



J. B. Hunt
Project NEXT
Spring Boot 2.1.6.RELEASE & Java 11 – OpEx –
Migration v0.1



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1.0 Table of Contents

1.0	Overview	5
2.0	Targetted Upgrade	5
2.1	In Scope.....	5
2.1.1	Technology Upgrade.....	5
2.1.2	JBH Parent Pom Upgrade	5
2.2	Out of scope.....	5
2.3	Assumptions.....	6
2.4	Open Items.....	6
2.5	Risks / Issues	6
3.0	Java 11 Upgrade.....	6
3.1	Java 8 to 11 Release notes xls	6
3.2	In scope for upgrade	6
3.3	Out scope for upgrade	6
3.4	Detailed design for Inscope components	7
3.5	Reference projects.....	7
3.6	Assumptions.....	7
3.7	Open Items.....	7
3.8	Risks / Issues	7
4.0	Spring & Spring Boot Upgrade.....	7
4.1	Spring Boot 1.5.9 to 2.1.6 release notes xls	7
4.2	In scope for upgrade	7
4.3	Out scope for upgrade	8
4.4	Detailed design for Inscope components	8
4.5	Reference projects.....	8
4.6	Assumptions.....	8
4.7	Open Items.....	8
4.8	Risks / Issues	8
5.0	OAuth Upgrade	8
5.1	In scope for upgrade	8
5.2	Out scope for upgrade	9
5.3	Detailed design for Inscope components	9
5.3.1	Java Security Configuration Changes.....	9
5.3.2	YML entry	9
5.4	Reference projects.....	10
5.5	Assumptions.....	10
5.6	Open Items.....	10
5.7	Risks / Issues	10

6.0	OpEx POC Project details.....	10
6.1	Angular Project	10
6.1.1	GIT URLs	10
6.1.2	Changes made	10
6.1.3	App URL.....	10
6.1.4	Testing scope and results	10
6.1.5	Open Items.....	10
6.1.6	Risks and Issues	10
6.2	WS project	10
6.2.1	GIT URLs	10
6.2.2	Changes made	11
6.2.3	App URL.....	11
6.2.4	Testing scope and results	11
6.2.5	Open Items.....	11
6.2.6	Risks and Issues	11
6.3	Listener project.....	11
6.3.1	GIT URLs	11
6.3.2	Changes made	11
6.3.3	App URL.....	11
6.3.4	Testing scope and results	11
6.3.5	Open Items.....	11
6.3.6	Risks and Issues	11
6.4	Batch project.....	11
6.4.1	GIT URLs	11
6.4.2	Changes made	11
6.4.3	App URL.....	11
6.4.4	Testing scope and results	11
6.4.5	Open Items.....	11
6.4.6	Risks and Issues	11
6.5	Lib DTO / Client / Entity project	11
6.5.1	GIT URLs	11
6.5.1.1	DTO	11
6.5.1.2	Entity	11
6.5.1.3	Client.....	12
6.5.2	Changes made	12
6.5.3	App URL.....	12
6.5.4	Testing scope and results	12
6.5.5	Open Items.....	12
6.5.6	Risks and Issues	12

7.0	Version Control	12
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Document Properties

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1.0 Overview

Objective(Goal)	The objective of the document is to give an overview on Spring Boot 2.1.6.RELEASE migration for entire OpEx Project. It also speaks of the Spring Framework 5 & Java 11 migration and define in detail about the benefits, configuration details of the system involved and their features.
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2.0 Targetted Upgrade

2.1 In Scope

2.1.1 Technology Upgrade

Technology	Version		Level
	From	To	
Spring Boot	1.5.9 RELEASE	2.1.6.RELEASE	Mandatory
Spring Framework	4.3.6.RELEASE	5.1.8.RELEASE	Mandatory
Spring Batch	spring-batch-admin-manager	spring-cloud-data-flow	Mandatory
Java	8	11	Mandatory
Maven	3.2.1	3.3+	Mandatory
Hibernate	5.0	5.3+	Mandatory
ehcache	2.x	3.x	Mandatory
Tomcat	8	9	Mandatory
Map struct	1.0.0.Final	1.3.0.Final	Mandatory

2.1.2 JBH Parent Pom Upgrade

Group Id	Artifact Id	Version
com.jbhunt	jbhunt_starter_parent	2.1.21

2.2 Out of scope

- Only Spring Boot and Java libraries planned for this upgrade. Other frameworks and libraries upgrade are beyond the scope of this upgrade.

2.3 Assumptions

- We can add only the jbhunt-subsystem's libraries as a maven dependency for any particular project pom.
- Any parent pom changes would not affect the consuming maven projects.

2.4 Open Items

- “spring-batch-admin-manager” service has already reached EOL, we do not suppose to use. Do we need to migrate to the Spring Cloud Data Flow?
- JBHunt Parent POM may have all the maven dependency that I do not want to use on my project, so I guess using single parent pom for all ws, listener, DTO and Entity project will not be suitable. Do we have any strategy to follow how can we solve this?
- Jenkins builder is using java 8 to compile and deploy the library [DTO / Entity / Client] project’s code. So do we have any plan to upgrade Jenkins?

