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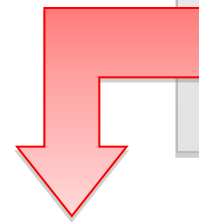
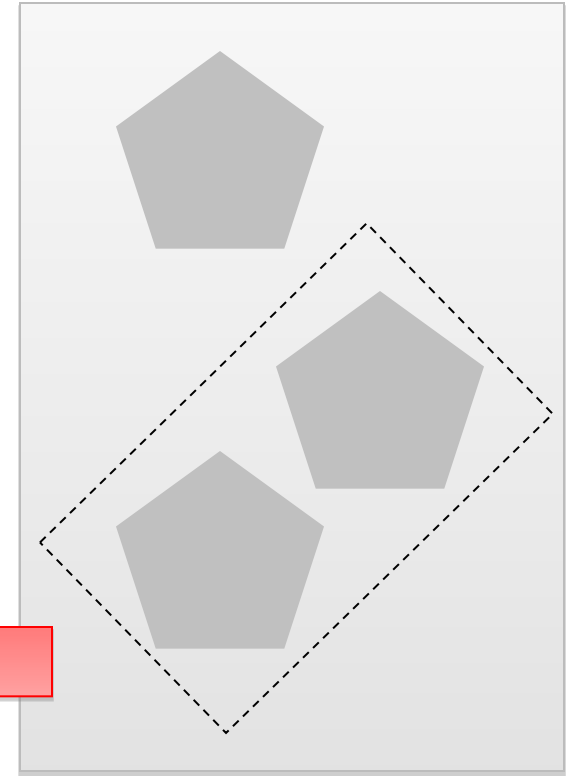
Introduction to WLS Topologies

Agenda

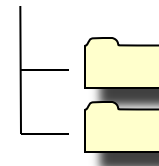
- Topology
 - Domain
 - Server
 - Admin Server
 - Managed Server
 - Cluster
 - Node Manager
 - Machine
- Configuration Files
- Administration Tools
- Sample Configuration Schemes

Domain

- What is it?
 - a logically related group of WebLogic Server instances that you manage from a single set of configuration artifacts.
- What's in a domain?
 - Servers
 - Clusters of servers
- Rules:
 - All WebLogic Server instances within the same domain must be at the same major and minor version.
 - Servers within a domain can be at different Maintenance Pack levels as long as the Administration Server is at the same Maintenance Pack Level or higher than its Managed Servers.

