Red Hat Fuse 7.11

Migration Guide

Migrate to Red Hat Fuse 7.11

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Legal Notice

Abstract

Use this guide to help you when upgrading your Fuse installation to the latest version of Red Hat Fuse.

Table of Contents

PREFACE

This guide provides information on updating Red Hat Fuse and Fuse applications:

NOTE

If you want to migrate from Fuse 6 to the latest Fuse 7 release, before you follow the instructions in this guide, you should follow the instructions in the Red Hat Fuse 7.0 Migration Guide.

Chapter 2, *Upgrading Fuse Online*

Chapter 5, *Upgrading Fuse applications on Spring Boot standalone*

Chapter 4, *Migrating from Fabric8 Maven plugin to Openshift Maven plugin*

Chapter 6, *Upgrading Fuse applications on JBoss EAP standalone*

Chapter 7, *Upgrading Fuse applications on Karaf standalone*

Chapter 8, *Upgrading Fuse Standalone on Karaf*

MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright's message.

CHAPTER 1. UPGRADING FUSE ON OPENSHIFT

Fuse 7.11 contains updates that enable it to work with OpenShift Container Platform (OCP) 4.9 or later. If you plan to upgrade to OCP 4.10, you must upgrade Fuse to version 7.11 **before** you upgrade OCP to version 4.10. Earlier versions of Fuse (prior to 7.10) do not support OCP 4.9 or later.

For more information, see *Fuse on OpenShift Guide*.

CHAPTER 2. UPGRADING FUSE ONLINE

From time to time, fresh application images, which incorporate patches and security fixes, are released for Fuse. You are notified of these updates through Red Hat's errata update channel. You can then upgrade your Fuse images.

For OCP 4.x, use the OpenShift OperatorHub to upgrade from Fuse 7.10 to 7.11, by following the steps in Upgrading Fuse by using the OperatorHub (OCP 4.x).

You should determine whether upgrading to Fuse 7.11 requires you to make changes to your existing integrations. Even if no changes are required, you must republish any running integration when you upgrade Fuse.

Upgrading Fuse by using the OperatorHub (OCP 4.x)

Use the OpenShift OperatorHub to upgrade from Fuse Online 7.10 to 7.11.

1. If you want to upgrade from Fuse 7.9.x to Fuse Online 7.10.1, you must first manually upgrade to Fuse 7.10.0 as described in the **Upgrading from Fuse Online 7.9.x to 7.10.1 requires manual upgrade steps** release note.

2. Fuse 7.11 requires OpenShift Container Platform (OCP) 4.6 or later. If you are using OCP 4.5 or earlier, you must upgrade to OCP 4.6 or later, if you want to upgrade to Fuse 7.11 .

3. On OCP 4.9, When you upgrade to 7.11, the following warning is displayed during the Fuse Operator upgrade process:
   W1219 18:38:58.064578 1 warnings.go:70] extensions/v1beta1 Ingress is deprecated in v1.14+, unavailable in v1.22+; use networking.k8s.io/v1 Ingress

   This warning appears because clients (that Fuse uses for the Kubernetes/OpenShift API initialization code) access a deprecated Ingress version. This warning is not an indicator of complete use of deprecated APIs and there is no issue with upgrading to Fuse 7.11.

The upgrade process from a Fuse Online 7.10 or an earlier version to a newer Fuse Online 7.11 version depends on the **Approval Strategy** that you selected when you installed Fuse Online:

- For **Automatic** updates, when a new version of the Fuse operator is available, the OpenShift Operator Lifecycle Manager (OLM) automatically upgrades the running instance of the Fuse Online without human intervention.

- For **Manual** updates, when a newer version of an Operator is available, the OLM creates an update request. As a cluster administrator, you must then manually approve that update request to have the Fuse Online operator updated to the new version as described in the **Manually approving a pending Operator upgrade** section of the OpenShift documentation.

During and after an infrastructure upgrade, existing integrations continue to run with the older versions of Fuse libraries and dependencies.

To have existing integrations run with the updated Fuse Online version, you must republish the integrations.

CHAPTER 3. UPGRADE TO SPRING BOOT 2

This chapter explains how to upgrade your applications to Spring Boot 2.0 from Spring Boot 1.

3.1. BEFORE YOU BEGIN

Before you start the migration to Spring Boot 2, you must review the system requirements and dependencies.

- Upgrade to the latest 1.5.x version
  - Before you start, upgrade to the latest 1.5.x available version. This is to ensure that you are building against the most recent dependencies of that line.
- Review dependencies
  - The migration to Spring Boot 2 will result in upgrading a number of dependencies. Review the dependency management for 1.5.x with the dependency management for 2.0.x to assess how your project is affected.
  - Identify the compatible versions for the dependencies that are not managed by Spring Boot and then define the explicit versions for these.
- Review custom configuration
  - Any custom configuration that your project defines might need to be reviewed on upgrade. If this can be replaced by the use of standard auto-configuration, do it so before upgrading.
- Review system requirements
  - Spring Boot 2.0 requires Java 8 or later.
  - It also requires Spring Framework 5.0.
  - Java 6 and 7 are no longer supported.

