

BAP-3812

Expose, Distribute and
Consume eTravel Services
through IBM API Connect
and BlueMix

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InterConnect
2017



This Session

This session demonstrates the path to a successful deployment on Bluemix of an enterprise eTravel application consumed by IBM API Connect (or Front End) App.

Some of the topics:

- Developing & Deploying Tavel Services on IBM **Bluemix**
- Developing travel services with **IBM API Connect** (LoopBack application integrating existing REST/SOAP travel services)



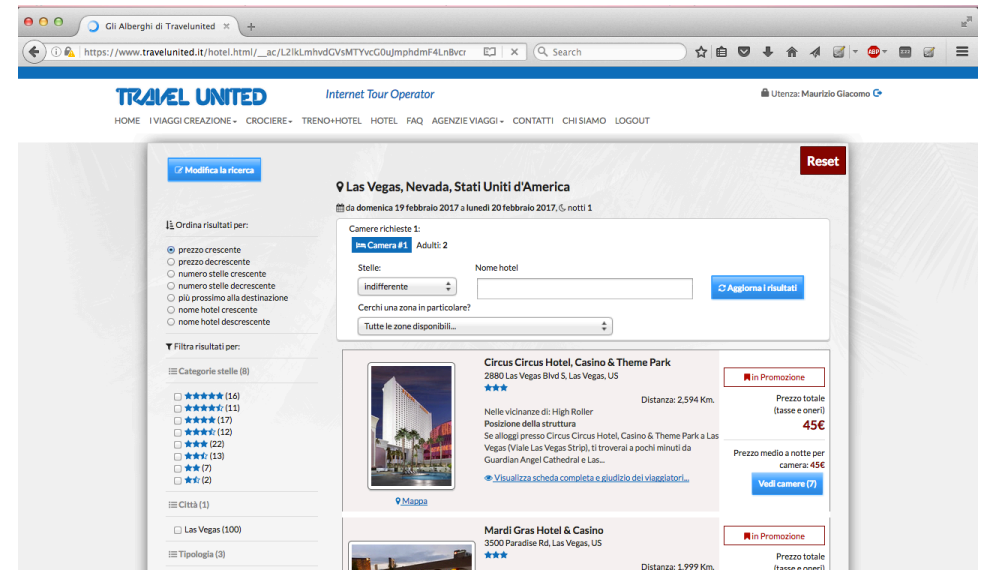
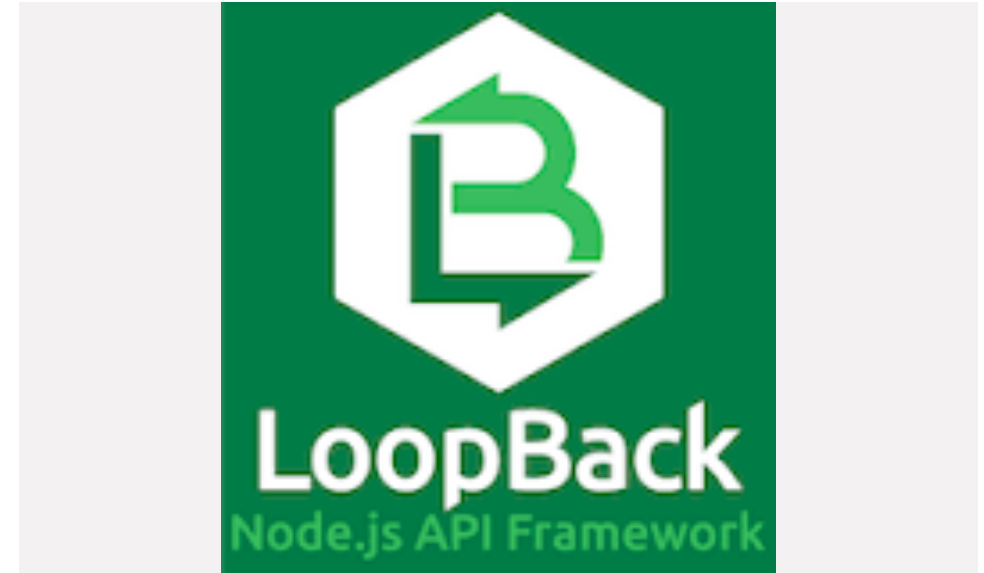
IBM Bluemix



IBM apiconnect

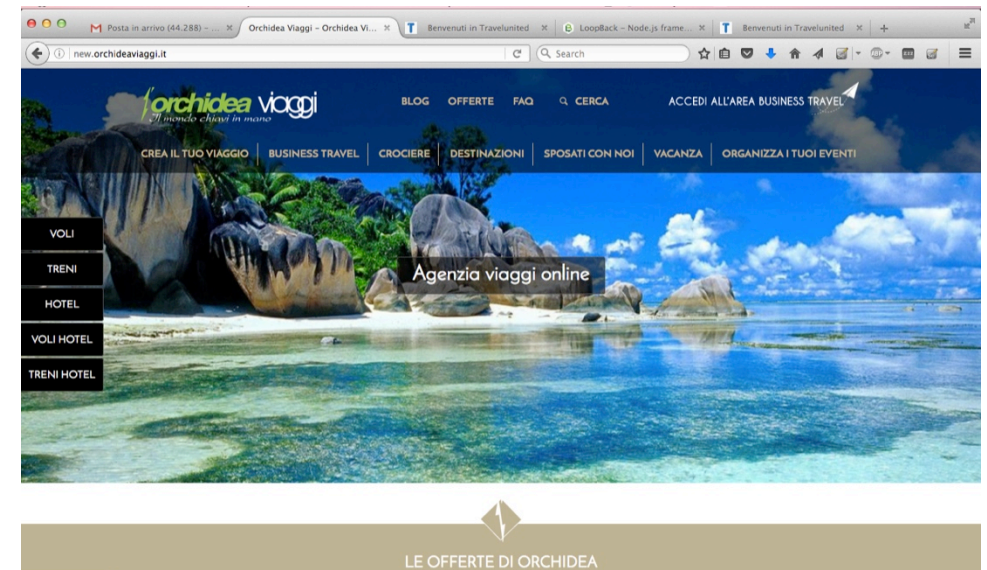
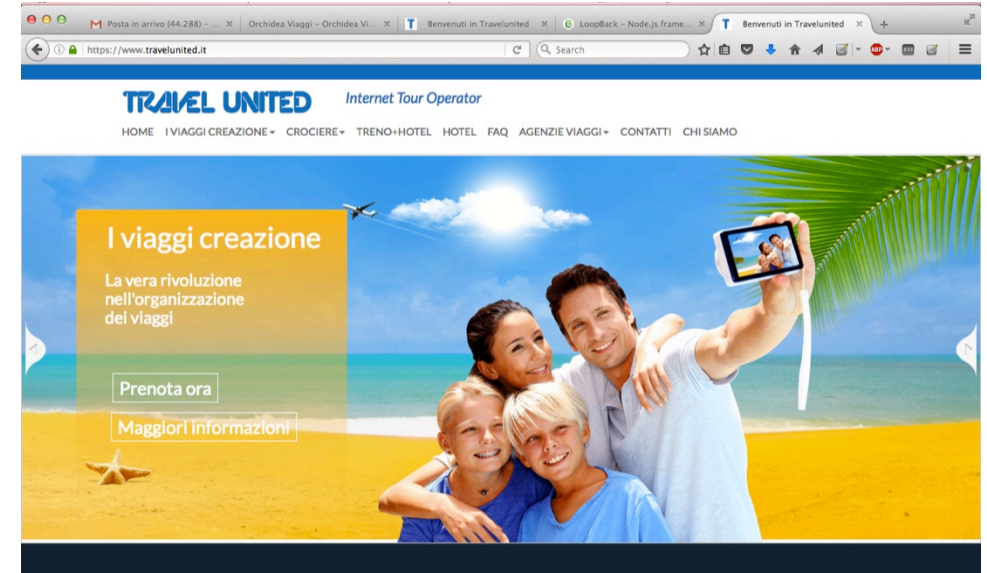
Other Topics

- eTravel models and data sources SQL binding;
- customizing eTravel services with local databases and customized rules—flights and hotels case study);
- **Test, assemble and deploy** (testing and documenting through **Swagger**; deploying on Micro Gateway, DataPower Gateway and Bluemix);
- Client-side integration (portlet consuming MVC with **Freemarker** and **IBM Portal**);



Agenda

- Introduction
- The SOATravel Solution
- Business scenario & architecture
- A different Approach: Why BlueMix
- Ten Steps to BlueMix
- IBM Connect API
- Consume & personalize services
- The LoopBack Framework
- Ux Client Side Integration
- A Real Front End Application



This is us



Giacomo Maurizio

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Partner of PROW

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Marco Zanchi

CEO of PROW IMC, Inc.
IBM Certified Trainer

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Giacomo Maurizio

Mathematics Degree, Milan, Italy.

20 Yrs Exp. Developing, IBM Trainer

Lotus Domino, C++, MFC, .Net

IBM Portal (Liferay, eXo, Pluto) ,
WCM, WEF, JEE, RAD, RSA, LMS,

IBM Commerce, Sterling, AppScan

Connections, Rational Functional
Tester, more

IBM Bluemix, **IBM Api Connect**

Soa Architectures, **e-Travel Apps**
(**Expedia Affiliate Network**,
Travelport, **GTA**, Royal Caribbean,
MSC, Carnival ...)



Marco Zanchi

Since 2002 I am a certified and awarded IBM Trainer and Specialist on WebSphere Application Server, Portal, WCM & Domino/Notes.

In 2006 I started working with TIVOLI on security and monitoring

My focus is mostly Security, working on QRadar, ISAM and ISIM, Guardium but also Analytics, Maximo and Tririga.

I serve customers WW, mostly in USA and EU, like DUCATI, BlackRock, banks, more.



Company Profile

Lemansys specializes in **e-Travel solutions** for Big OTA, Tour Operators and Travel Networks. Interfaces more than 100 providers. **Builds Enterprise Portal Solutions:** IBM, Liferay and “ad hoc” solutions.

PROW is an **IBM Premium Business Partner** (Gold) and we specialize in **enabling third parties and customers on IBM software.**

We also develop software solutions like secure **ecommerce solutions** for Ducati.



