



WildFlies and a Camel

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May, 2015

WildFly 

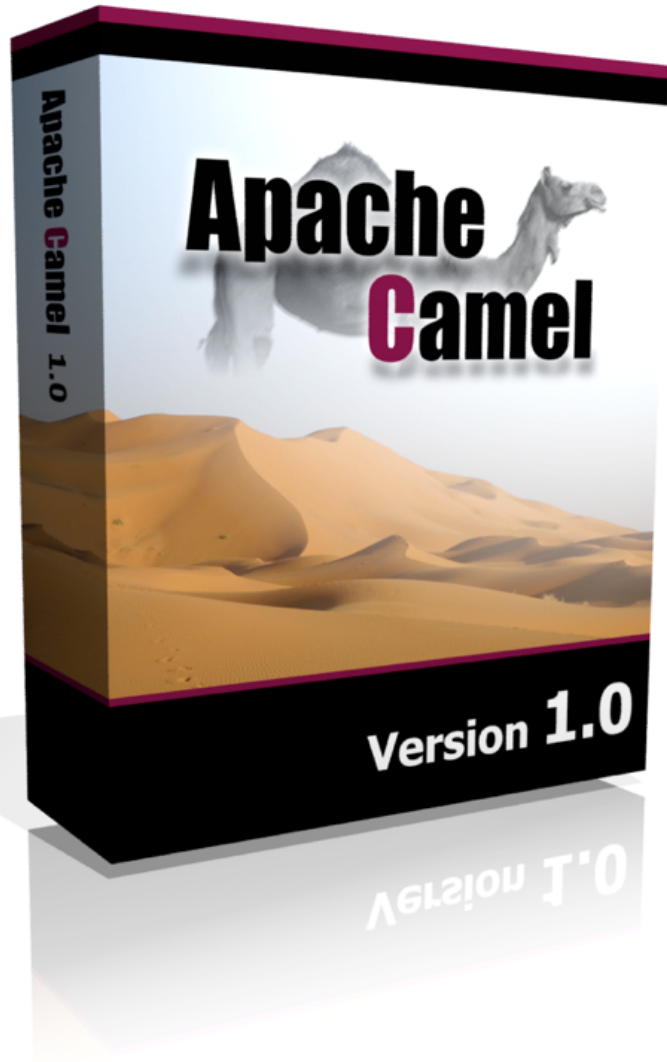
WildFly 

WildFly 

WildFly 

WildFly 







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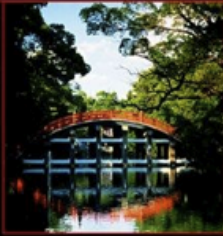
The Addison-Wesley Signature Series

ENTERPRISE INTEGRATION PATTERNS

DESIGNING, BUILDING, AND
DEPLOYING MESSAGING SOLUTIONS

GREGOR HOHPE
BOBBY WOOLF




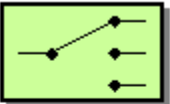
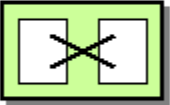
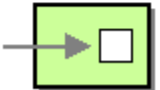
WITH CONTRIBUTIONS BY
KYLE BROWN
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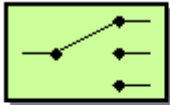

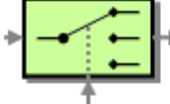
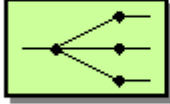

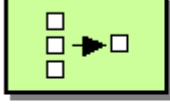
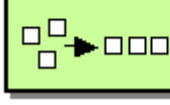
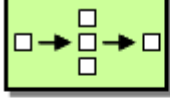
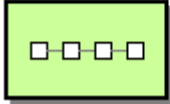



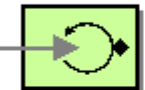
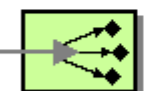
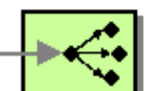
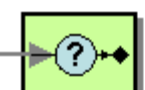

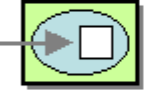
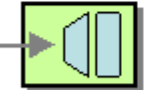

Forewords by John Crupi and Martin Fowler

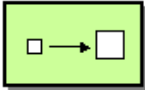
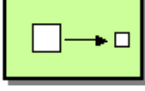
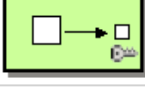
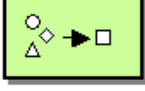
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	Message Channel
	Message
	Pipes and Filters
	Message Router
	Message Translator
	Message Endpoint

	Content Based Router
	Message Filter
	Dynamic Router
	Recipient List
	Splitter
	Aggregator
	Resequencer
	Composed Message Processor
	Scatter-Gather
	Routing Slip

