Fuse 7: L'integrazione ai tempi del container

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AGENDA

- Agile Integration
- Red Hat Fuse
- Fuse Online (syndesis)
- Demo
AGILE INTEGRATION
**SHORT HISTORY OF INTEGRATION**

- **Since the beginning of time**
  - ad hoc point to point spaghetti integration

- **First decade of 2000**
  - SOA and ESB

- **2003**
  - Enterprise Integration Patterns book published

- **2007**
  - Apache Camel first release

- **Nowadays**
  - Agile integration
ENTERPRISE IT IS UNDERGOING FUNDAMENTAL CHANGE

To remain competitive, businesses need an integration platform capable of supporting current and next generation architectures.
AGILE INTEGRATION: DEFINING A NEW METHOD FOR INTEGRATION IN THE HYBRID CLOUD

Traditional integration incompatible with hybrid cloud development

Centralize • Leverage • Simplify
Internal teams • Maximize use of resources

Modern architectures and app development requires more agile integration

Distributed Integration • APIs • Scalability
Agile Teams • Cloud App Dev • DevOps

USE INTEGRATION WHERE NEEDED, RATHER THAN CENTRALIZING
ADAPTING TO ORGANIZATIONAL CHANGE

Integration Competency Centers (ICC) → Do-it-yourself or Agile Teams
API-CENTRIC AGILE INTEGRATION
KEY FOUNDATIONAL CAPABILITIES NEEDED BY TODAY’S ENTERPRISES

DISTRIBUTED INTEGRATION
- LIGHTWEIGHT
- PATTERN BASED
- EVENT-ORIENTED
- COMMUNITY-SOURCED

CONTAINERS
- CLOUD-NATIVE SOLUTIONS
- LEAN ARTIFACTS, INDIVIDUALLY DEPLOYABLE
- CONTAINER-BASED

APIs
- WELL-DEFINED, REUSABLE, & WELL-MANAGED ENDPOINTS
- ECOSYSTEM LEVERAGE

Tools & processes
- Flexibility
- Scalability
- Re-Usability
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CONTAINERS
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- LEAN ARTIFACTS, INDIVIDUALLY DEPLOYABLE
- CONTAINER-BASED SCALING & HIGH AVAILABILITY

APIs
- WELL-DEFINED, REUSABLE, & WELL-MANAGED ENDPOINTS
- ECOSYSTEM LEVERAGE

Tools & processes

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RED HAT FUSE
WHAT IS FUSE 7?

- **Fuse Standalone**
- **Fuse on Openshift**
- **Fuse Online**

**APACHE Camel**

- More than 10 years of experience
- One of the most active Apache projects
- Integration easier
- EIPs
- >200 components

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from("kafka:topic")
  .to("http://todoapp/api")
  .to("telegram:mybot?chatId=1234");

Camel Route Java DSL

Camel Route xml DSL

<from uri="kafka:topic" />
<to uri="http://todoapp/api" />
<to uri="telegram:mybot?chatId=1234" />
NOTABLE COMPONENTS AND FEATURES

- Camel 2.21
- Karaf 4.2
- Spring Boot 1.5.x
- EAP 7.1
- Narayana (aligned to EAP 7.1)
- Undertow (aligned to EAP 7.1)

- AMQ 6.3 and 7.0 certification
- CXF 3.1 (aligned to EAP 7.1)
- HawtIO 2
- Java 8
- Features Parity in EAP
**FUSE ON OPENSSHIFT**

- Support to run all standalone runtimes on OpenShift:
  - Scalable
  - High available
  - Certified container images

- Set of components available to simply work with openshift:
  - Deploy -> `Fabric8-maven-plugin, Kubernetes-client`
  - Integration Testing -> `Arquillian Cube Kubernetes`
  - Container Health Checks -> `Apache Camel Health Checks Framework`
  - Singleton Camel route -> `Master Component and Clustered Routes`
EASIEST WAY TO TRY FUSE ON OPENSHIFT