PROW
INTERNATIONAL
MANAGEMENT
CONSULTING

Customers & Partners

- Big OTA
- Tour Operators
- GDS
- Travel Networks
- Ducati Motor
- Credit Agricole – Cariparma
- ANIA
- Trenitalia
- LearnQuest
- Arrow
- Avnet



The SOATravel Solution

- What is SOAtravel
 - The business scenario
 - What Was Needed
 - The Travel Service Factory
 - Project Milestones
 - SoaTravel Architecture
-
- An Example: Hotel Search Rest Call

What is SOATravel

- “**Soatravel Blue**” provides Flight & Hotel services to many customers (clients) through REST API
- Every service type picks up data from **many providers** and produces a common response.
- Each client is profiled and identified through an **API Key**, IP address and other settings.
- **Targets:** Tour Operators, Big OTAs, GDS, Software Houses



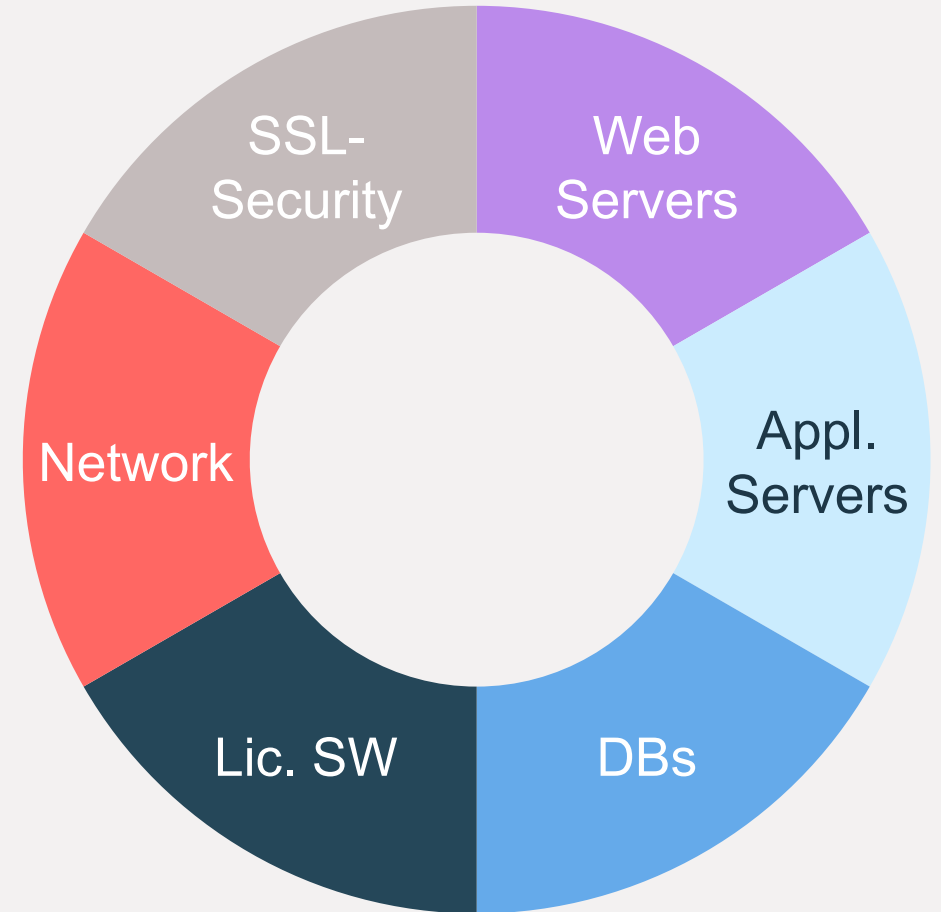
The business scenario

- Required Features: (Search, Pricing, Booking, Review, Delete ...)
- High Performances
- Scalability
- Standard Compliant
- Multi User, Currency, Language
- SLA, High Reliability & Security Layer
- Traceability
- Personalization



What Was Needed

- Scalable Environments
- Robust Application Servers
- Smart Web Servers
- Stable & Strong Databases
- Store Billions of data
- Limit Costs
- Enterprise Professional Software Fully Licensed
- To Be Live 24 x 7



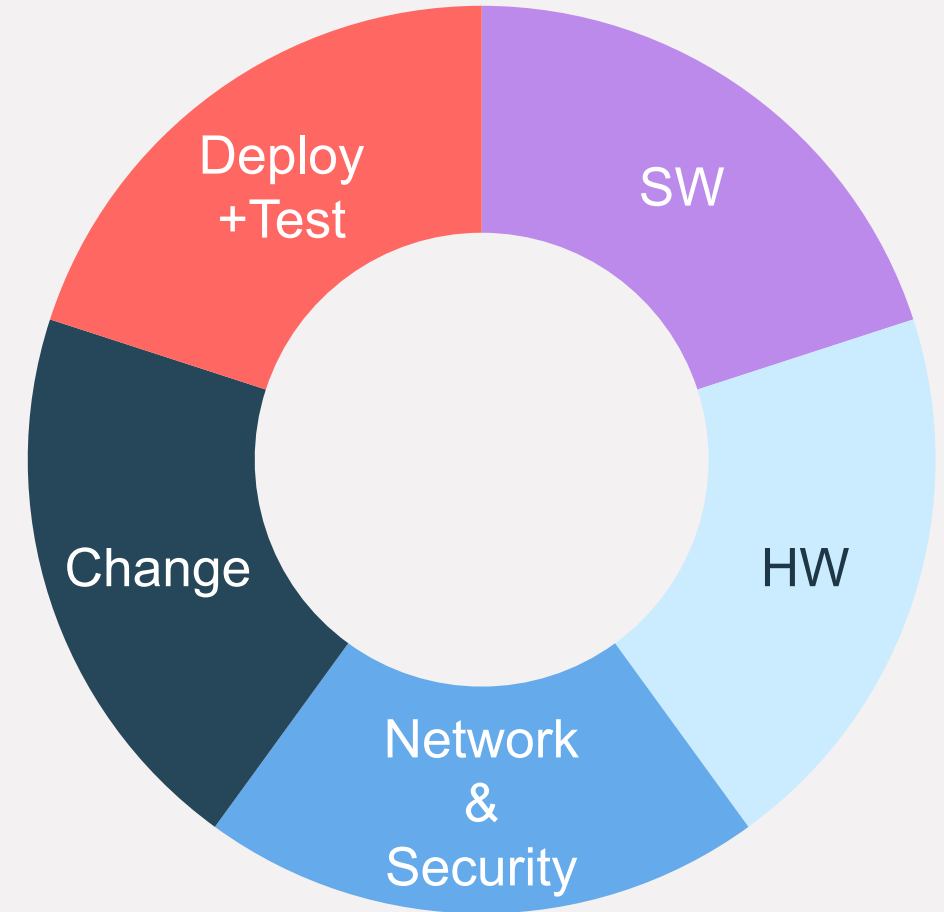
Our Travel Service Factory

- A team with many roles:
 - Travel Experts
 - Stakeholders, DBA
 - Software Architects
 - Analysts, Developers
 - Testers, Sys Admins
- Software Repository & Libraries
- C.I. , Performances & T.A.
- Many layers: Dev., Test, Prod...