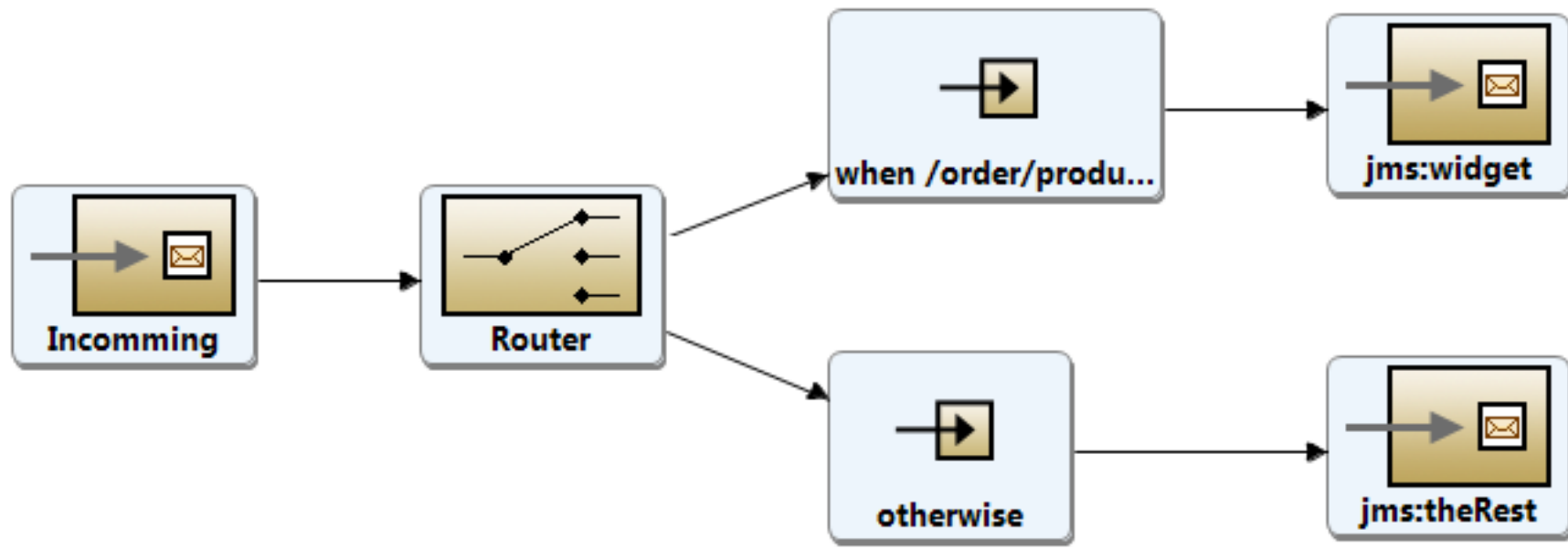
	Messaging Mapper
	Event Driven Consumer
	Polling Consumer
	Competing Consumers
	Message Dispatcher
	Selective Consumer
	Durable Subscriber
	Idempotent Consumer
	Transactional Client
	Messaging Gateway
	Service Activator

	Content Enricher
	Content Filter
	Claim Check
	Normalizer
	Sort
	Validate

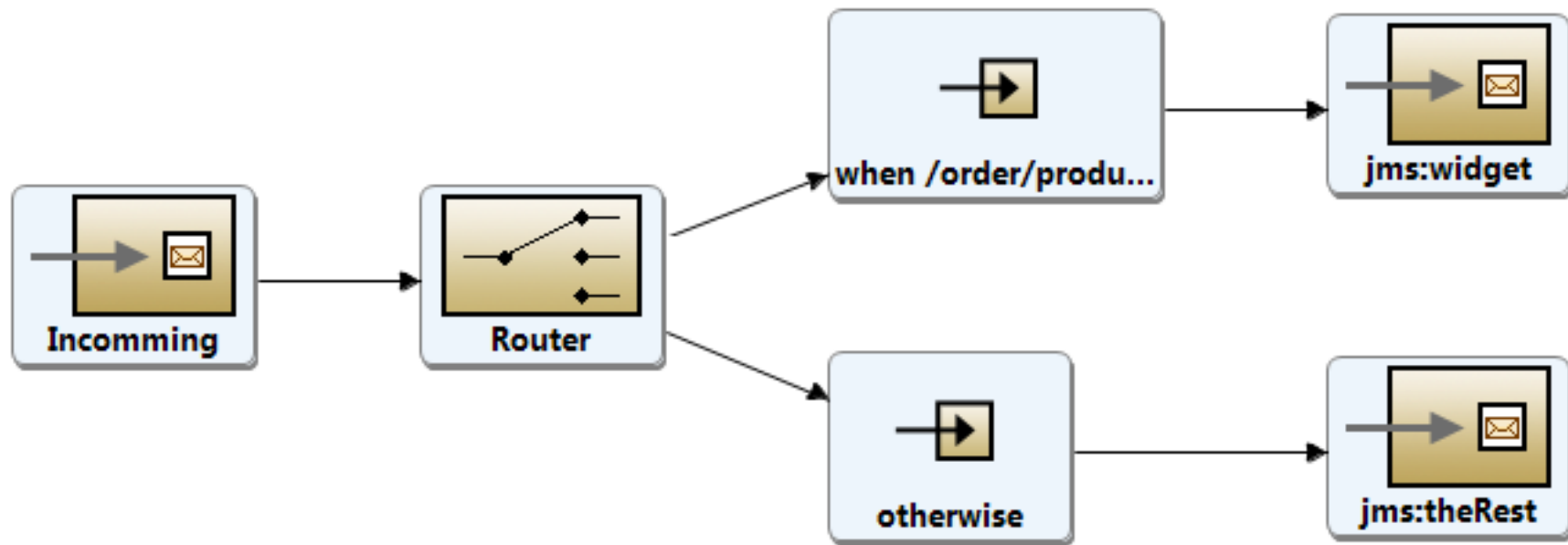
Why Camel?

- **Open source integration library**
- **Simple lightweight, use in any JVM or application server**
- **Connects to anything**
- **100s of components connecting to databases, file systems, messaging systems, big data, SaaS providers, social media, ...**
- **Lots of tooling**

