Java – JEE im Überblick

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Java auf der Serverseite

HTTP-Based Client — HTTP — **Web Server** — **Servlet or JSP**

RMI/IIOP

EJB Server — **Data Source**

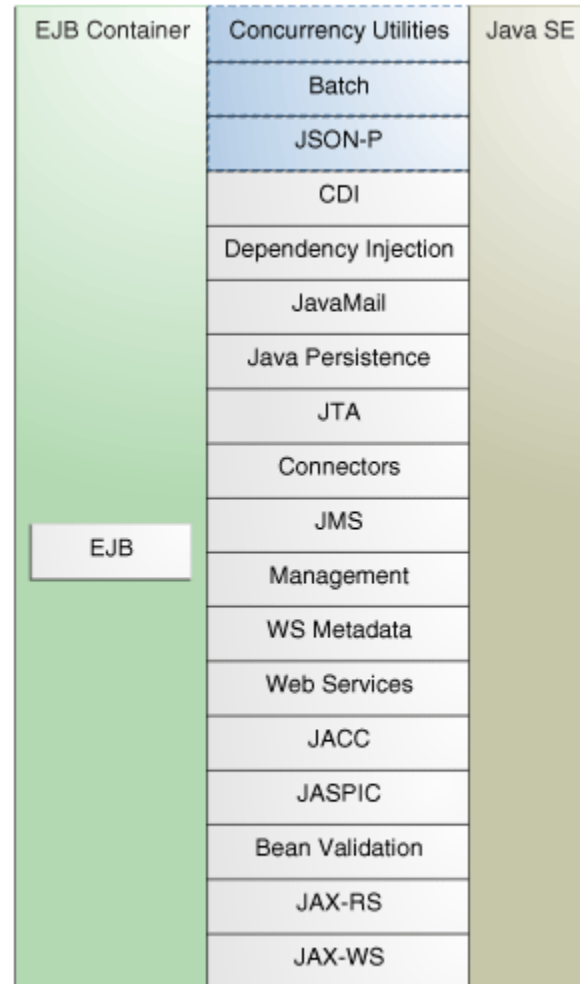**Java Application**

- Servlets:
  Serverseitiges Äquivalent
  zu Applets

- Java Server Pages:
  Eigene Skriptsprache zur
  Ergänzung

- Enterprise Java Beans:
  Applikationslogik-
  Bausteine die innerhalb
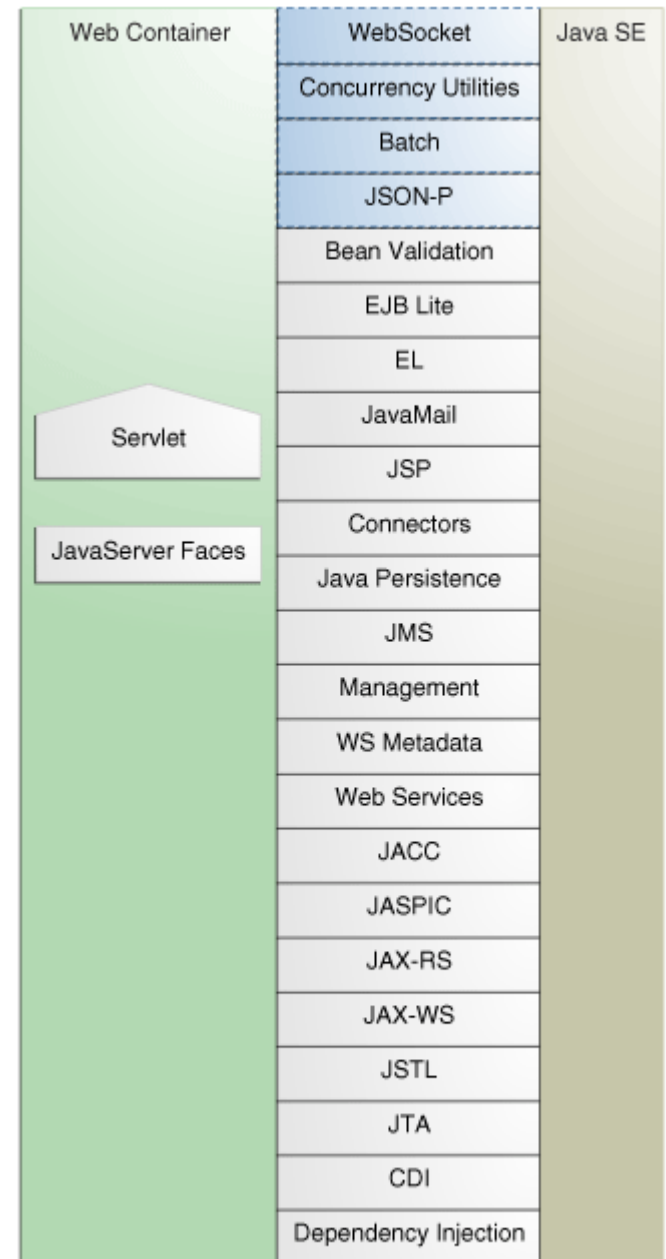 eines J2EE-Containers
