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# CONFIGURATION AND MANAGEMENT WITH JBOSS APPLICATION SERVER 7 DOMAINS

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# Agenda

- Operations, Administration & Management (OA&M):
  - Key OA&M Goals for JBoss Application Server 7 / JBoss Enterprise Application Platform 6
- Domain Mode and Standalone Mode
- Key Management Model Concepts
- Demo
- Q&A

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# Key OA&M Goal – Simplified Configuration

- End user configuration centralized in a few files
  - No longer scattered all over the distribution
- Configuration files focused on end user configuration
  - No internal service wiring details
- Config changes made via management tools persisted back to the config file



# Key OA&M Goal – Robust Management API

- Complete: expose everything in the config schema
  - Plus metrics, runtime operations
- Stable: no incompatible changes across EAP 6.x
  - And should be minimal beyond that
- Secure remote access via:
  - Native Java interface
  - HTTP
  - CLI



# Key OA&M Goal – Multi-Server Management

- Multi-server management as a core part of EAP itself
- Manage multiple servers from a single control point
  - Configure a set of servers
  - Start/quiesce/stop servers
  - Rolling deployment to a set of servers
  - Roll a config change out to a set of servers
  - Roll back changes



# Choices for How to Manage Your AS Instances

- Two different operational modes
- Basically, do you want to take advantage of our multi-server management features?
  - Yes: run in *Domain Mode*
  - No: run in *Standalone Mode*
- Either way, you still get simplified configuration and a robust management API



# Standalone Mode

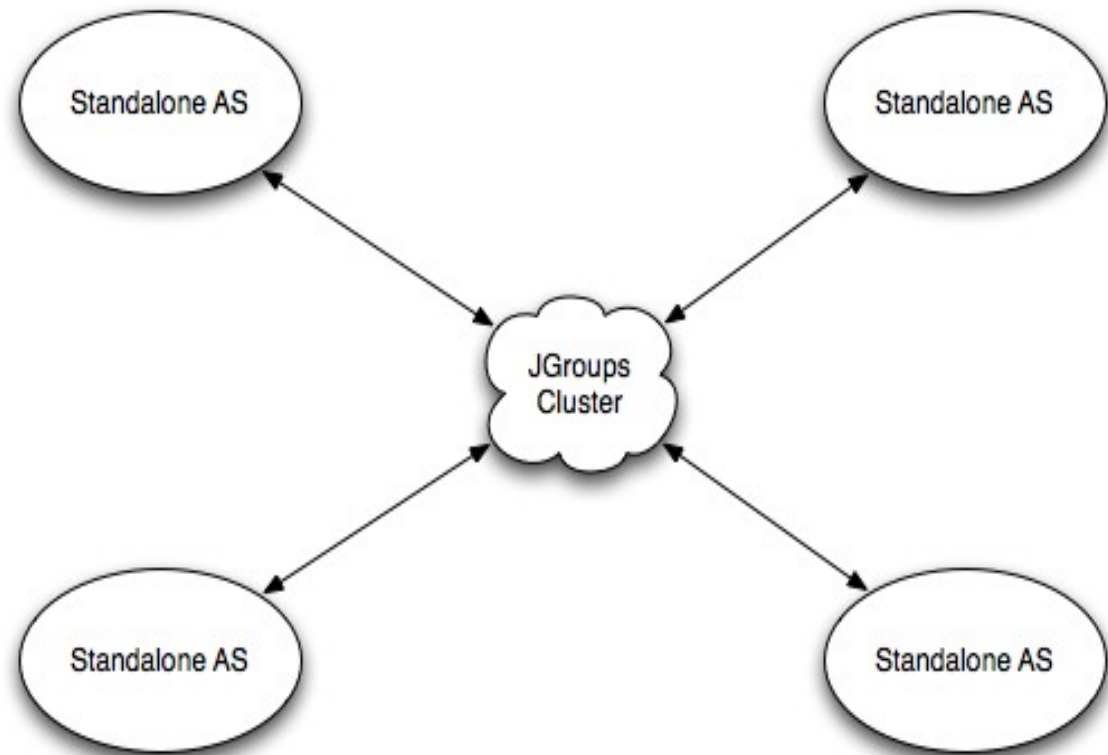
- Each server is independently managed, a la EAP 4/5
- User is responsible for coordinating changes across servers
- Good for many development use cases
- An option for enterprises with their own preferred tooling for multi-server management
- Launch from `bin` using `standalone.sh` or `standalone.bat`
- Single configuration file:
  - `standalone/configuration/standalone.xml`





