



New Features in EJB 3.1

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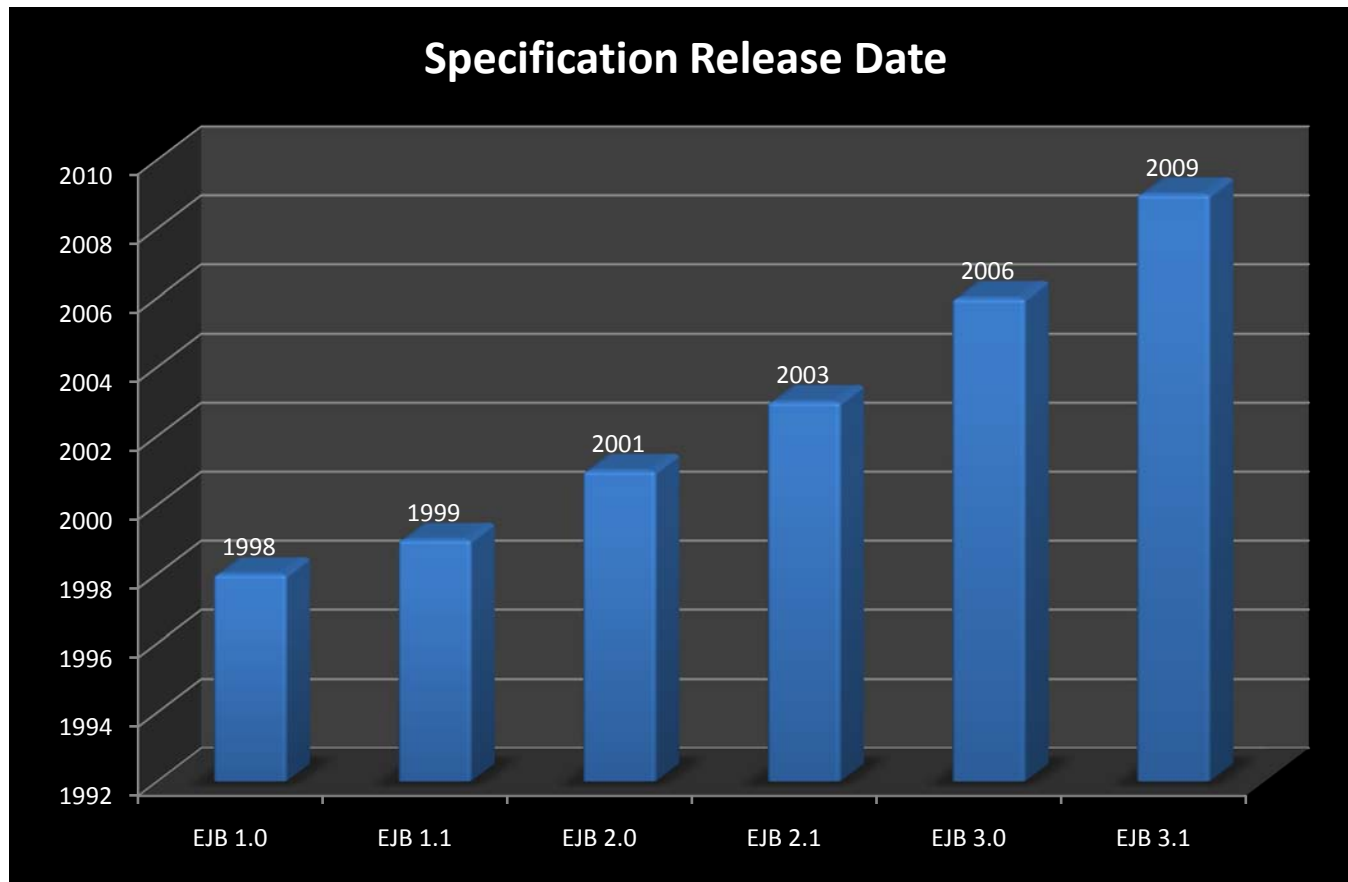
Agenda

- New Features in EJB 3.1
 - No Interface View
 - EJB Components in WAR
 - Singleton Beans
 - Asynchronous Session Bean
 - EJB Lite
 - Embeddable EJB

Enterprise JavaBeans

- Enterprise JavaBeans
 - Server side component technology
 - For creating, deploying, managing
 - Server side business components
 - That are highly scalable, transactional and multi-user secure....