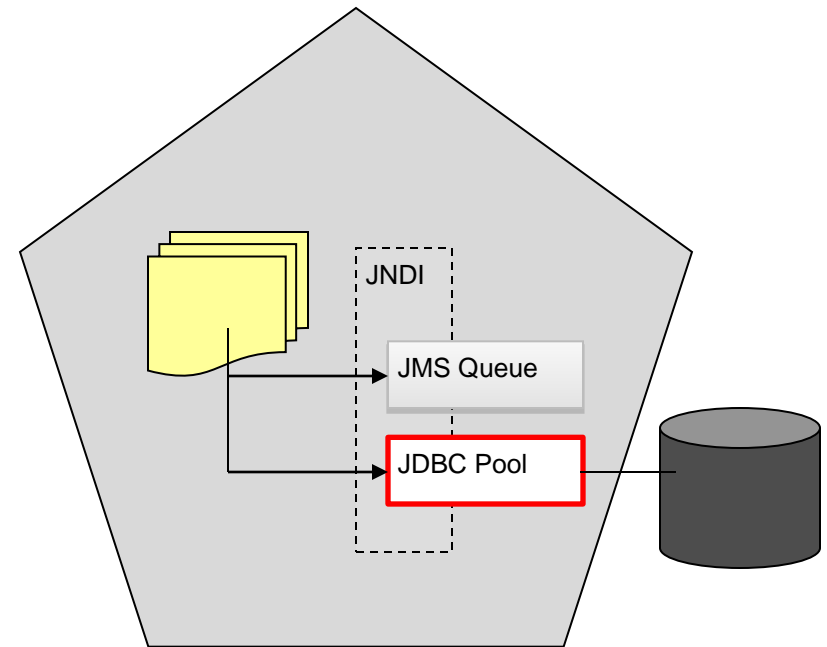


config.xml



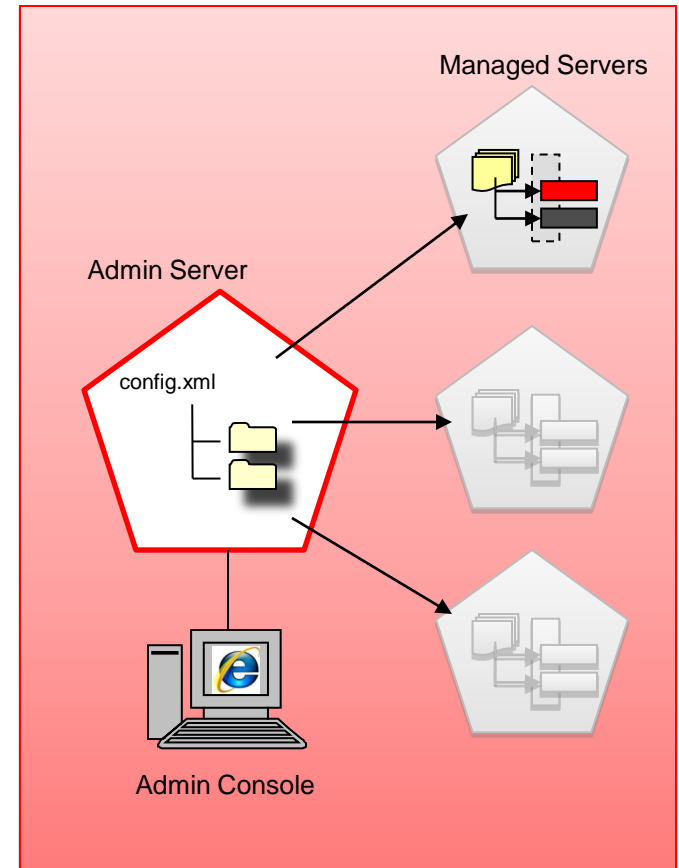
Server

- What is it?
 - A configured instance to host applications and resources
 - WebApps, Enterprise Apps, Web Services, ...
 - JMS, JDBC, Diagnostics, ...
- What types of servers are there?
 - Administration Server
 - Managed Server



Administration Server

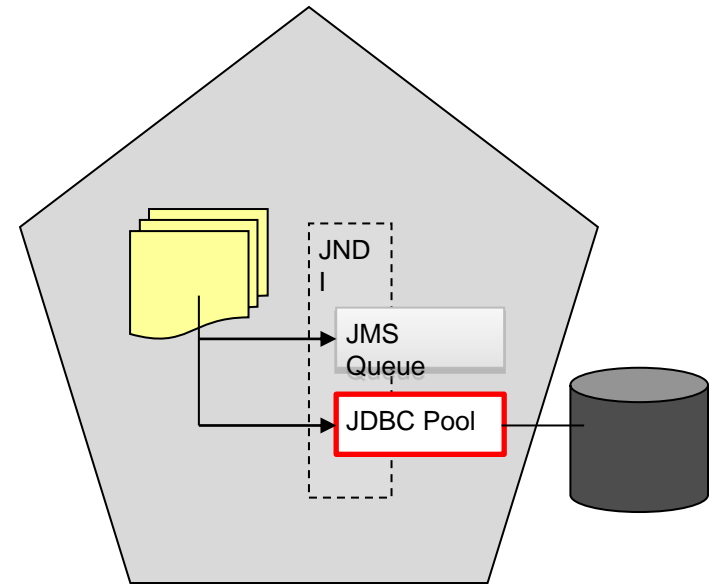
- What is it?
 - Central configuration controller for the entire domain
- What else does it do?
 - Hosts the Administration Console
 - Enables you to start and stop servers from a central location
 - Enables you to migrate servers and services within the domain
 - Enables you to deploy applications within the domain
- Guidelines:
 - There must be exactly one* Administration Server in domain
 - An Administration Server controls only one domain.
 - For production use, we recommend not hosting application logic or resources on the Administration Server



****The Administration Server does not need to run at all times, but is required for making configuration and deployment changes to a running domain.***

Managed Server

- What is it?
 - A running instance that hosts applications and resources needed by those applications - The real work horses in a WebLogic domain
 - Each Managed Server is independent of all other Managed Servers in the domain (unless they are in a cluster, defined later)
 - You can have as many Managed Servers in a domain as you need
 - Individual Managed Servers are typically added for capacity and application isolation

