



Java EE Introduction

Java EE

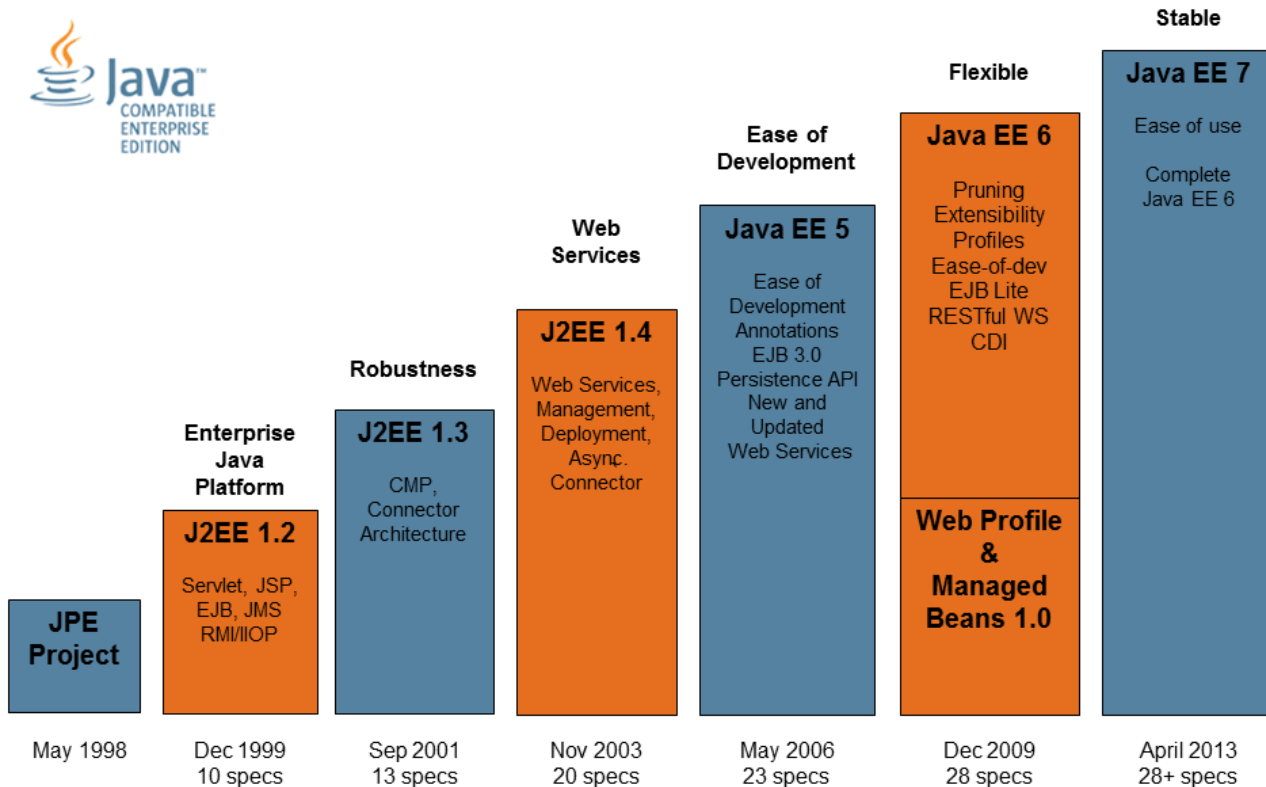
- ★ Specifications of standard API
 - ★ Defined by the Java Community Process (JCP)
 - ★ Java Specification Requests (JSRs): proposed and final specifications
 - ★ Different implementation of same API
 - ★ Example: JPA is implemented by EclipseLink, OpenJPA, Hibernate
- ★ Certifications
- ★ Architecture pattern
 - ★ Large scale
 - ★ Multi-tiers (Presentation Logic, Business Logic, Persistence)
 - ★ Scalable
 - ★ Reliable
 - ★ Secure
- ★ J2EE = an extension of Java SE to facilitate the development of enterprise applications ?