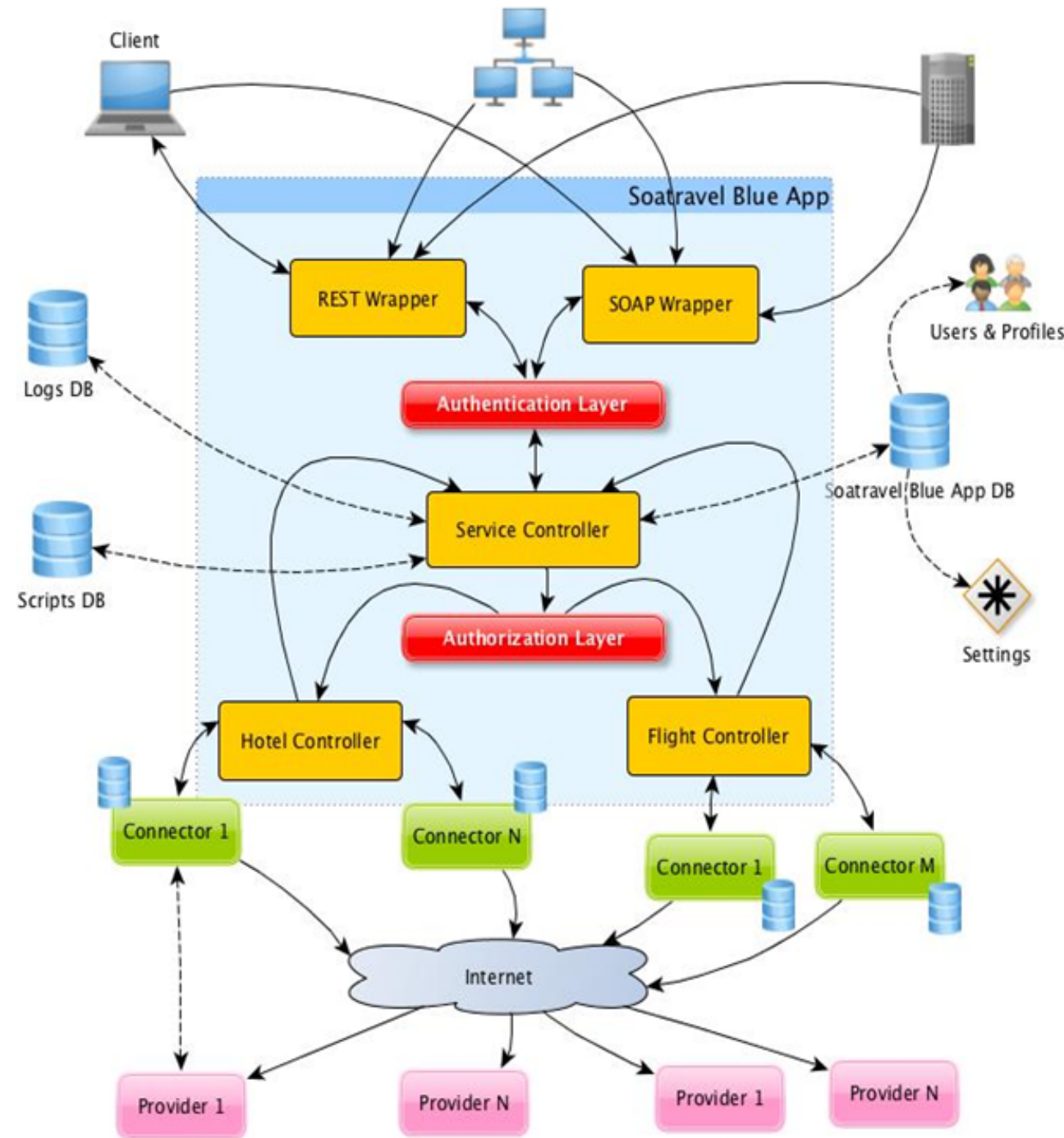
Project Goals

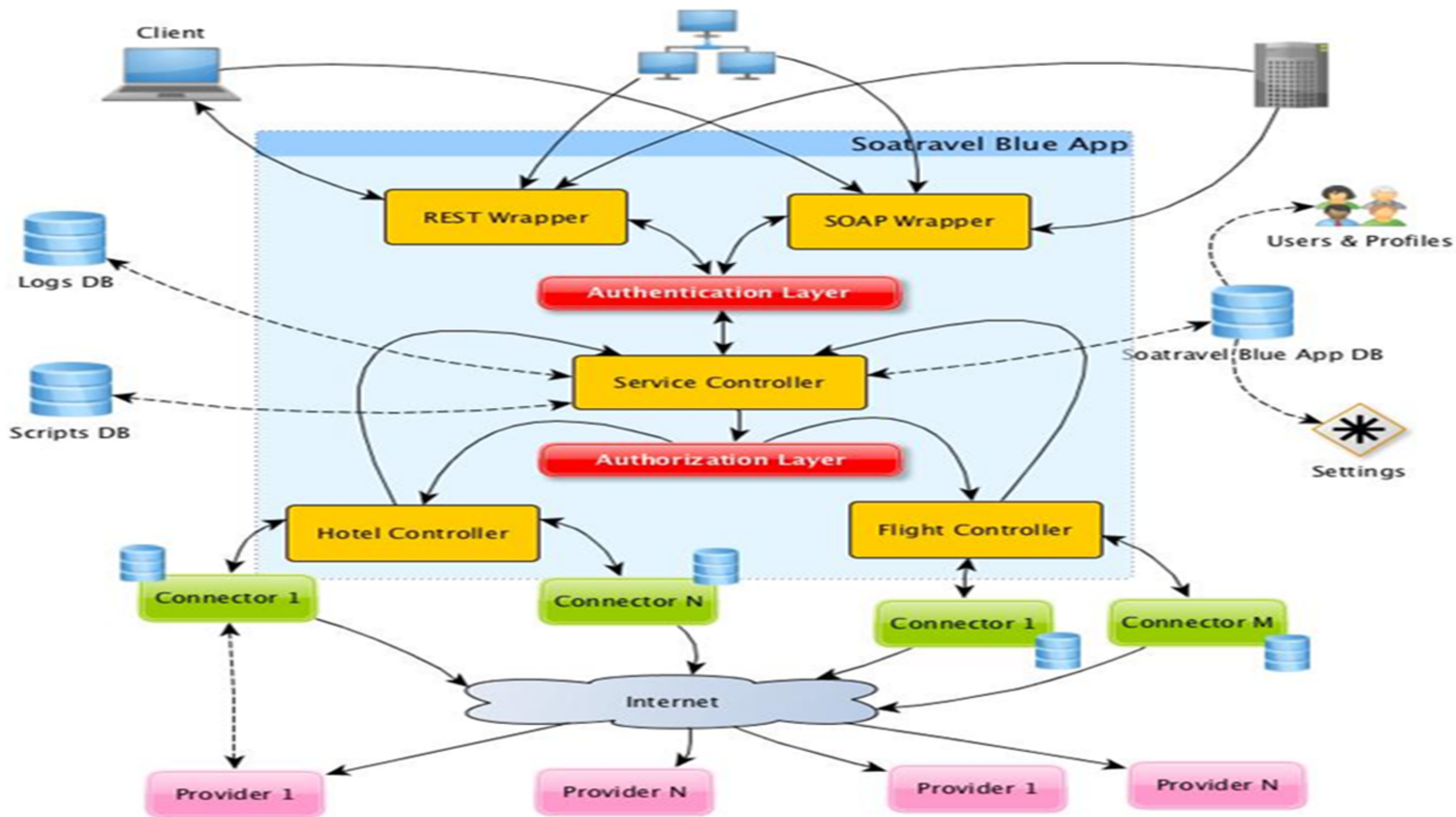
- Get SW Licenses
- Size the Hardware
- Plan SW Lifecycle Management
- Plan for New Requirements
- Testing and Code Optimization
- Network Reliability
- Ensure High Performances
- Respond to increase in traffic and request with more power



The Architecture

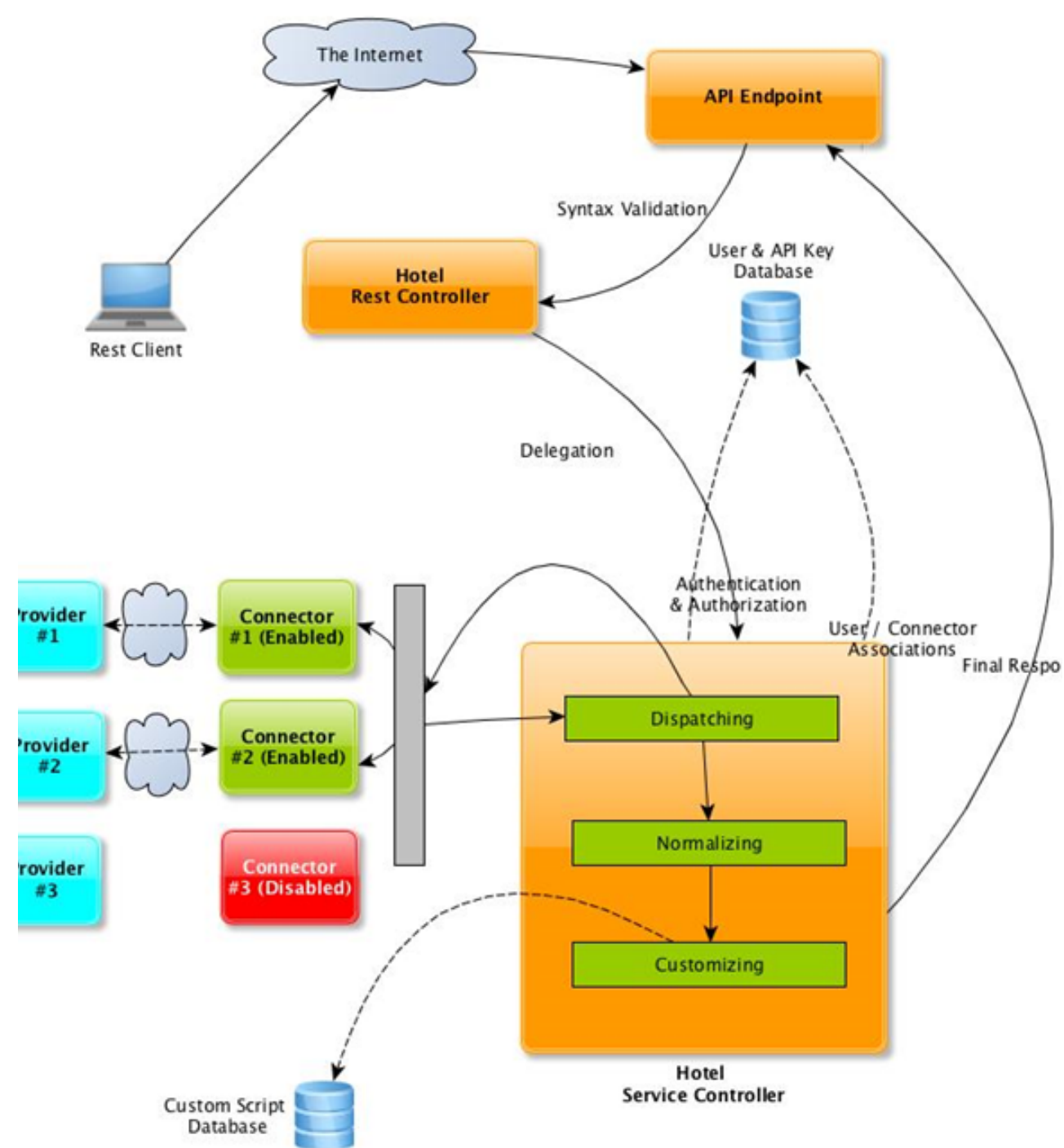
- Java EE Application
- Service Oriented
- Uses Databases SQL/NOSQL
- Leverages SW Frameworks
- Uses Standards (XML,JSON)
- Portable
- Pluggable (through Drivers)
- Extensible (scripts JS / Groovy)





Hotel Search Rest Call

- Client performs call (XML/JSON)
- Request is parsed & validated
- Hotel Controller (HC) splits calls
- Connectors Translate Query
- Connectors Call Providers
- Connectors Get Response
- Connectors Translate Response
- HC assembles Response
- Response is Filtered by Scripts (optional)
- Response is Returned



Hotel search example (2/2)

Content-Type: application/json

METHOD: POST

```
{
  "api-key" : "1221232-222-2221",
  "city" : "Las Vegas",
  "room" : [ "19,19" ],
  "dateFrom" : "2017-03-21",
  "dateTo" : "2017-03-24",
  "maxres" : 10
}
```



“Today **We will do** what others won't
so tomorrow **We can develop** what
others can't ”

“Today I will do what others won't, so tomorrow I can accomplish what others can't” — [Jerry Rice](#)

A Different Approach

IBM Bluemix

- Classic vs Cloud Approach
- Why Bluemix?
- Development “Vs” Publishing
- Bluemix Applications
- Our Solution On Bluemix
- IBM Liberty Profile (WLP)
- Maven Project
- Databases
- Ten Steps to BlueMix

Which Approach?



Classic:

We Manage SW & Infrastructure



Alternative:

Delegate => Remote Infrastructure

Classic Approach

- On premises: HW, Apps, Data, Security
- Install & Manage OS
- Install SW, **buy Licenses**
- Upgrade HW, OS, SW
- Other Cost: Energy, HVAC, Networking, Connectivity, Facility...
- Does Our Infrastructure support **Changes in Business Environment & Growth?**
- How about **Network failures?**
- What is the **TCO?** What **ROI?**



Disruptive Approach (Cloud)

- On **Cloud** : HW, Apps, Data, Security
- Click 2 have OS, SW, Licenses
- “**Pay per Use**”
- CPU, Storage, Instances **On Demand**
- New Needs => More Resources
- Reduced Needs => Less Resources
- **Reduce** Network failure Risks
- **Focus** on your **Business**



Why IBM BlueMix?

- **Cloud Infrastructure (Cloud Foundry)**
- Hosts “Apps” & “Services”
- Fully **Web** Managed
- Click 2 Compose / Extend
- **Pay Per Use** (different plans)
- Powered & **Licensed** by IBM
- Instant Startup & Upgrade
- Dev. Framework+ Appl.Services
- Integrate with GIT SW Repositories
- Rich Catalog / Marketplace



IBM Bluemix

IBM Bluemix Travel Service Development “Vs” Publishing

Pipeline: All Stages

Build Stage

INPUT [Git URL](#)

Last commit by Demo User 21 min ago
[Add starter application package](#)

JOBS [View logs and history](#)

JOBS COMPLETED SUCCESSFULLY

✓ Build Succeeded 4 min ago

LAST EXECUTION RESULT

Build 1

Deploy Stage

INPUT

Stage: Build Stage / Job: Build
Last Input: [Build 1](#)

JOBS [View logs and history](#)

JOBS COMPLETED SUCCESSFULLY

✓ Deploy to dev Succeeded 3 min ago

LAST EXECUTION RESULT

Liberty for Java Starter app t...
[liberty-for-java-starter-app-tutorial.m...](#)
[View runtime log](#)

Build 1

<https://hub.jazz.net/>

Project Code Management
(Edit, Repository, Build, Deploy)

IBM Bluemix Apps

All Apps (2) [Create App](#)

Cloud Foundry Apps 576 MB/2 GB Used

NAME	ROUTE	MEMORY (MB)	INSTANCES	RUNNING	STATE	ACTIONS
hello-world-soatravel	hello-world-soatravel-demo.eu-gb.mybluemix.net	64	1	1	Running	Refresh Stop More
soatravel-flight-wrapper	soatravel-flight-wrapper.eu-gb.mybluemix.net	512	1	1	Running	Refresh Stop More

All Services (3) [Create Service](#)