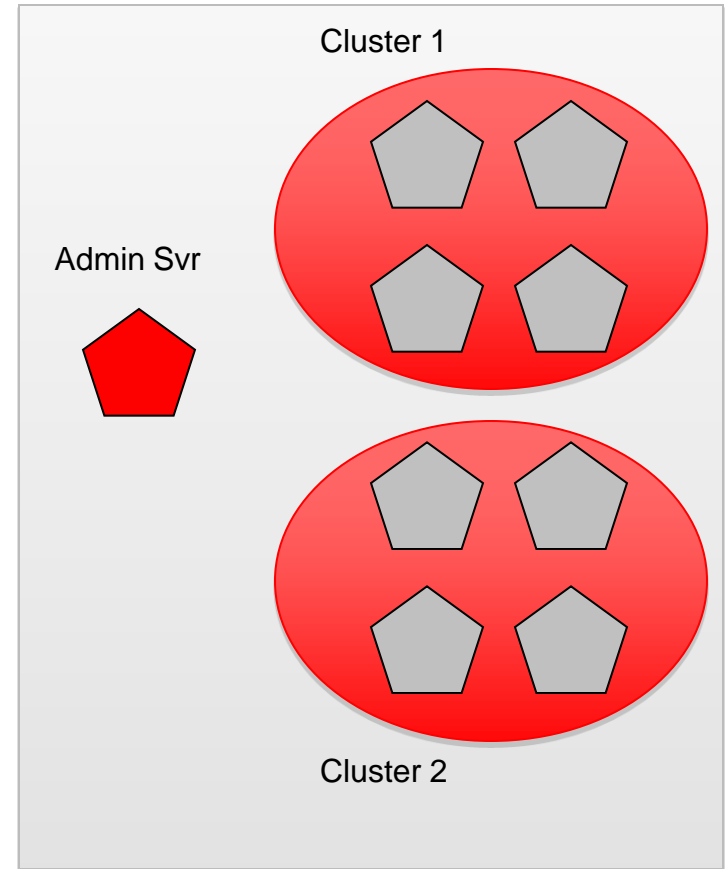


Administration Server to Managed Server Interaction

- The Administration Server stores the master copy of the domain configuration, including the configuration for all managed servers in the domain
- Each Managed Server stores a local copy of its configuration.
- When a Managed Server starts, it connects to the Administration Server to synchronize the configuration
- When configuration is changed, the Administration Server sends changed configuration to Managed Servers

Cluster

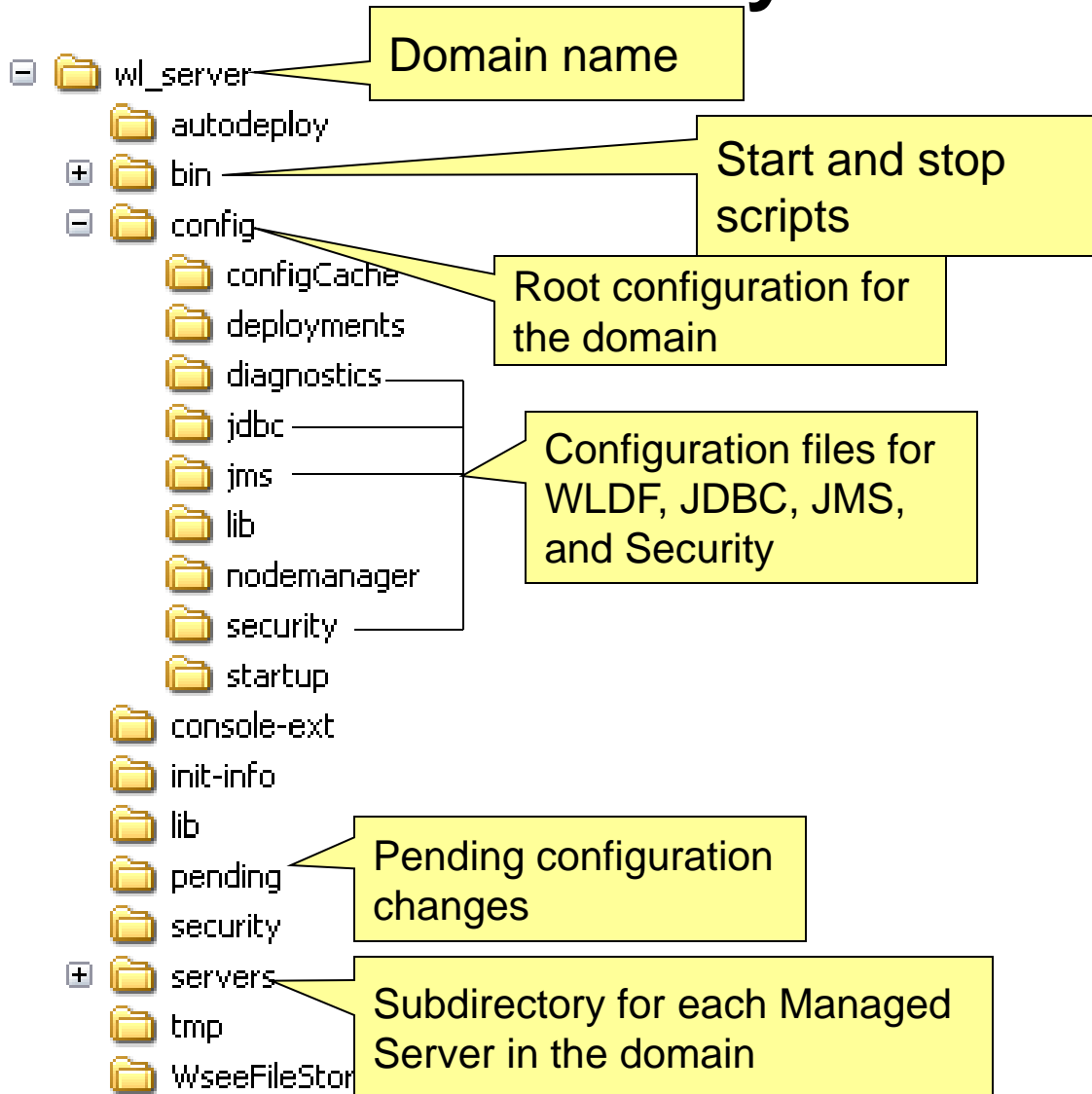
- A cluster is a group of Managed Servers running simultaneously and working together to provide increased scalability and reliability
 - Scalability: through parallelism
 - Reliability/Availability: through replication and redundancy
- A cluster appears as a single instance to most clients.
- Clusters enable some advanced features, such as Whole Server Migration, Service Migration, and clustered JMS destinations.