2.5 Risks / Issues

- “spring-batch-admin-manager” service has already reached EOL.

3.0 Java 11 Upgrade

3.1 Java 8 to 11 Release notes xls



3.2 In scope for upgrade

Feature	Level	POC
Using Java Platform Module System, we can create our own custom JRE with only Java modules required for application need. This greatly reduces memory footprint. We can create it using jlink command.	Optional	Yet to complete
Complete the removal, begun in Java SE 8, of the underscore from the set of legal identifier names.	Mandatory	Yet to complete
HTTP/2 – Reactive Programming [Which can be permanent solution for the STOMP delay issue.]	Optional	Yet to complete
Remove the JavaEE Modules. <ul style="list-style-type: none"> • Java Transaction API (JTA) in the package javax.transaction • JAXB in the packages javax.xml.bind.* • JAX-WS in the packages javax.jws, javax.jws.soap, javax.xml.soap, and javax.xml.ws.* • Commons Annotation in the package javax.annotation 	Mandatory	Yet to complete
Map Struct upgrade from mapstruct-jdk8 1.0.0.Final to mapstruct1.3.0.Final	Mandatory	Yet to complete

3.3 Out scope for upgrade

- Java 11 is the scope of this section, other than that beyond the scope.

3.4 Detailed design for Inscope components

- TBD.

3.5 Reference projects

GIT URL	https://jbhunt.visualstudio.com/EngAndTech/_git/ws_loadplanning_integration_backfill
Project	ws_loadplanning_integration_backfill
Branch	spring2.1.6_migration

GIT URL	https://jbhunt.visualstudio.com/EngAndTech/_git/listener_obc_message_sync
Project	listener_obc_message_sync
Branch	spring2.1.6_migration

3.6 Assumptions

- TBD.

3.7 Open Items

- Is JBHunt recommending jdk is Zulu jdk 11, which is available on software center?
 - Yes. [Clarified by Surajit]

3.8 Risks / Issues

- TBD.

4.0 Spring & Spring Boot Upgrade

4.1 Spring Boot 1.5.9 to 2.1.6 release notes xls



4.2 In scope for upgrade

Spring Boot 1.5.9.RELEASE	Spring Boot 2.1.6.RELEASE	Level
org.springframework.boot.web.support.SpringBootServletInitializer	org.springframework.boot.web.servlet.support.SpringBootServletInitializer	Mandatory
org.springframework.boot.autoconfigure.jdbc.DataSourceBuilder	org.springframework.boot.jdbc.DataSourceBuilder	Mandatory
org.springframework.data.querydsl.QueryDslPredicateExecutor	org.springframework.data.querydsl.QueryDslPredicateExecutor	Mandatory

org.springframework.cloud.netflix.feign.EnableFeignClients	org.springframework.cloud.openfeign.EnableFeignClients	Mandatory
org.springframework.boot.autoconfigure.web.HttpMessageConverters	org.springframework.boot.autoconfigure.http.HttpMessageConverters	Mandatory
org.springframework.ws.soap.security.wss4j.Wss4jSecurityInterceptor	org.springframework.ws.soap.security.wss4j2.Wss4jSecurityInterceptor	Mandatory
org.springframework.web.context.request.RequestAttributes	org.springframework.web.context.request.WebRequest	Mandatory
org.springframework.boot.autoconfigure.web.DefaultErrorAttributes	org.springframework.boot.web.servlet.error.DefaultErrorAttributes	Mandatory
org.springframework.web.context.request.ServletWebRequestAttributes	org.springframework.web.context.request.ServletWebRequest	Mandatory
	org.springframework.web.servlet.config.annotation.WebServletConfigurer	Mandatory
ehcache 2.x is available under net.sf.ehcache package	ehcache 3.x is available under org.ehcache package	Mandatory
Hibernate 5.0.11	Hibernate 5.3 [JPA 2.2]	Mandatory
spring-batch-admin-manager	spring-cloud-data-flow	Mandatory
spring-cloud-dependencies Edgware.SR2	spring-cloud-dependencies Greenwich.RC1	Mandatory

4.3 Out scope for upgrade

- TBD.

4.4 Detailed design for Inscope components

- TBD.

4.5 Reference projects

- TBD.

4.6 Assumptions

- TBD.

4.7 Open Items

- “spring-batch-admin-manager” service has already reached EOL, we do not supposed to use. Do we need to migrate to the Spring Cloud Data Flow?

4.8 Risks / Issues

- TBD.

