Java™ Platform, Enterprise Edition 8 (Java EE 8) Web Profile Specification

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CHAPTER WP.1

Introduction

This specification defines the Java EE Web Profile ("Web Profile"), a profile of the Java Platform, Enterprise Edition specifically targeted at web applications.

WP.1.1 Target and Rationale for the Web Profile

The Web Profile is targeted at developers of modern web applications.

With the term "modern" we intend to highlight the fact that the world of web applications has made much progress since the introduction of the first Servlet specification. Inevitably, the number of technologies used to create even simple web applications had grown by leaps and bounds. In fact, few web applications today are written directly to the servlet API: most applications rely on standard or third-party frameworks and libraries, often developed as open source, which in turn use the services of the servlet container.

Besides managing HTTP interactions, most web applications have significant requirements in the areas of transaction management, security and persistence. Such requirements can be readily addressed by technologies that have been part of the Java EE platform for quite some time, such as the Enterprise JavaBeans (EJB) 3.x technology and the Java Persistence API, but that are rarely supported by "plain" servlet containers. By incorporating many of these APIs, the Web Profile aims at raising the bar for what should be considered a basic stack for the development of web applications using the Java platform.

Targeting "modern" web applications then implies offering a reasonably complete stack, composed of standard APIs, and capable out-of-the-box of addressing the needs of a large class of web applications. Furthermore, this stack should be easy to grow, so as to address any remaining developer needs.

Against this drive towards completeness, one wishes to balance a desire to limit the footprint of web containers, both in physical and in conceptual terms. From the point of view of developers learning the Web Profile, it is more valuable to have a small, focused profile, with as little overlap between technologies as possible, rather than a more powerful but overly complex one, with redundant APIs.

In defining the Web Profile we strove to find a middle ground between these two sets of requirements.

In terms of completeness, the Web Profile offers a complete stack, with technologies addressing presentation and state management (JavaServer Faces, JavaServer Pages), core web container funtionality (Servlet), business logic (Enterprise JavaBeans Lite), transactions (Java Transaction API), persistence (Java Persistence API) and more.

As for simplicity, it leaves out many of the enterprise backend APIs that are part of the Java EE platform. It also relies on the pluggability features in the Servlet specification to allow applications to use libraries that extend the servlet container with minimal configuration overhead.

Finally, it is worth reminding that Web Profile products are allowed to ship with more technologies than the required ones. It is conceivable that products will offer a choice at installation time between different configurations, some richer in extensions, or even allow for complete customization beyond the required core ("à la carte" installation).

WP.1.2 Determining Applicable Requirements

Note – Profile definitions can be quite terse, amounting to little more than a list of required technologies and a (possibly empty) set of additional requirements, beyond those entailed by all the referenced specifications. Being the first profile of the Java EE 6 Platform to be defined, we expect the Web Profile specification to be used as a model for future profiles. It will also be seen as a starting point for understanding how the requirements defined in the Java EE Platform specification apply to a profile that subsets the platform itself, a significant innovation in this version of the platform. (The case of a profile that is a superset of the platform is much easier to picture.) To help with this process, this section attempts to shed light on how one should go from the definition of the Web Profile to figuring out

the exact set of requirements that apply to it, and consequently to any product that implements it.

As dictated by the general rules for Java EE profiles in the Platform specification, products that implement the Web Profile must honor:

1. all requirements of the Java EE Platform specification that apply to all profiles;
2. all requirements of this specification;
3. all requirements of the individual component specifications;
4. all requirements in the Java EE Platform specification that are conditional on the presence of a specific technology or combinations of technologies.

Let's look at some examples of requirements from each grouping.

For the first one, the Java EE Platform specification mandates support for the "`java:`" naming context in all profiles. Consequently, Web Profile products must support it. For a similar reason, all Web Profile 8 products must support the Java Platform, Standard Edition 8 API.

In the second category one can point out the requirement to support Java EE web application modules (`.war` files) (see Section WP.2.3, "Additional Requirements").

The third category is hopefully self-explanatory. For example, Web Profile products must implement the Servlet API, which in turn means they need to satisfy all the requirements listed in the Servlet specification.

The fourth category is the most complex. As a first example, since a Web Profile product is required to implement the Servlet technology, it must also follow all general requirements for Java EE web containers in the Platform specification. Additionally, it must follow all security requirements in the Platform specification that pertain to Java EE web containers, all interoperability requirements for such containers, etc. Furthermore, since a Web Profile product must implement the Java Transaction API (JTA), it must also satisfy all the Platform specification's transaction management-related requirements for web components, which indeed are conditional on the presence of Servlet and JTA .

As a negative example for the fourth category of requirements, consider the Java Message Service (JMS) technology. Since it is not a required component of the Web Profile, Web Profile products are not required to include an implementation of JMS, nor do they have to support other JMS-related requirements, like the ability to inject message destination references. On the other hand, a Web Profile product that included an implementation of JMS would

be required to honor all the JMS-related requirements in the Java EE Platform specification.