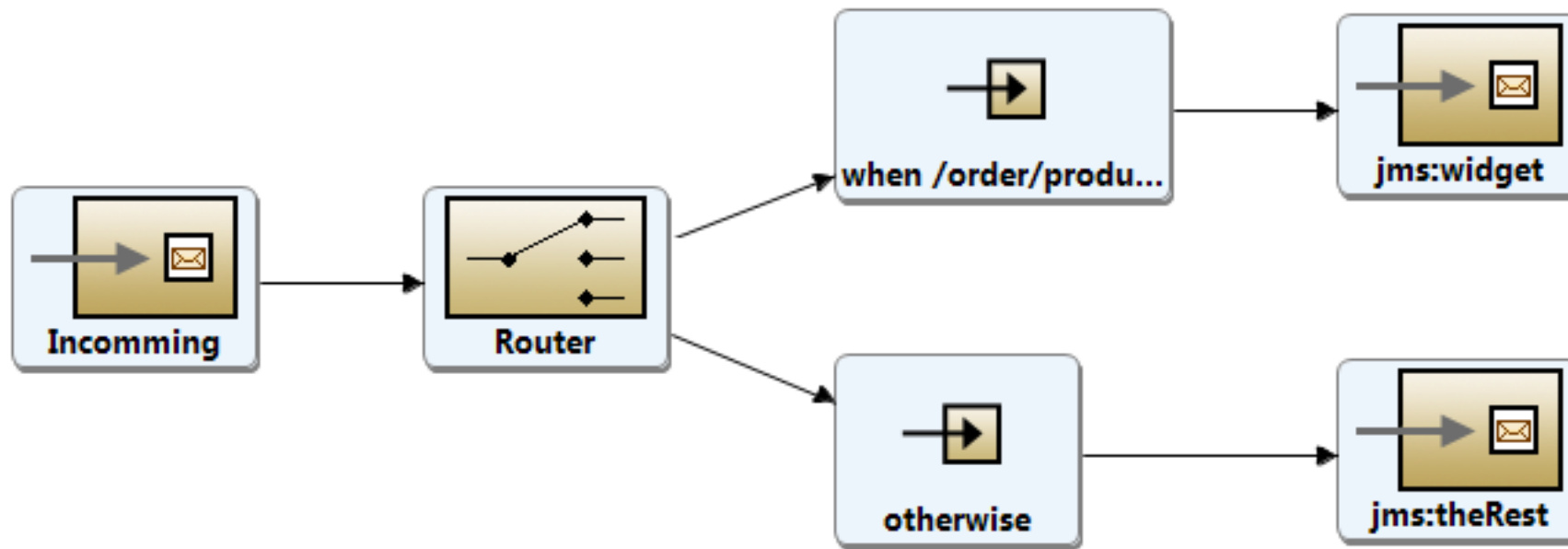
Camel Basics



from `newOrder`
choice



from `newOrder`
choice
when `isWidget` to `widget`

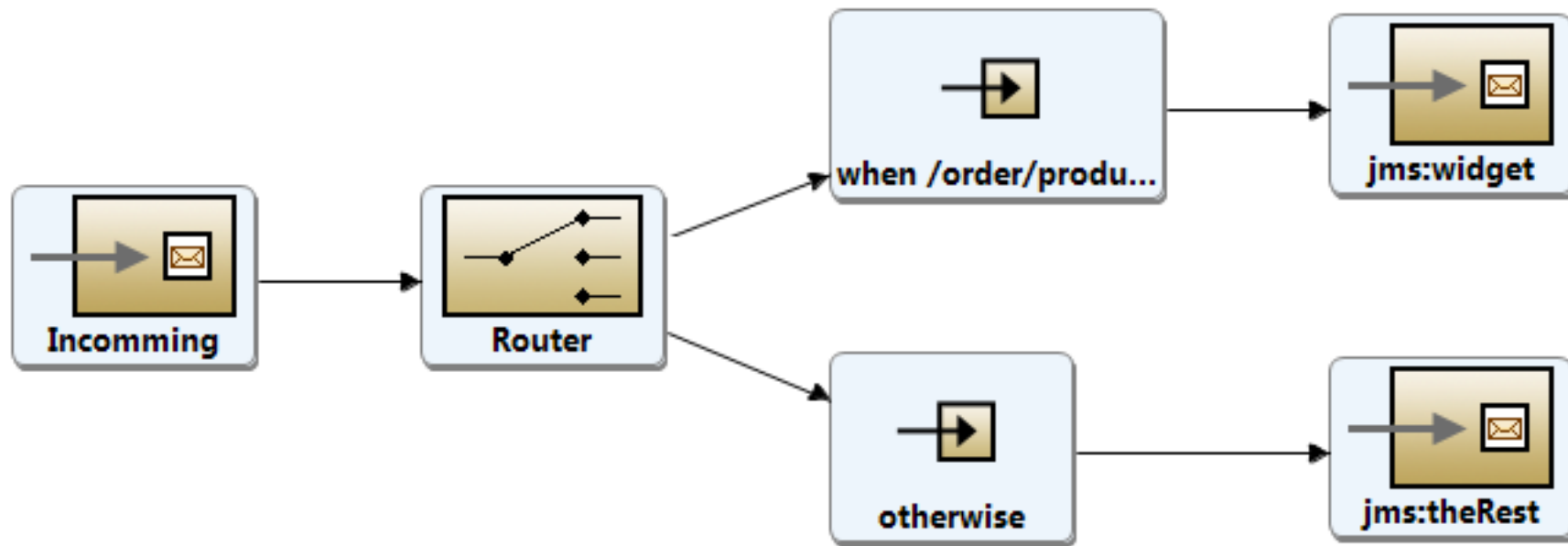


from `newOrder`

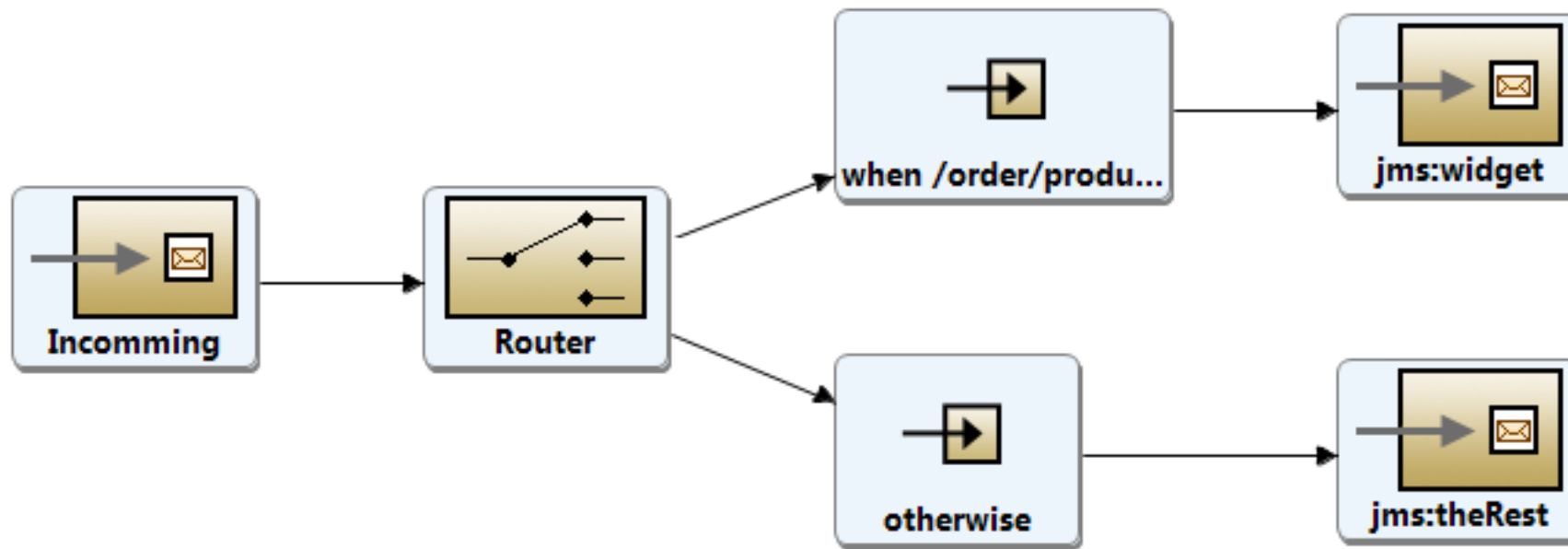
choice

when `isWidget` to `widget`

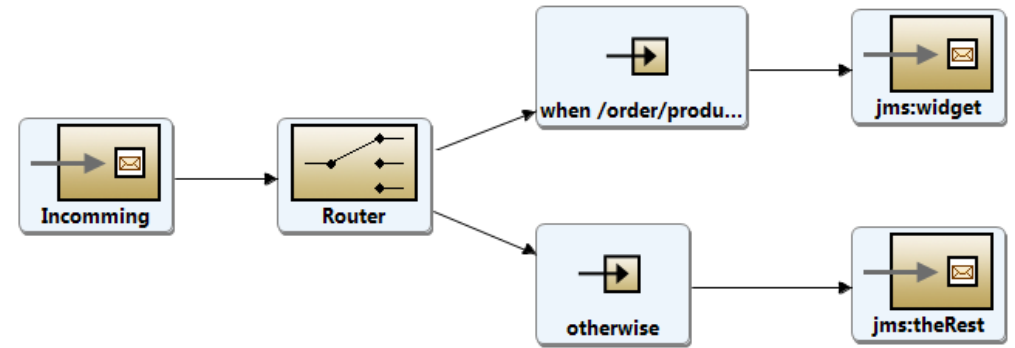
otherwise to `theRest`



```
from (newOrder)
  choice
    when (isWidget) to (widget)
    otherwise to (theRest)
```



```
from (newOrder)  
  .choice()  
    .when(isWidget).to(widget)  
    .otherwise().to(theRest);
```

```
Endpoint newOrder = endpoint("jms:incomming");  
Predicate isWidget = xpath("/order/product/type = 'widget'");  
Endpoint widget = endpoint("jms:widget");  
Endpoint gadget = endpoint("jms:theRest");
```

```
from (newOrder)  
  .choice()  
    .when(isWidget).to(widget)  
    .otherwise().to(theRest);  
  .end();
```

Java code

```
import org.apache.camel.Endpoint;
import org.apache.camel.Predicate;
import org.apache.camel.builder.RouteBuilder;

public class MyRoute extends RouteBuilder {

    public void configure() throws Exception {
        Endpoint newOrder = endpoint("jms:incomming");
        Predicate isWidget = xpath("/order/product/type = 'widget'");
        Endpoint widget = endpoint("jms:widget");
        Endpoint gadget = endpoint("jms:theRest");

        from(newOrder)
            .choice()