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Domain Directory



Configuration Files

config.xml

```
<domain (schema locations)>
  <name>wl_server</name>
  <security-configuration></security-configuration>
  <jta></jta>
  <server>
    <name>examplesServer</name>
  </server>
  <app-deployment></app-deployment>
  <jms-server></jms-server>
  <jms-system-resource></jms-system-resource>
  <jdbc-system-resource>
    <name>examples-demo</name>
    <target>examplesServer,managedServer-0</target>
    <descriptor-file-name>jdbc/examples-demo-jdbc.xml</descriptor-file-name>
  </jdbc-system-resource>
</domain>
```

- config.xml – central configuration file for a domain
- includes the configuration of each server instance, cluster, resource, and service in the domain.
- references additional XML files that are stored in subdirectories of the domain/config directory: JMS, JDBC, WLDF, and Security
- All files are based on schemas

references to other files

examples-demo-jdbc.xml

```
<jdbc-data-source>
  <name>examples-demo</name>
  <jdbc-driver-params></jdbc-driver-params>
  <jdbc-driver-params></jdbc-driver-params>
  <jdbc-data-source-params></jdbc-data-source-params>
</jdbc-data-source>
```



Two-Phase Configuration Changes

- Changes activated in batches:
 - Reliability, consistency:
 - Make (related) changes as a group
 - Validate before making the change
 - Activate or Roll back as a single unit(all changes on all servers)
- General process:
 - Get an edit lock
 - make changes
 - changes are stored in the pending directory
 - activate your changes (with implicit validation through the Admin Console or WLST)
 - changes are distributed to servers in the domain
 - Two phases: prepare and commit
 - Prepared on all servers; any failures will cause total rollback

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Administration Tools

- Configuration Wizard
 - GUI/scriptable tool to create and extend WebLogic domains
 - Template based
- Administration Console
 - Browser-based tool for configuring and monitoring domains, deploying applications, and controlling servers
- WebLogic Scripting Tool (WLST)
 - Script or command line tool to do the same thing as the Administration Console and Configuration Wizard
 - *Note that we will cover details on WLST in a separate document*
- weblogic.Admin
 - Deprecated command line tool for configuring a domain
 - Recommend using WLST instead
- weblogic.Deployer
 - Command line tool for deploying applications