Services 3/10 Used

NAME	SERVICE OFFERING	PLAN	ACTIONS
------	------------------	------	---------

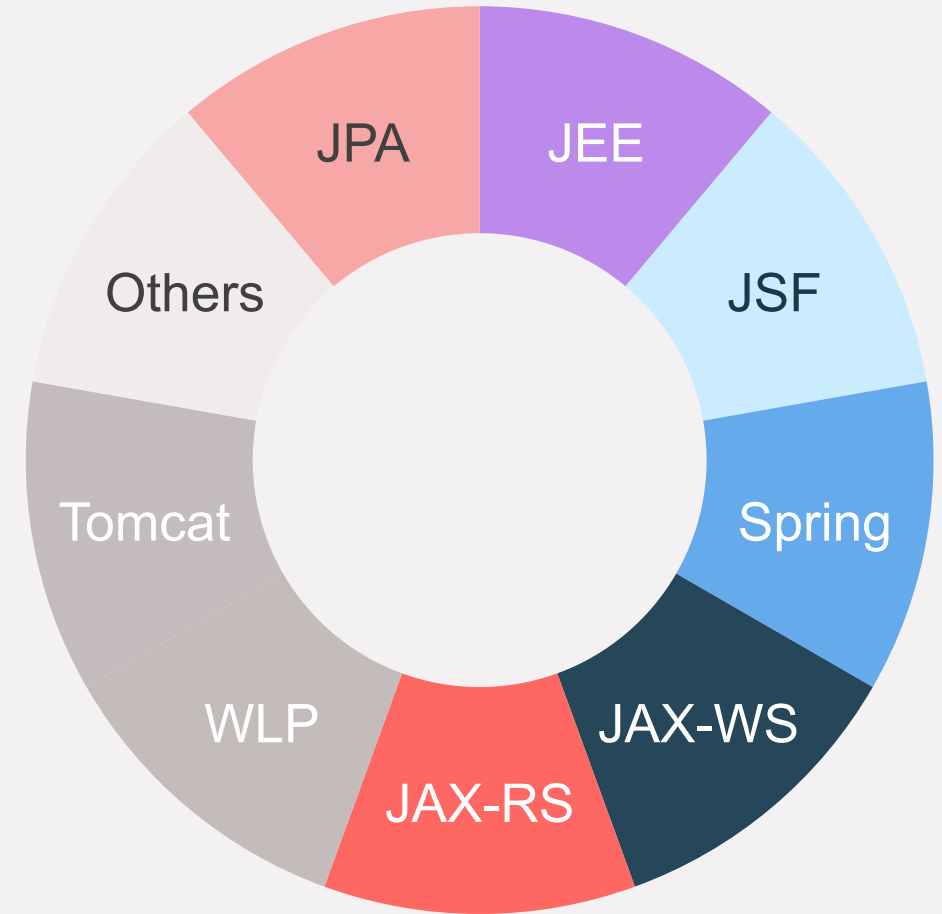
<https://bluemix.net/>

Bluemix Access Point
App & Service Mgmt. Console

Bluemix Applications

- Many supported languages:
<http://docs.cloudfoundry.org/buildpacks/>
 - Java, Python
 - NodeJs, .Net
 - Php, Ruby, “HTML”, Others...
- Java (EE) Apps hosted by IBM Websphere Liberty Profile (WLP)
- Tomcat or WAS available as well
- WLP was Our First Choice



Java App & Bluemix Keys







Creating Bluemix Applications



Boilerplates

Get started with a new app, now.

**ASP.NET Core Cloudant Starter**
Use the Cloudant NoSQL DB Service in an ASP.NET Core


**Internet of Things Platform Starter**
Get started with IBM Watson IoT platform using the Node-RED


**Java Cloudant Web Starter**
Use the Cloudant NoSQL DB service with the 'Liberty for Java'




**Java Workload Scheduler Starter**
This application demonstrates how to use the Workload Scheduler




Boilerplates



New app from template.




Cloud Foundry Apps

Deploy your app without managing underlying infrastructure.

**Liberty for Java™**
Develop, deploy, and scale Java web apps with ease. IBM WebSphere


**SDK for Node.js™**
Develop, deploy, and scale server-side JavaScript® apps with ease.


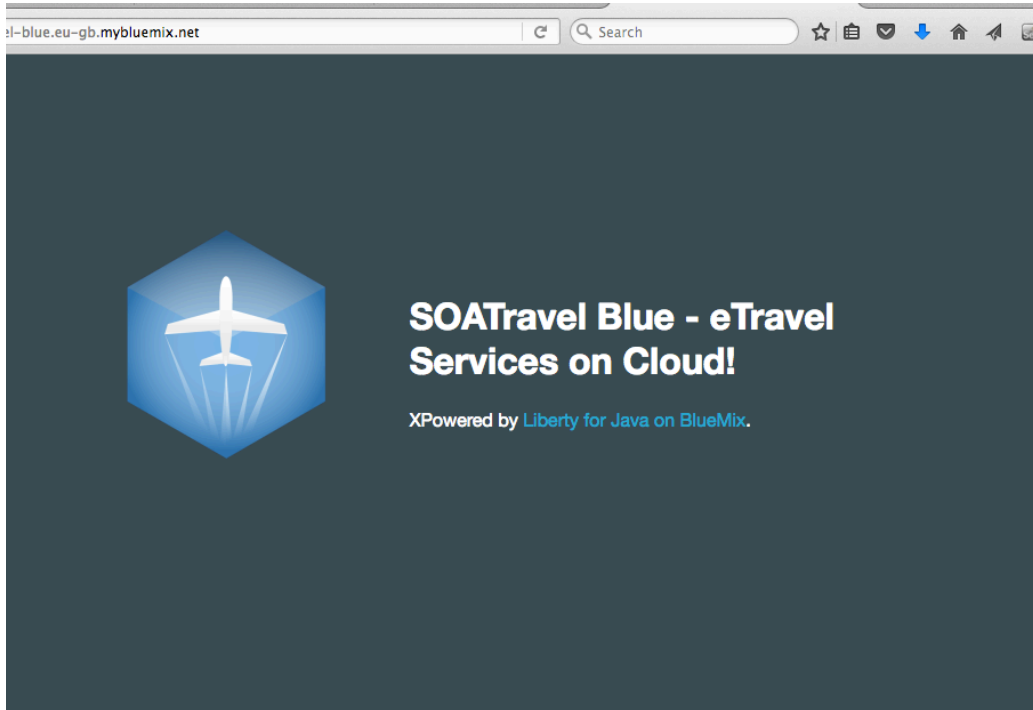
**Runtime for Swift**
A Kitura based server application that you can use as a starting point.


**XPages**
Develop, deploy and scale IBM XPages applications with ease. Try it now!


Cloud Foundry Apps

New “empty” app

Our Solution On Bluemix : Soatravel BLUE



<https://soatravel-blue.eu-gb.mybluemix.net>

Java EE – Service Producer
Powered by Liberty Profile



Bluemix is Our Data Center:
Highly Reliable Mix of SQL /
NOSQL Databases

IBM Liberty Profile (WLP)

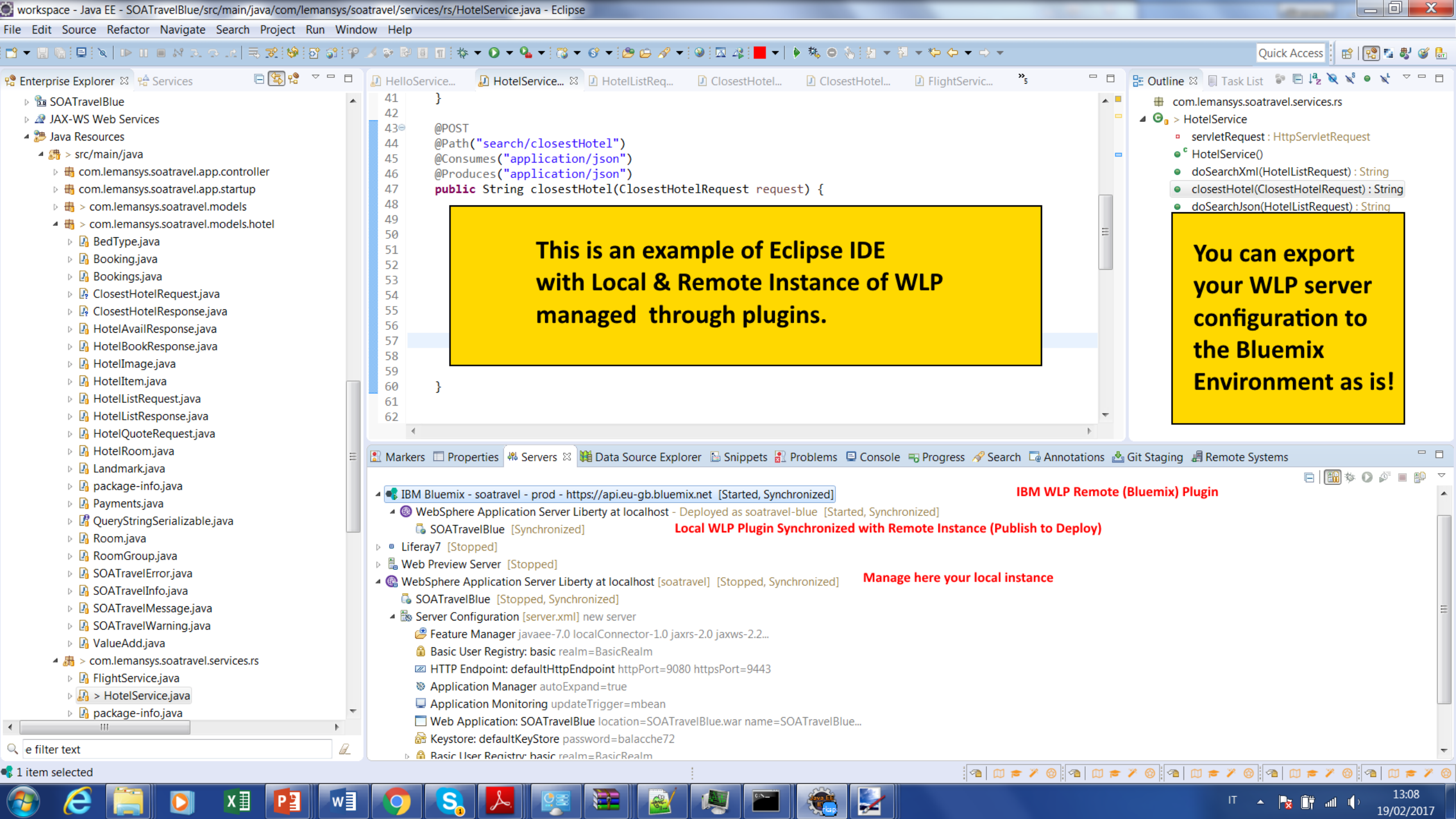
- Full Java EE Application Server
- Lightweight & Fast
- Highly Configurable (xml)
- Extensible (OSGI, Libraries)
- Scalable (Clusters) & Secure
- Service Oriented:
 - JAX-WS / JAX-RS
- JSF, JPA, EJB, JMS, NOSQL...
- Automatic deployment (Maven)
- Also Available on Bluemix



Developing for WLP

- Work with Liberty locally
- Install **Eclipse** / **RAD Plugins**
Remote WLP / Local WLP
- Use **Maven** Project Artifacts
 - Same code runs on Cloud
- Use **GIT** SW Repository
- Test Locally before commit
- Push changes to Jazz Hub (JH)
- Inject automated Task on JH
- Use Jazz Hub or CF Console





Use the Cloud Foundry Console to get your remote instance on IBM Bluemix with full control of your system !!!