                .when(isWidget).to(widget)
                .otherwise().to(theRest)
            .end();
    }
}
```

Cool!

Java DSL

```
import org.apache.camel.builder.RouteBuilder;

public class MyRoute extends RouteBuilder {

    public void configure() throws Exception {

        from("jms:incomming")
            .choice()
                .when(xpath("/order/product/type = 'widget'"))
                    .to("jms:widget")
                .otherwise().to("jms:theRest")
            .end();
    }
}
```

XML DSL

```
<route>
  <from uri="jms:newOrder" />
  <choice>
    <when>
      <xpath>/order/product/type='widget' </xpath>
      <to uri="jms:widget"/>
    </when>
    <otherwise>
      <to uri="jms:theRest"/>
    </otherwise>
  </choice>
</route>
```


Groovy DSL

```
import org.apache.camel.builder.RouteBuilder;

public class MyRoute extends RouteBuilder {

    public void configure() throws Exception {

        from("jms:incomming")
            .choice()
                .when({ it.in.header('zipcode') ==~ /\d+/ })
                    .to("jms:widget")
                .otherwise().to("jms:theRest")
            }
    }
}
```

Scala DSL

```
class FilterRoute {  
  def createMyFilterRoute = new RouteBuilder {  
    from("direct:start")  
      .filter(_.in("gold") == "true")  
      .to("mock:gold")  
  }  
}
```