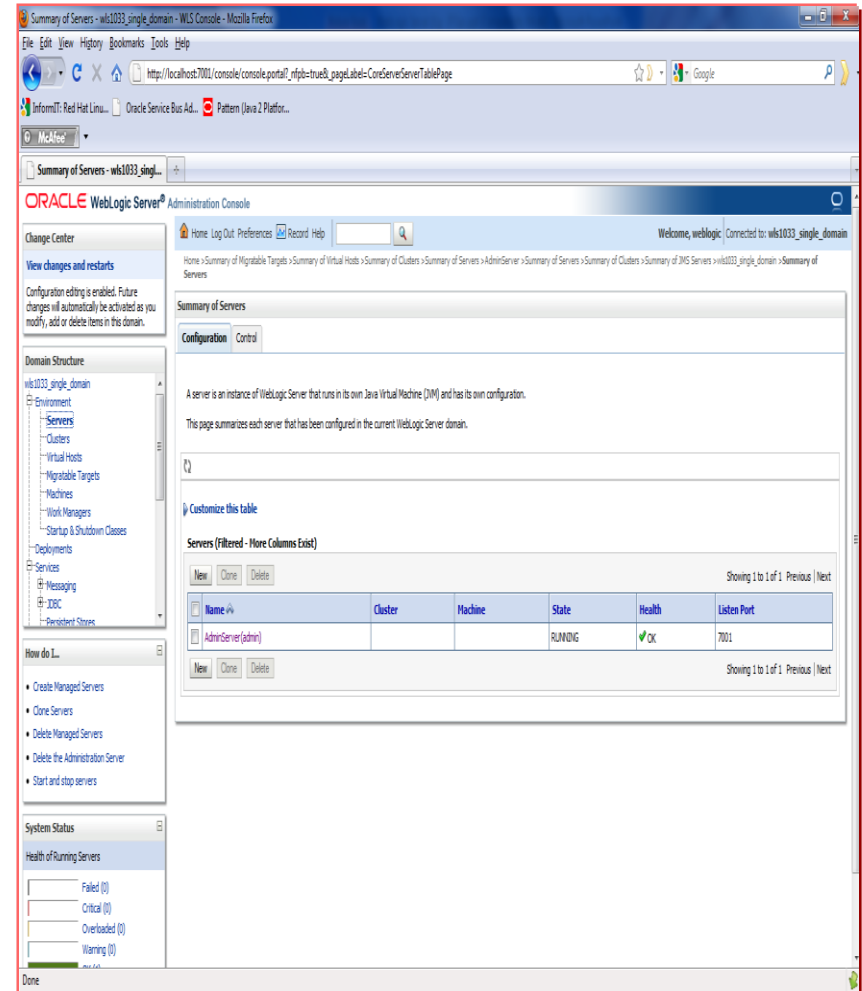
Configuration Wizard

- Wizard that walks you through domain creation off line
 - Not intended to run against a running domain
- Requires a domain template
- WLS ships with a default template and templates for samples domains
- Customers and layered products can create their own templates
- Can be executed in graphical and console mode
- No equivalent tool existed in OC4J