# Standalone Mode Allows HA Clusters

- Standalone mode is about *management*, not how managed services operate

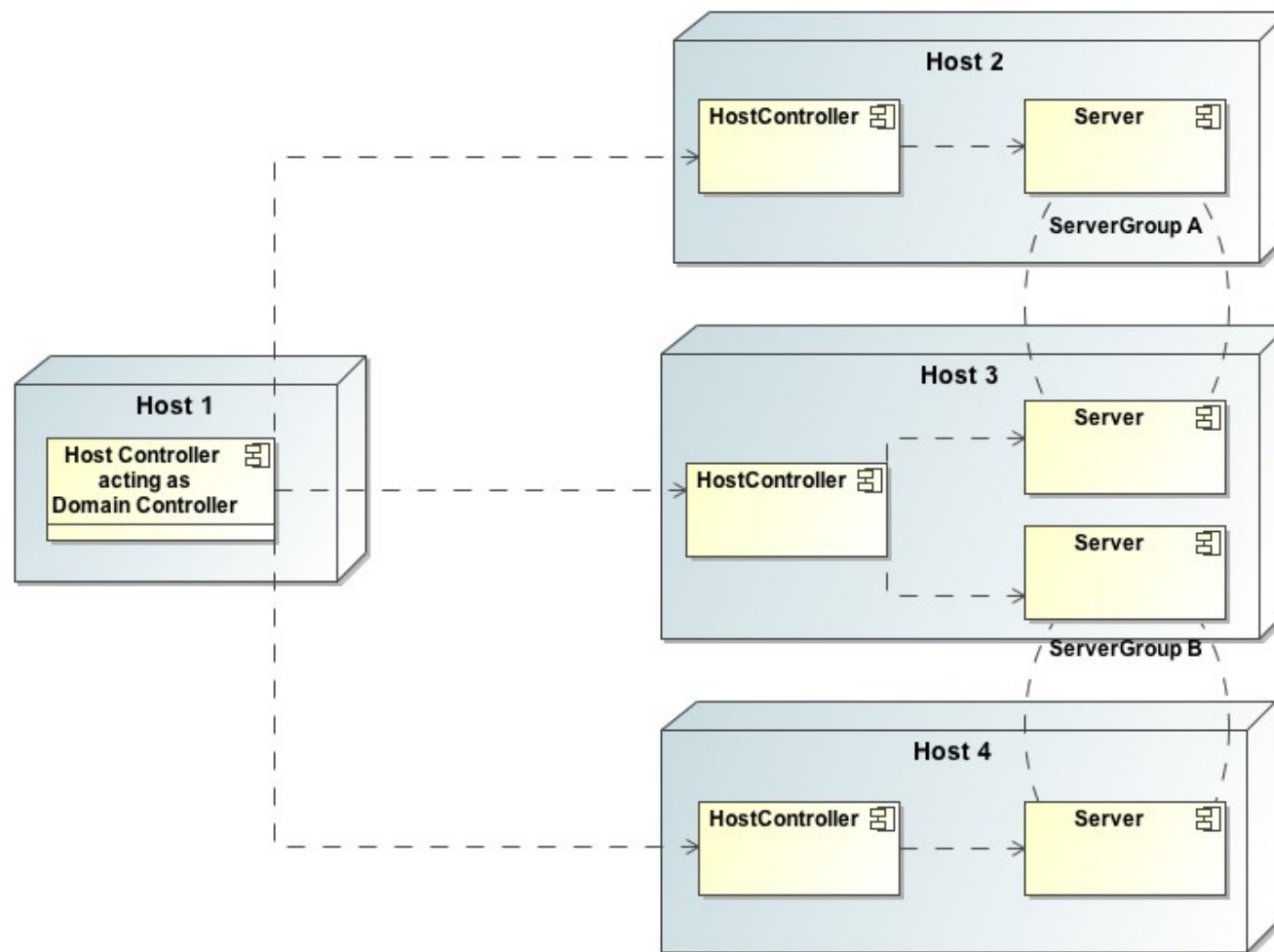


# Domain Mode

- Domain: a set of servers with a common management policy
  - Policy is defined in the `domain.xml` config file
  - Servers can be heterogeneous in a domain
- We provide processes that coordinate management across the domain
  - DomainController
  - HostController
- Launch from `bin` using `domain.sh` or `domain.bat`



# Domain Mode Architectural Elements



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# Key Management Model Concepts

- Subsystem: a particular set of capabilities that extend the application server core
  - Webserver, Transaction Manager, EJB3 etc
- Profile: the set of subsystems a server or group of servers runs
  - Change your profile to expand or narrow the capabilities of your servers



# Example standalone.xml

```
<server name="example" xmlns="urn:jboss:domain:1.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  ....
  <profile>
    ....
    <subsystem xmlns="urn:jboss:domain:weld:1.0"/>
    <subsystem xmlns="urn:jboss:domain:web:1.0">
      <connector name="http" protocol="HTTP/1.1"
        socket-binding="http" scheme="http"/>
      <virtual-server name="localhost">
        <alias name="example.com"/>
      </virtual-server>
    </subsystem>
  </profile>
  ...
```

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# Key Management Model Concepts

- Other configuration elements refer to socket and interfaces by *logical names*, not specifics
  - `<connector socket-binding="http" .../>`
  - Not `<connector address="192.168.0.10" port="8080" .../>`
- Allows centralizing socket configs in one location
- In Domain Mode, each host can control how a logical interface name resolves to an actual IP address