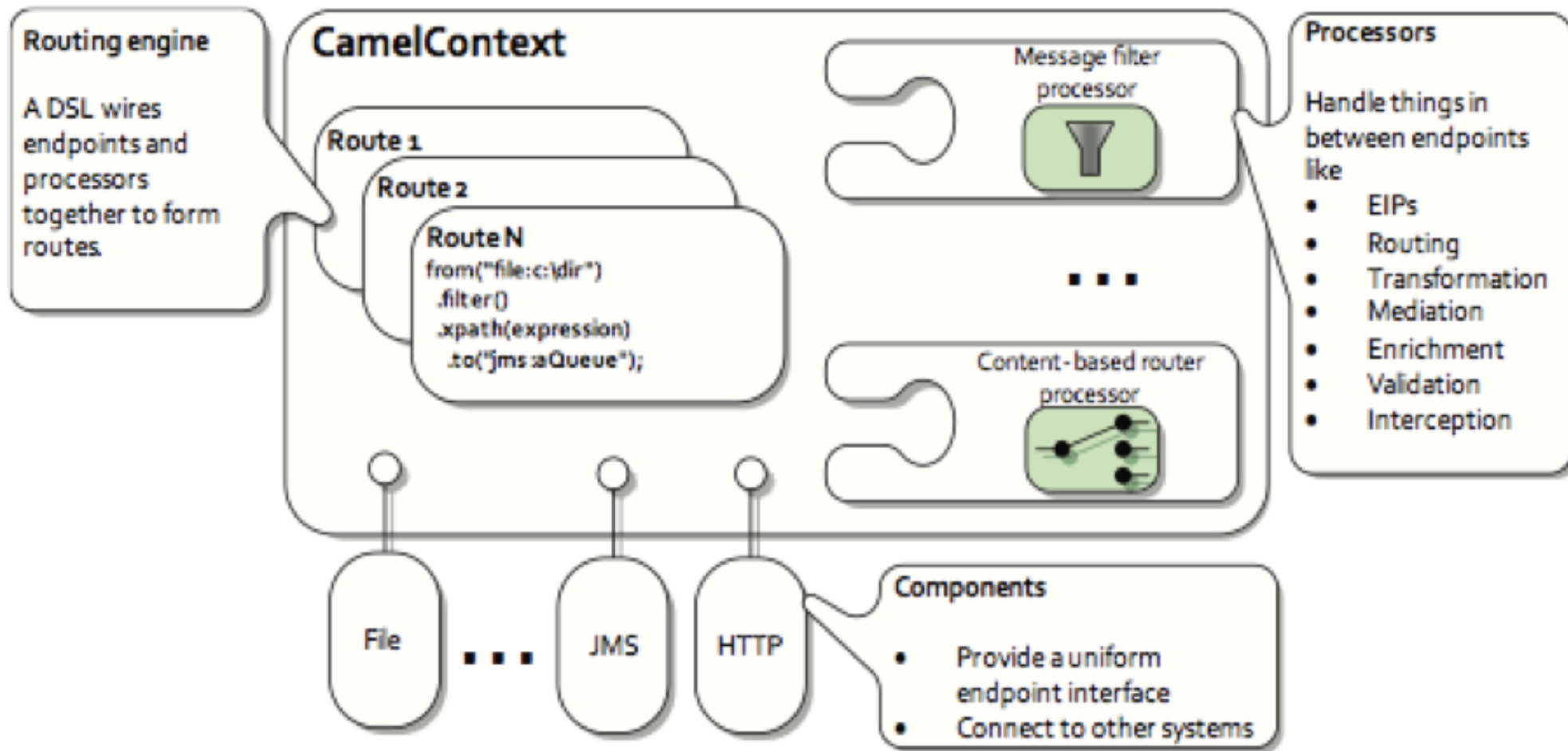
Endpoints as URIs

```
import org.apache.camel.builder.RouteBuilder;

public class MyRoute extends RouteBuilder {

    public void configure() throws Exception {

        from("file:inbox/orders?delete=true")
            .choice()
                .when(xpath("/order/product/type = 'widget'"))
                    .to("jms:widget")
                .otherwise().to("jms:theRest")
            .end();
    }
}
```



150+ Components

<http://camel.apache.org/component.html>

```
rest("/user").description("User rest service")
    .consumes("application/json").produces("application/json")

    .get("/{id}").description("Find user by id").outType(User.class)
        .to("bean:userService?method=getUser(${header.id})")
    .put().description("Updates or create a user").type(User.class)
        .to("bean:userService?method=updateUser")
    .get("/findAll").description("Find all users").outTypeList(User.class)
        .to("bean:userService?method=listUsers");
```

User Services

Camel Rest Example with Swagger that provides an User REST service

user : User rest service

Show/Hide | List Operations | Expand Operations | Raw

PUT /user Updates or create a user

GET /user/{id} [Find user by id](#)

Response Class

Model | Model Schema

```
{
  "id": 0,
  "name": ""
}
```

Response Content Type

Parameters

Parameter	Value	Description	Parameter Type	Data Type
id	<input type="text" value="(required)"/>		path	string

[Try it out!](#)

GET /user/findAll [Find all users](#)

19 Data Formats

<http://camel.apache.org/data-format.html>


```
// lets turn Object messages into json (Xstream) then send to MQSeries
```

```
from("activemq:My.Queue")  
  .marshal().json()  
  .to("mqseries:Another.Queue");
```

```
/** Alternative Libraries  
  marshal().json(JsonLibrary.Jackson)  
  marshal().json(JsonLibrary.Gson).  
**/
```

15 Expression Languages

<http://camel.apache.org/languages.html>

```
// lets route if a line item is over $100
from("queue:foo")
.filter(groovy("request.lineItems.any { i -> i.value > 100 }"))
.to("queue:bar")
```

```
// route exchanges from admin users to a special queue.
from("direct:start")
    .choice()
        .when()
            .javascript("request.headers.get('user') == 'admin'")
                .to("seda:adminQueue")
        .otherwise()
            .to("seda:regularQueue");
```

Wow!

- **Integration Framework**
- **Enterprise Integration Patterns (EIP)**
- **Routing DSLs**
- **Endpoint as URIs**
- **Just Java or XML code (or even more)**
- **No Container Dependency**
- **A hell lot of ready made components**
- **Expressions and Date-Formats**

FTW!

Deploying Camel

camel-core.jar = 2.8 MB!