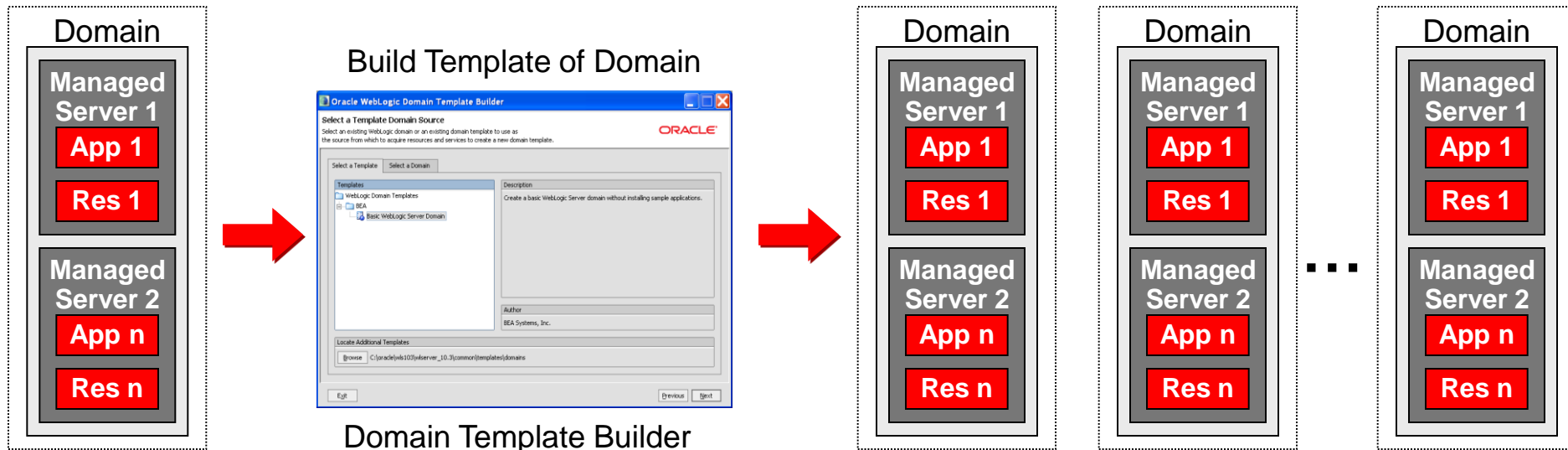
Administration Console

- Graphical interface to configure, manage, monitor a domain
- One Administration Console for each domain
- The Administration Server in the domain hosts the Admin Console application
- Open the Admin Console with the following URL:
 - <http://host:port/console>
 - Typically in dev:
<http://localhost:7001/console>
- Similar to the OC4J Oracle Enterprise Manager Application Server Control



Automation with Domain Templates

- Configuration Wizard and Domain Template Builder
 - GUI/scriptable tool to generate templates from existing domains
 - Scriptable with WLST to clone domains to multiple environments
- Fusion Middleware Templates Out of the Box
 - SOA, WebCenter, Identity ...

