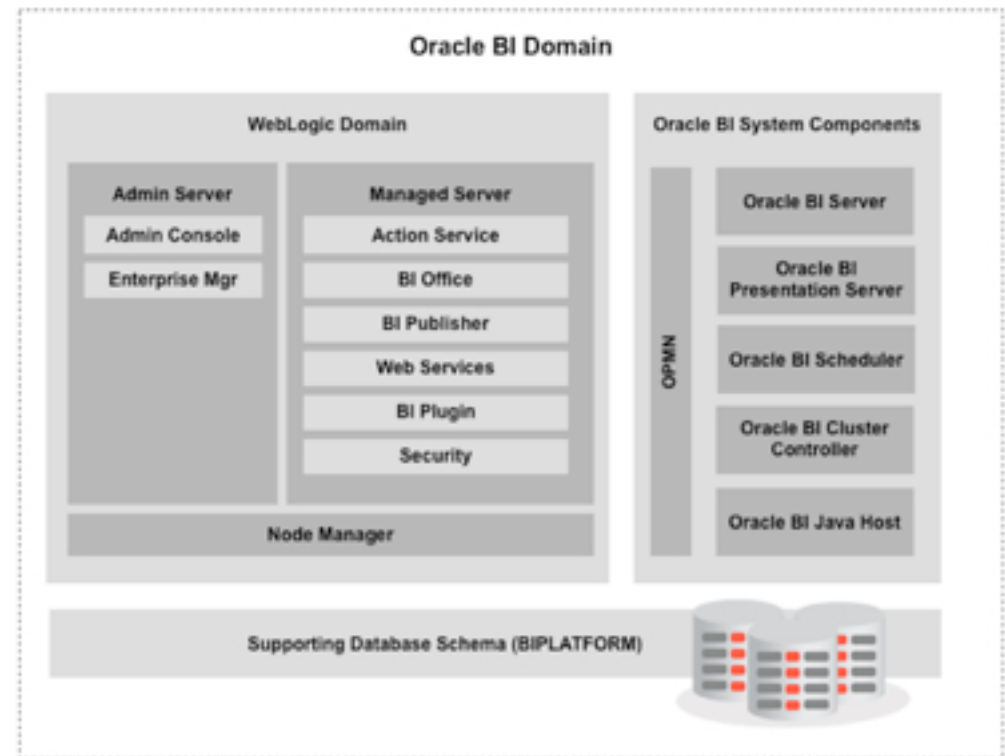
- Main difference is wrapping components in WLS platform and EM management
- Individual servers, components are still the same (BI Server, Presentation Server, BI Publisher J2EE application etc)
- Some reworking has taken place in 11gR1 (unified logging, management of config files using EM etc)
- Basic concepts, plus clustering (OBIEE), scheduling etc are the same as in 10g





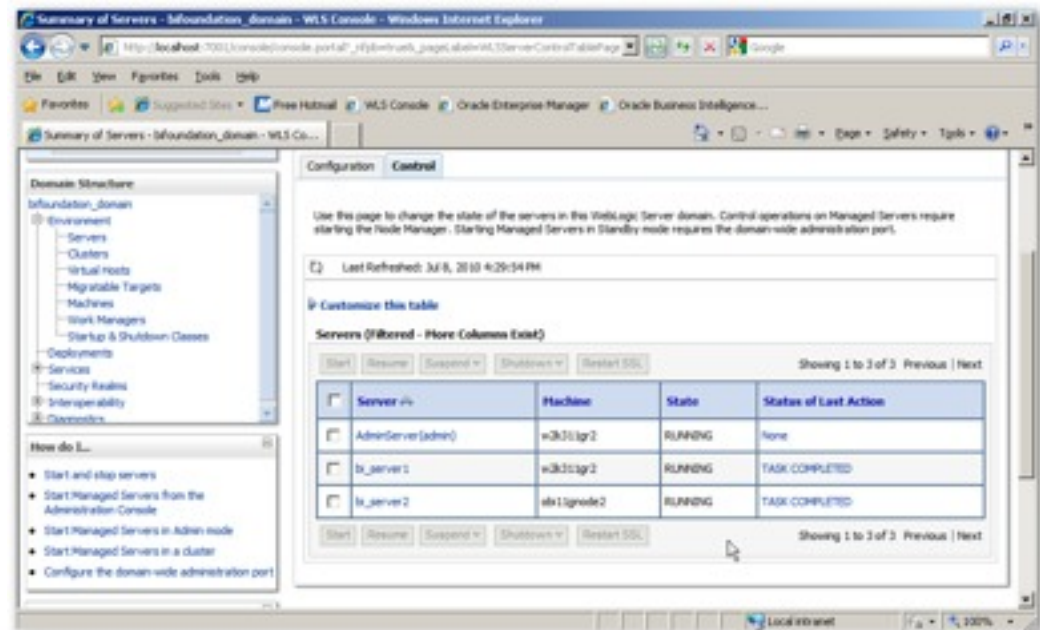
## OBIEE 11g Key Components in Detail

- Oracle WebLogic Server 11g
- Oracle Enterprise Manager
- Oracle BI Server
- Oracle BI Presentation Server
- Oracle BI Scheduler
- Oracle BI Cluster Controller
- Oracle Process Manager and Notification Server (OPMN)
- Node Manager