Java EE

★ Version History

- ★ Java EE 8 (expected mid 2017)



Java EE 6 (JSR 316)

Web Services Technologies » [Read more](#)

[Java API for RESTful Web Services \(JAX-RS\) 1.1](#) JSR 311

[Implementing Enterprise Web Services 1.3](#) JSR 109

[Java API for XML-Based Web Services \(JAX-WS\) 2.2](#) JSR 224

[Java Architecture for XML Binding \(JAXB\) 2.2](#) JSR 222

[Web Services Metadata for the Java Platform](#) JSR 181

[Java API for XML-Based RPC \(JAX-RPC\) 1.1](#) JSR 101

[Java APIs for XML Messaging 1.3](#) JSR 67

[Java API for XML Registries \(JAXR\) 1.0](#) JSR 93

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[Java Servlet 3.0](#) JSR 315

[JavaServer Faces 2.0](#) JSR 314

[JavaServer Pages 2.2/Expression Language 2.2](#) JSR 245

[Standard Tag Library for JavaServer Pages \(JSTL\) 1.2](#) JSR 52

[Debugging Support for Other Languages 1.0](#) [JSR 45](#)

Enterprise Application Technologies » [Read more](#)

[Contexts and Dependency Injection for Java \(Web Beans 1.0\)](#) JSR 299

[Dependency Injection for Java 1.0](#) JSR 330

[Bean Validation 1.0](#) JSR 303

[Enterprise JavaBeans 3.1 \(includes Interceptors 1.1\)](#) JSR 318

[Java EE Connector Architecture 1.6](#) JSR 322

[Java Persistence 2.0](#) JSR 317

[Common Annotations for the Java Platform 1.1](#) JSR 250

[Java Message Service API 1.1](#) JSR 914

[Java Transaction API \(JTA\) 1.1](#) JSR 907

[JavaMail 1.4](#) JSR 919

Management and Security Technologies » [Read more](#)

[Java Authentication Service Provider Interface for Containers](#) JSR 196

[Java Authorization Contract for Containers 1.3](#) JSR 115

[Java EE Application Deployment 1.2](#) JSR 88

[J2EE Management 1.1](#) JSR 77

Java EE-related Specs in Java SE

[Java API for XML Processing \(JAXP\) 1.3](#) JSR 206

[Java Database Connectivity 4.0](#) JSR 221

[Java Management Extensions \(JMX\) 2.0](#) JSR 255

[JavaBeans Activation Framework \(JAF\) 1.1](#) JSR 925

[Streaming API for XML \(StAX\) 1.0](#) JSR 173

Java EE 7 (JSR 342)

Java EE Platform

Java Platform, Enterprise Edition 7 (Java EE 7)	JSR 342	Download spec
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Web Application Technologies

Java API for WebSocket	JSR 356	Download spec	✓
Java API for JSON Processing	JSR 353	Download spec	✓
Java Servlet 3.1	JSR 340	Download spec	✓
JavaServer Faces 2.2	JSR 344	Download spec	✓
Expression Language 3.0	JSR 341	Download spec	✓
JavaServer Pages 2.3	JSR 245	Download spec	✓
Standard Tag Library for JavaServer Pages (JSTL) 1.2	JSR 52	Download spec	✓

Enterprise Application Technologies

Batch Applications for the Java Platform	JSR 352	Download spec	
Concurrency Utilities for Java EE 1.0	JSR 236	Download spec	
Contexts and Dependency Injection for Java 1.1	JSR 346	Download spec	✓
Dependency Injection for Java 1.0	JSR 330	Download spec	✓
Bean Validation 1.1	JSR 349	Download spec	✓
Enterprise JavaBeans 3.2	JSR 345	Download spec	✓
Interceptors 1.2 (Maintenance Release covered under JSR 318)	JSR 318	Download spec	✓
Java EE Connector Architecture 1.7	JSR 322	Download spec	
Java Persistence 2.1	JSR 338	Download spec	✓
Common Annotations for the Java Platform 1.2	JSR 250	Download spec	✓
Java Message Service API 2.0	JSR 343	Download spec	
Java Transaction API (JTA) 1.2	JSR 907	Download spec	✓
JavaMail 1.5	JSR 919	Download spec	