Particular care should be taken when determining applicable requirements based on the presence of EJB Lite in the Web Profile. As described in the EJB specification, EJB Lite is a subset of the EJB API. When examining an EJB-related requirement in the Java EE Platform spec, one must first of all determine which API classes, component types and EJB container services are mentioned in the requirement itself. Only if all of them fall inside the EJB Lite subset that requirement is considered applicable to Web Profile products.

For example, since EJB Lite does not include any remote functionality, the `EJB` annotation may not be used to inject a remote reference, something that should be kept in mind when evaluating the requirements in the Platform specification section “Enterprise JavaBeans References”.

WP.1.3 Acknowledgements for Version 6

Version 6 of this specification was created under the Java Community Process as JSR-316. The spec leads for the JSR-316 Expert Group were Bill Shannon (Sun Microsystems, Inc.) and Roberto Chinnici (Sun Microsystems, Inc.). The expert group included the following members: Florent Benoit (Inria), Adam Bien (Individual), David Blevins (Individual), Bill Burke (Red Hat Middleware LLC), Larry Cable (BEA Systems), Bongjae Chan (Tmax Soft, Inc.), Rejeev Divakaran (Individual), Francois Exertier (Inria), Jeff Genender (Individual), Antonio Goncalves (Individual), Jason Greene (Red Hat Middleware LLC), Gang Huang (Peking University), Rod Johnson (SpringSource), Werner Keil (Individual), Michael Keith (Oracle), Wonseok Kim (Tmax Soft, Inc.), Jim Knutson (IBM), Elika S. Kohen (Individual), Peter Kristiansson (Ericsson AB), Changshin Lee (NCsoft Corporation), Felipe Leme (Individual), Ming Li (TongTech Ltd.), Vladimir Pavlov (SAP AG), Dhanji R. Prasanna (Google), Reza Rahman (Individual), Rajiv Shivane (Pramati Technologies), Hani Suleiman (Individual).

WP.1.4 Acknowledgements for Version 7

Version 7 of this specification was created under the Java Community Process as JSR-342. The Expert Group work for this specification was conducted by means of the `http://javaee-spec.java.net` project in order to provide transparency to the

Java community. The specification leads for the JSR-342 Expert Group were Bill Shannon (Oracle) and Linda DeMichiel (Oracle). The expert group included the following members: Deepak Anupalli (Pramati Technologies), Anton Arhipov (ZeroTurnaround), Florent Benoit (OW2), Adam Bien (Individual), David Blevins (Individual), Markus Eisele (Individual), Jeff Genender (Individual), Antonio Goncalves (Individual), Jason Greene (Red Hat, Inc.), Minehiko Iida (Fujitsu), Alex Heneveld (Individual), Jevgeni Kabanov (Individual), Ingyu Kang (Tmax Soft, Inc.), Werner Keil (Individual), Jim Knutson (IBM), Ming Li (TongTech Ltd.), Pete Muir (Red Hat, Inc.), Minoru Nitta (Fujitsu), Reza Rahman (Caucho Technology, Inc), Kristoffer Sjogren (Ericsson AB), Kevin Sutter (IBM), Spike Washburn (Individual), Kyung Koo Yoon (Tmax Soft).

WP.1.5 Acknowledgements for Version 8

Version 8 of this specification was created under the Java Community Process as JSR-366. The Expert Group work for this specification was conducted by means of the `http://javaee-spec.java.net` project in order to provide transparency to the Java community. The specification leads for the JSR-366 Expert Group were Bill Shannon (Oracle) and Linda DeMichiel (Oracle). The expert group included the following members: Florent Benoit (OW2), David Blevins (Tomitribe), Jeff Genender (Savoir Technologies), Antonio Goncalves (Individual), Jason Greene (Red Hat), Werner Keil (Individual), Moon Namkoong (TmaxSoft, Inc.) Antoine Sabot-Durand (Red Hat), Kevin Sutter (IBM), Ruslan Synytsky (Jelastic, Inc.), Markus Winkler (oparco - open architectures & consulting). Reza Rahman (Individual) participated as a contributor.

CHAPTER WP.2

Web Profile Definition

This chapter defines the contents of the Java™ Platform, Enterprise Edition 8 (Java EE™ 8) Web Profile.

WP.2.1 Required Components

The following technologies are required components of the Web Profile:

- Servlet 4.0
- JavaServer Pages (JSP) 2.3
- Expression Language (EL) 3.0
- Debugging Support for Other Languages (JSR-45) 1.0
- Standard Tag Library for JavaServer Pages (JSTL) 1.2
- JavaServer Faces (JSF) 2.3
- Java API for RESTful Web Services (JAX-RS) 2.1
- Java API for WebSocket (WebSocket) 1.1
- Java API for JSON Processing (JSON-P) 1.1
- Java API for JSON Binding (JSON-B) 1.0
- Common Annotations for the Java Platform (JSR-250) 1.3
- Enterprise JavaBeans (EJB) 3.2 Lite
- Java Transaction API (JTA) 1.2
- Java Persistence API (JPA) 2.2
- Bean Validation 2.0

- Managed Beans 1.0
- Interceptors 1.2
- Contexts and Dependency Injection for the Java EE Platform 2.0
- Dependency Injection for Java 1.0
- Java EE Security API 1.0
- Java Authentication Service Provider Interface for Containers (JASPIC) 1.1

WP.2.2 Optional Components

There are no optional components in the Web Profile.