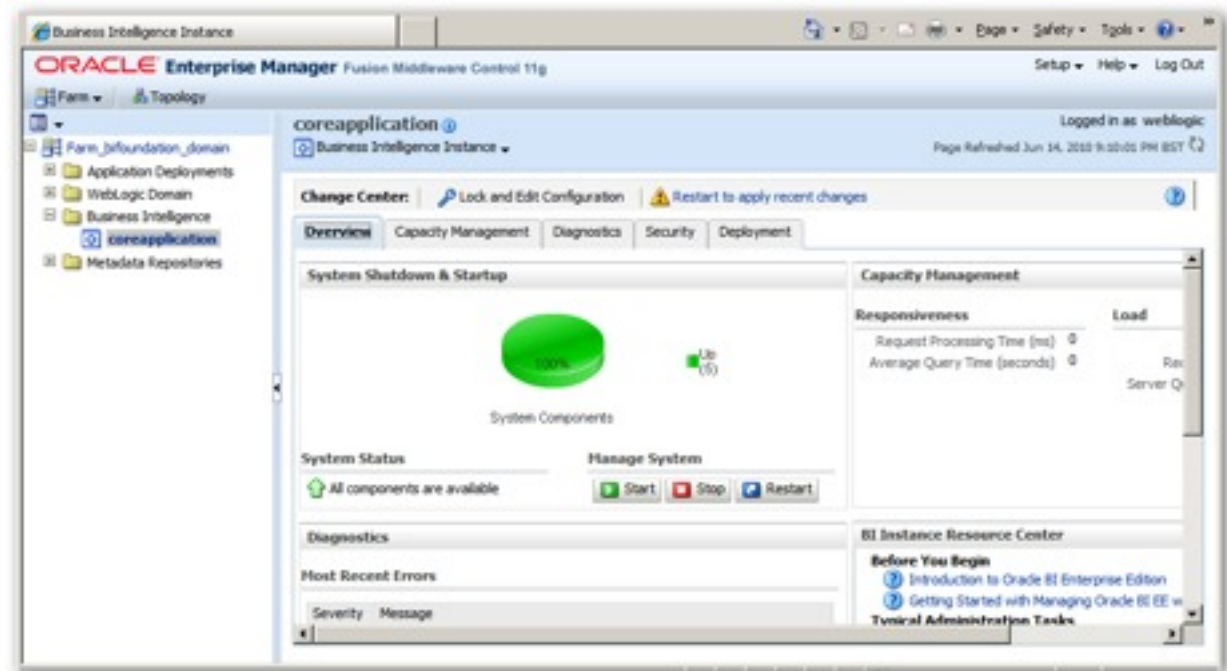
## Oracle WebLogic Server 11g

- J2EE Application Server used for hosting OBIEE 11g Java components
  - ▶ Plays role performed by OC4J/OAS in 10g version
- Managed using the WebLogic Administration Server
  - ▶ Weblogic Server Administration Console
  - ▶ Fusion Middleware Control
  - ▶ JMX MBeans (programmatic access to BI Domain)
- OBIEE Java components held in (n) Managed Servers
- System Components Managed by Fusion Middleware Control, but exist outside of WLS domain



## Oracle Enterprise Manager Fusion Middleware Control

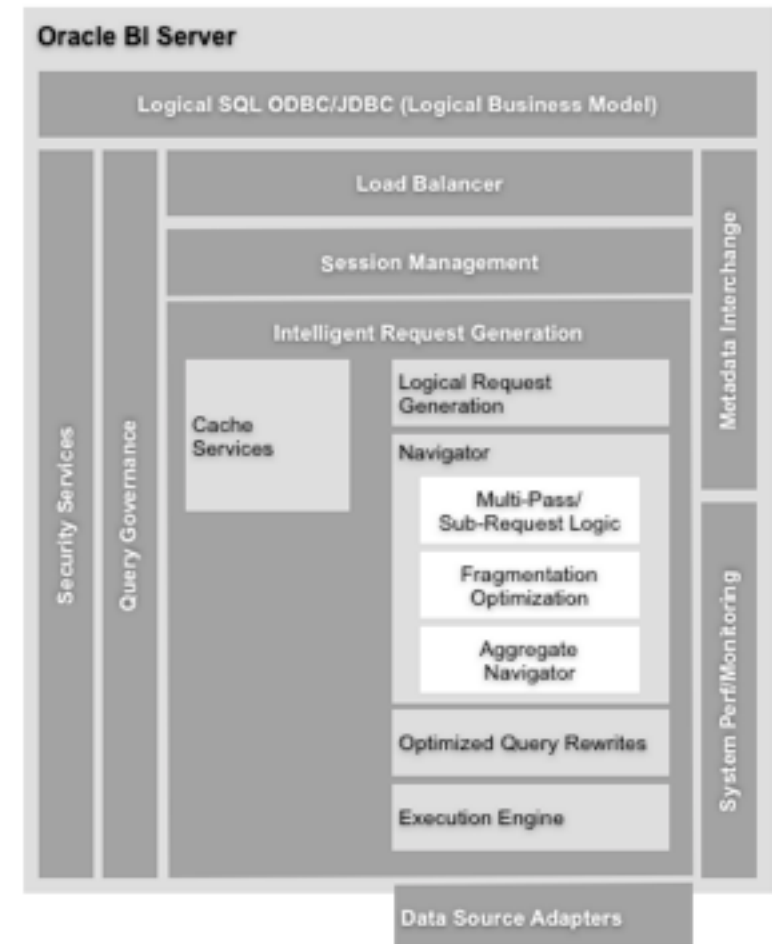
- Manage System Components (BI Server, BI Presentation Server etc)
- Start, Stop and Restart all System Components and Managed Servers
- Configure Preferences and Defaults
- Scale out System Components
- Performance Monitoring and Diagnostics