Web Services Technologies

Java API for RESTful Web Services (JAX-RS) 2.0	JSR 339	Download spec	✓
Implementing Enterprise Web Services 1.3	JSR 109	Download spec	
Java API for XML-Based Web Services (JAX-WS) 2.2	JSR 224	Download spec	
Web Services Metadata for the Java Platform	JSR 181	Download spec	
Java API for XML-Based RPC (JAX-RPC) 1.1 (Optional)	JSR 101	Download spec	
Java APIs for XML Messaging 1.3	JSR 67	Download spec	
Java API for XML Registries (JAXR) 1.0	JSR 93	Download spec	

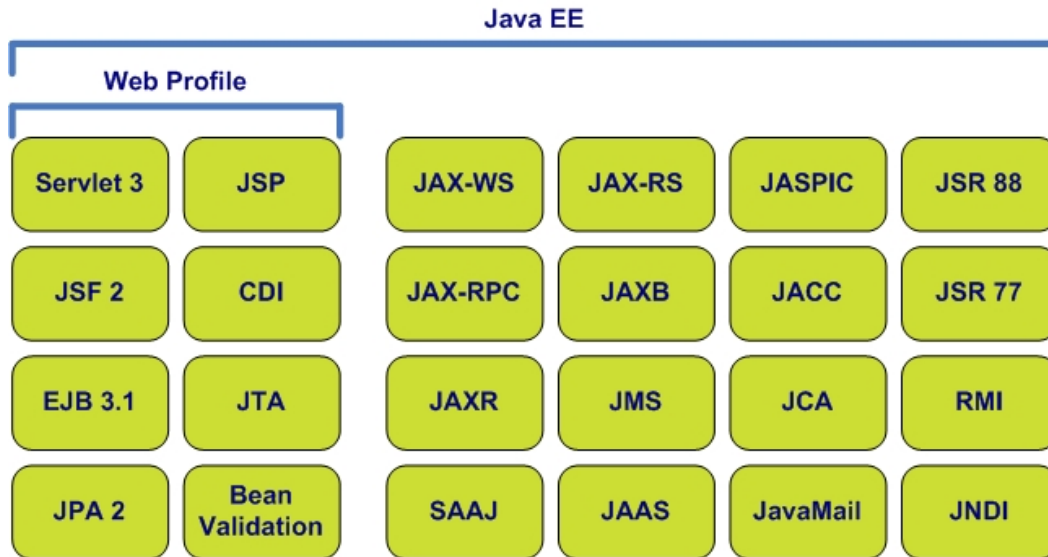
Management and Security Technologies

Java Authentication Service Provider Interface for Containers 1.1	JSR 196	Download spec	
Java Authorization Contract for Containers 1.5	JSR 115	Download spec	
Java EE Application Deployment 1.2 (Optional)	JSR 88	Download spec	
J2EE Management 1.1	JSR 77	Download spec	
Debugging Support for Other Languages 1.0	JSR 45	Download spec	✓

Java EE-related Specs in Java SE

Java Architecture for XML Binding (JAXB) 2.2	JSR 222	Download spec	
Java API for XML Processing (JAXP) 1.3	JSR 206	Download spec	
Java Database Connectivity 4.0	JSR 221	Download spec	
Java Management Extensions (JMX) 2.0	JSR 003	Download spec	
JavaBeans Activation Framework (JAF) 1.1	JSR 925	Download spec	
Streaming API for XML (StAX) 1.0	JSR 173	Download spec	