5.0 OAuth Upgrade

5.1 In scope for upgrade

Feature	Level	POC
Java will expose all services with OAuth compatibility.	Mandatory	Yet to complete
Angular will call the java services with security token by passing on header detail	Mandatory	Yet to complete

5.2 Out scope for upgrade

Feature	Level	POC
Retain PID security for Active MQ communication.	Mandatory	Yet to complete

5.3 Detailed design for Inscope components

5.3.1 Java Security Configuration Changes

```

import static com.jbhunt.autoconfigure.security.esa.JBHAuthorizationAccessLevel.POWER;
import static com.jbhunt.autoconfigure.security.esa.JBHAuthorizationAccessLevel.SUPER;
import static com.jbhunt.autoconfigure.security.esa.JBHAuthorizationAccessLevel.UPDATE;

import org.springframework.context.annotation.Configuration;
import org.springframework.http.HttpMethod;
import org.springframework.security.config.annotation.web.builders.HttpSecurity;

import com.jbhunt.autoconfigure.security.JbhSecurity;
import com.jbhunt.autoconfigure.security.oauth2.configuration.WebServiceSecurityConfigurerAdapter;

@Configuration
@JbhSecurity(esaMode = JbhSecurity.EsaMode.IMPORSONATION)
public class SecurityConfiguration extends WebServiceSecurityConfigurerAdapter {

    @Override
    protected void configureAppSecurity(HttpSecurity http) throws Exception {

        http.authorizeRequests()
            .antMatchers("/health", "/info", "/actuator", "/trace", "/docs/**", "/beans", "/metrics")
            .permitAll()
            .antMatchers(HttpMethod.POST, "/ruleexecutions")
            .hasAnyAuthority(UPDATE.getAuthority(), POWER.getAuthority(), SUPER.getAuthority())
            .anyRequest()
            .denyAll();
    }
}

```

5.3.2 YML entry

```

jhbhunt:
  oauth2:
    public-key-url: https://oauth2-dev.jbhunt.com/oauth2provider/oauth/publickey
    resource-server-name: ws_operationsexecution_ruleresult
    resource-id-resolver-url: https://oauth2-dev.jbhunt.com/oauth2admin/clientId/appName

```

5.4 Reference projects

5.5 Assumptions

5.6 Open Items

- Do we need to keep PID configuration after implemented the OAuth?
- Is there any solution to using OAuth in Active MQ settings?

5.7 Risks / Issues

1.1

6.0 OpEx POC Project details

6.1 Angular Project

6.1.1 GIT URLs

URL	https://jbehunt.visualstudio.com/EngAndTech/_git/app_operationsexecution_loads_ui
Project	app_operationsexecution_loads_ui
Branch	OAuth_poc

URL	https://jbehunt.visualstudio.com/EngAndTech/_git/app_operationsexecution_loads_api
Project	app_operationsexecution_loads_api
Branch	OAuth_poc

6.1.2 Changes made

6.1.3 App URL

6.1.4 Testing scope and results

6.1.5 Open Items

6.1.6 Risks and Issues

6.2 WS project

6.2.1 GIT URLs

URL	https://jbehunt.visualstudio.com/EngAndTech/_git/ws_operationsexecution_resourcenotes
Project	ws_operationsexecution_resourcenotes
Branch	spring2.1.6_migration

- 6.2.2 Changes made**
- 6.2.3 App URL**
- 6.2.4 Testing scope and results**
- 6.2.5 Open Items**
- 6.2.6 Risks and Issues**

6.3 Listener project

6.3.1 GIT URLs

URL	https://jhbhunt.visualstudio.com/EngAndTech/_git/listener_operationsexecution_resourcenotes
Project	listener_operationsexecution_resourcenotes
Branch	spring2.1.6_migration

- 6.3.2 Changes made**
- 6.3.3 App URL**
- 6.3.4 Testing scope and results**
- 6.3.5 Open Items**
- 6.3.6 Risks and Issues**

6.4 Batch project

6.4.1 GIT URLs

URL	https://jhbhunt.visualstudio.com/EngAndTech/_git/batch_obc_equipmentpositions
Project	batch_obc_equipmentpositions
Branch	spring2.1.6_migration

- 6.4.2 Changes made**
- 6.4.3 App URL**
- 6.4.4 Testing scope and results**
- 6.4.5 Open Items**
- 6.4.6 Risks and Issues**

6.5 Lib DTO / Client / Entity project

6.5.1 GIT URLs

6.5.1.1 DTO

URL	https://jhbhunt.visualstudio.com/EngAndTech/_git/lib_operationsexecution_resourcenotesDto
Project	lib_operationsexecution_resourcenotesDto
Branch	spring2.1.6_migration

6.5.1.2 Entity

URL	https://jhbhunt.visualstudio.com/EngAndTech/_git/lib_operationsexecution_resourcenotesEntity
Project	lib_operationsexecution_resourcenotesEntity

Branch	spring2.1.6_migration
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6.5.1.3 Client

URL	https://jbhunt.visualstudio.com/EngAndTech/_git/lib_operationsexecution_resourcenotes_elastic_client
Project	lib_operationsexecution_resourcenotes_elastic_client
Branch	spring2.1.6_migration

6.5.2 Changes made

6.5.3 App URL

6.5.4 Testing scope and results

6.5.5 Open Items

6.5.6 Risks and Issues

7.0 Version Control

Version #	Modified By	Description of Changes
0.1	Jayandh Vijayakumar	Initial version