- **Deployment Strategy**
 - No Container Dependency
 - Lightweight & Embeddable
- **Deployment Options**
 - Standalone
 - WAR
 - Spring
 - Java EE
 - OSGi
 - Cloud

- **Containers**

- Apache ActiveMQ
- Apache Karaf
- Apache ServiceMix
- Apache Tomcat
- Fabric8
- JBoss AS / WildFly
- JBoss Fuse
- JBoss Fuse Service Works
- Jetty
- WebLogic
- Glassfish
- WebSphere

Camel & Java EE

#1 Camel CDI

```
@Singleton
@Startup
public class Bootstrap {
    @Inject
    CdiCamelContext context;

    @PostConstruct
    public void init() {

        // create routes

        // Start Camel Context
        context.start();
    }

    @PreDestroy
    public void shutdown() {
        // Graceful Shutdown Camel Context
        context.stop();
    }
}
```

Keep in Mind!

- **Not all components are working as expected**
- **Deployment gets really large**
- **Easy to run into classloading issues**

#2 Custom Module

- **Create a Spring Module**
- **Create a Camel Module**

Keep in Mind!

- **The module dependencies have to be correct.**
- **Need to reference modules from `jboss-deployment-structure.xml`**
- **No pre-build list / no support**

#3 Camel Subsystem

- **Simply apply the wildfly-camel-patch to a compatible wildfly version**
- **wildflyext/wildfly-camel docker distribution**

Keep in Mind!

- **Not all components contained so far**
- **Still under development**
- **Growing component base**

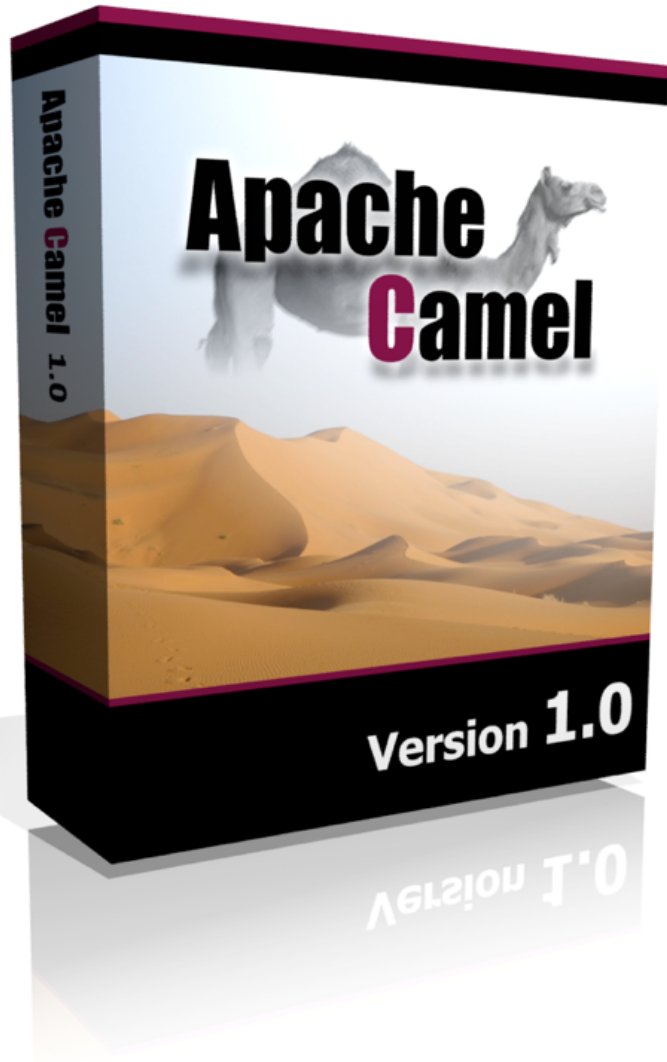
**Camel and
JavaEE
are awesome!**



What users are telling us

- **Camel rocks in development**
- **very easy to get started and create small projects**
- **can I have more tooling?**
- **need help scaling to 1000s of services and integration flows**
- **need help moving integration solutions through Continuous Deployment pipeline**

Something is missing



<http://fabric8.io/>

- **an open source integration platform**
- **designed to make it easy to deploy, manage and scale integration solutions**
- **helps move integration solutions from dev -> test -> prod**

What does it do?

- **provision, configure and manage services**
- **perform incremental and rolling upgrades of changes**
- **discovery and load balancing of services**
- **elastic scaling of services**

How does that look like?