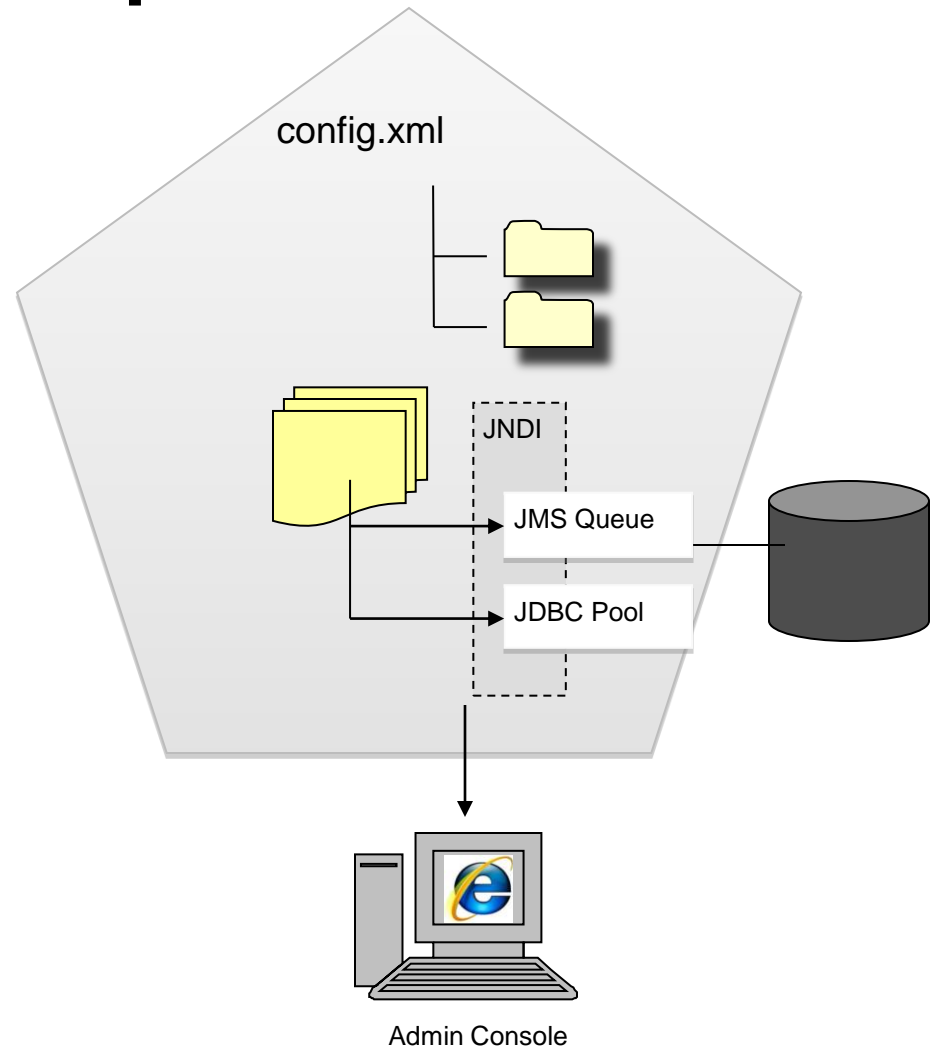


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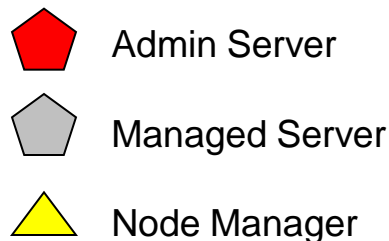
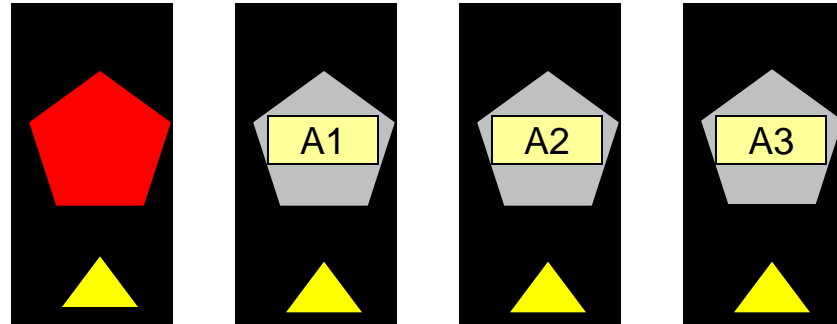
Single Server/Development Configuration

- Single server acts as the Administration Server and as a host for applications
- Not recommended for production, but standard for development



Configuring for Application Isolation

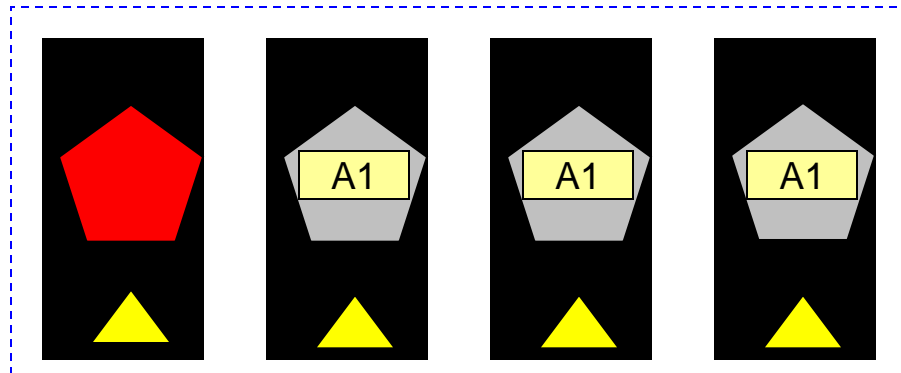
- Deploy applications to their own servers
- Admin server on its own server (highly recommended)
- Each managed server on its own physical server



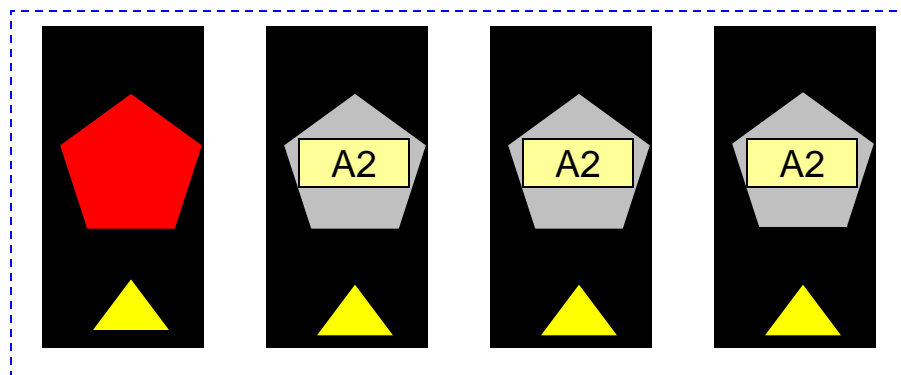
Configuring for Extreme Application Isolation

- Each application gets its own **domain**
- Admin server on its own server (highly recommended)
- Each managed server on its own physical server