EJB History



EJB 3.1 – New Features

- Simplified Local View – No Local Business interface
- EJB Components in WAR file
- Embeddable EJB API
- Singleton Session Bean
- Asynchronous Session Bean
- EJB Lite
- Update to EJB Timer service
- Portable global JNDI syntax



EJB 3.1 – No Interface View

Removal of Local Business Interface

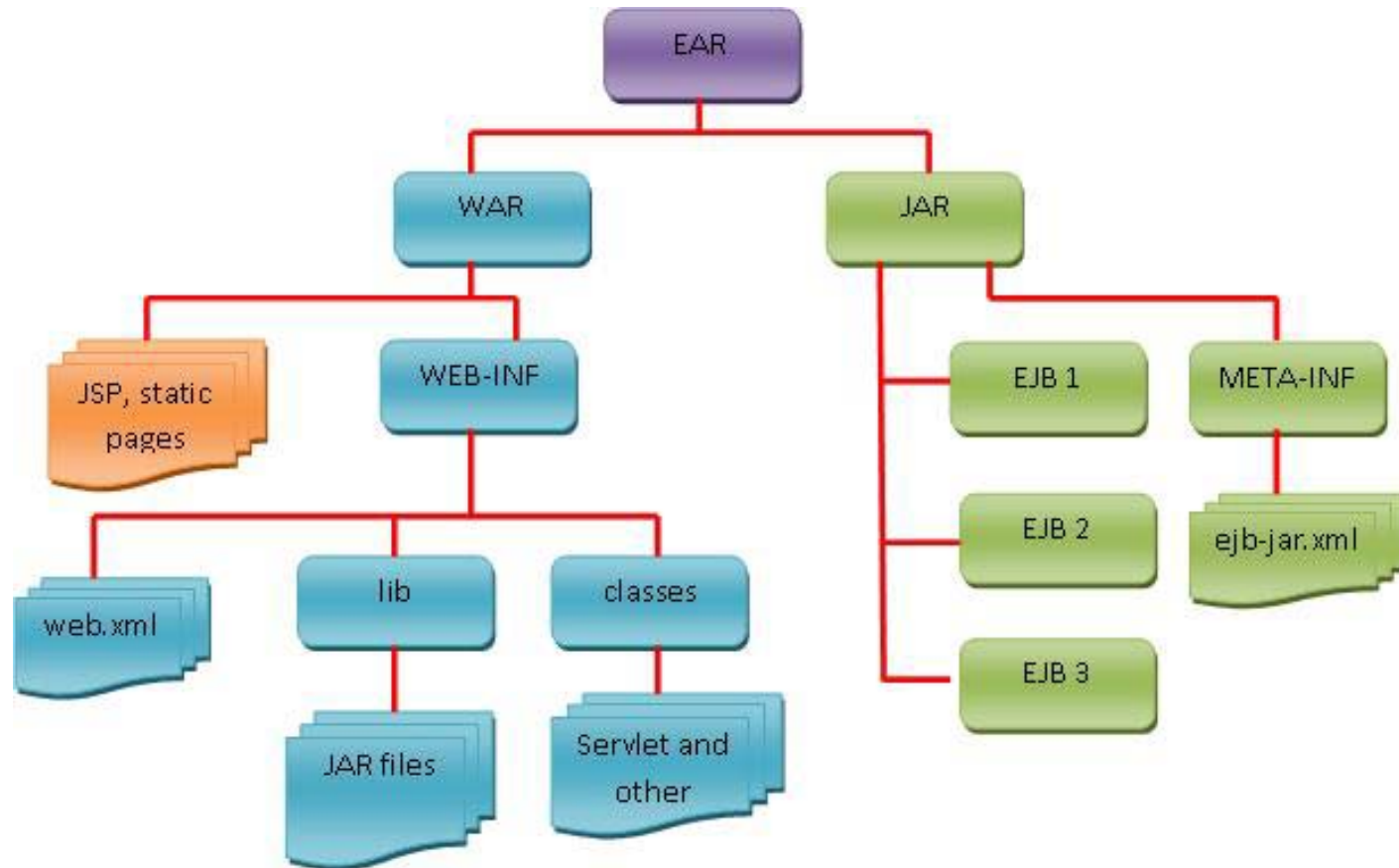
- Optional Business Interfaces
- Session Beans are simple POJO like Message Driven Beans and JPA entities

```
@Stateless
public class StockBean {
    public double getStockPrice(String symbol) {
        if (symbol.equals("INFY")) {
            return 66.4;
        }
        if (symbol.equals("ORCL")) {
            return 28.7; }
        return 0.0;
    }
}
```