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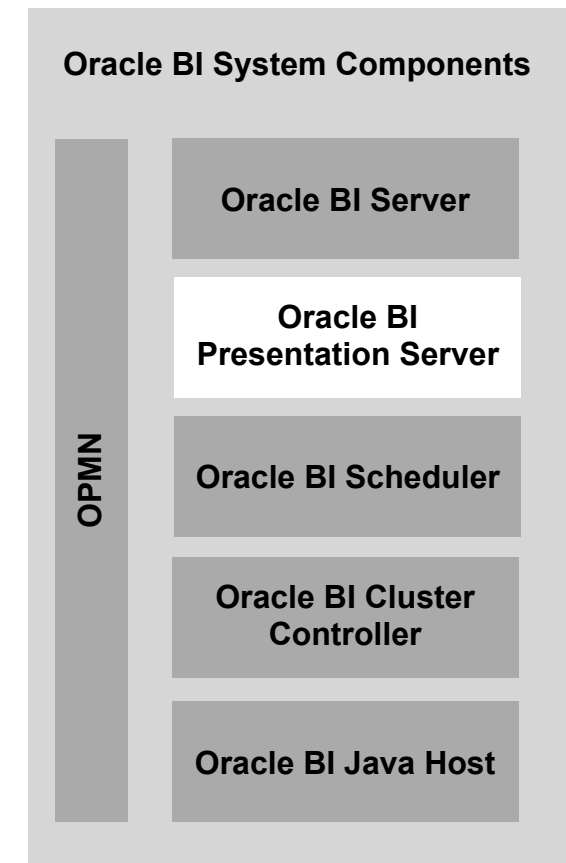
## Oracle BI Server

- Receives incoming logical SQL, converts to (n) physical queries
- Provides aggregate navigation, calculations, joining of datasets in memory
- Cache Services used for speeding up commonly used queries
- Works in combination with Cluster Controller for load balancing, failover etc
- Uses semantic model to represent data sources, provide integrated virtual dimensional model for end-user query tools



## Oracle BI Presentation Server

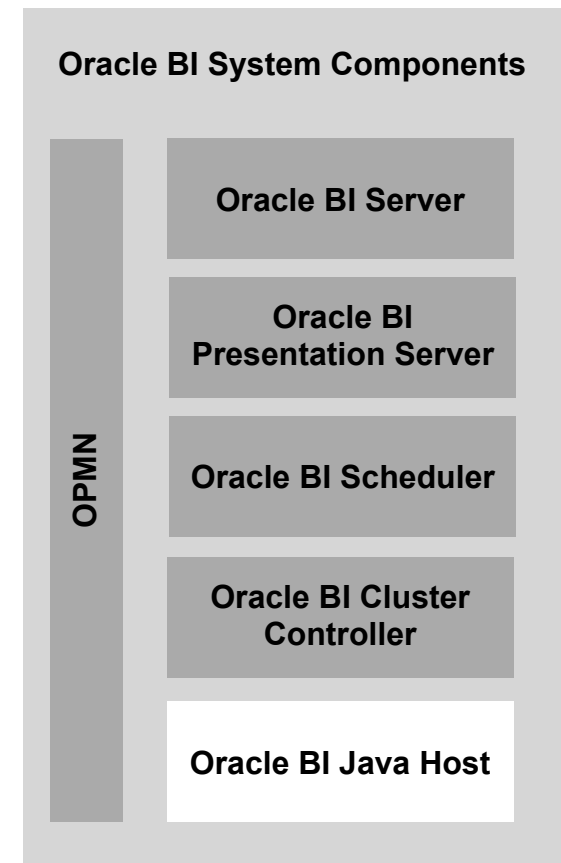
- Non-Java service used for rendering most UI elements
- Answers, Dashboards, Scorecards, KPIs etc
- Generates logical SQL which is then sent to the BI Server
- Access is provided by /analytics J2EE plug-in, hosted in WebLogic Managed Server
- Metadata stored in Web Catalog
- Users, Groups now only for backward compatibility