Java EE 6

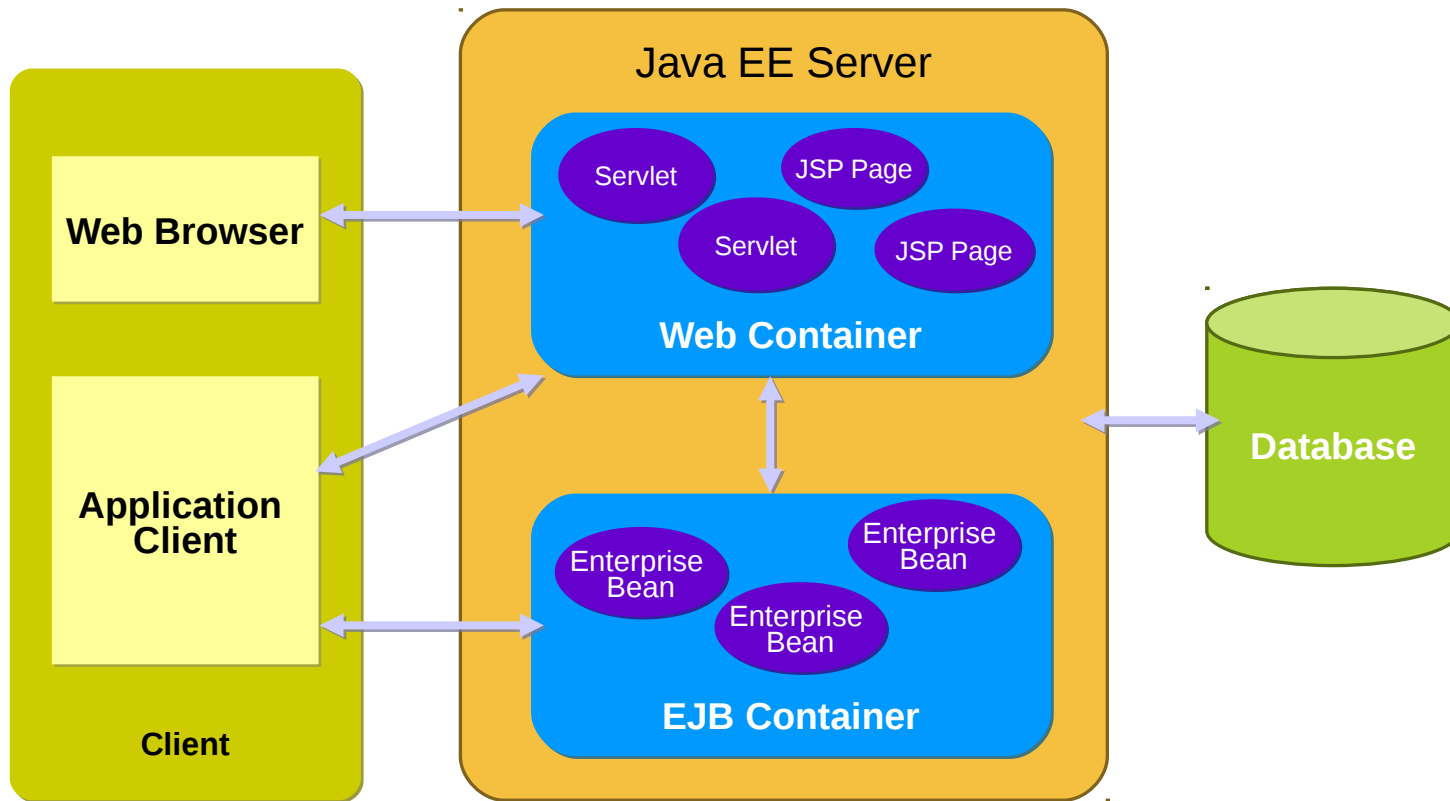


EJB Lite in
Web Profile

Feature	EJB Lite	EJB
Stateless beans	✓	✓
Stateful beans	✓	✓
Singleton beans	✓	✓
Message driven beans		✓
Remoting		✓
Web service (SOAP/REST)		✓
Asynchronous invocation		✓
Interceptors	✓	✓
Declarative security	✓	✓
Declarative transactions	✓	✓
Programmatic transactions	✓	✓
Timer service		✓
EJB 2 support		✓
CORBA interoperability		✓

Java EE architecture

- Presentation Tier
- Business Logic Tier
- Data (EIS) Tier



Java EE servers

- ★ “Java EE is a set of specifications implemented by different **containers**. Containers are Java EE runtime environment that provides certain **services** to the **component** they host...”