  laufen
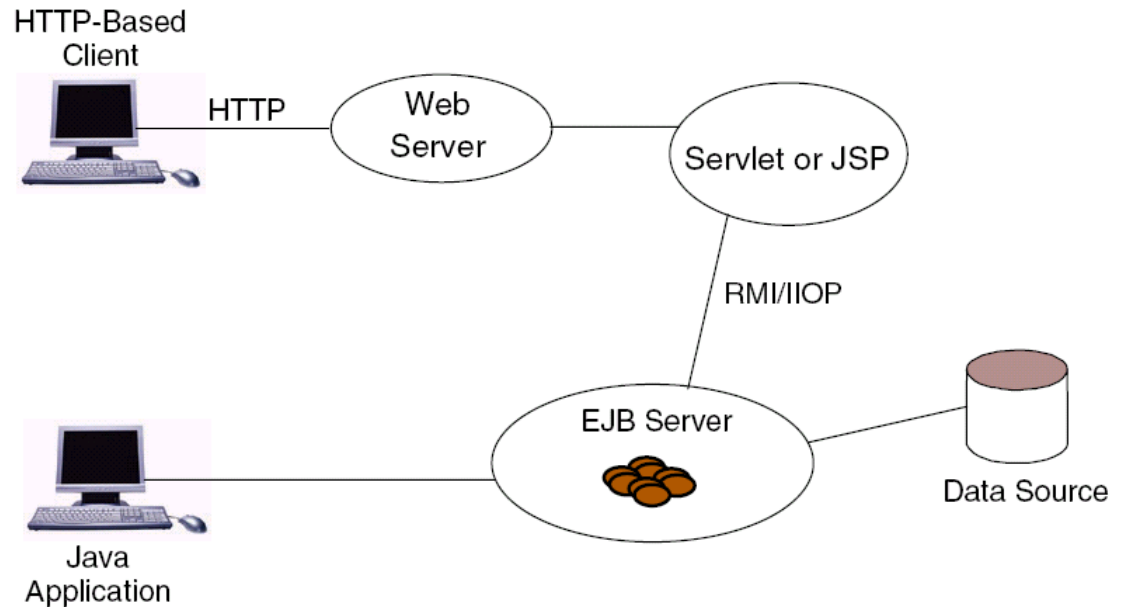
- Wichtige Server-Produkte:
  - Apache Web-Server
  - Apache Tomcat: Servlet-Engine
  - RedHat JBoss, Oracle Weblogic, IBM Websphere:
    Komplette J2EE-Applikationsserver

Bestandteile des JEE 7-Standards

EJB Container

EJB Container	Concurrency Utilities	Java SE
	Batch	
	JSON-P	
	CDI	
	Dependency Injection	
	JavaMail	
	Java Persistence	
	JTA	
EJB	Connectors	
	JMS	
	Management	
	WS Metadata	
	Web Services	
	JACC	
	JASPIC	
	Bean Validation	
	JAX-RS	
	JAX-WS	