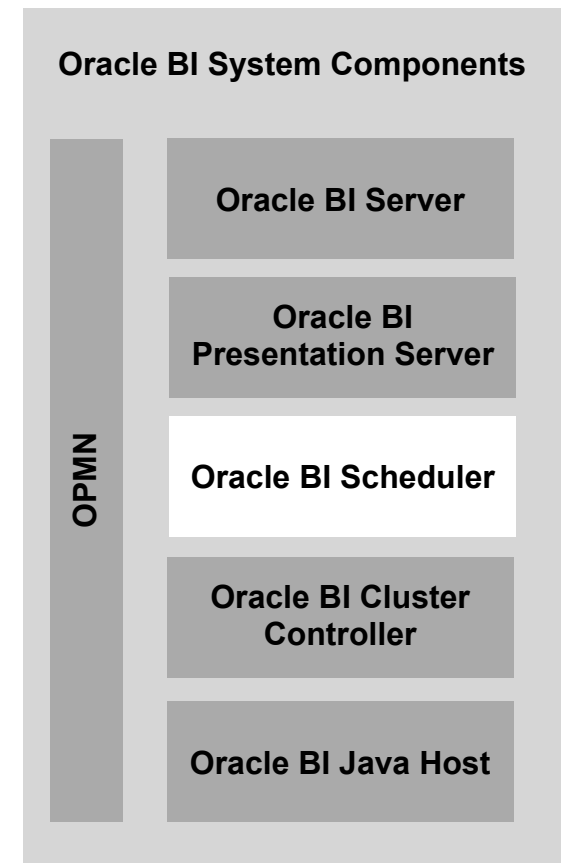
## Oracle BI Javahost

- Used by Presentation Services to support
  - ▶ Graph generation
  - ▶ SVG rendering (Apache Batik)
  - ▶ Java tasks support for scheduler
  - ▶ Oracle BI Publisher
  - ▶ URL Connect (HTTP request to other components)
  - ▶ Java service calls by BI Publisher



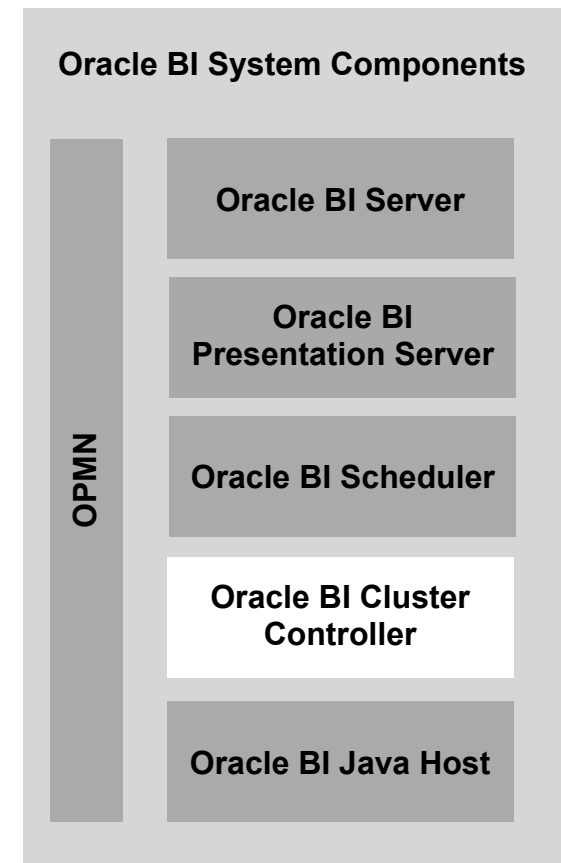
## Oracle BI Scheduler

- Server that schedules and manages jobs
  - ▶ Previously known as Delivers in 10g
- Jobs can be one of two types
  - ▶ Scripted jobs (Java, Jscript, Javascript)
  - ▶ Agents (iBots in 10g release)
- Consists of four components
  - ▶ Oracle BI Scheduler Job Manager
  - ▶ Oracle BI Scheduler Service (System Component)
  - ▶ Scheduler tab in EM Fusion Middleware Control
  - ▶ Command-line tool `saschinvoke`



## Oracle BI Cluster Controller

- Enabled now by default in OBIEE 11g systems (initial setup creates 1-node cluster)
- Serves as initial point of contact for incoming requests
- Monitors status of BI Servers and BI Schedulers in the cluster
- Determines the active BI Scheduler at run-time
- Usually deployed with a secondary Cluster Controller, in an active/passive configuration
- Does not control usage of BI Presentation Server
  - ▶ These are usually accessed via a load balancer