Once logged in, you can open a SSH session!

Administrator: C:\Windows\system32\cmd.exe - cf ssh soatravel-blue

```
C:\Users\Giacomo Maurizio>cf ssh soatravel-blue
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~$ ls
app  dumps  logs  staging_info.yml  tmp
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~$ cd app/
.app-management/      .java/              .liberty/           wlp/
.buildpack-diagnostics/ .lib/              .profile.d/
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~$ cd app/wlp/usr/
extension/ servers/
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~$ cd app/wlp/usr/servers/soatravel/
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~/app/wlp/usr/servers/soatravel$ ls
apps  dropins  jvm.options  lib  logs  messaging  resources  runtime-vars.xml  server.env  server.xml  server.xml.org  workarea
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~/app/wlp/usr/servers/soatravel$ cd apps
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~/app/wlp/usr/servers/soatravel/apps$ ls
SOATravelBlue.war
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~/app/wlp/usr/servers/soatravel/apps$ ls -lat SOATravelBlue.war/
total 56
drwxr-xr-x 5 ucap ucap  4096 Feb 17 17:44 .
drwxr-xr-x 3 ucap ucap  4096 Feb 17 17:44 ..
drwxr-xr-x 2 ucap ucap  4096 Feb 17 17:44 images
drwxr-xr-x 3 ucap ucap  4096 Feb 17 17:44 META-INF
drwxr-xr-x 5 ucap ucap  4096 Feb 17 17:44 WEB-INF
-rw-r--r-- 1 ucap ucap 23493 Feb 17 17:43 flight-icon.png
-rw-r--r-- 1 ucap ucap   688 Feb 17 17:43 index.html
-rw-r--r-- 1 ucap ucap  1188 Feb 17 17:43 index.js
-rw-r--r-- 1 ucap ucap  1157 Feb 17 17:43 style.css
ucap@f363fbb3-c405-4151-45b6-7d1c6c0a7cfd:~/app/wlp/usr/servers/soatravel/apps$
```

Maven Project Structure

- Dependency Management
- Standard
- Reduce Project Size
- Has plugins for WLP deploy
- Ready for Cloud Deploy
- Start from Jazz Hub
- One App ⇔ One SW Project
- One SW Project ⇔ One Maven

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <project xmlns="http://maven.apache.or
3      <modelVersion>4.0.0</modelVersion>
4
5      <parent>
6          <groupId>net.wasdev.maven.pare
7          <artifactId>java7-parent</arti
8          <version>1.4</version>
9          <relativePath></relativePath>
10     </parent>
11
12     <groupId>net.wasdev.wlp.sample</gr
13     <artifactId>JavaHelloWorldApp</art
14     <version>1.0-SNAPSHOT</version>
15     <packaging>war</packaging>
16
17     <name>Liberty Profile Sample - Ser
18     <url>https://wasdev.github.io</url
19
20     <licenses>
21         <license>
```


Data Storage - Databases

- **Trace** Logs of requests / responses
- **Store** User / Profile Data
- Use **Geographic Info** (e.g. Hotel Searches across many providers...)
- Support Database for Each **Connector**
- Store **CMS** data
- Structured vs Unstructured
- **Relational** vs **Schema Less**
- IBM Bluemix is **Providing Both**



ibm@pachot.net



Type here to search

Services

- Watson
- Mobile
- DevOps
- Web and Application
- Integration
- ☒ Data and Analytics
- Security
- Business Analytics
- Internet of Things

Provider

- IBM
- Third Party
- Beta

Services // The building blocks of any great app

Data and Analytics

Essential data services; limitless possibilities

HELP ME PICK



Cloudant NoSQL DB
IBM



dashDB
IBM



DataWorks
IBM



Elasticsearch by
Compose
IBM



Geospatial Analytics
IBM



IBM DB2 on Cloud
IBM



Insights for Twitter
IBM



Insights for Weather
IBM



MongoDB by Compose
IBM



PostgreSQL by
Compose
IBM



Predictive Analytics
IBM



Redis by Compose
IBM



SQL Database
IBM



Streaming Analytics
IBM



Time Series Database
IBM



ClearDB MySQL
Database



ElephantSQL
Third Party



jKool
Third Party

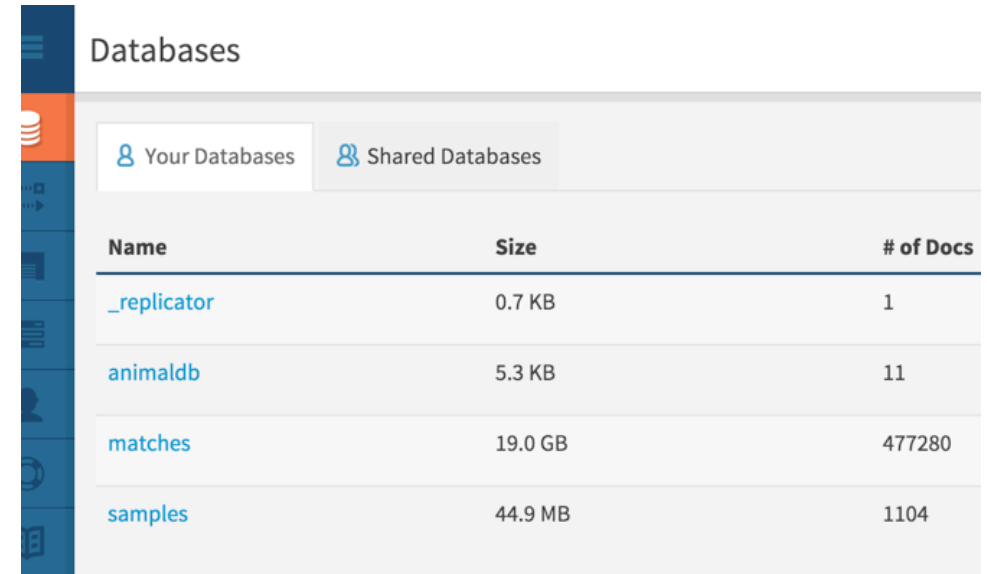
Cloudbant Database 1/2

- **NoSQL** DB as-a-service (DBaaS)
- Is on Bluemix or Private Cloud
- Massive Scalability
- Secure Infrastructure
- High Availability
- Store Large Sets of Data
- Two Pricing Plans:
 - Lite / Free (up 1GB)
 - Standard
- Based on Apache CouchDB



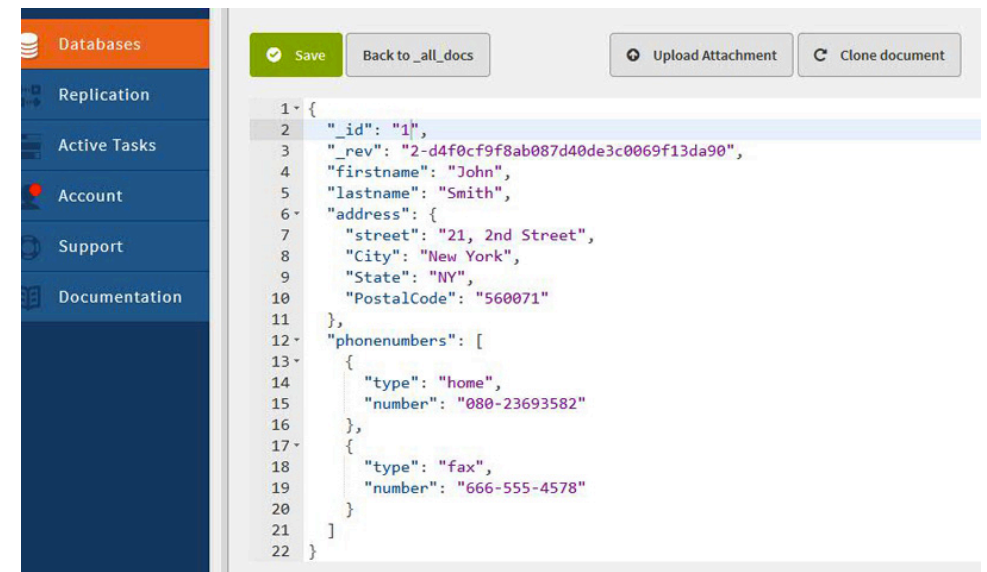
Cloudant Database 2/2

- **Our First Choice**
- Web Console Management
- HTTP / REST Interface (JSON)
- Flexibility via JSON Data Store
- Indexes + API 4 Geospatial Search
- DB Sharding Partition
- Map Reduce & Views Through JS
- **Replication**
 - Master/Master
 - Master/Slave



The screenshot shows the 'Databases' section of the Cloudant web console. It features two tabs: 'Your Databases' (active) and 'Shared Databases'. Below the tabs is a table listing databases with columns for Name, Size, and # of Docs.

Name	Size	# of Docs
_replicator	0.7 KB	1
animaldb	5.3 KB	11
matches	19.0 GB	477280
samples	44.9 MB	1104

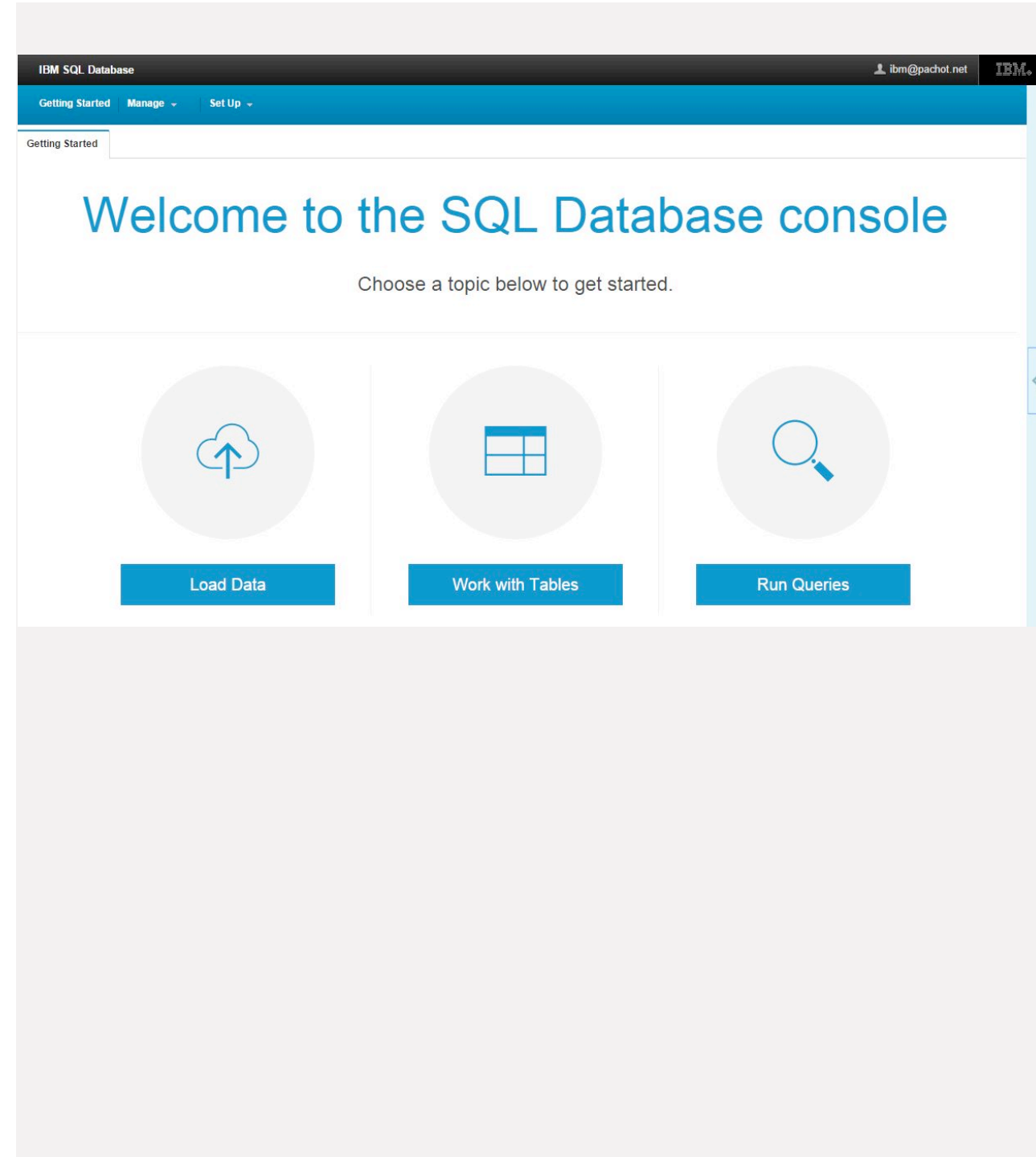


The screenshot shows the document editor interface in the Cloudant web console. It includes a left sidebar with navigation links (Databases, Replication, Active Tasks, Account, Support, Documentation) and a top bar with buttons for Save, Back to _all_docs, Upload Attachment, and Clone document. The main area displays a JSON document with line numbers 1 through 22.