# Example standalone.xml

```
...
<interfaces>
  <interface name="local">
    <inet-address value="127.0.0.1"/>
  </interface>
  <interface name="wildcard">
    <any-ipv4-address/>
  </interface>
  <interface name="internal">
    <nic name="eth1"/>
  </interface>
</interfaces>
<socket-binding-group name="standard" default-interface="local">
  <socket-binding name="jndi" interface="internal" port="1099"/>
  <socket-binding name="jmx-connector-registry" port="1090"/>
  <socket-binding name="jmx-connector-server" port="1091"/>
  <socket-binding name="http" interface="wildcard" port="8080"/>
  ....
</socket-binding-group>
```

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# Key Management Concepts – Deployments

- The configuration file includes a listing of available deployments

```
...
<deployments>
  <deployment name="foo.war" runtime-name="foo.war"
    sha1="6fcd9eae343ed6d5aa9fffa83012d155b1ef911c"/>
  <deployment name="bar.ear.v1" runtime-name="bar.ear"
    sha1="dda9881fa7811b22f1424b4c5acccb13c71202bd" enabled="false"/>
  <deployment name="bar.ear.v2" runtime-name="bar.ear"
    sha1="4659881fa7811b22f1424b4c5acccb13c712abcd"/>
</deployments>
</server>
```





# Configuration of an AS Instance in Domain Mode

- An individual server's config comes from 2 sources
  - `domain/configuration/domain.xml` on host with DC
    - Elements that are consistent across the domain
    - This config data is “owned” by the DomainController
      - Non-DC HostControllers ask for it as part of boot
      - DC keeps HostControllers in sync thereafter
  - `domain/configuration/host.xml` on each host
    - Elements that are specific to the host the server runs on
    - This config data is “owned” by the relevant HostController
- HostController process combines `domain.xml` data + `host.xml` data to derive server config(s)



# Domain-wide Configuration – domain.xml

- “Palettes” of config that can be applied to servers
  - One or more Profiles (sets of subsystem configurations)
  - One or more Socket Binding Groups (sets of socket configs)
  - Available deployments
- ServerGroups: sets of homogeneous servers managed as a unit
  - All servers belong to a group
  - The ServerGroup element specifies which items from the “palettes” – the profile, sockets, deployments – to use on servers in the group



# Example domain.xml

```
<domain xmlns="urn:jboss:domain:1.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  ...
  <profiles>
    <profile name="web">... details of the web profile</profile>
    <profile name="messaging">... details of the messaging profile</profile>
  </profiles>
  <socket-binding-groups>
    <socket-binding-group name="web-sockets" default-interface="local">
      ... details of sockets in the 'web-sockets' group
    </socket-binding-group>
    <socket-binding-group name="msg-sockets" default-interface="local">
      ... details of sockets in the 'msg-sockets' group
    </socket-binding-group>
  </socket-binding-groups>
  <deployments>... all available deployments ...</deployments>
  <server-groups>
    <server-group name="web-group" profile="web">
      <socket-binding-group ref="web-sockets"/>
    </server-group>
    <server-group name="messaging-group" profile="messaging">
      <socket-binding-group ref="msg-sockets"/>
    </server-group>
  </server-groups>
</domain>
```

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# Example host.xml

```
<host name="host-1" xmlns="urn:jboss:domain:1.0"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <management-interfaces>
    <native-interface interface="internal" port="9999"/>
    <http-interface interface="internal" port="9990"/>
  </management-interfaces>
  <domain-controller>
    <local/> <!-- We are the DomainController -->
    <!-- if not: <remote address="192.168.204.1" port="9999"/> -->
  </domain-controller>
  <interfaces>
    <interface name="internal">
      <inet-address value="192.168.204.13"/>
    </interface>
  </interfaces>
  <servers>
    <server name="web-one" group="web-group"/>
    <server name="messaging-one" group="messaging-group"/>
  </servers>
</host>
```

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# CLI

- Launch from `bin` dir via `jboss-admin.sh` or `jboss-admin.bat`
- Connect to any DC, HC or standalone server
- Commands:
  - Low-level: provide resource address, operation name and params and you can invoke any operation exposed by any resource
  - High-level: simple convenience commands (WIP)
- Can read commands from command line, file or an interactive shell



# Demo

- Manage a standalone server via CLI
- Domain management with the web console

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# Resources

- JBoss Enterprise Application Platform BoF
  - Today at 5:30
- AS 7 space on jboss.org
  - [http://community.jboss.org/en/jbossas/dev/jboss\\_as7\\_development](http://community.jboss.org/en/jbossas/dev/jboss_as7_development)
- Mail list
  - [jboss-as7-dev@lists.jboss.org](mailto:jboss-as7-dev@lists.jboss.org)
- IRC
  - #jboss-as7 on freenode
- JIRA
  - <https://issues.jboss.org/browse/AS7>

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# Q&A

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