## Oracle Process Manager and Notification Server

- Used for distributed process start/stop/restart
- Process recovery (optional), process “ping”
- Managed via EM, or from command line
- Can also be used for performance collection (DMS)
- Required on every OBIEE server
- Standard FMW process control tool



```
C:\Middleware\Oracle_BI1\opmn\bin>opmnctl status
```

```
Processes in Instance: instance1
```

ias-component	process-type	pid	status
coreapplication_obiccs1	OracleBIClusterCo~	3364	Alive
coreapplication_obisch1	OracleBIScheduler~	1012	Alive
coreapplication_obijh1	OracleBIJavaHostC~	4400	Alive
coreapplication_obips1	OracleBIPresentat~	2092	Alive
coreapplication_obis1	OracleBIServerCom~	5040	Alive

## Node Manager

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- Used for stopping and starting distributed Managed Servers
- Java utility that runs as a separate process from WebLogic Server
- Can also restart managed servers that have crashed
- The equivalent of OPMN, but for Java components
- Usually must be running as a service for full start of OBIEE 11gR1





## Demonstration

WLS Admin Server, and EM Fusion Middleware Control

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## Three Sample Deployments

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### 1. Desktop / Laptop Install

- Quick installation, smallest footprint
- No contingency for HA, Failover, Resilience etc

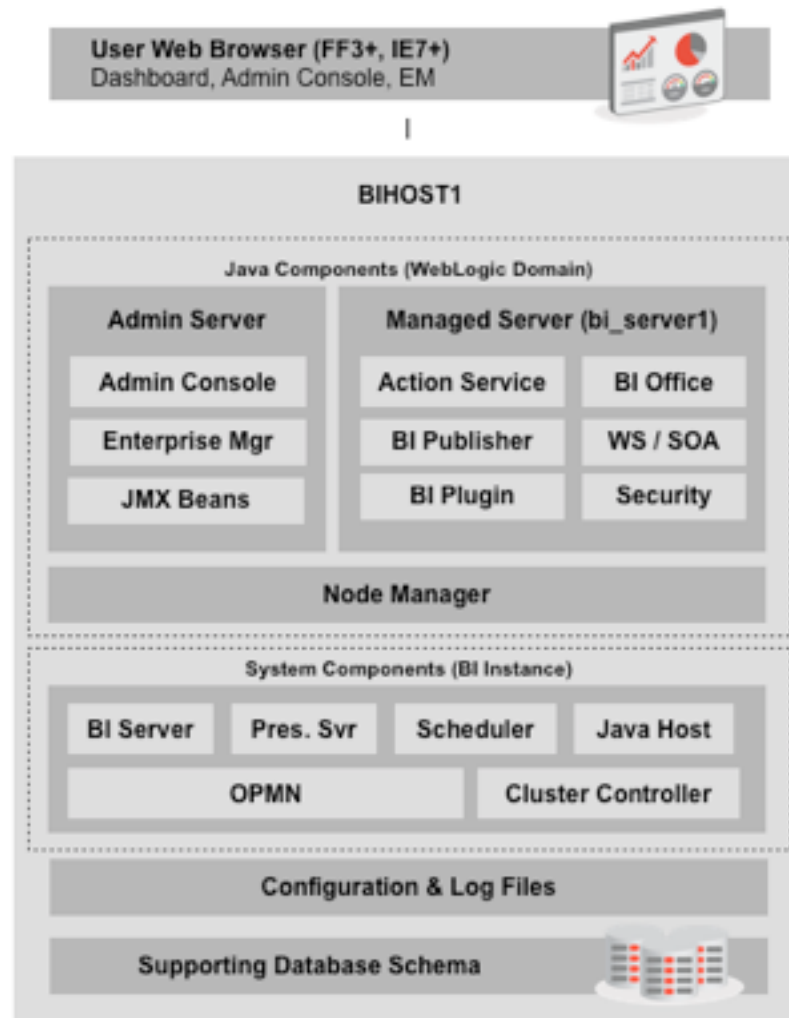
### 2. Departmental Install with Horizontal Scaleout

- Production installation, needs element of resilience / scalability
- not overcomplicated installation, simple maintenance
- Ability to create DEV, TEST etc environments