EJB 3.1 – EJB Components in WAR

EJB 3.0 – Packaging Structure

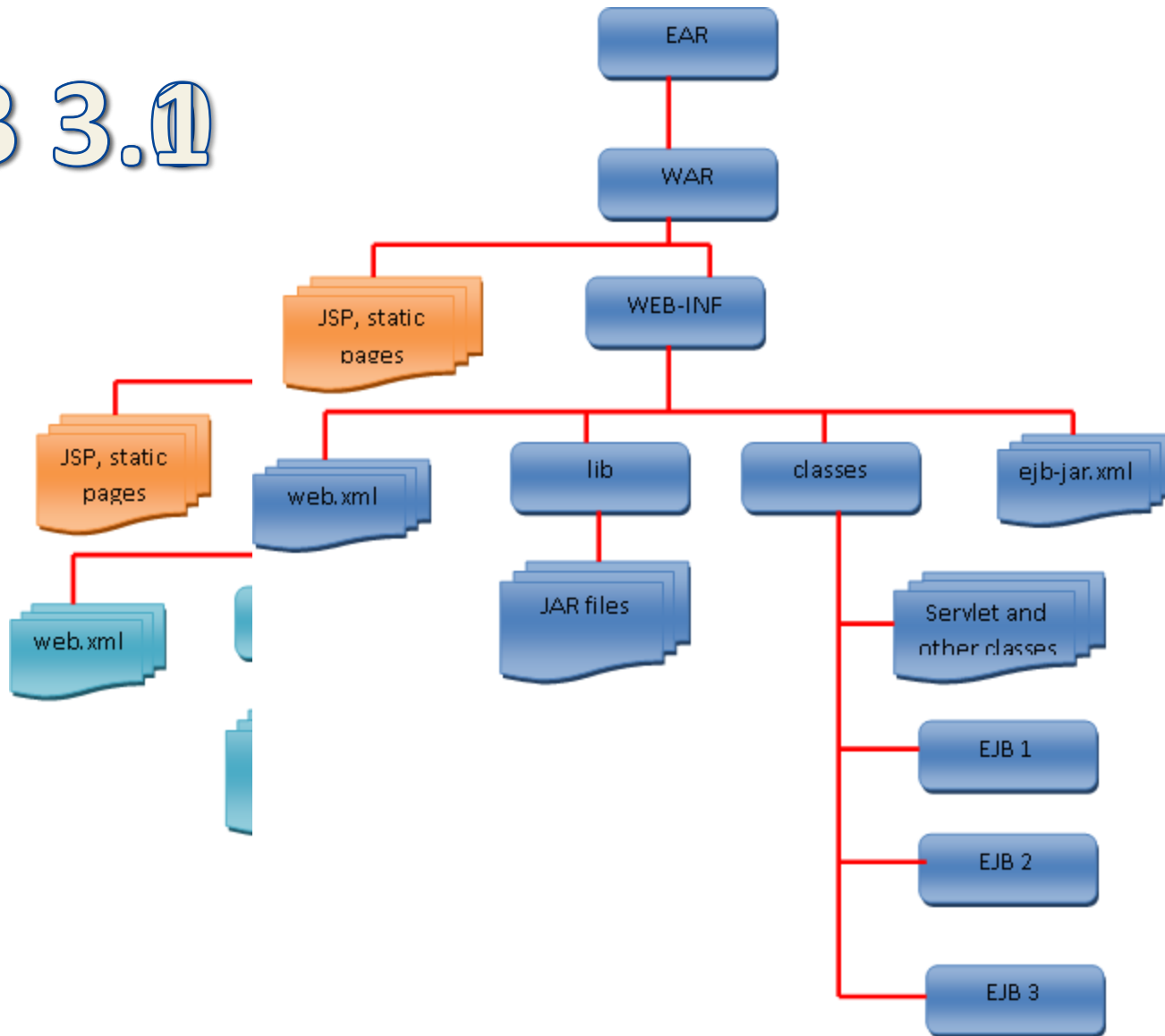


EJB 3.1 – Packaging Structure

- Simplified packaging mechanism for web applications including EJBs
- EJB components can be directly placed in the WAR file (No need for creating separate JAR file)
- EJB components are placed under \WEB-INF\Classes directory along with Servlet Classes in WAR file

