Deployment Diagrams Overview

Deployment diagram is a **structure diagram** which shows architecture of the system as deployment (distribution) of software artifacts to deployment targets.

Artifacts represent concrete elements in the physical world that are the result of a development process. Examples of artifacts are executable files, libraries, archives, database schemas, configuration files, etc.

Deployment target is usually represented by a **node** which is either hardware device or some software execution environment. Nodes could be connected through **communication paths** to create networked systems of arbitrary complexity.

Note, that **components** were directly deployed to nodes in UML 1.x deployment diagrams. In UML 2.x **artifacts** are deployed to nodes, and artifacts could **manifest** (implement) components. Components are deployed to nodes indirectly through artifacts.

Deployment diagrams could describe architecture at **specification level** (also called type level) or at **instance level** (similar to class diagrams and object diagrams).

Specification level deployment diagram shows some overview of **deployment** of **artifacts** to **deployment targets**, without referencing specific instances of artifacts or nodes.

Instance level deployment diagram shows **deployment** of instances of **artifacts** to specific instances of **deployment targets**. It could be used for example to show differences in deployments to development, staging or production environments with the names/ids of specific build or deployment servers or devices.

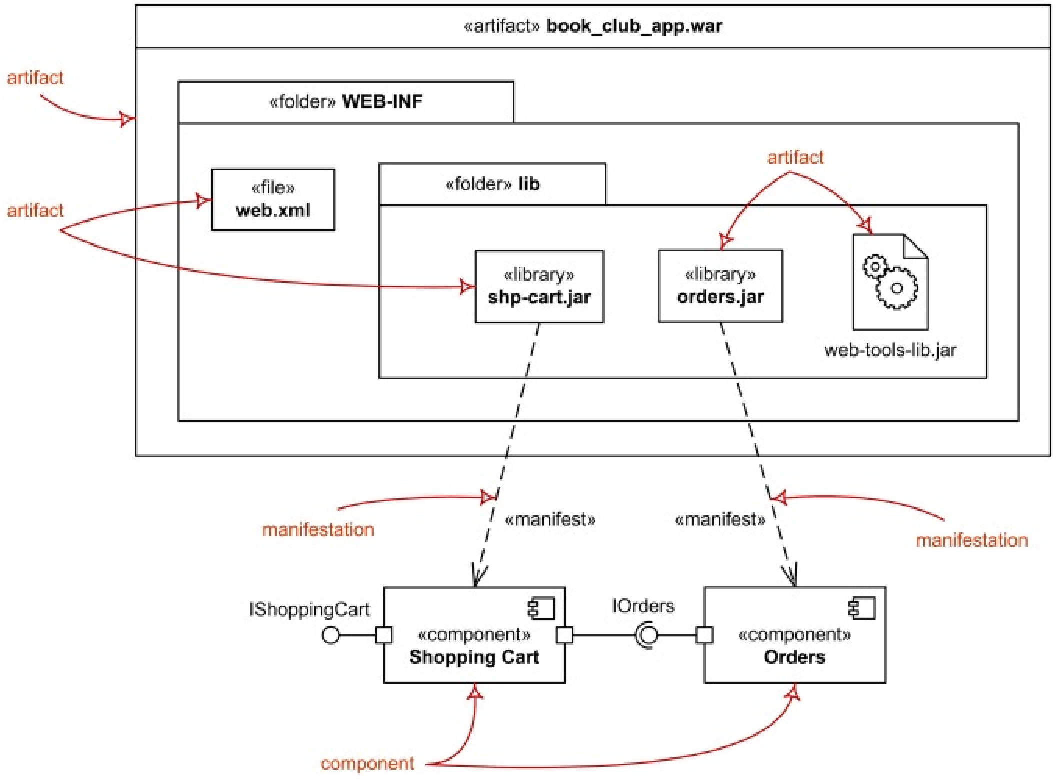
Some common types of deployment diagrams are:

- **Implementation (manifestation) of components by artifacts**,
- **Specification level deployment diagram**,
- **Instance level deployment diagram**,
- **Network architecture of the system**.

Manifestation of Components by Artifacts

While **component diagrams** show components and relationships between components and classifiers, and **deployment diagrams** - **deployments** of artifacts to deployment targets, some missing intermediate diagram is **manifestation diagram** to be used to show **manifestation** (implementation) of **components** by **artifacts** and internal structure of artifacts.