### 3. Enterprise Install (optional Vertical/Horizontal Scaleout)

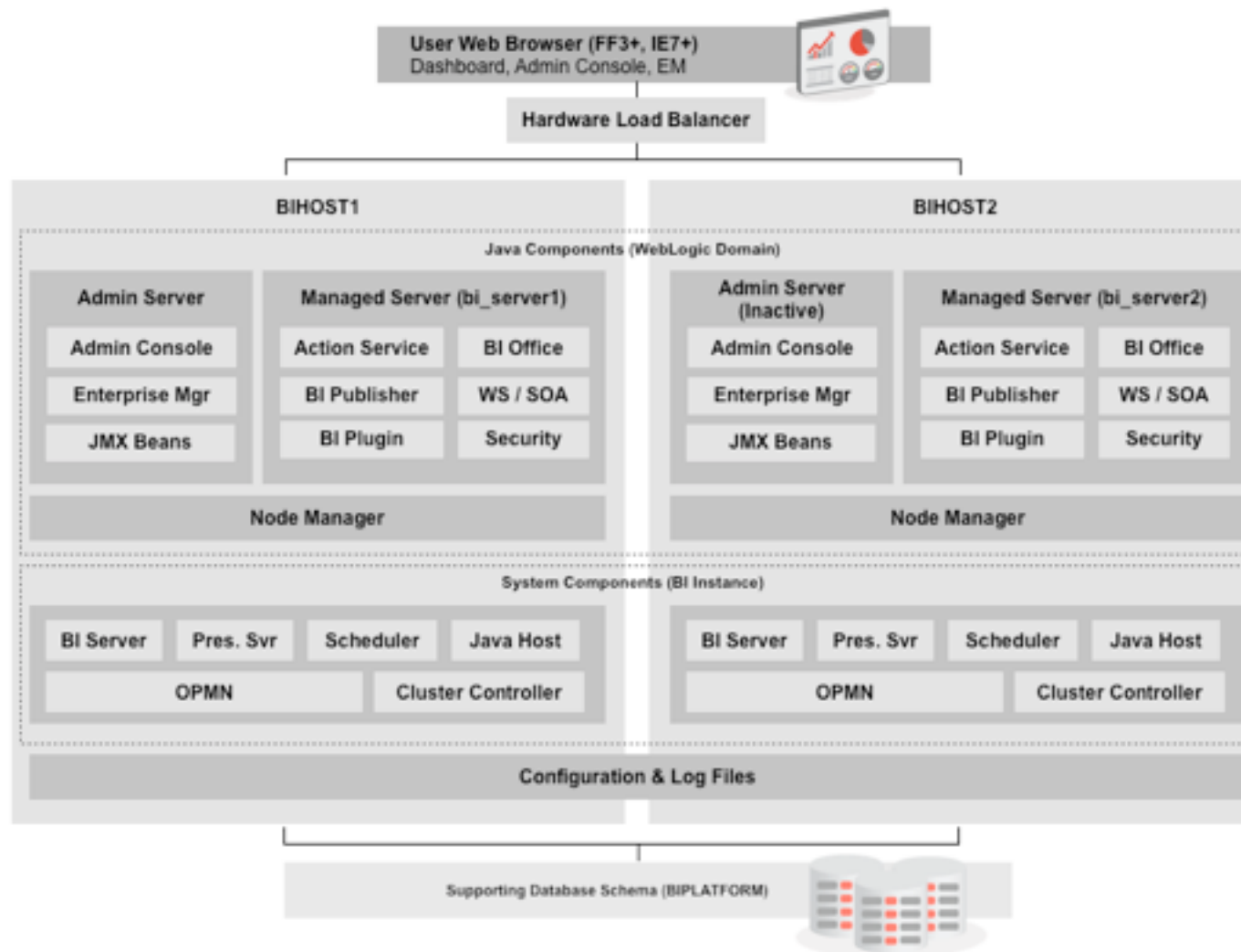
- As with Departmental install, plus...
- Highly secure - use of firewalls, DMZ etc
- Highly resilient, failover for all components
- Failover extends to RDBMS level
- Suitable for enterprise-wide deployment of OBIEE 11g

## Deployment Topology 1 : Desktop / Laptop



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## Deployment Topology 2 : Departmental w/Horizontal Scaleout



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## Vertical Scaleout of System Components

- Spare capacity on an individual host can be used by adding additional system components
- Can add additional BI Servers, Presentation Servers and Java Hosts
- Useful for resilience, and usage of spare capacity
  - Doesn't protect against the whole server failing though

coreapplication Business Intelligence Instance Logged in as w  
Page Refreshed Aug 25, 2010 1:41:27 PM

Change Center: Activate Changes Release Configuration

Overview **Capacity Management** Diagnostics Security Deployment

Metrics Availability **Scalability** Performance

System Components

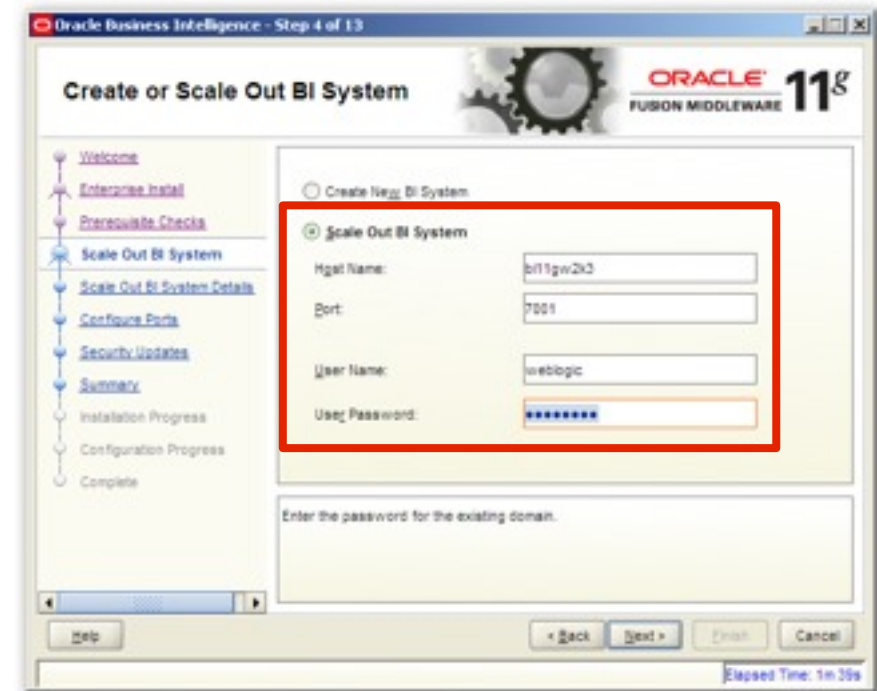
Edit the table below to increase/decrease/modify the system components for each instance.