Fabric8 V1.x

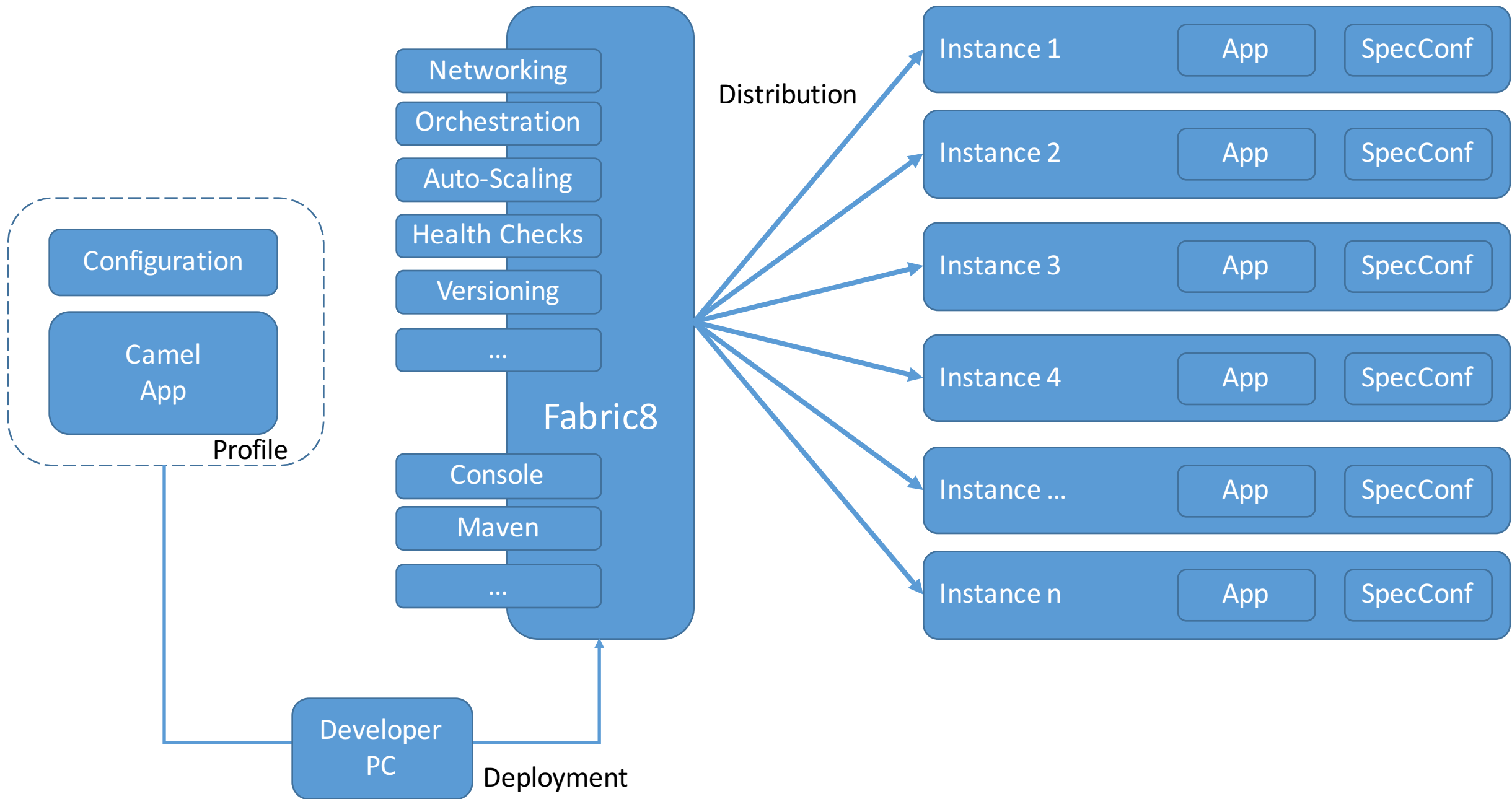


- **Implemented with Zookeeper and git**
- **Intended to be used with a dynamic JVM/Apache Karaf**
- **Profiles store configuration, metadata, end-state deployments**
- **Networking, JVM isolation, orchestration, auto-scaling, health checks, cloud deployments: all up to you**

Fabric8 V1.x



- **Registry**
 - Where configs are stored, everything centrally managed
- **Profiles**
 - Description of end-state deployment of a server
- **Agent**
 - Listens on the server that can respond to registry changes/profile updates



Fabric8 V2



- **Implemented with Docker and Kubernetes**
- **Use any JVM (or any technology)**
- **Docker images, encourage static, well-defined, well-tested deployments**
- **Provides networking, JVM isolation, orchestration, auto-scaling, health checks, cloud deployments**
- **Still in community!**
- **Will support OpenShift v3**

- Profiles
- Runtime Registry
- Configuration Repository
- Tooling
- Profiles

V1 vs. V2

- Docker
- Kubernetes
 - PODs
 - Labels
 - Services
 - Apps
 - App Zips
 - Builds

Download and install

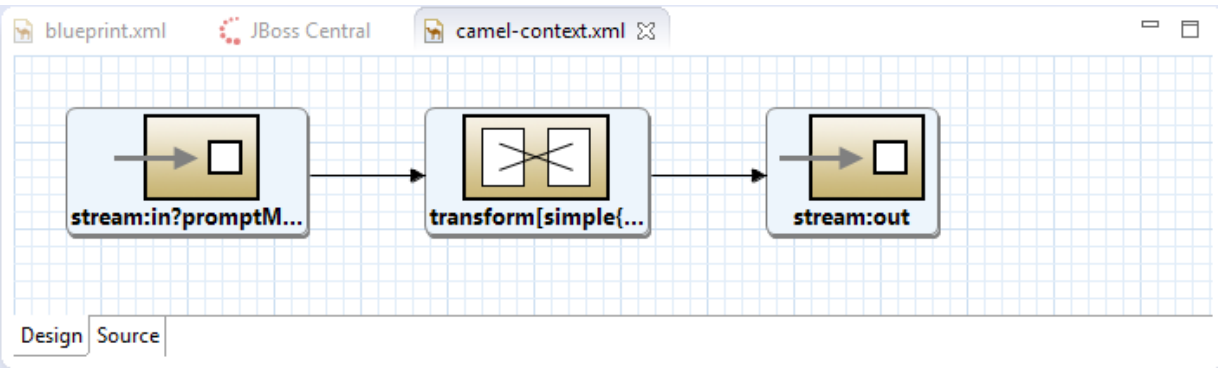
<http://camel.apache.org/download.html>

<http://fabric8.io/v2/>

<http://www.jboss.org/products/devstudio/overview/>

Projec... Packa...

- camel-example-console
 - src/main/java
 - src/main/resources
 - META-INF
 - spring
 - camel-context.xml
 - LICENSE.txt
 - NOTICE.txt
 - log4j.properties
 - JRE System Library [JavaSE-1.6]
 - Maven Dependencies
 - src
 - target
 - pom.xml
 - README.txt