Domain 1

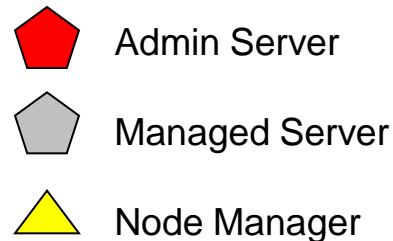
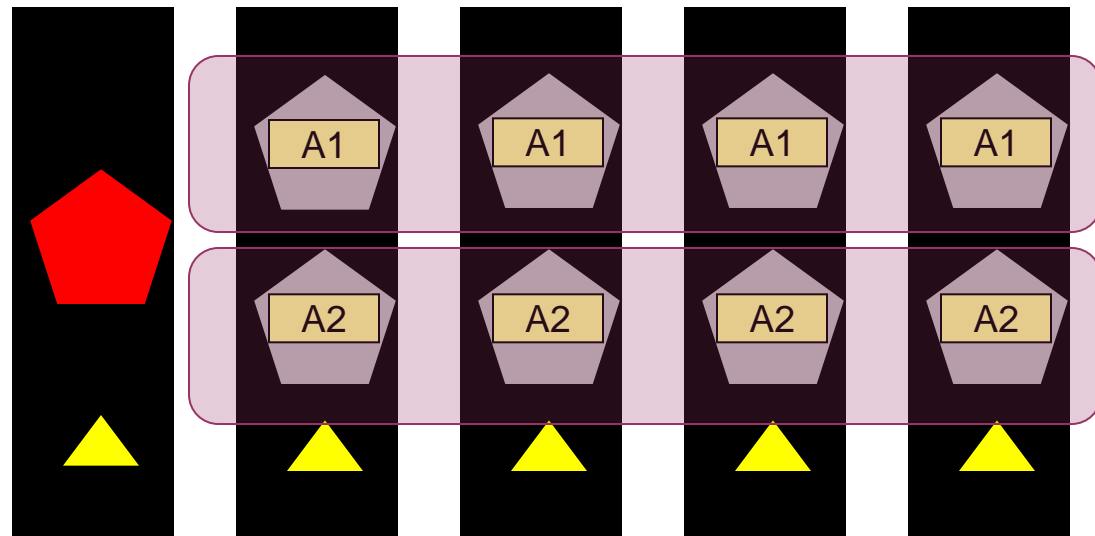


Domain 2



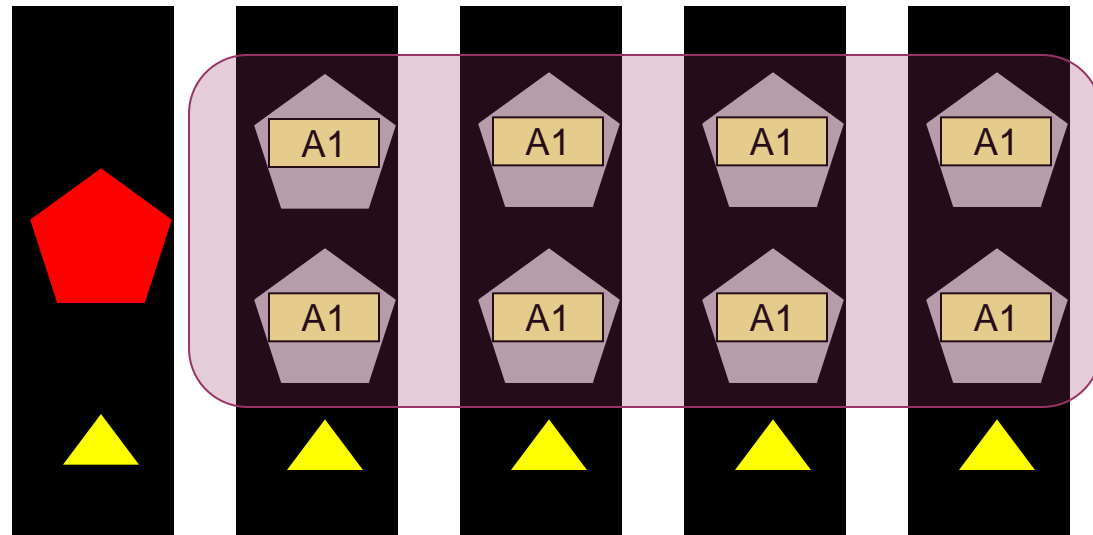
Configuring for High Availability

- Clustered servers for HA and scalability
- All managed servers in the same cluster are on different machines, although machines are frequently shared



Configuring for Perf and Utilization

- Multiple Managed Servers per machine
- All Managed Servers in one cluster
- Cluster replication scheme considers location in determining secondary Managed Servers



Simplified Administration

- Multiple applications deployed to a single cluster
- Admin server on its own server (highly recommended)
- Single domain to manage