Host	Oracle Instance	BI Servers	Presentation Servers	JavaHosts	Port Range From
bi11gw2k3	instance1	2	2	1	9700

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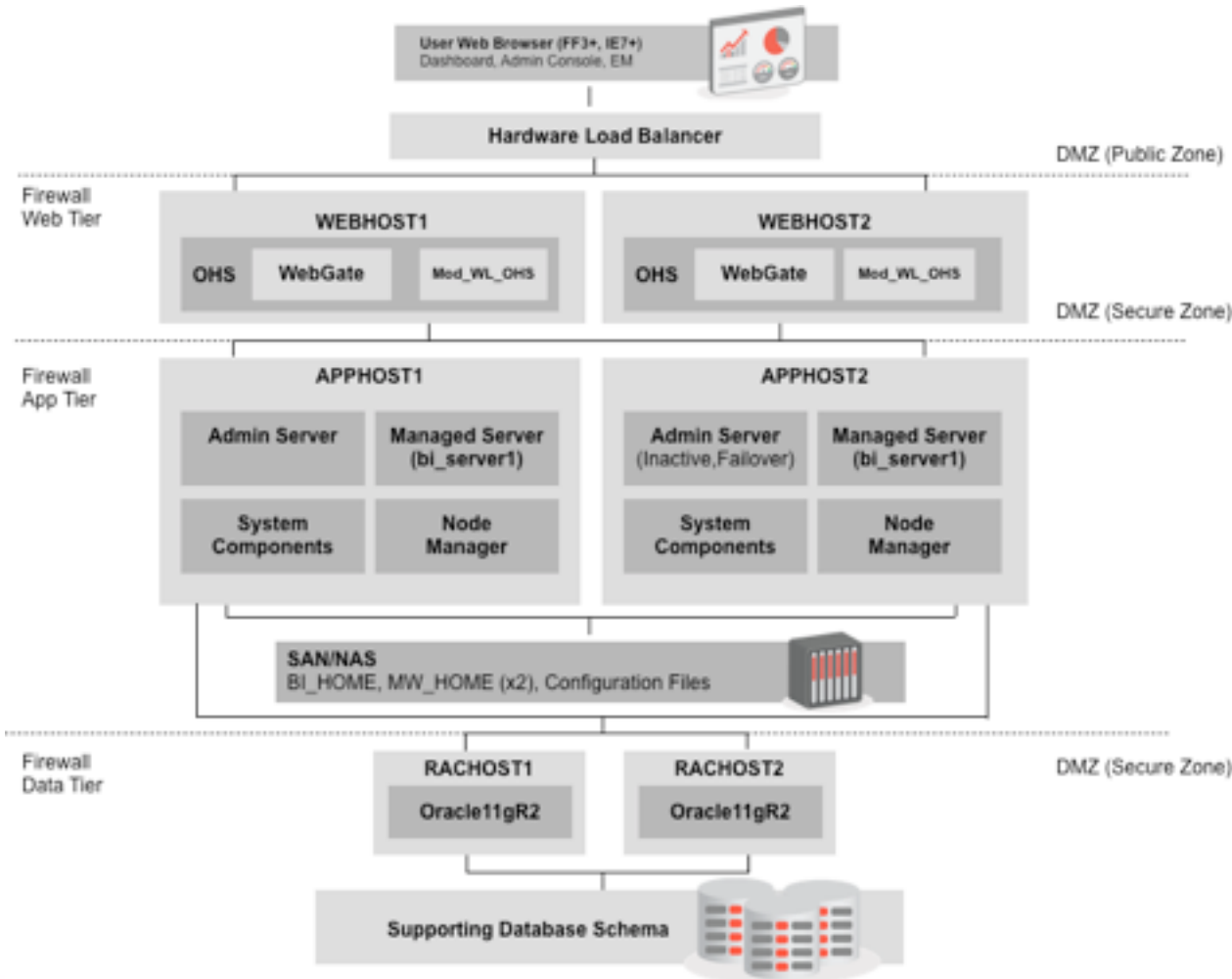
## Horizontal Scaleout of System Components

