

Deployment in Oracle SOA Suite and Oracle BPM Suite

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Keywords:

Deployment, Oracle SOA Suite, Oracle BPM Suite, ant, WLST, configuration plan, customization files.

Introduction

Deployment in a Service oriented environment is slightly more complicated because the endpoints and other settings need to be changed when promoting the components through QA, Staging and production systems. The Oracle SOA suite offers different mechanisms for different components: Configuration plans for SCA components and customization files for the OSB. You can either deploy an artifact manually, or script the deployment using ant or WLST.

This paper will discuss the different settings you can adjust in configuration plans and customization files, a way of organizing these files in different situations and the use of scripting versus manual deployment.

What is the problem?

When deploying your SOA and BPM artifacts, there are three challenges to overcome:

1. Different environments (D, T, A, P) have different configurations;
2. There are different component types that need to be deployed;
3. There are different resources and settings that need to be manipulated.

Let's investigate these three challenges in some detail.

Different environments.

Often in IT projects you have four different types of environment that serve different purposes:

1. Development;
2. Test;
3. Acceptance or QA;
4. Production.

The development environment is often installed on the PC of the developer, with a central or shared source control system like GIT, or Subversion (SVN). As you can see in *Illustration 1*, external services that are used are being emulated using stubs. These stubs are used both during development from the development tool, and by the application server that the developer deploys his or her artifacts to.

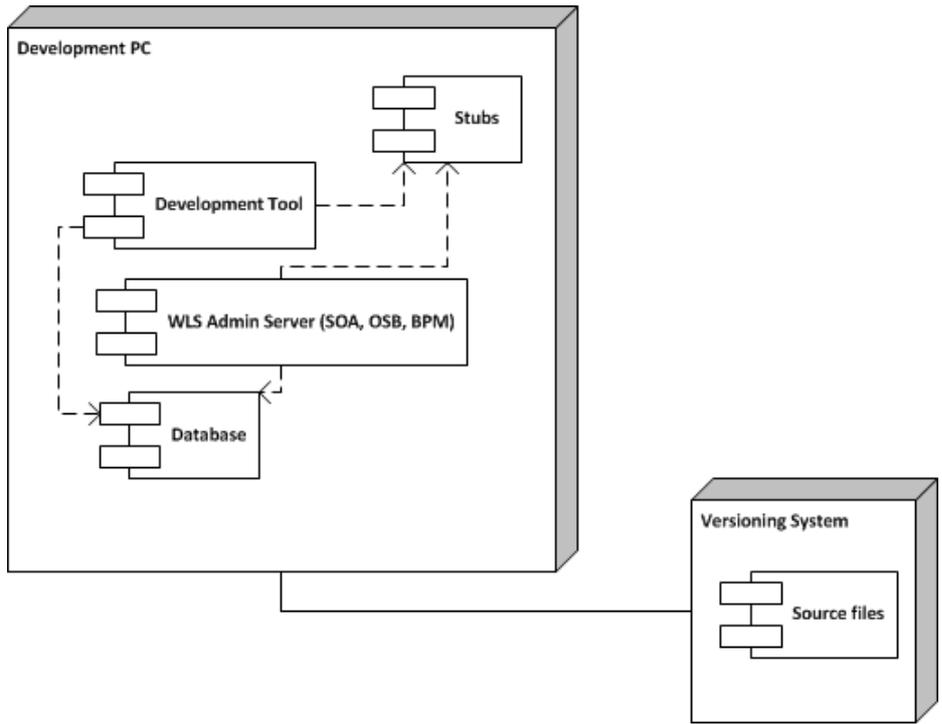


Illustration 1 Development environment configuration

The testing environment is more like production and is used by the QA people to verify the functionality is built according to the specification. Often the configuration of WebLogic is different: there is a separate admin server and one or more managed servers, on their own physical server or on different servers. The database is often installed on a different server.