Antonio Goncalves, Beginning Java EE 6 Platform with GlassFish 3

- ★ J2EE server = Web container + J2EE implementation



Certified application servers [\[edit\]](#)

App Server ⇅	Java EE 7 certified - Full ⇅	Java EE 7 certified - Web ⇅	Java EE 6 certified - Full Official Oracle page for Java EE Compatibility. ⇅	Java EE 6 certified - Web ⇅	Java EE 5 certified ⇅	J2EE 1.4 certified ⇅	Licensing ⇅
GlassFish server Open Source Edition	Yes v4.0 ^[7]	Yes v4.0 ^[7]	Yes v3.x and upward ^[8]	Yes v3.x Web Profile	Yes v2.1.x ^[8]		Free software
Oracle GlassFish Server			Yes v3 ^[9] based on the open source GlassFish application server		Yes Sun Java System Application Server v9.0	Yes Sun Java System Application Server v8.2	Proprietary software
Oracle WebLogic Server			Yes v12c ^[10]		Yes v10.3.5.0	Yes v9	Proprietary software
WildFly	Yes v8.0.0.Final ^{[11][12][13]}	Yes v8.0.0.Final	Yes v7.1 ^[14]	Yes v6.0 ^[15] and v7.0 ^[16]	Yes v5.1 ^{[17][18]}	Yes v4.x	Free software
JBoss Enterprise Application Platform			Yes v6.0 ^[19]		Yes v5		Source is Free software
IBM WebSphere Application Server			Yes v8 ^[20]		Yes v7	Yes	Proprietary software
IBM WebSphere Application Server Liberty	Yes v8.5.5.6 ^[21] ^[22]			Yes v8.5.5 ^[23]			Proprietary software
IBM WebSphere Application Server Community Edition			Yes v3.0		Yes v2.1		Proprietary software
Apache Geronimo			Yes v3.0-beta-1 ^[3] ^[24]		Yes v2.0	Yes v1.0	Free software
TmaxSoft JEUS	Yes v8 ^{[25][26][27]}		Yes v7 ^{[28][29]}		Yes v6	Yes v5	Proprietary software
Hitachi Application Server	Yes v10 ^{[30][31]}		Yes v9 ^[32]				Proprietary software
Fujitsu Interstage Application Server^[33]			Yes v1 Azure/v10.1 ^[34] ^[35]		Yes		Proprietary software
NEC WebOTX			Yes ^[36]		Yes		Proprietary software
Caucho Resin Server				Yes v4.0. ^[37]		Yes	Proprietary software
Apache TomEE^{[38][39]}				Yes			Free software
OW2 JOnAS				Yes v5.3 rc1 ^[40]	Yes	Yes	Free software
SAP NetWeaver				Yes v2.x ^[41]	Yes	Yes	Proprietary software
Oracle Containers for Java EE					Yes		Proprietary software
Oracle iPlanet Web Server						Yes Sun Java System Web Server	Proprietary software
Oracle Application Server 10g						Yes	Proprietary software
Pramati Server						Yes v5.0	Proprietary software
Trifork T4						Yes	Proprietary software
Sybase Enterprise Application Server^[42]						Yes	Proprietary software