Web Profile products may support some of the technologies present in the full Java EE Platform and not already listed in Section WP.2.1, “Required Components”, consistently with their compatibility requirements.

WP.2.3 Additional Requirements

Web Profile products must support the deployment of Java EE web application modules (`.war` files). No other modules types are required to be supported.

APPENDIX WP.A

Revision History

WP.A.1 Changes in Early Draft

WP.A.1.1 Additional Requirements

- Java EE 8 Web Profile requires Java SE 8.
- Updated to reflect versions of Java EE 8 technologies.
- Added JSON-B as required component.
- Added MVC as required component.

WP.A.1.2 Removed Requirements

- None

WP.A.1.3 Editorial Changes

- Updated Related Documents.

WP.A.2 Changes in Early Draft 2

WP.A.2.1 Additional Requirements

- None

WP.A.2.2 Removed Requirements

- Removed MVC 1.0 from Section WP.2.1, “Required Components.”

WP.A.2.3 Editorial Changes

- Changed version of Bean Validation from 1.1 to 2.0.

WP.A.3 Changes in Public Review Draft

WP.A.3.1 Additional Requirements

- Added Java EE Security API 1.0 and JASPIC 1.1 as required components.

WP.A.3.2 Removed Requirements

- None

WP.A.3.3 Editorial Changes

- Corrected version of WebSocket to 1.1.
- Added acknowledgements.
- Updated “Related Documents.”

APPENDIX WP.B

Related Documents

This specification refers to the following documents. The terms used to refer to the documents in this specification are included in parentheses.

Java™ Platform, Enterprise Edition Specification Version 8. Available at `http://jcp.org/en/jsr/detail?id=366`.

Java™ Platform, Standard Edition, v8 API Specification (Java SE specification). Available at `http://docs.oracle.com/javase/8/docs/api/index.html`.

Enterprise JavaBeans™ Specification, Version 3.2 (EJB specification). Available at `http://jcp.org/en/jsr/detail?id=345`.

JavaServer Pages™ Specification, Version 2.3 (JSP specification). Available at `http://jcp.org/en/jsr/detail?id=245`.

Expression Language Specification, Version 3.0 (EL specification). Available at `http://jcp.org/en/jsr/detail?id=341`.

Java™ Servlet Specification, Version 4.0 (Servlet specification). Available at `http://jcp.org/en/jsr/detail?id=369`.

Java™ Transaction API, Version 1.2 (JTA specification). Available at `http://jcp.org/en/jsr/detail?id=907`.

JAX-RS: The JavaTM API for RESTful Web Services 2.1 (JAX-RS specification). Available at `http://jcp.org/en/jsr/summary?id=370`.

Common Annotations for the Java Platform 1.3. Available at `http://jcp.org/en/jsr/detail?id=250`.

Debugging Support for Other Languages 1.0. Available at `http://jcp.org/en/jsr/detail?id=45`.

Standard Tag Library for JavaServer Pages 1.2 (JSTL specification). Available at `http://jcp.org/en/jsr/detail?id=52`.

JavaServer Faces 2.3 (JSF specification). Available at `http://jcp.org/en/jsr/detail?id=372`.

Java Persistence 2.2 (Java Persistence specification). Available at `http://jcp.org/en/jsr/detail?id=338`.

Bean Validation 2.0 (Bean Validation specification). Available at `http://jcp.org/en/jsr/detail?id=380`.

Managed Beans 1.0 (Managed Beans specification). Available at `http://jcp.org/en/jsr/detail?id=316`.

Interceptors 1.2 (Interceptors specification). Available at `http://jcp.org/en/jsr/detail?id=318`.

Contexts and Dependency Injection for the Java EE Platform 2.0 (CDI specification). Available at `http://jcp.org/en/jsr/detail?id=365`.

Dependency Injection for Java 1.0 (DI specification). Available at `http://jcp.org/en/jsr/detail?id=330`.

Java API for WebSocket 1.1 (WebSocket specification). Available at `http://jcp.org/en/jsr/detail?id=356`.

Java API for JSON Processing 1.1 (JSON-P specification). Available at `http://jcp.org/en/jsr/detail?id=374`.

Java API for JSON Binding 1.0 (JSON-B specification). Available at `http://jcp.org/en/jsr/detail?id=367`.

Java™ EE Security API 1.0. Available at `http://jcp.org/en/jsr/detail?id=375`.

Java™ Authentication Service Provider Interface for Containers 1.1 (JASPIC specification). Available at `http://jcp.org/en/jsr/detail?id=196`.