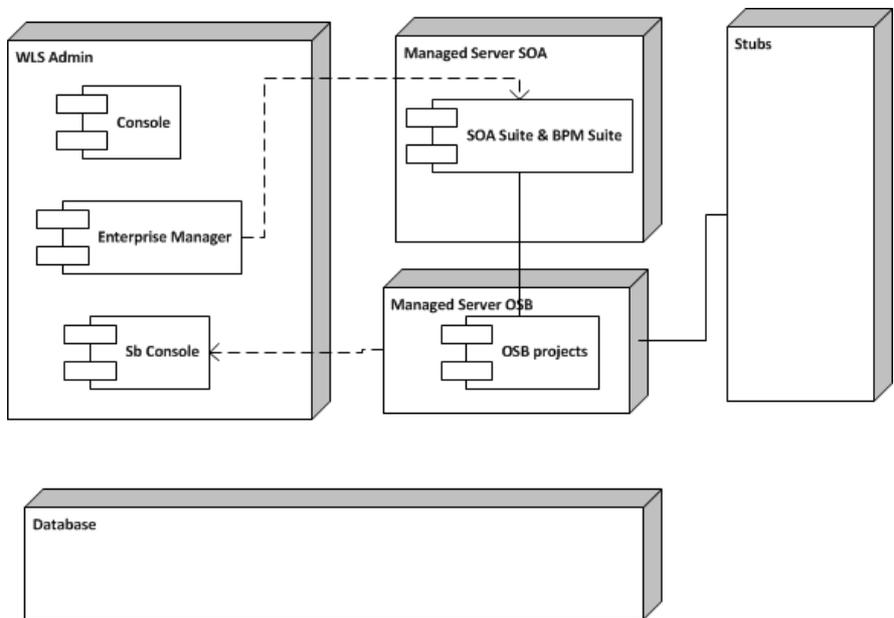


Illustration 2 Test environment configuration

End users validate the functionality in the acceptance environment. Real service calls are executed; no stubs are used in this environment. The acceptance environment is ideally an exact copy of the production environment, both from a specification point of view and from a data point of view.

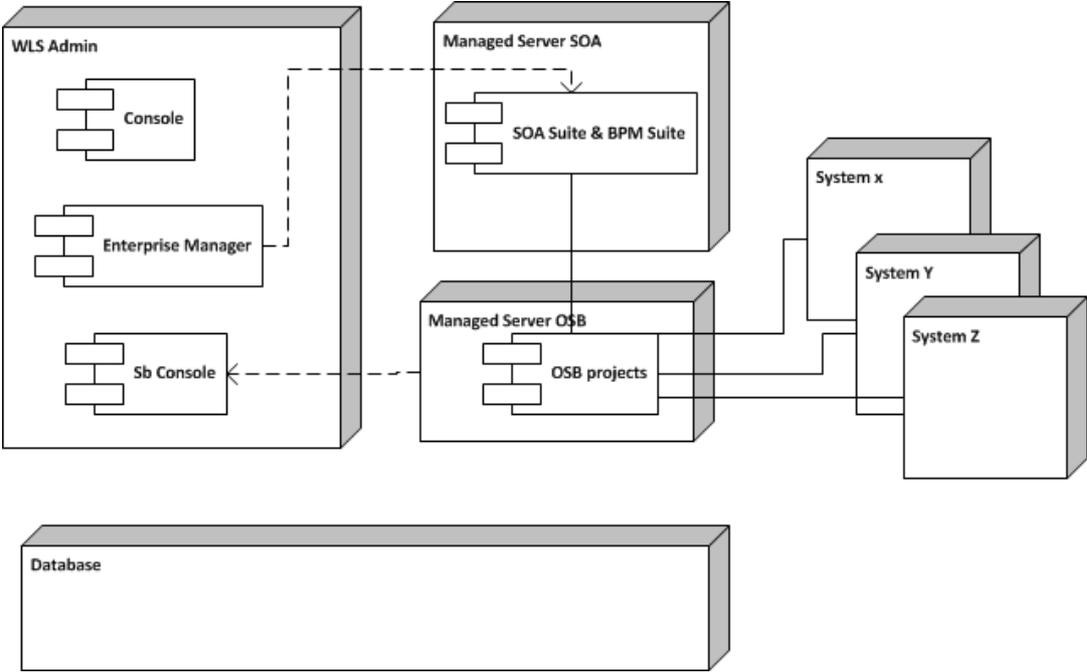


Illustration 3. Acceptance and production environment configuration

These differences mean that you can't just deploy the artifact you created for your development environment to your testing, acceptance or production environment: you need to change properties.

Different component types

When working with Oracle SOA Suite and Oracle BPM Suite, you are creating different types of components, that are either deployed to run in the SCA Fabric, or that are deployed to the Oracle Service Bus. The different component types need different configurations and different deployment artifacts are created for Oracle Service Bus and SCA composites.