3.2. UPGRADE FROM SPRING BOOT 1 TO SPRING BOOT 2

Once you have reviewed the state of your project and its dependencies, upgrade to the latest maintenance release of Spring Boot 2.x. It is recommended to upgrade in the phases. For example, first upgrade from Spring Boot 1.5 to Spring Boot 2.0 and then upgrade to 2.1 and then to the latest maintenance release of Spring Boot 2.

Migrating configuration properties

With Spring Boot 2.0, many configuration properties were renamed or removed. Hence you need to update the **application.properties/application.yml** accordingly. You can achieve that with the help of a new **spring-boot-properties-migrator** module. Once added as a dependency to your project, this will not only analyze your application's environment and print diagnostics at startup, but also temporarily migrate properties at runtime for you.

Procedure

1. Add **spring-boot-properties-migrator** module to dependency section of your project's **pom.xml**.

```
<dependency>
 <groupId>org.springframework.boot</groupId>
 <artifactId>spring-boot-properties-migrator</artifactId>
 <scope>runtime</scope>
</dependency>

runtime("org.springframework.boot:spring-boot-properties-migrator")
```

NOTE

Once you're done with the migration, please make sure to remove this module from your project's dependencies.

CHAPTER 4. MIGRATING FROM FABRIC8 MAVEN PLUGIN TO OPENSHIFT MAVEN PLUGIN

The **fabric8-maven-plugin** has been completely removed from Fuse 7.11. We recommend that you use the **openshift-maven-plugin** instead for building and deploying Maven projects in Fuse on OpenShift.

Procedure

Use following instructions to update your application so that it can use the openshift-maven plugin.

1. Rename the **src/main/fabric8** directories in your applications to **src/main/jkube**.

2. Locate the **org.jboss.redhat-fuse:fabric8-maven-plugin** dependency in your project's pom.xml and change it to **org.jboss.redhat-fuse:openshift-maven-plugin**. See the Sample pom.xml.

3. Check the dependencies. For example, **org.arquillian.cube:arquillian-cube-openshift**, **org.jboss.arquillian.junit:arquillian-junit-container**, **io.fabric8:kubernetes-assertions** are no longer used in our examples and may no longer be needed.

4. You can create some sample tests that can be used to reflect the API changes after the migration. For more information see the sample tests in the Spring Boot Camel quickstart.

Additional resources

- OpenShift Maven plugin.

CHAPTER 5. UPGRADING FUSE APPLICATIONS ON SPRING BOOT STANDALONE

To upgrade your Fuse applications on Spring Boot:

- You should consider Apache Camel updates as described in Section 5.1, "Camel migration considerations".
- You must update your Fuse project's Maven dependencies to ensure that you are using the correct version of Fuse.

Typically, you use Maven to build Fuse applications. Maven is a free and open source build tool from Apache. Maven configuration is defined in a Fuse application project's **pom.xml** file. While building a Fuse project, the default behavior is that Maven searches external repositories and downloads the required artifacts. You add a dependency for the Fuse Bill of Materials (BOM) to the **pom.xml** file so that the Maven build process picks up the correct set of Fuse supported artifacts.

The following sections provide information on Maven dependencies and how to update them in your Fuse projects.

- Section 5.2, "About Maven dependencies"
- Section 5.3, "Updating your Fuse project's Maven dependencies"

5.1. CAMEL MIGRATION CONSIDERATIONS

Creating a connection to MongoDB using the MongoClients factory

From Fuse 7.11, use **com.mongodb.client.MongoClient** instead of **com.mongodb.MongoClient** to create a connection to MongoDB (note the extra *.client* sub-package in the full path).

If any of your existing Fuse applications use the **camel-mongodb** component, you must:

- Update your applications to create the connection bean as a **com.mongodb.client.MongoClient** instance.
  For example, create a connection to MongoDB as follows:

  ```
  import com.mongodb.client.MongoClient;
  ```

  You can then create the MongoClient bean as shown in following example:

  ```
  return MongoClients.create("mongodb://admin:password@192.168.99.102:32553");
  ```

- Evaluate and, if needed, refactor any code related to the methods exposed by the MongoClient class.

Camel 2.23

Red Hat Fuse uses Apache Camel 2.23. You should consider the following updates to Camel 2.22 and 2.23 when you upgrade to Fuse 7.8.

Camel 2.22 updates

- Camel has upgraded from Spring Boot v1 to v2 and therefore v1 is no longer supported.