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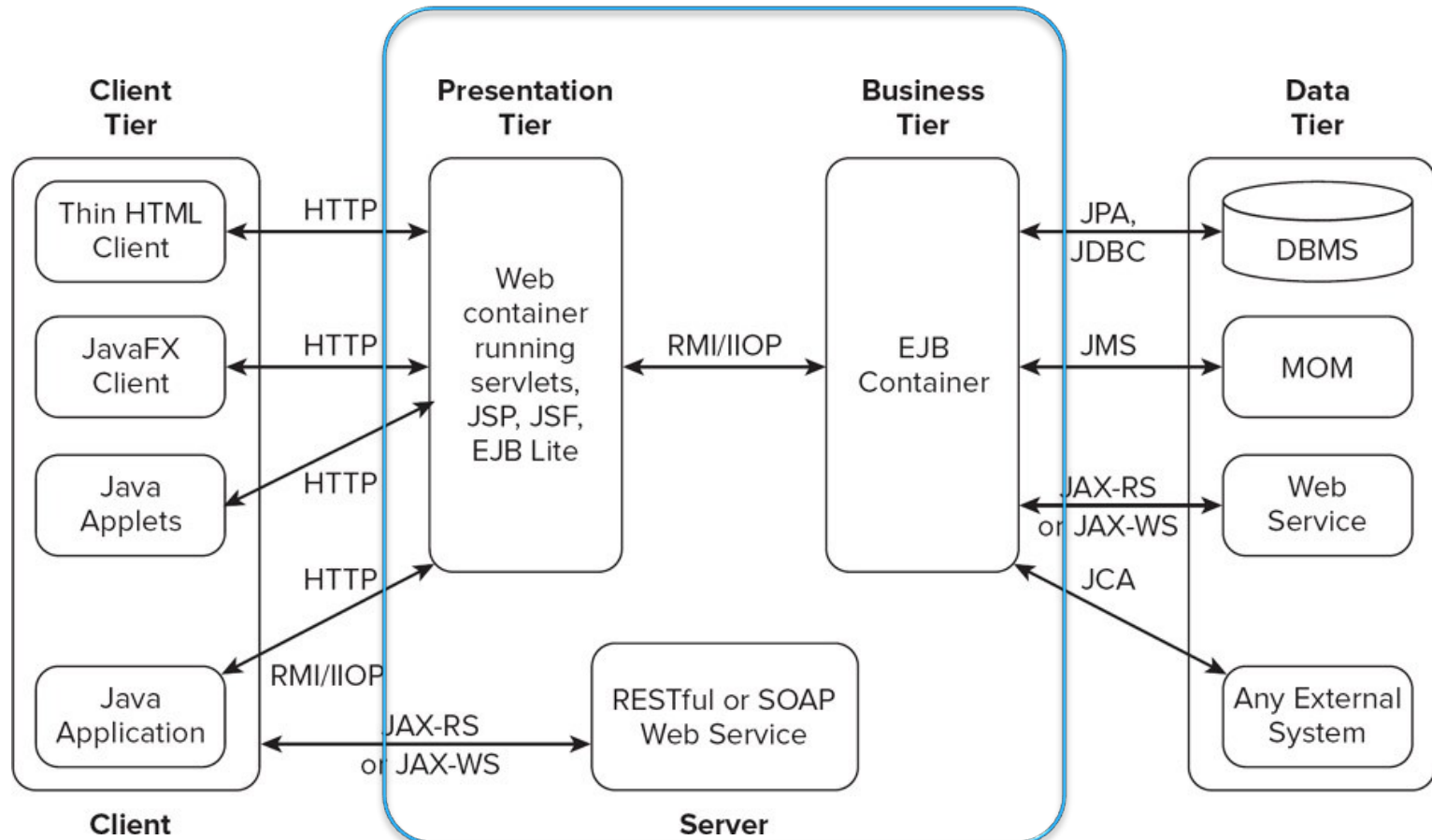
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J2EE APIs – The big picture



To sum up

- ★ J2EE extends J2SE
- ★ J2EE is multi-tiers/layered
- ★ J2EE is a set of specifications, not a set of implementations
- ★ J2EE server = container + J2EE implementations
- ★ A J2EE server host J2EE applications