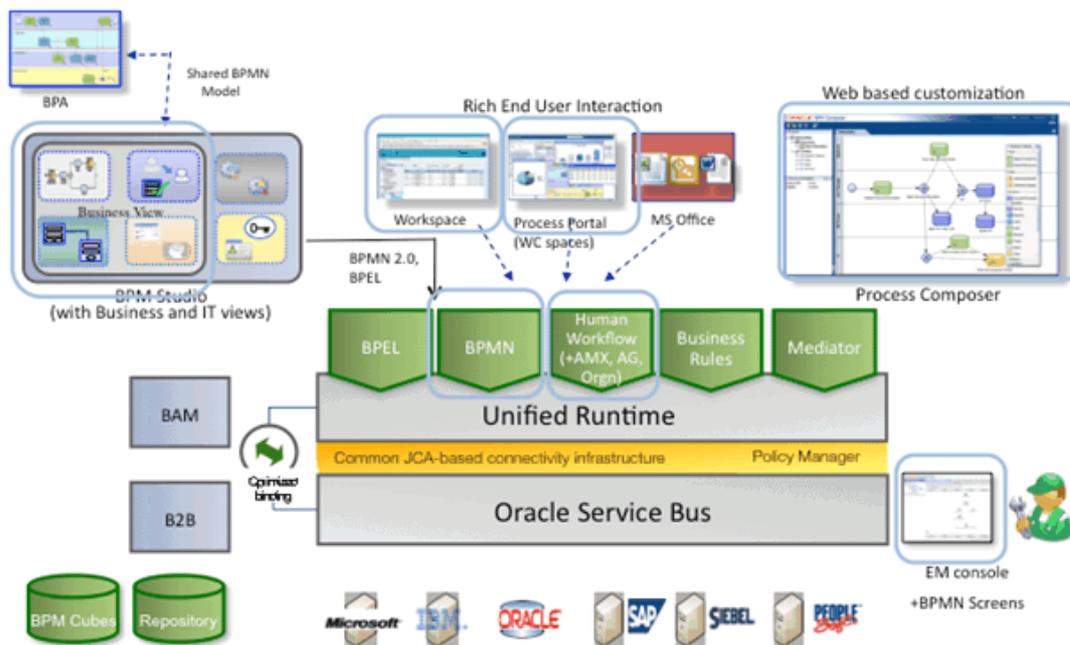


Illustration 4 Component types

Resources and settings

Composite applications use different resources, settings and properties. The following need to be taken into account when deploying artifacts:

- Endpoints of services that are called by the composite or the Oracle Service Bus.
- Resources (JMS, JDBC, WSDL, XSLT)
- Schema validation
- Target (managed server)
- Security (Policies, account names)
- Timer and/or retry settings
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The solution

When you deploy an artifact, the following steps need to be executed:

1. Create the package (ear, jar);
2. Add configuration for target environment;
3. Deploy the package.

Note that the configuration can be added to the package while creating it, after creating, or after deployment.

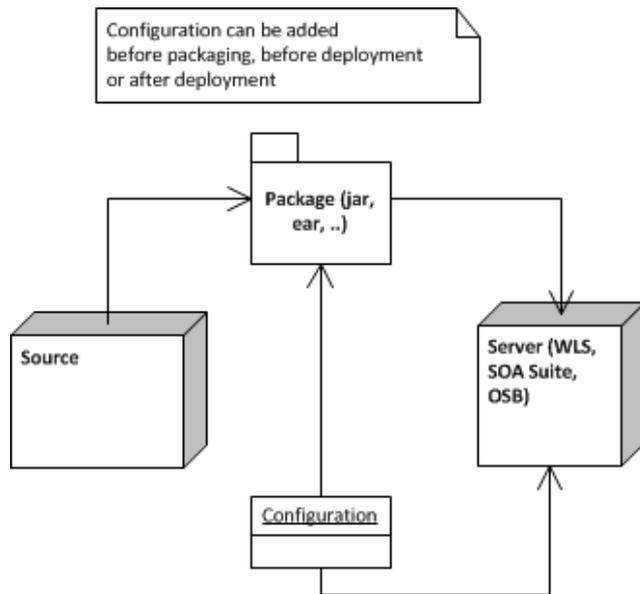


Illustration 5 Deployment of artifacts

There are three deployment options in the Oracle SOA Suite and Oracle BPM Studio:

1. Deployment with the development/design tool (JDeveloper, Eclipse, Process composer, Rule composer);
2. Deployment with the console (WebLogic Console, OSB Console, Enterprise manager);
3. Deployment with scripts (Maven, Ant, WLST).

Deployment	Environment	Component	Remark
JDeveloper	D	JEE, SCA composites	All types of SCA
Oracle Enterprise Eclipse Pack	D	JEE, OSB artifacts	All OSB artifacts
Process composer	D, T	BPMN process	Depending on workflow
Rule composer	D, T	Business rules	
WebLogic console	T	JEE	All JEE types
Enterprise manager	T	SCA composites	All types of SCA
OSB Console	T	OSB artifacts	Including xsd, wsdl etc.
Maven scripts	D, T, A, P	JEE	Packaging in A and P
Ant scripts	D, T, A, P	JEE, SCA, OSB	Packaging in A and P
WLST scripts	D, T, A, P	JEE, SCA, OSB	Incl. resources

Of course you can also use a combination of these methods, use JDeveloper to create a package and then ant scripts to deploy, or a practice we see a lot is to create the packages with ant or maven and then deploy them using WLST scripts in production environments.

Configuration

Different artifacts have different configuration files. For JEE you have deployment descriptors like web.xml, application.xml and weblogic-web.xml. SCA composites are deployed as sar files (with the extension .jar) and use configuration plans. OSB projects are packaged as .jar file and use customization files.

Apart from the components that you develop, there are also shared resources that need to be deployed:

- Libraries as part of your ear or war file;
- Connection pools and resource adapter to connect to the database, queues, etc;

- Xsds, wsdl, xslt and other shared resources;
- System accounts for email, etc.

Conclusion and best practices or tips

The following are best practices with regards to shared resources and configuration of the artifacts:

- Combine configuration plans for different composites to avoid having to maintain a lot of configuration plans;
- Export the customization file from OSB and edit it. It is very hard to create one from scratch;
- Use OSB to connect to endpoints, to minimize the configuration of endpoints in your SCA composites;
- Use MDS for shared resources like XSDs and WSDL for SOA Suite and BPM Suite.
- Use a designated project in OSB for shared resources.
- Use scripting as much as possible to have maximum control over the deployment and minimize mistakes.

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