- Upgraded to Spring Framework 5. Camel should work with Spring 4.3.x as well, but going forward Spring 5.x will be the minimum Spring version in future releases.
- Upgraded to Karaf 4.2. You may run Camel on Karaf 4.1 but we only officially support Karaf 4.2 in this release.
- Optimized using toD DSL to reuse endpoints and producers for components where it is possible. For example, HTTP based components will now reuse producer (HTTP clients) with dynamic URIs sending to the same host.
- The File2 consumer with read-lock idempotent/idempotent-changed can now be configured to delay the release tasks to expand the window when a file is regarded as in-process, which is usable in active/active cluster settings with a shared idempotent repository to ensure other nodes don't too quickly see a processed file as a file they can process (only needed if you have readLockRemoveOnCommit=true).
- Allow to plugin a custom request/reply correlation id manager implementation on Netty4 producer in request/reply mode. The Twitter component now uses extended mode by default to support tweets greater than 140 characters
- Rest DSL producer now supports being configured in REST configuration by using endpointProperties.
- The Kafka component now supports HeaderFilterStrategy to plugin custom implementations for controlling header mappings between Camel and Kafka messages.
- REST DSL now supports client request validation to validate that Content-Type/Accept headers are possible for the REST service.
- Camel now has a Service Registry SPI which allows you to register routes to a service registry (such as consul, etcd, or zookeeper) by using a Camel implementation or Spring Cloud.
- The SEDA component now has a default queue size of 1000 instead of unlimited.
- The following noteworthy issues have been fixed:
    - Fixed a CXF continuation timeout issue with camel-cxf consumer that could cause the consumer to return a response with data instead of triggering a timeout to the calling SOAP client.
    - Fixed camel-cxf consumer doesn't release UoW when using a robust one-way operation.
    - Fixed using AdviceWith and using weave methods on onException etc. not working.
    - Fixed Splitter in parallel processing and streaming mode may block, while iterating message body when the iterator throws an exception in the first invoked next() method call.
    - Fixed Kafka consumer to not auto commit if autoCommitEnable=false.
    - Fixed file consumer was using markerFile as read-lock by default, which should have been none.
    - Fixed using manual commit with Kafka to provide the current record offset and not the previous (and -1 for first).
    - Fixed Content Based Router in Java DSL may not resolve property placeholders in when predicates.

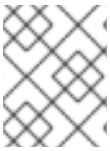
Camel 2.23 updates

- Upgraded to Spring Boot 2.1.
- Additional component-level options can now be configured by using spring-boot auto-configuration. These options are included in the spring-boot component metadata JSON file descriptor for tooling assistance.
- Added a documentation section that includes all the Spring Boot auto configuration options for all the components, data-formats, and languages.
- All the Camel Spring Boot starter JARs now include **META-INF/spring-autoconfigure-metadata.properties** file in their JARs to optimize Spring Boot auto-configuration.
- The Throttler now supports correlation groups based on dynamic expression so that you can group messages into different throttled sets.
- The Hystrix EIP now allows inheritance for Camel's error handler so that you can retry the entire Hystrix EIP block again if you have enabled error handling with redeliveries.
- SQL and ElSql consumers now support dynamic query parameters in route form. Note that this feature is limited to calling beans by using simple expressions.
- The swagger-restdsl maven plugin now supports generating DTO model classes from the Swagger specification file.
- The following noteworthy issues have been fixed:
  - The Aggregator2 has been fixed to not propagate control headers for forcing completion of all groups, so it will not happen again if another aggregator EIP is in use later during routing.
  - Fixed Tracer not working if redelivery was activated in the error handler.
  - The built-in type converter for XML Documents may output parsing errors to stdout, which has now been fixed to output by using the logging API.
  - Fixed SFTP writing files by using the charset option would not work if the message body was streaming-based.
  - Fixed Zipkin root id to not be reused when routing over multiple routes to group them together into a single parent span.
  - Fixed optimized toD when using HTTP endpoints had a bug when the hostname contains an IP address with digits.
  - Fixed issue with RabbitMQ with request/reply over temporary queues and using manual acknowledge mode. It would not acknowledge the temporary queue (which is needed to make request/reply possible).
  - Fixed various HTTP consumer components that may not return all allowed HTTP verbs in Allow header for OPTIONS requests (such as when using rest-dsl).
  - Fixed the thread-safety issue with FluentProducerTemplate.

5.2. ABOUT MAVEN DEPENDENCIES

The purpose of a Maven Bill of Materials (BOM) file is to provide a curated set of Maven dependency versions that work well together, saving you from having to define versions individually for every Maven artifact.

There is a dedicated BOM file for each container in which Fuse runs.



NOTE

You can find these BOM files here: https://github.com/jboss-fuse/redhat-fuse. Alternatively, go to the latest Release Notes for information on BOM file updates.