Outline Palette

- Select
- Endpoints
 - Endpoint
- Routing
 - Aggregate
 - Choice
- Control Flow

Problems Properties Servers Console OpenShift Explorer

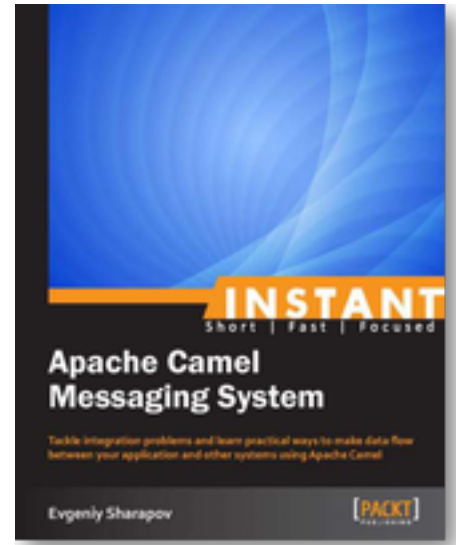
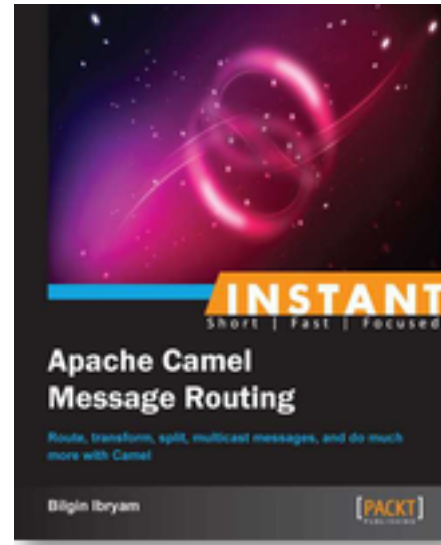
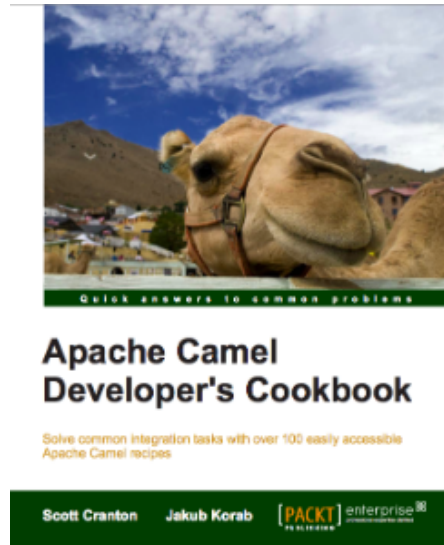
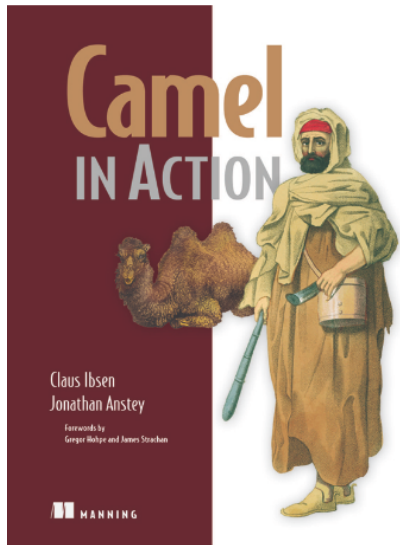
camel-example-console (1) [Maven Build] D:\jdk1.7.0_65\bin\javaw.exe (Jan 20, 2015, 9:53:10 AM)

```

Downloaded: http://repo.maven.apache.org/maven2/org/springframework/spring-test/3.2.11.RELEASE/spring-test-3.2.11.RELEASE.jar (448 KB at 895.1 KB/sec)
Downloaded: http://repo.maven.apache.org/maven2/org/apache/aries/blueprint/org.apache.aries.blueprint/1.1.0/org.apache.aries.blueprint-1.1.0.jar (442 KB)
[INFO] Using org.apache.camel.spring.Main to initiate a CamelContext
[INFO] Starting Camel ...
[patche.camel.spring.Main.main()] MainSupport INFO Apache Camel 2.14.1 starting
[patche.camel.spring.Main.main()] ClassPathXmlApplicationContext INFO Refreshing org.springframework.context.support.ClassPathXmlApplicationContext@704
[patche.camel.spring.Main.main()] XmlBeanDefinitionReader INFO Loading XML bean definitions from file [D:\temp\apache-camel-2.14.1\apache-camel-2.14.1\resources\camel-context.xml]
[patche.camel.spring.Main.main()] DefaultListableBeanFactory INFO Pre-instantiating singletons in org.springframework.beans.factory.support.DefaultListableBeanFactory@912709f: defining beans [camelContext]; root of factory hierarchy
[patche.camel.spring.Main.main()] SpringCamelContext INFO Apache Camel 2.14.1 (CamelContext: camel-1) is starting
[patche.camel.spring.Main.main()] ManagedManagementStrategy INFO JMX is enabled
[patche.camel.spring.Main.main()] DefaultTypeConverter INFO Loaded 179 type converters
[patche.camel.spring.Main.main()] SpringCamelContext INFO AllowUseOriginalMessage is enabled. If access to the original message is not needed, you can set AllowUseOriginalMessage to false.
[patche.camel.spring.Main.main()] SpringCamelContext INFO StreamCaching is not in use. If using streams then its recommended to enable streamCaching.
[patche.camel.spring.Main.main()] SpringCamelContext INFO Route: route1 started and consuming from: Endpoint[stream://in?promptMessage=Enter something: asdasd]
[patche.camel.spring.Main.main()] SpringCamelContext INFO Total 1 routes, of which 1 is started.
[patche.camel.spring.Main.main()] SpringCamelContext INFO Apache Camel 2.14.1 (CamelContext: camel-1) started in 0.640 seconds
Enter something: asdasd
lsnASD
  
```

Wanna know more ?

<http://camel.apache.org/examples>



<http://camel.apache.org/mailling-lists.html>

<http://stackoverflow.com/questions/tagged/apache-camel>

<http://camel.apache.org/irc-room.html>

<http://fabric8.io/v2/>

What else ?



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FUSE SERVICE WORKS**

<http://camel.apache.org/commercial-camel-offerings.html>





**<http://bit.ly/virtualJBUG>
@vJBUG**

A nighttime cityscape of Boston, Massachusetts, featuring illuminated skyscrapers and buildings. The image is overlaid with a dark grid pattern. The text 'DEVNATION' is prominently displayed in the center.

DEVNATION

June 21-25, 2015 Boston, Massachusetts