New in Java EE 7

Web Container

Web Container	WebSocket	Java SE
	Concurrency Utilities	
	Batch	
	JSON-P	
	Bean Validation	
	EJB Lite	
	EL	
Servlet	JavaMail	
	JSP	
JavaServer Faces	Connectors	
	Java Persistence	
	JMS	
	Management	
	WS Metadata	
	Web Services	
	JACC	
	JASPIC	
	JAX-RS	
	JAX-WS	
	JSTL	
	JTA	
	CDI	
	Dependency Injection	

New in Java EE 7

Einzelspezifikationen

Enterprise Application	Robust Scalable	Web Services	Ease of Development	Web EoD Profile	Tighter Integration
J2EE 1.2	**J2EE 1.3**	**J2EE 1.4**	**Java EE 5**	**Java EE 6**	**Java EE 7**
Servlet JSP EJB JMS RMI/IIOP	EJB CMP JCA	Web Services Management Deployment	Annotations Injection EJB 3.0 JPA WS-* JSF	Pruning Extensibility CDI JAX-RS Bean Validat°	JMS 2.0 Batch Transactions WebSocket JSon-P ~~JAX-RPC~~ ~~Entity CMP~~ ~~JSR 88~~
				Web Profile EJB Lite	**Web Profile** JAX-RS
				Managed Bean	**Managed Bean**
Dec 1999 **10 specs**	Sept 2001 **13 specs**	Nov 2003 **20 specs**	May 2006 **23 specs**	Dec 2009 **28 specs**	Q2 2013 **31 specs**

Neu in JEE 8

- JSON Binding API (JSON-B, JSR 367)

- Java EE Security API (JSR 375)

Updates in JEE 8

- Servlet 4.0 (HTTP/2, PushBuilder)

- Bean Validation 2.0

- CDI-Erweiterungen (CDI 2.0)

- Ansonsten kleinere Updates

Programmierung: Annotations Everywhere

```
@Stateful @SessionScoped @Model
public class Login {

    @Inject Credentials credentials;
    @Inject @Users EntityManager userDatabase;
    ...

    private User user;

    @Inject
    void initQuery(@Users EntityManagerFactory emf) {
        ...
    }

    @TransactionAttribute(REQUIRES_NEW)
    @RolesAllowed("guest")
    public void login() {
        ...
    }
    ...
```
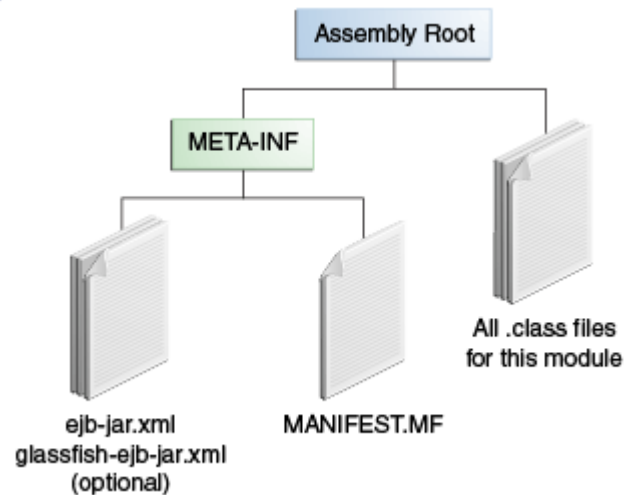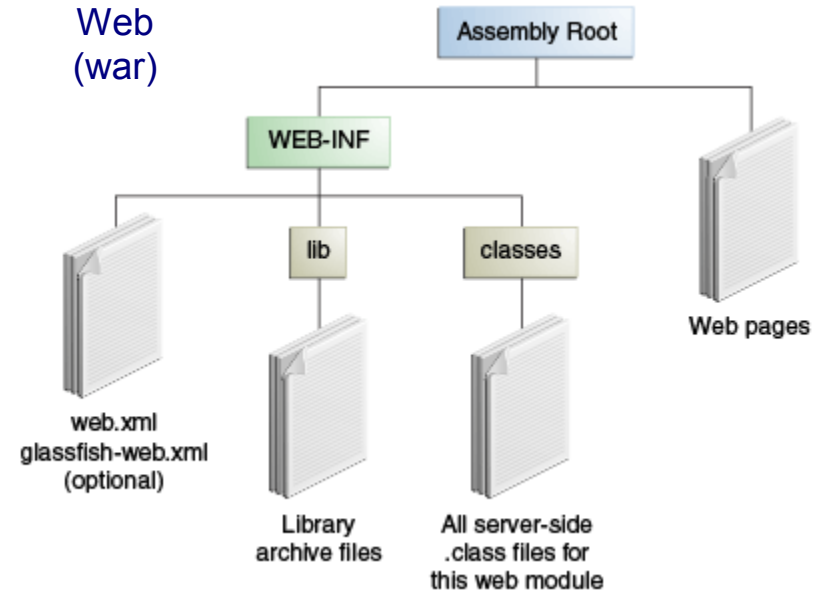
XML-Konfigurationsdateien