The Fuse BOM offers the following advantages:

- Defines versions for Maven dependencies, so that you do not need to specify the version when you add a dependency to your **pom.xml** file.
- Defines a set of curated dependencies that are fully tested and supported for a specific version of Fuse.
- Simplifies upgrades of Fuse.

IMPORTANT

Only the set of dependencies defined by a Fuse BOM are supported by Red Hat.

5.3. UPDATING YOUR FUSE PROJECT'S MAVEN DEPENDENCIES

To upgrade your Fuse application for Spring Boot, update your project's Maven dependencies.

Procedure

1. Open your project's **pom.xml** file.
2. Add a **dependencyManagement** element in your project's **pom.xml** file (or, possibly, in a parent **pom.xml** file), as shown in the following example:

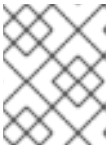
```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<project ...>
  ...
  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

    <!-- configure the versions you want to use here -->
    <fuse.version>7.11.0.fuse-sb2-7_11_0-00028-redhat-00001</fuse.version>

  </properties>

  <dependencyManagement>
    <dependencies>
      <dependency>
        <groupId>org.jboss.redhat-fuse</groupId>
        <artifactId>fuse-springboot-bom</artifactId>
        <version>${fuse.version}</version>
        <type>pom</type>
        <scope>import</scope>
```

```
    </dependency>
  </dependencies>
 </dependencyManagement>
 ...
</project>
```



NOTE

Ensure you update your Spring Boot version as well. This is typically found under the Fuse version in the **pom.xml** file:

```
<properties>
 <!-- configure the versions you want to use here -->
 <fuse.version>7.11.0.fuse-sb2-7_11_0-00028-redhat-00001</fuse.version>
 <spring-boot.version>2.5.13.RELEASE</spring-boot.version>
</properties>
```

3. Save your **pom.xml** file.

After you specify the BOM as a dependency in your **pom.xml** file, it becomes possible to add Maven dependencies to your **pom.xml** file *without* specifying the version of the artifact. For example, to add a dependency for the **camel-velocity** component, you would add the following XML fragment to the **dependencies** element in your **pom.xml** file:

```
<dependency>
  <groupId>org.apache.camel</groupId>
  <artifactId>camel-velocity</artifactId>
  <scope>provided</scope>
</dependency>
```

Note how the **version** element is omitted from this dependency definition.

CHAPTER 6. UPGRADING FUSE APPLICATIONS ON JBOSS EAP STANDALONE

To upgrade your Fuse applications on JBoss EAP:

- You should consider Apache Camel updates as described in Section 6.1, "Camel migration considerations".
- You must update your Fuse project's Maven dependencies to ensure that you are using the correct version of Fuse.
  Typically, you use Maven to build Fuse applications. Maven is a free and open source build tool from Apache. Maven configuration is defined in a Fuse application project's **pom.xml** file. While building a Fuse project, the default behavior is that Maven searches external repositories and downloads the required artifacts. You add a dependency for the Fuse Bill of Materials (BOM) to the **pom.xml** file so that the Maven build process picks up the correct set of Fuse supported artifacts.

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  - Section 6.2, "About Maven dependencies"
  - Section 6.3, "Updating your Fuse project's Maven dependencies"
- You must update your Fuse project's Maven dependencies to ensure that you are using the upgraded versions of the Java EE dependencies as described in Section 6.4, "Upgrading your Java EE dependencies".

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The Fuse BOM offers the following advantages:

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- Defines a set of curated dependencies that are fully tested and supported for a specific version of Fuse.
- Simplifies upgrades of Fuse.

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6.3. UPDATING YOUR FUSE PROJECT'S MAVEN DEPENDENCIES

To upgrade your Fuse application for JBoss EAP, update your project's Maven dependencies.

Procedure

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2. Add a **dependencyManagement** element in your project's **pom.xml** file (or, possibly, in a parent **pom.xml** file), as shown in the following example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<project ...>
  ...
  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

    <!-- configure the versions you want to use here -->
    <fuse.version>7.11.0.fuse-sb2-7_11_0-00028-redhat-00001</fuse.version>

  </properties>

  <dependencyManagement>
    <dependencies>
      <dependency>
        <groupId>org.jboss.redhat-fuse</groupId>
        <artifactId>fuse-eap-bom</artifactId>
```

```
        <version>${fuse.version}</version>
        <type>pom</type>
        <scope>import</scope>
      </dependency>
    </dependencies>
  </dependencyManagement>
  ...
</project>
```

3. Save your **pom.xml** file.

After you specify the BOM as a dependency in your **pom.xml** file, it becomes possible to add Maven dependencies to your **pom.xml** file *without* specifying the version of the artifact. For example, to add a dependency for the **camel-velocity** component, you would add the following XML fragment to the **dependencies** element in your **pom.xml** file:

```
<dependency>
  <groupId>org.apache.camel</groupId>
  <artifactId>camel-velocity</artifactId>
  <scope>provided</scope>
</dependency>
```

Note how the **version** element is omitted from this dependency definition.

6.4. UPGRADING YOUR JAVA EE DEPENDENCIES

In Fuse 7.8, some managed dependencies in the BOM file have updated **groupId** or **artifactId** properties, therefore you must update your project's **pom.xml** file accordingly.

Procedure

1. Open your project's **pom.xml** file.

2. To change the **org.jboss.spec.javax.transaction** version from 1.2 to 1.3 and the **org.jboss.spec.javax.servlet** version from 3.1 to 4.0, update the dependencies as shown in the following example:

```
<dependency>
  <groupId>org.jboss.spec.javax.transaction</groupId>
  <artifactId>jboss-transaction-api_1.3_spec</artifactId>
</dependency>

<dependency>
    <groupId>org.jboss.spec.javax.servlet</groupId>
    <artifactId>jboss-servlet-api_4.0_spec</artifactId>
</dependency>
```

3. To migrate from Java EE API to Jakarta EE, replace **javax.*** with **jakarta.*** for each **groupId** and modify the **artifactId** for individual dependencies as shown in the following example:

```
<dependency>
  <groupId>jakarta.validation</groupId>
  <artifactId>jakarta.validation-api</artifactId>
</dependency>
```

```
<dependency>
  <groupId>jakarta.enterprise</groupId>
  <artifactId>jakarta.enterprise.cdi-api</artifactId>
</dependency>

<dependency>
  <groupId>jakarta.inject</groupId>
  <artifactId>jakarta.inject-api</artifactId>
</dependency>
```

6.5. UPGRADING AN EXISTING FUSE ON JBOSS EAP INSTALLATION

The following procedure describes how to upgrade an existing Fuse on JBoss EAP installation.

Procedure

1. To upgrade from one JBoss EAP minor release to another, you should follow the instructions in the JBoss EAP Patching and Upgrading Guide guide.
2. To update Fuse, you must run the Fuse on JBoss EAP installer as described in the Installing on JBoss EAP guide.

NOTE

You should not need to recompile or redploy your Fuse application.

6.6. UPGRADING FUSE AND JBOSS EAP SIMULTANEOUSLY

The following procedure describes how to upgrade a Fuse installation and the JBoss EAP runtime simultanously, for example, if you are migrating from Fuse 7.7 on JBoss EAP 7.2 to Fuse 7.8 on JBoss EAP 7.3.

WARNING

When upgrading **both** Fuse and the JBoss EAP runtime, Red Hat recommends that you perform a fresh installation of both Fuse and the JBoss EAP runtime.

Procedure

1. To perform a new installation of the JBoss EAP runtime, follow the instructions in the Installing on JBoss EAP guide.
2. To perform a new installation of Fuse, run the Fuse on JBoss EAP installer as described in the Installing on JBoss EAP guide.

CHAPTER 7. UPGRADING FUSE APPLICATIONS ON KARAF STANDALONE

To upgrade your Fuse applications on Karaf:

- You should consider Apache Camel updates as described in Section 7.1, “Camel migration considerations”.
- You must update your Fuse project’s Maven dependencies to ensure that you are using the correct version of Fuse.

Typically, you use Maven to build Fuse applications. Maven is a free and open source build tool from Apache. Maven configuration is defined in a Fuse application project’s **pom.xml** file. While building a Fuse project, the default behavior is that Maven searches external repositories and downloads the required artifacts. You add a dependency for the Fuse Bill of Materials (BOM) to the **pom.xml** file so that the Maven build process picks up the correct set of Fuse supported artifacts.

The following sections provide information on Maven dependencies and how to update them in your Fuse projects.

- Section 7.2, “About Maven dependencies”
- Section 7.3, “Updating your Fuse project’s Maven dependencies”

7.1. CAMEL MIGRATION CONSIDERATIONS

Creating a connection to MongoDB using the MongoClients factory

From Fuse 7.11, use **com.mongodb.client.MongoClient** instead of **com.mongodb.MongoClient** to create a connection to MongoDB (note the extra *.client* sub-package in the full path).

If any of your existing Fuse applications use the **camel-mongodb** component, you must:

- Update your applications to create the connection bean as a **com.mongodb.client.MongoClient** instance.
  For example, create a connection to MongoDB as follows:

  ```
  import com.mongodb.client.MongoClient;
  ```

  You can then create the MongoClient bean as shown in following example:

  ```
  return MongoClients.create("mongodb://admin:password@192.168.99.102:32553");
  ```

- Evaluate and, if needed, refactor any code related to the methods exposed by the MongoClient class.

Camel 2.23

Red Hat Fuse uses Apache Camel 2.23. You should consider the following updates to Camel 2.22 and 2.23 when you upgrade to Fuse 7.8.

Camel 2.22 updates

- Camel has upgraded from Spring Boot v1 to v2 and therefore v1 is no longer supported.

- Upgraded to Spring Framework 5. Camel should work with Spring 4.3.x as well, but going forward Spring 5.x will be the minimum Spring version in future releases.
- Upgraded to Karaf 4.2. You may run Camel on Karaf 4.1 but we only officially support Karaf 4.2 in this release.
- Optimized using toD DSL to reuse endpoints and producers for components where it is possible. For example, HTTP based components will now reuse producer (HTTP clients) with dynamic URIs sending to the same host.
- The File2 consumer with read-lock idempotent/idempotent-changed can now be configured to delay the release tasks to expand the window when a file is regarded as in-process, which is usable in active/active cluster settings with a shared idempotent repository to ensure other nodes don't too quickly see a processed file as a file they can process (only needed if you have readLockRemoveOnCommit=true).
- Allow to plugin a custom request/reply correlation id manager implementation on Netty4 producer in request/reply mode. The Twitter component now uses extended mode by default to support tweets greater than 140 characters
- Rest DSL producer now supports being configured in REST configuration by using endpointProperties.
- The Kafka component now supports HeaderFilterStrategy to plugin custom implementations for controlling header mappings between Camel and Kafka messages.
- REST DSL now supports client request validation to validate that Content-Type/Accept headers are possible for the REST service.
- Camel now has a Service Registry SPI which allows you to register routes to a service registry (such as consul, etcd, or zookeeper) by using a Camel implementation or Spring Cloud.
- The SEDA component now has a default queue size of 1000 instead of unlimited.
- The following noteworthy issues have been fixed:
    - Fixed a CXF continuation timeout issue with camel-cxf consumer that could cause the consumer to return a response with data instead of triggering a timeout to the calling SOAP client.
    - Fixed camel-cxf consumer doesn't release UoW when using a robust one-way operation.
    - Fixed using AdviceWith and using weave methods on onException etc. not working.
    - Fixed Splitter in parallel processing and streaming mode may block, while iterating message body when the iterator throws an exception in the first invoked next() method call.
    - Fixed Kafka consumer to not auto commit if autoCommitEnable=false.
    - Fixed file consumer was using markerFile as read-lock by default, which should have been none.
    - Fixed using manual commit with Kafka to provide the current record offset and not the previous (and -1 for first).
    - Fixed Content Based Router in Java DSL may not resolve property placeholders in when predicates.

Camel 2.23 updates

- Upgraded to Spring Boot 2.1.
- Additional component-level options can now be configured by using spring-boot auto-configuration. These options are included in the spring-boot component metadata JSON file descriptor for tooling assistance.
- Added a documentation section that includes all the Spring Boot auto configuration options for all the components, data-formats, and languages.
- All the Camel Spring Boot starter JARs now include **META-INF/spring-autoconfigure-metadata.properties** file in their JARs to optimize Spring Boot auto-configuration.
- The Throttler now supports correlation groups based on dynamic expression so that you can group messages into different throttled sets.
- The Hystrix EIP now allows inheritance for Camel's error handler so that you can retry the entire Hystrix EIP block again if you have enabled error handling with redeliveries.
- SQL and ElSql consumers now support dynamic query parameters in route form. Note that this feature is limited to calling beans by using simple expressions.
- The swagger-restdsl maven plugin now supports generating DTO model classes from the Swagger specification file.
- The following noteworthy issues have been fixed:
  - The Aggregator2 has been fixed to not propagate control headers for forcing completion of all groups, so it will not happen again if another aggregator EIP is in use later during routing.
  - Fixed Tracer not working if redelivery was activated in the error handler.
  - The built-in type converter for XML Documents may output parsing errors to stdout, which has now been fixed to output by using the logging API.
  - Fixed SFTP writing files by using the charset option would not work if the message body was streaming-based.
  - Fixed Zipkin root id to not be reused when routing over multiple routes to group them together into a single parent span.
  - Fixed optimized toD when using HTTP endpoints had a bug when the hostname contains an IP address with digits.
  - Fixed issue with RabbitMQ with request/reply over temporary queues and using manual acknowledge mode. It would not acknowledge the temporary queue (which is needed to make request/reply possible).
  - Fixed various HTTP consumer components that may not return all allowed HTTP verbs in Allow header for OPTIONS requests (such as when using rest-dsl).
  - Fixed the thread-safety issue with FluentProducerTemplate.

7.2. ABOUT MAVEN DEPENDENCIES

The purpose of a Maven Bill of Materials (BOM) file is to provide a curated set of Maven dependency versions that work well together, saving you from having to define versions individually for every Maven artifact.

There is a dedicated BOM file for each container in which Fuse runs.

NOTE

You can find these BOM files here: https://github.com/jboss-fuse/redhat-fuse. Alternatively, go to the latest Release Notes for information on BOM file updates.

The Fuse BOM offers the following advantages:

- Defines versions for Maven dependencies, so that you do not need to specify the version when you add a dependency to your **pom.xml** file.
- Defines a set of curated dependencies that are fully tested and supported for a specific version of Fuse.
- Simplifies upgrades of Fuse.

IMPORTANT

Only the set of dependencies defined by a Fuse BOM are supported by Red Hat.

7.3. UPDATING YOUR FUSE PROJECT'S MAVEN DEPENDENCIES

To upgrade your Fuse application for Karaf, update your project's Maven dependencies.

Procedure

1. Open your project's **pom.xml** file.
2. Add a **dependencyManagement** element in your project's **pom.xml** file (or, possibly, in a parent **pom.xml** file), as shown in the following example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<project ...>
  ...
  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

    <!-- configure the versions you want to use here -->
    <fuse.version>7.11.0.fuse-sb2-7_11_0-00028-redhat-00001</fuse.version>

  </properties>

  <dependencyManagement>
    <dependencies>
      <dependency>
        <groupId>org.jboss.redhat-fuse</groupId>
        <artifactId>fuse-karaf-bom</artifactId>
        <version>${fuse.version}</version>
        <type>pom</type>
        <scope>import</scope>
```

```
    </dependency>
  </dependencies>
 </dependencyManagement>
 ...
</project>
```