EJB 3.1 – Packaging Structure

EJB 3.1





EJB 3.1 – Singleton Beans

Singleton Beans

- New type of bean, introduced from this release
- Enables application wide data sharing and supports concurrent access
- For Singleton beans, container guarantees a ***single instance per JVM***
- Singleton beans are POJOs, marked with @Singleton annotation (can be marked as Singleton in deployment descriptor also...)
- Like Stateless, but not pooled

```
@Singleton
public class AccessCountBean {
    private int accessCount;
    public int getAccessCount() {
        return accessCount++;
    }
    public void setAccessCount(int accessCount) {
        this.accessCount = accessCount;
    }
}
```

Concurrency Support

- Provides flexible concurrency option
- Concurrency
 - Container managed - `@ConcurrencyManagement(CONTAINER)`
 - Bean managed - `@ConcurrencyManagement(BEAN)`
- Concurrency annotations for READ and WRITE operations
 - `@Lock(READ)`
 - `@Lock(WRITE)`

```
@Singleton
public class AccessCountBean {
    private int accessCount;
    @Lock(READ)
    public int getAccessCount() {
        return accessCount++;
    }
    @Lock(WRITE)
    public void setAccessCount(int accessCount) {
        this.accessCount = accessCount;
    }
}
```



EJB 3.1 – Asynchronous Session Bean

Asynchronous Session Bean

- EJB 3.1 supports 'Asynchronous Session Bean'
- Session bean methods supports 'Asynchronous' invocations
- Bean methods are marked with `@Asynchronous` annotation
- Might have a return value or void
- Return value is `Future<V>` object of the `java.util.concurrent` PI

```
public interface StockIntf {  
    @Asynchronous  
    Future<Double> getRecentStock();  
}
```

```
@Stateless  
public class StockDetails {  
    public Double getRecentStock();  
}
```




EJB 3.1 – EJB Lite

EJB Lite

- Minimal subset of EJB 3.1
- Simple, lightweight and powerful
- Applications created using EJB Lite can be deployed on any server that supports EJB – EJB Full or EJB Lite
- Has the following features:
 - Session bean components
 - Stateless, Stateful and Singleton
 - Supports only synchronous invocation
 - Transaction
 - Container-managed as well as Bean-managed
 - Security
 - Declarative as well as Programmatic
 - Interceptors
 - Support for deployment descriptor (ejb-jar.xml)

EJB Full Vs EJB Lite

Features	EJB 3.1 Lite	EJB 3.1 Full
Session Beans (Stateless, Stateful, Singleton)		
Message Driven Beans		
Entity Beans (EJB 2.x)		
Java Persistence API 2.0		
No Interface		
Remote Interface		
Local Interface		
JAX-WS Web Service Endpoint		
JAX-RPC Web Service Endpoint		
Timer Service		
Asynchronous Session Bean		
Interceptors		
RMI-IIOP Interoperability		
Container Managed Transactions		
Bean Managed Transactions		
Declarative Security		
Programmatic Security		
Embeddable API		



EJB 3.1 – Embeddable EJB

Embeddable EJB

- EJB 3.1 allows EJB to run in Java SE environment
- Client and EJB run by the same JVM
- Possible with the help of Embeddable EJB APIs and Embeddable EJB container
- Benefits:
 - Better support for testing
 - Batch processing
 - Usage of EJB programming model in desktop applications

Resources

- EJB 3.1: The EJB Application Gets Simpler, More Flexible
 - http://www.developer.com/features/article.php/52691_3881841_1/EJB-31-The-EJB-Application-Gets-Simpler-More-Flexible.htm



Thank You!