- Used for adding additional managed servers (Java components) and system components to an existing cluster
- Used for scalability and failover
- Set up via the Universal Installer > Scale Out BI System option
- Automatic process, no need to edit configuration files





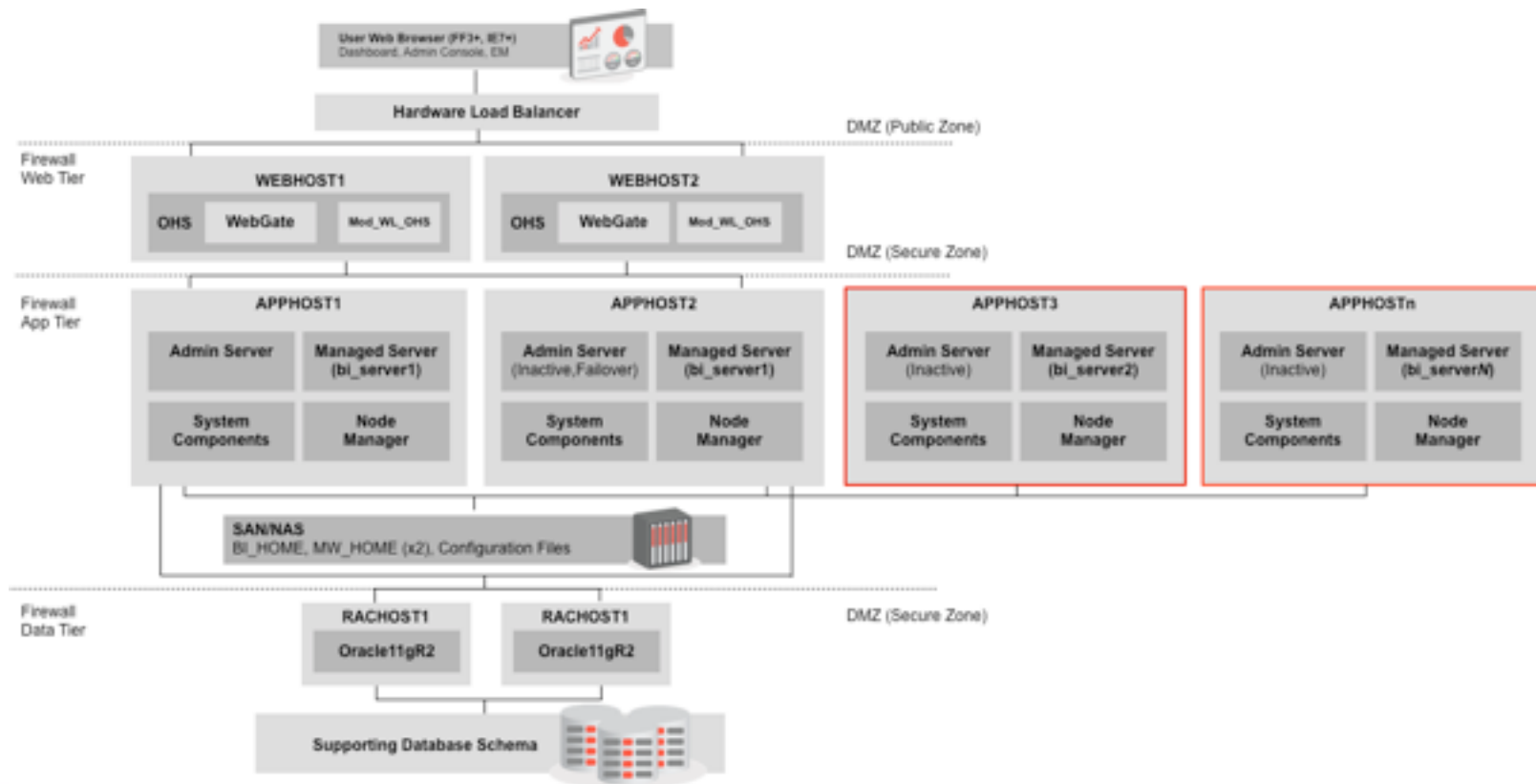
## Deployment Topology 3 : Enterprise



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## Horizontal and Vertical Scaleout of Enterprise Deployment

- Deployment can be vertically or horizontally scaled out as normal
- ADMINVHN used as hostname for Admin Server



## Summary

- Architecture for OBIEE 11gR1 has changed significantly compared to 10g
- Leverages WLS / Fusion Middleware components, services
- Basic servers, processes are the same but now managed through WLS/EM
- Clustering of OBIEE components now joined by WLS components
- Horizontal scaleout now much simpler to set up
- Vertical scaleout now possible to provide scalability, resilience
- This presentation provided three scenarios for simple, departmental and enterprise deployments
- For more details, check out the following resources
  - ▶ <http://www.rittmanmead.com/obiee11g>
  - ▶ *Oracle® Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)*
  - ▶ *Oracle® Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition 11g Release 1 (11.1.1)*



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