3. Save your **pom.xml** file.

After you specify the BOM as a dependency in your **pom.xml** file, it becomes possible to add Maven dependencies to your **pom.xml** file *without* specifying the version of the artifact. For example, to add a dependency for the **camel-velocity** component, you would add the following XML fragment to the **dependencies** element in your **pom.xml** file:

```
<dependency>
  <groupId>org.apache.camel</groupId>
  <artifactId>camel-velocity</artifactId>
  <scope>provided</scope>
</dependency>
```

Note how the **version** element is omitted from this dependency definition.

CHAPTER 8. UPGRADING FUSE STANDALONE ON KARAF

The Fuse on Apache Karaf upgrade mechanism enables you to apply fixes to an Apache Karaf container without needing to reinstall an updated version of Fuse on Karaf. It also allows you to roll back the upgrade, if the upgrade causes problems with your deployed applications.

The upgrade installer file is the *same file* that you use to install Fuse on Apache Karaf.

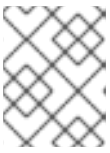
NOTE

To obtain the upgrade installer file, go to the **Downloads** page of the Red Hat customer portal and download the latest version of the installation archive for Fuse on Apache Karaf (for example, **fuse-karaf-7.11.0.fuse-7_11_0-00036-redhat-00001.zip**).

8.1. IMPACT OF UPGRADING FUSE ON KARAF

The upgrade mechanism can make updates to **any** installation files including **bundle JARs** and **static files** (including, for example, configuration files under the **etc/** directory). The Fuse on Apache Karaf upgrade process:

- Updates any files, including bundle JARs, configuration files, and any static files.
- Patches both the current container instance (and its runtime storage under the **data/** directory) and the underlying installation. Hence, patches are preserved after deleting a container instance.
- Updates all of the files related to Karaf features, including the features repository files and the features themselves. Hence, any features installed after the rollup patch will reference the correct patched dependencies.
- If necessary, updates configuration files (for example, files under **etc/**), automatically merging any configuration changes you have made with the configuration changes made by the patch. If merge conflicts occur, see the patch log for details of how they are handled.
- Most of the merge conflicts are resolved automatically. For example, the patch mechanism detects conflicts at property level for the property files. It detects whether it was a user or patch that changed any property. The change is preserved, if only one side changed the property.
- Tracks **all** of the changes made to the installation (including to static files), so that it is possible to roll back the patch.



NOTE

The rollup patching mechanism uses an internal git repository (located under **patches/.management/history**) to track the changes made.

8.2. UPGRADING FUSE STANDALONE ON KARAF

The following instructions guide you through upgrading Fuse on Apache Karaf. Ensure all prerequisites are completed before commencing the upgrade procedure.

Prerequisites

- Ensure you have a full backup of your Fuse on Apache Karaf installation before upgrading.
- Start the container, if it is not already running.

TIP

If the container is running in the background (or remotely), connect to the container using the SSH console client, **bin/client**.

- Add the upgrade installer file to the container's environment by invoking the **patch:add** command. For example, to add the **fuse-karaf-7.11.0.fuse-7_11_0-00036-redhat-00001.zip** upgrade installer file:

```
patch:add file:///path/to/fuse-karaf-7.11.0.fuse-7_11_0-00036-redhat-00001.zip
```

NOTE

The **patch:find** command can only be used to find and add the latest hot fix patches to the container's environment; it cannot be used to apply full upgrade patches.