File	Specification	Paths
application.xml	Java EE	META-INF
application-client.xml	Java EE	META-INF
beans.xml	CDI	META-INF or WEB-INF
ra.xml	JCA	META-INF
ejb-jar.xml	EJB	META-INF or WEB-INF
faces-config.xml	JSF	WEB -INF
persistence.xml	JPA	META-INF
validation.xml	Bean Validation	META-INF or WEB-INF
web.xml	Servlet	WEB-INF
web-fragment.xml	Servlet	WEB-INF
webservices.xml	SOAP Web Services	META-INF or WEB-INF

Packaging

EJB (ejb-jar)

Assembly Root
- META-INF
  - ejb-jar.xml / glassfish-ejb-jar.xml (optional)
  - MANIFEST.MF
- All .class files for this module

Web (war)

Assembly Root
- WEB-INF
  - web.xml / glassfish-web.xml (optional)
  - lib — Library archive files
  - classes — All server-side .class files for this web module
- Web pages

EAR

Assembly Root
- META-INF
  - application.xml / glassfish-application.xml (optional)
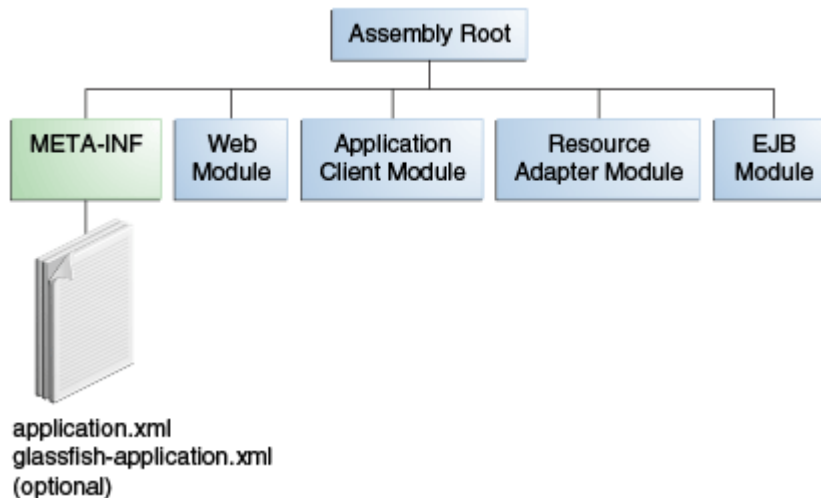- Web Module
- Application Client Module
- Resource Adapter Module
- EJB Module

- ■ EJBs können in JEE 7 direkt mit der Web-Applikation in ein WAR gepackt werden