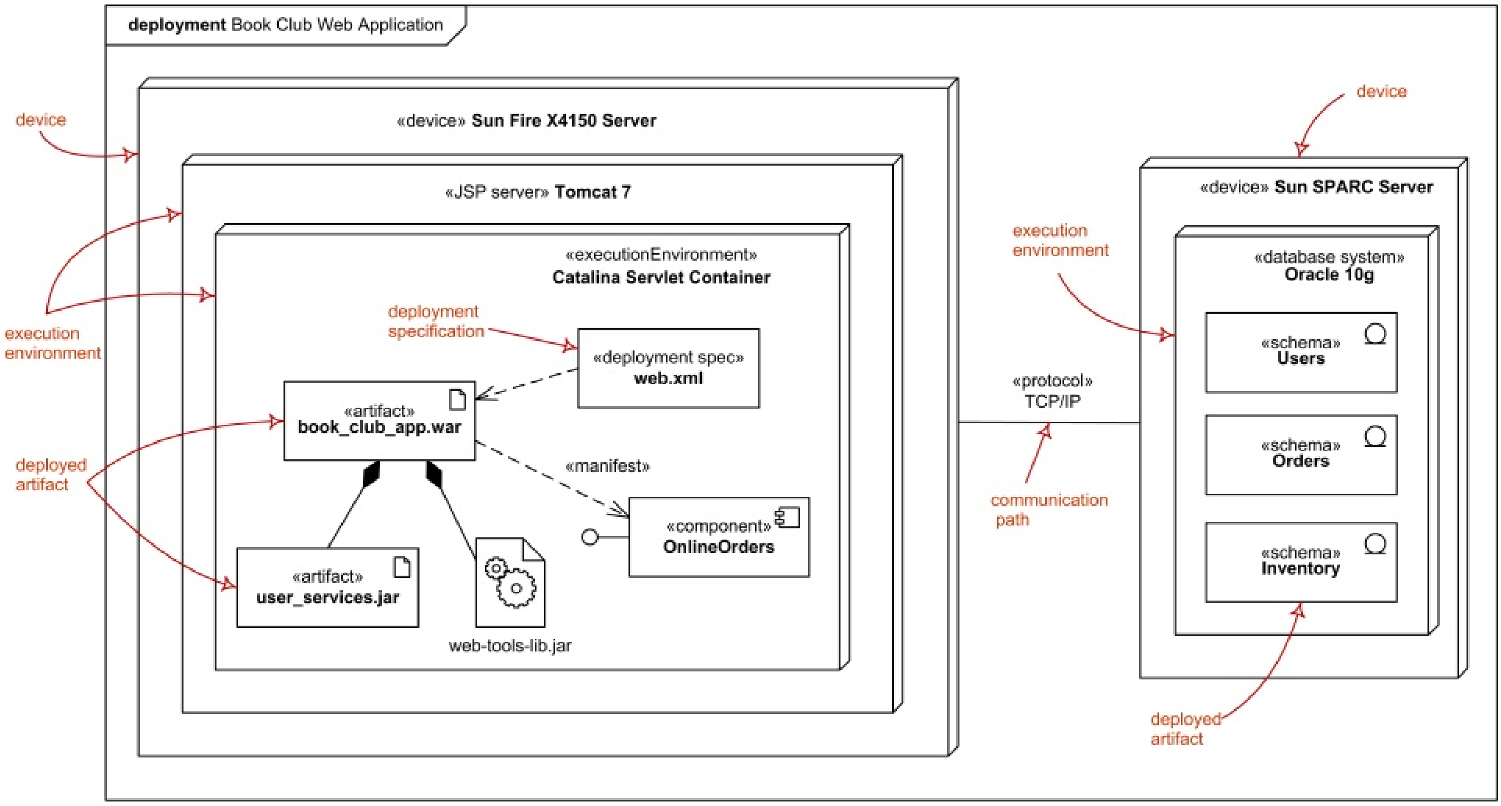
Because **manifestation diagrams** are not defined by UML 2.4 specification, manifestation of components by artifacts could be shown using either component diagrams or deployment diagrams.



Manifestation of components by artifacts.

Specification Level Deployment Diagram

Specification level (also called type level) deployment diagram shows some overview of **deployment** of **artifacts** to **deployment targets**, without referencing specific instances of artifacts or nodes.