```
1 {  
2   "_id": "1",  
3   "_rev": "2-d4f0cf9f8ab087d40de3c0069f13da90",  
4   "firstname": "John",  
5   "lastname": "Smith",  
6   "address": {  
7     "street": "21, 2nd Street",  
8     "City": "New York",  
9     "State": "NY",  
10    "PostalCode": "560071"  
11  },  
12  "phonenumber": [  
13    {  
14      "type": "home",  
15      "number": "080-23693582"  
16    },  
17    {  
18      "type": "fax",  
19      "number": "666-555-4578"  
20    }  
21  ]  
22 }
```

SQL Databases

- Available on Bluemix with Different Solutions and Plans
- Pay per Storage
- Free Plans as well
- MySQL, PostgreSQL, DB2 ...
- Web Management Console
- Section For Remote Access
- Credentials, Secure, Scalable



... so, how did we do it?

10 Easy Steps!

Ten Steps to Bluemix

Log In to Bluemix with your IBM id

Enter your IBM id [Forgot your IBM id?](#)

Password [Forgot your password?](#)

LOG IN

New? [Create an IBMid and Bluemix account.](#)

1. Create account on Bluemix

Docs 9 Trial Days Remaining Lemansys | United Kingdom : lem-blu : test

IBM Bluemix Apps Catalog Support Account

All Apps (2) [Create App +](#)

Cloud Foundry Apps 576 MB/2 GB Used

NAME	ROUTE	INST...	RUN...	STATE	ACTIONS
hello-world-soat	hello-world-soatravel-c	1	1	Running	Rollback to DEA Refresh Open More
soatravel-flight-v	soatravel-flight-wrappe	1	1	Running	Rollback to DEA Refresh Open More

2. Evaluate as Free (30 Days)

Taste Provided Features

Ten Steps to Bluemix

Docs

9 Trial Days Remaining

Lemansys | United Kingdom : lem-blu : test

IBM Bluemix Catalog

Catalog Support Account

Liberty for Java™

Develop, deploy, and scale Java web apps with ease. IBM WebSphere Liberty Profile is a highly composable, ultra-fast, ultra-light profile of IBM WebSphere Application Server designed for the cloud.

IBM

[View Docs](#)

VERSION3.x

TYPEApplication

REGIONUnited Kingdom

App name:

my-java-app

Host name:

my-java-app

Domain:

eu-gb.mybluemix.net

Pricing Plans

Monthly prices shown are for country or region: [Italy](#)

PLAN	FEATURES	PRICING
Default	Run one or more apps free for 30 days (375 GB-hours free).	€0.0526 EUR/GB-Hour

Need Help?

Contact Bluemix Sales

Estimate Monthly Cost

[Cost Calculator](#)

€0.0526 EUR/GB-Hour

Create

3. Create Your App

IBM Bluemix Cloud Foundry Apps

Catalog Support Account

Dashboard

Getting started

Overview

Runtime

Connections

Logs

Monitoring

my-java-app-bla-bla-bla

Status: Running

Rollback to DEA

View app

Download, modify, and redeploy your Cloud Foundry app with the command line interface

Last Updated: 2017-01-12 | [Edit in GitHub](#)

Use the Cloud Foundry command line interface to download, modify, and redeploy your Cloud Foundry applications and service instances.

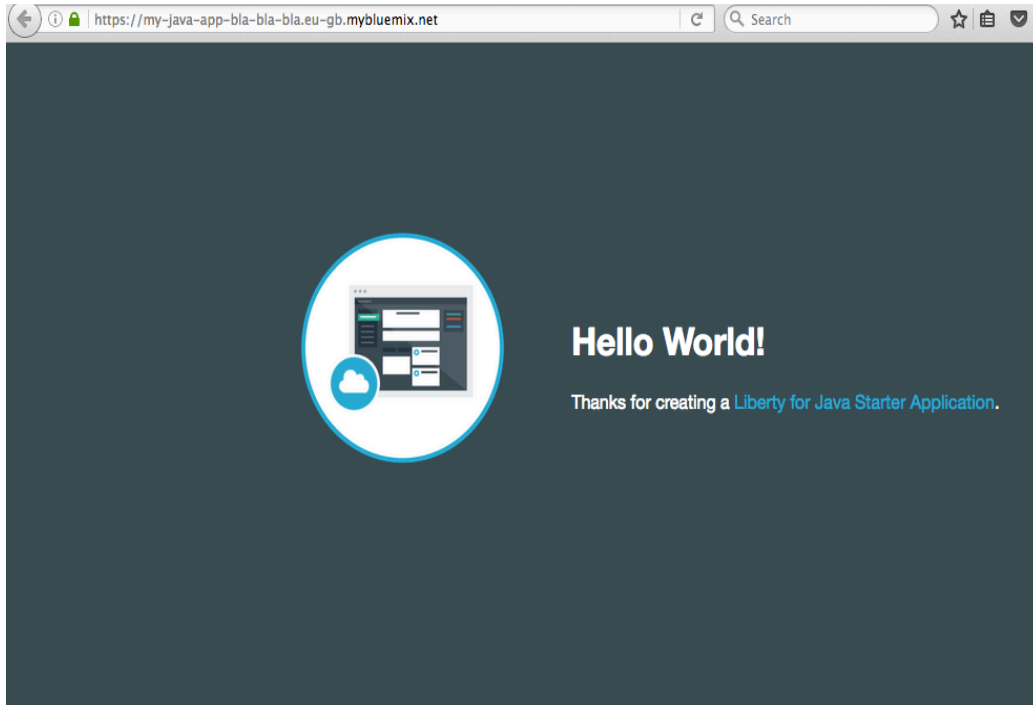
Before you begin, download and install the Cloud Foundry command line interface.

Download CF Command Line Interface

Restriction: The command line tool is not supported by Cygwin. Use the tool in a command line

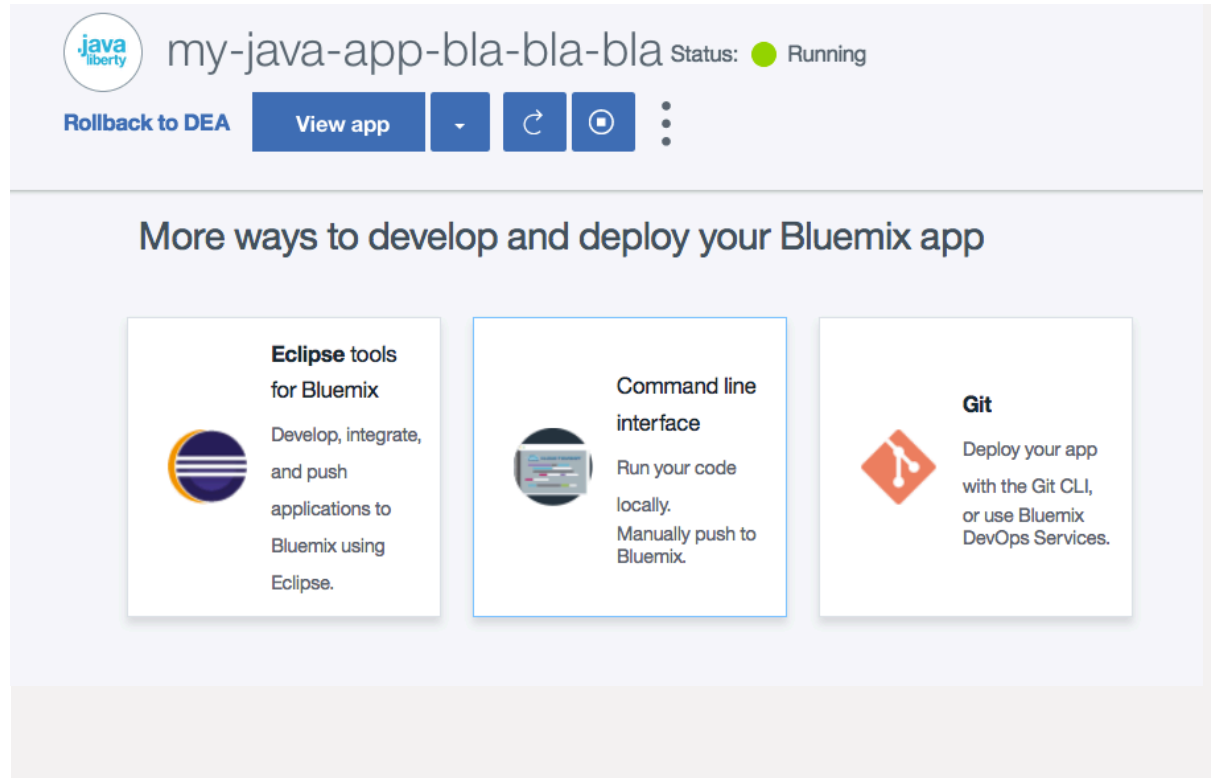
4. Review Your App

Ten Steps to Bluemix



5. Preview Your Application

<https://<name>-gb.mybluemix.net/>



6. Configure Dev.Environment



Create a project

lemrecruiting |



Create a new repository or link to an existing one ⓘ



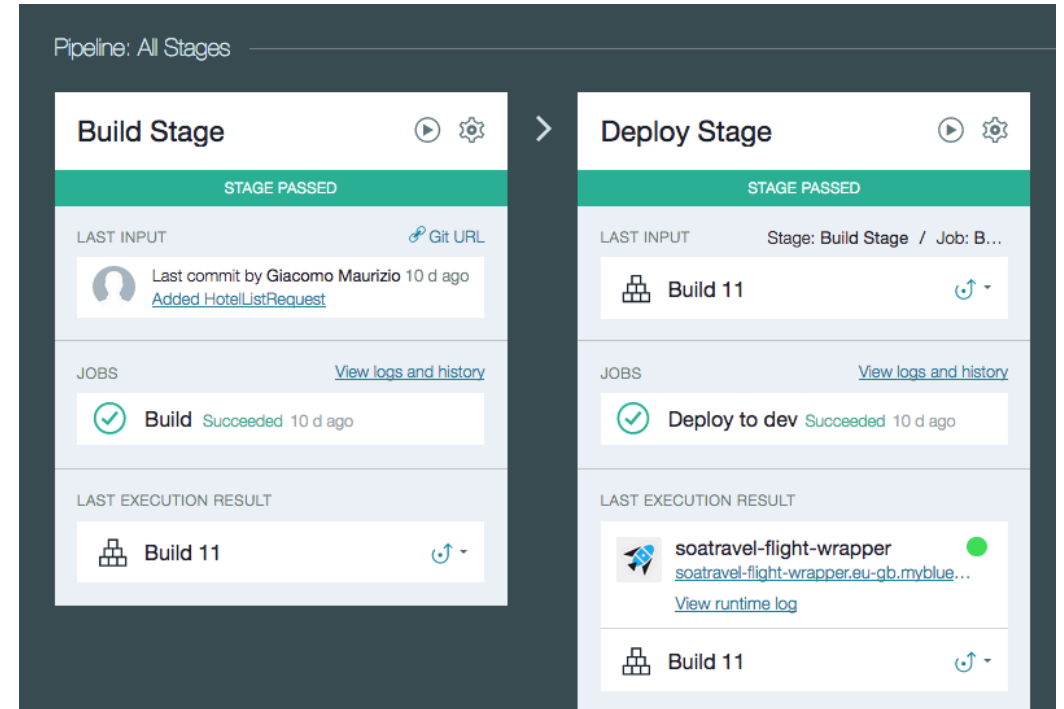
Create a new repository

Link to an existing GitHub

Ten Steps to BlueMix



7. Develop & Test Locally...
... then commit & push!



8. Manage Build & Publish
<https://hub.jazz.net/>

Repository: lemrecruiting | soatravel-flight-wrapper ▾

Reference: master => origin/master ▾



EDIT CODE

TRACK & PLAN

BUILD & DEPLOY

Active Branch (master)



Sync



Working Directory Changes

Nothing to commit.

▼ Outgoing (0)

Push ▾

No Changes

▼ Incoming (9)



Fetch ▾



Added HotelListRequest

Giacomo Maurizio on 1/25/2017, 1:19:24 AM

[more ...](#)

Deployed json

Giacomo Maurizio on 1/24/2017, 1:16:10 PM

[more ...](#)

First RS

Giacomo Maurizio on 1/23/2017, 6:05:46 PM

[more ...](#)

changed server.xml

Giacomo Maurizio on 1/23/2017, 4:57:27 PM

[more ...](#)

First rest service

Commit (80ba22)



5 files changed



src/main/java/com/lemansys/soatravel/app/controller/HotelCtrl.java