Procedure

1. Run the **patch:update** command. There is no need to restart the container.

```
karaf@root()> patch:update
Current patch mechanism version: 7.1.0.fuse-710023-redhat-00001
New patch mechanism version detected: 7.2.0.fuse-720035-redhat-00001
Uninstalling patch features in version 7.1.0.fuse-710023-redhat-00001
Installing patch features in version 7.2.0.fuse-720035-redhat-00001
```

2. Invoke the **patch:list** command to display a list of upgrade installers. In this list, the entries under the **[name]** heading are upgrade IDs. For example:

```
karaf@root()> patch:list
[name]                                  [installed] [rollup] [description]
fuse-karaf-7.2.0.fuse-720035-redhat-00001 false       true     fuse-karaf-7.2.0.fuse-
720035-redhat-00001
```

3. Simulate the upgrade by invoking the **patch:simulate** command and specifying the upgrade ID for the upgrade that you want to apply, as follows:

```
karaf@root()> patch:simulate fuse-karaf-7.2.0.fuse-720035-redhat-00001
INFO : org.jboss.fuse.modules.patch.patch-management (226): Installing rollup patch
"fuse-karaf-7.2.0.fuse-720035-redhat-00001"
========== Repositories to remove (9):
 - mvn:io.hawt/hawtio-karaf/2.0.0.fuse-710018-redhat-00002/xml/features
...
```

```
========== Repositories to add (9):
 - mvn:io.hawt/hawtio-karaf/2.0.0.fuse-720044-redhat-00001/xml/features
...
========== Repositories to keep (10):
 - mvn:org.apache.activemq/artemis-features/2.4.0.amq-711002-redhat-1/xml/features
...
========== Features to update (100):
[name]                  [version]                  [new version]
aries-blueprint         4.2.0.fuse-710024-redhat-00002    4.2.0.fuse-720061-redhat-
00001
...
========== Bundles to update as part of features or core bundles (100):
[symbolic name]                                    [version]                  [new location]
io.hawt.hawtio-log                                 2.0.0.fuse-710018-redhat-00002
mvn:io.hawt/hawtio-log/2.0.0.fuse-720044-redhat-00001
...
========== Bundles to reinstall as part of features or core bundles (123):
[symbolic name]                                    [version]                  [location]
com.fasterxml.jackson.core.jackson-annotations     2.8.11
mvn:com.fasterxml.jackson.core/jackson-annotations/2.8.11
...
Simulation only - no files and runtime data will be modified.
karaf@root()>
```

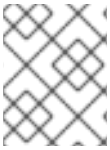
This generates a log of the changes that will be made to the container when the upgrade is performed, but will not make any actual changes to the container. Review the simulation log to understand the changes that will be made to the container.

4. Upgrade the container by invoking the **patch:install** command and specifying the upgrade ID for the upgrade that you want to apply. For example:

```
karaf@root()> patch:install fuse-karaf-7.11.0.fuse-7_11_0-00036-redhat-00001
```

5. Validate the upgrade, by searching for one of the upgrade artifacts. For example, if you had just upgraded Fuse 7.1.0 to Fuse 7.2.0, you could search for bundles with the build number, 7_11_0-00023-redhat-00001, as follows:

```
karaf@root()> bundle:list -l | grep 7_11_0-00023-redhat-00001
 22 │ Active │  80 │ 7.11.0.fuse-7_11_0-00036-redhat-00001  │
mvn:org.jboss.fuse.modules/fuse-pax-transx-tm-narayana/7.11.0.fuse-7_11_0-00036-
redhat-00001
188 │ Active │  80 │ 7.11.0.fuse-7_11_0-00036-redhat-00001  │
mvn:org.jboss.fuse.modules.patch/patch-commands/7.11.0.fuse-7_11_0-00036-redhat-
00001
```



NOTE

After upgrading, you also see the new version and build number in the Welcome banner when you restart the container.

8.3. ROLLING BACK AN UPGRADE FOR FUSE ON KARAF

Occasionally an upgrade might not work or might introduce new issues to a container. In these cases, you can easily roll back the upgrade and restore your system to its previous state using the **patch:rollback** command. This set of instructions guides you through this procedure.

Prerequisites

- You have recently upgraded Fuse on Karaf.
- You want to rollback the upgrade.

Procedure

1. Invoke the **patch:list** command to obtain the upgrade ID, **UPGRADE_ID**, of the most recently installed patch.
2. Invoke the **patch:rollback** command, as follows:

```
patch:rollback UPGRADE_ID
```

NOTE

In some cases the container needs to restart to roll back the upgrade. In these cases, the container restarts automatically. Due to the highly dynamic nature of the OSGi runtime, during the restart you might see some occasional errors related to incompatible classes. These errors are related to OSGi services that have just started or stopped and can be safely ignored.