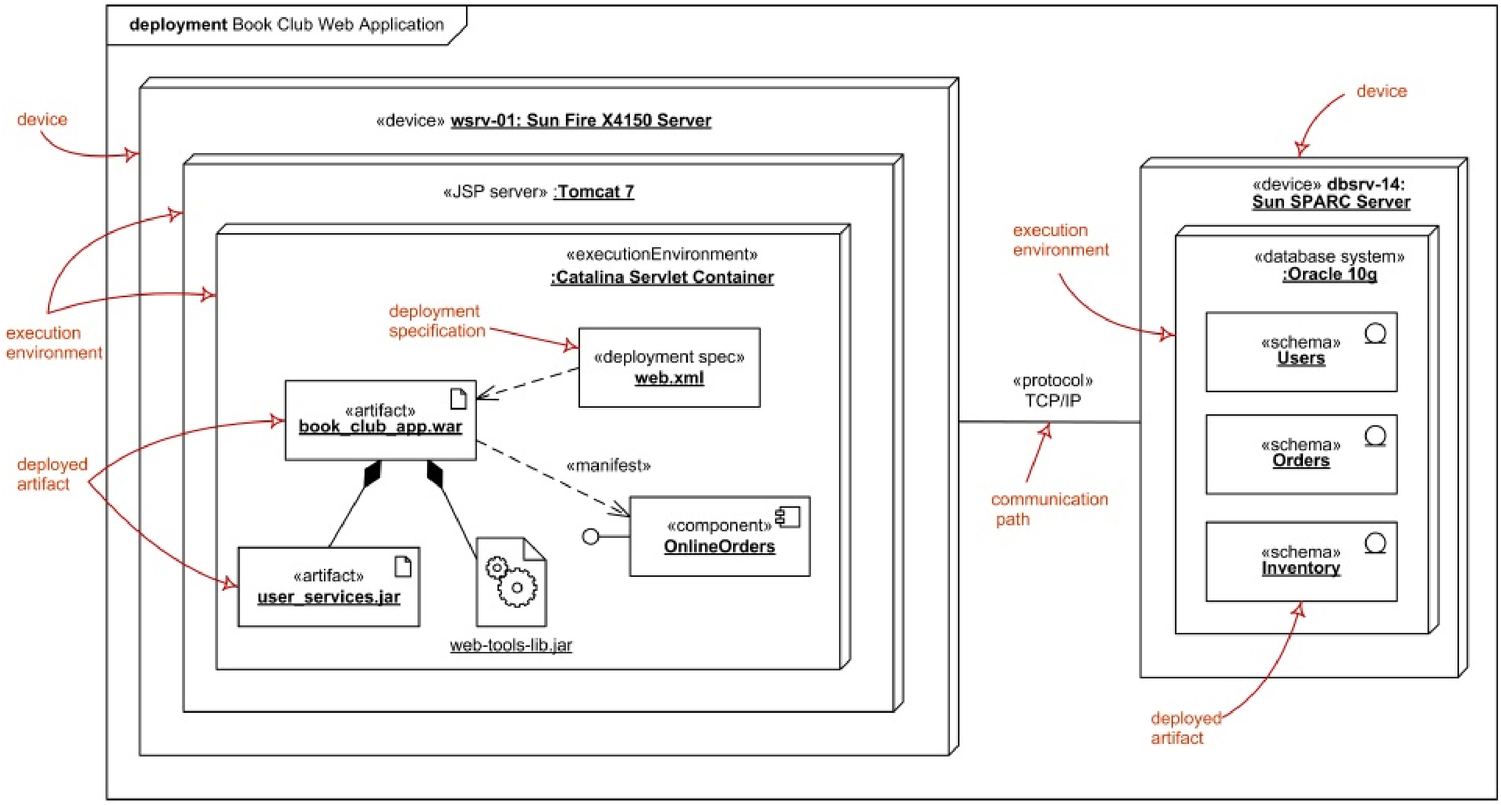


Specification level deployment diagram - web application deployed to Tomcat JSP server and database schemas - to database system.

Instance Level Deployment Diagram

Instance level deployment diagram shows **deployment** of instances of **artifacts** to specific instances of **deployment targets**. It could be used for example to show differences in deployments to development, staging or production environments with the names/ids of specific deployment servers or devices.

In the example below, web application is deployed to the application server **wsrv-01** and several database schemas - to the database server **dbsrv-14**.


deployment Book Club Web Application
device
«device» wsrv-01: Sun Fire X4150 Server
«JSP server» :Tomcat 7
execution environment
«executionEnvironment» :Catalina Servlet Container
deployment specification
«deployment spec» web.xml
«artifact» book_club_app.war
deployed artifact
«manifest»
«component» OnlineOrders
«artifact» user_services.jar
web-tools-lib.jar
device
«device» dbsrv-14: Sun SPARC Server
execution environment
«database system» :Oracle 10g
«protocol» TCP/IP
communication path
«schema» Users
«schema» Orders
«schema» Inventory
deployed artifact

Instance level deployment diagram - web application deployed to Tomcat JSP server and database schemas - to database system.

Specification Level Network Architecture

Deployment diagrams could be used to show logical or physical **network architecture** of the system. Network architecture diagram could show no artifacts or deployments at all or only the major ones.

Network architecture diagrams

Noticed a spelling error? Select the text using the mouse and press Ctrl + Enter.

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This document describes UML versions up to *UML 2.5* and is based on the corresponding **OMG™ Unified Modeling Language™ (OMG UML®)** specifications. UML diagrams were created in **Microsoft® Visio®** 2007-2016 using *UML 2.x Visio Stencils*. *Lucidchart* is a nice, free UML tool that I recommend for students.
You can send your comments and suggestions to webmaster at **webmaster@uml-diagrams.org**.