```
2 2
3 3 import java.io.ByteArrayInputStream;
4 4 import java.io.UnsupportedEncodingException;
5 5
6 6 import javax.servlet.http.HttpServletRequest;
7 7 import javax.xml.bind.JAXBException;
8 8 import javax.xml.bind.Unmarshaller;
9 9
10 10 import com.lemansys.soatravel.models.hotel.HotelListResponse;
11 11 import com.lemansys.soatravel.models.hotel.QueryStringSerializable;
12 12 import com.lemansys.soatravel.util.JAXBHotelContext;
13 13 import com.lemansys.soatravel.util.SOATravelClient;
14 14
15 15 public class HotelCtrl {
16 16
17 17     private HttpServletRequest request;
18 18
19 19     private String baseEndpoint = "http://orchidea.swa.soatravel.com/SWA/SWAServlet?_target=hotel&";
20 20     private String baseEndpoint = "http://orchidea.swa.soatravel.com/SWA/SWAServlet?_target=hotel&";
21 21
22 22     private QueryStringSerializable query;
23 23
24 24     public HotelCtrl() {
25 25         // TODO Auto-generated constructor stub
26 26     }
```

lemrecruiting | soatravel-flight-wrapper

EDIT CODE

TRACK & PLAN

BUILD & DEPLOY

Pipeline: All Stages



Build Stage



STAGE PASSED

LAST INPUT

[Git URL](#)

Last commit by Giacomo Maurizio 10 d ago
[Added HotellistRequest](#)

JOBS

[View logs and history](#)

Build Succeeded 10 d ago

LAST EXECUTION RESULT



Build 11



Deploy Stage



STAGE PASSED

LAST INPUT

Stage: Build Stage / Job: B...



Build 11



JOBS

[View logs and history](#)

Deploy to dev Succeeded 10 d ago

LAST EXECUTION RESULT



soatravel-flight-wrapper
[soatravel-flight-wrapper.eu-gb.myblue...](#)

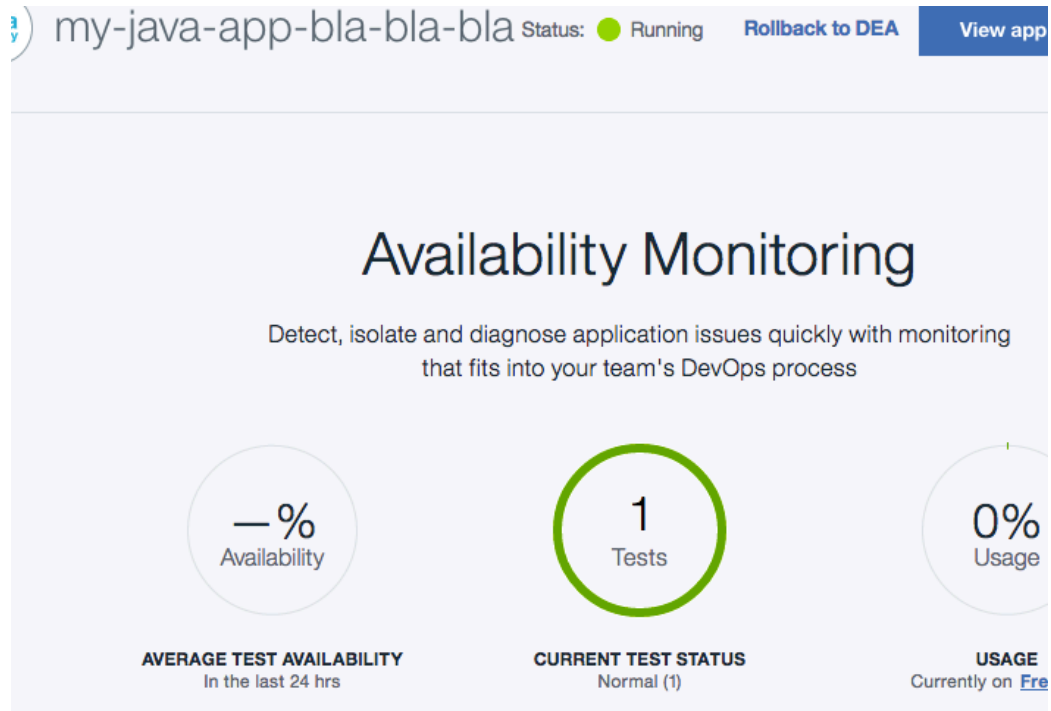
[View runtime log](#)

Build 11

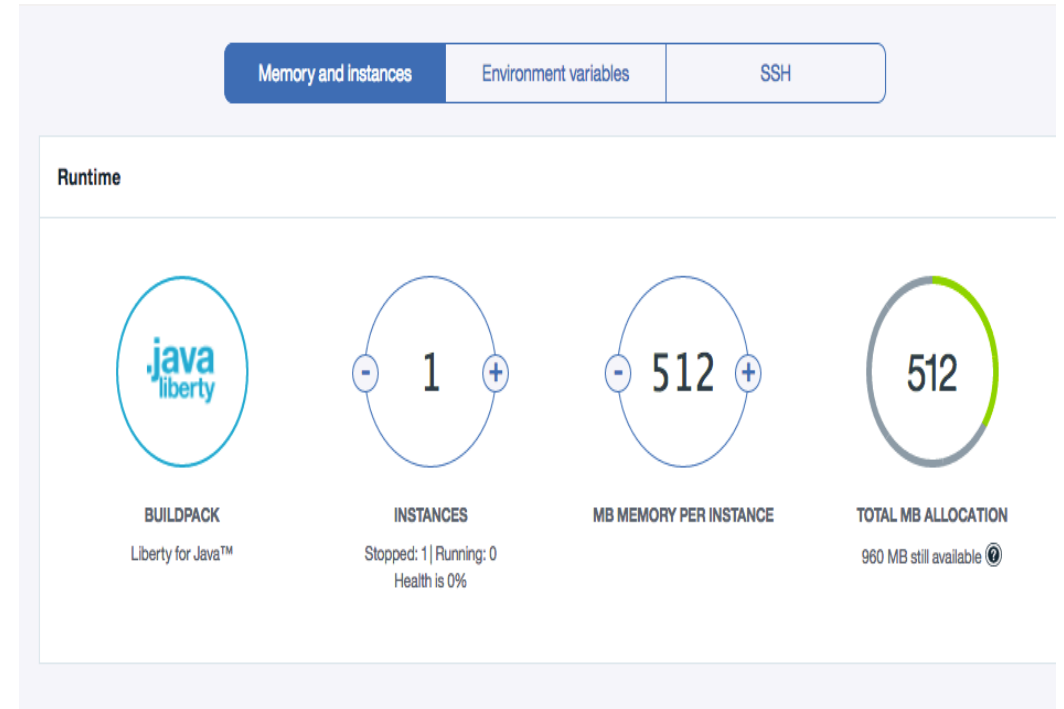


+ ADD STAGE

Ten Steps to BlueMix



9. Launch & Monitor Your App...



10. Tune Runtime (if needed)



Dashboard

Getting started

Overview

Runtime

Connections

Logs

Monitoring



soatravel-flight-wrapper

Status: ● Running

[Rollback to DEA](#)

[View app](#)

All

Errors

Log type: all

App instances: all

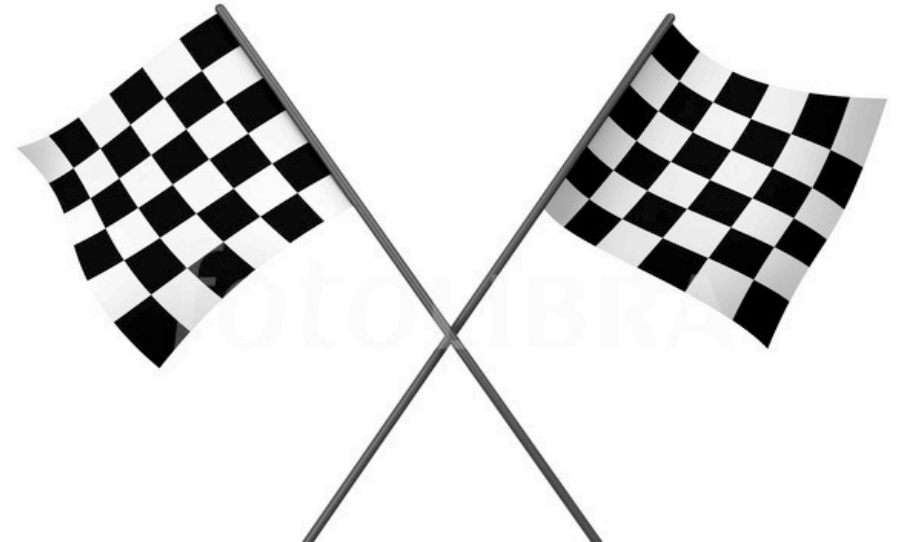


[Advanced view](#)

RTR/3	soatravel-flight-wrapper.eu-gb.mybluemix.net - [03/02/2017:15:54:12.704 +0000] "GET / HTTP/1.1" 200 0 708 "-" "-"	Feb 3, 2017 4:54:12 PM
	5.10.124.133:16289 x_forwarded_for:"169.50.77.22" x_forwarded_proto:"http"	
	vcap_request_id:b1b86fb8-0ed9-42c1-7301-0e4d2d3886a2 response_time:0.003590406 app_id:11c2a80b-88fd-49d5-b68a-6d30d70b6e59 x_global_transaction_id:"1391143473"	
RTR/2	soatravel-flight-wrapper.eu-gb.mybluemix.net - [03/02/2017:16:09:12.309 +0000] "GET / HTTP/1.1" 200 0 708 "-" "-"	Feb 3, 2017 5:09:12 PM
	159.122.215.11:60495 x_forwarded_for:"169.50.77.22" x_forwarded_proto:"http" vcap_request_id:d3bb0e41-9faa-409f-7912-8904bb91ae61 response_time:0.006737334 app_id:11c2a80b-88fd-49d5-b68a-6d30d70b6e59	
	x_global_transaction_id:"907782413"	
RTR/2	soatravel-flight-wrapper.eu-gb.mybluemix.net - [03/02/2017:16:39:12.504 +0000] "GET / HTTP/1.1" 200 0 708 "-" "-"	Feb 3, 2017 5:39:12 PM
	159.122.215.11:23391 x_forwarded_for:"169.50.77.22" x_forwarded_proto:"http" vcap_request_id:77a16547-4ec6-4baf-7c3f-d53faaec6d07 response_time:0.005410911 app_id:11c2a80b-88fd-49d5-b68a-6d30d70b6e59	