https://developers.redhat.com/launch
# NEW CAMEL COMPONENTS

- camel-asn1
- camel-atomix
- camel-azure
- camel-caffeine
- camel-couchbase
- camel-crypto-cms
- camel-digitalocean
- camel-drill
- camel-elasticsearch5
- camel-google-bigquery
- camel-google-pubsub
- camel-grpc
- camel-headersmap
- camel-iec60870
- camel-json-fastjson
- camel-milo
- camel-mongodb3
- camel-olingo4
- camel-openstack
- camel-opentracing
- camel-pubnub
- camel-reactive-streams
- camel-reactor
- camel-rest-swagger
- camel-sjms2
- camel-spring-cloud
- camel-spring-cloud-netflix
- camel-thrift
- camel-tika
- camel-twilio
- camel-zendesk
- camel-zookeeper-master
- camel-yql
- camel-aws
- camel-elasticsearch-rest
- camel-xchange
- camel-wordpress
● A Integration Platform as a Service (iPaaS)
● Based on the Syndesis upstream project https://github.com/syndesisio/syndesis
● The engine is always Apache Camel
● Main concepts:
  ○ Connection
  ○ Integration
● The plan is supporting the biggest part of the Camel components as connectors on this platform
FUSE ONLINE
(SYNDESIS)
FUSE ONLINE

- A Integration Platform as a Service (iPaaS)
- No Code, Web based UI for designing integrations
- Supports multiple connectors for several cloud services
- Allows connection of enterprise systems through extensions
- The UI designer produces Fuse on Openshift integrations
CONNECTORS

The list of connectors include the following OOB:
ActiveMQ, AMQP, S3, Concur, Dropbox, FTP, Gmail,
Google Calendar, HTTP, IRC, Kafka, Log, MQTT,
ODATA, Salesforce, ServiceNow, SFTP, Slack, SQL,
Telegram, Timer, Twitter, Webhook

Plus **special connectors** and **extensions** (see next)

Some examples:
- I want that all messages received by a Telegram chat bot are enhanced with data coming from a rest endpoint and then sent to a Kafka topic
- I want to poll data from a DB table, upload data as files on S3, then notify some other system
API PROVIDER

Fuse online let you:

- **Design** a REST API (or start from OpenAPI spec)
- Define a **flow** of operations for each endpoint
- Manage the API in 3Scale:
  - Traffic control
  - Plans
  - Rate Limiting
  - Dev Portal

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API CONSUMER

Allows to connect to **external REST services**.

Users can import a **OpenAPI** definition of an external service and use all defined REST endpoints as “actions”.

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DATAMAPPER

- Suggestion
  - Context
  - ConfidenceScore
  - TradeWindowEnd
  - TradeWindowStart
  - Detail
    - NumShares
    - TargetPrice
    - Order

- Trade
  - Action
  - Expiration
  - Limit
  - Quantity
  - Ticker

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EXTENSIONS

Whatever is not included out-of-the-box in Fuse Online, can be added through a extension (connectors or also complex actions).

A extension is a simple Java project packaged with Maven. You can use all 200+ Camel components plus your custom code.

The main repository containing extensions (they are promoted from time to time):

https://github.com/syndesisio/syndesis-extensions
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**ARCHITECTURE**

- **Fuse on Openshift**
  - Apache Camel
  - Spring Boot
- **iPaaS Infrastructure**
- **iPaaS UI**
- **Containers**
- **OpenShift Online**

Currently:
- Database
- Rest API Module
- Meta Module
- UI Module
DEMO ENVIRONMENT

- API Gateway (People to TODO)
- Kafka
- Kafka to Telegram
- Chat Bot Telegram
- TODO App

Fuse Online Integrations
Existing apps
Apache Camel K is a lightweight integration framework built from Apache Camel that runs natively on Kubernetes and is specifically designed for serverless and microservice architectures.

https://github.com/apache/camel-k

Goals for Fuse Online:

- Reduce Fuse online deployment time from ~1 minute to ~1 second
- Integrate Fuse with Knative (Serverless building blocks)

https://www.nicolaferraro.me/2018/10/15/introducing-camel-k/
RESOURCES

- Fuse Online: https://www.openshift.com/products/fuse
- Syndesis: https://syndesis.io/
- Syndesis extension: https://github.com/syndesisio/syndesis-extensions
- The easiest way to try fuse 7: https://developers.redhat.com/launch/
- Enterprise Integration Patterns: https://www.enterpriseintegrationpatterns.com/
GRAZIE PER L’ATTENZIONE

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