	x_global_transaction_id:"889041571"	
RTR/1	soatravel-flight-wrapper.eu-gb.mybluemix.net - [03/02/2017:16:39:12.987 +0000] "GET / HTTP/1.1" 200 0 708 "-" "-"	Feb 3, 2017 5:39:12 PM
	159.122.215.6:54899 x_forwarded_for:"169.45.2.51" x_forwarded_proto:"http"	
	vcap_request_id:b73ccd02-22b4-44e2-4527-65a07dbfa889 response_time:0.003692073 app_id:11c2a80b-88fd-49d5-b68a-6d30d70b6e59 x_global_transaction_id:"1456821441"	
RTR/3	soatravel-flight-wrapper.eu-gb.mybluemix.net - [03/02/2017:16:54:12.704 +0000] "GET / HTTP/1.1" 200 0 708 "-" "-"	Feb 3, 2017 5:54:12 PM

DONE!

- Create & Deploy Your Applications through IBM Bluemix is **Easy**.
- Keep Your **Focus** Over The App
- **Reduce** Costs, **Maximize** Results
- Enterprise Features & Tools
- **Unlimited** Reliability
- **New Business** => Re-Configure Cloud
- A New Way to Build e-Travel Solutions



IBM Api Connect

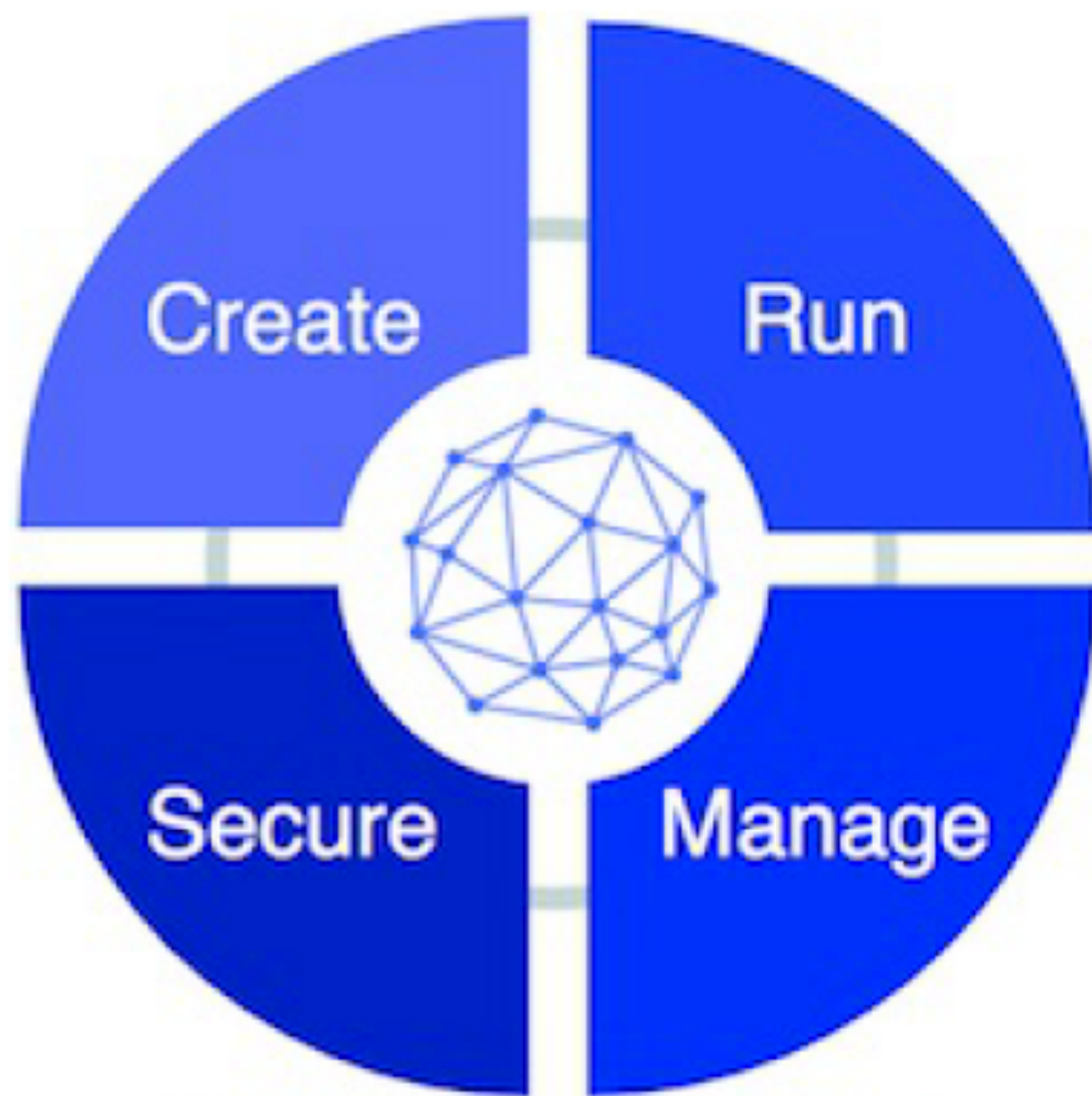
Service Integration

- What is IBM API Connect
- Why IBM API Connect
- Developing & Testing
- Documenting Services
- Case 1: Consume a Service
- Case 2: Customize a Service
- Deploy your service (Data Gateway or Bluemix)

IBM API Connect

- An integrated solution that includes creating, running, managing, and securing APIs for a range of applications in a digital ecosystem
- The solution consists of a set of components for API Creation, API runtime management, API security and control
- Intuitive Interface (powered by Node.js & LoopBack <https://loopback.io/>)





IBM **apiconnect**

Key differences between API Connect offerings

- Consumption-based subscription options for customer-managed and IBM managed (Bluemix) offerings.

Essentials

- For developers
- No charge, forum support
- 50 K* API calls per month
- Micro gateway
- Analytics
- Node.js and Java compute instances

Professional

- For departments with a stand-alone API project
- Chargeable license with IBM support
- 5 million* API calls per month
- Micro gateway
- Analytics
- Node.js and Java compute instances

Enterprise

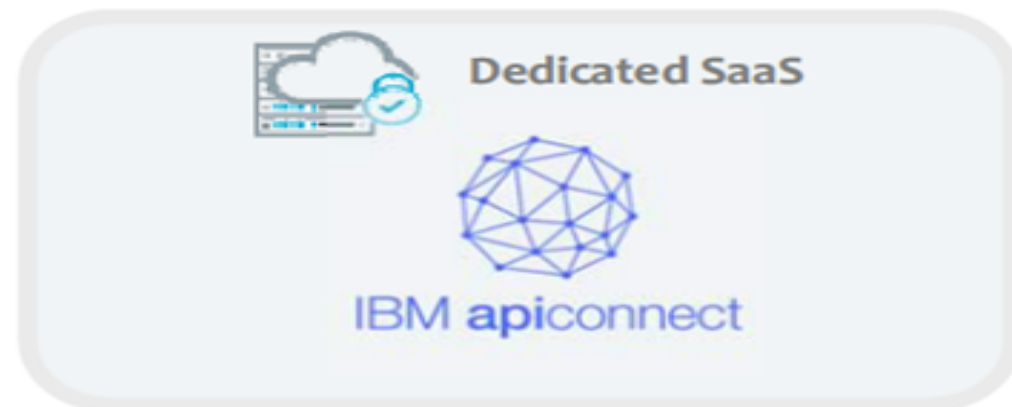
- For departments and cross-organization projects
- Chargeable license with IBM support
- 25 million* API calls per month
- Micro and DataPower gateways
- Advanced analytics
- Node.js and Java compute instances

For a complete list of features between API Connect offerings:

www.ibm.com/support/knowledgecenter/SSMNED_5.0.0/com.ibm.apic.overview.doc/overview_rapic_offerings.html

IBM API Connect as a dedicated cloud service

The power and simplicity of API Connect – offered on the lines of Bluemix Dedicated in your own dedicated SoftLayer environment to both the public Bluemix and your own network.



Dedicated to you

Single tenant hardware that is dedicated to you – to satisfy regulatory and legal compliance.

Feels like home

Secure, fast, and unmetered access. APIC Dedicated sits on your network by way of VPN or direct network connectivity.

Focus on apps, no iron

Focus on building the APIs to succeed in API Economy. IBM manages the platform.

Global – so you are local

Get closer to your users. APIC Dedicated can live in any of 20+ SoftLayer data centers around the world.

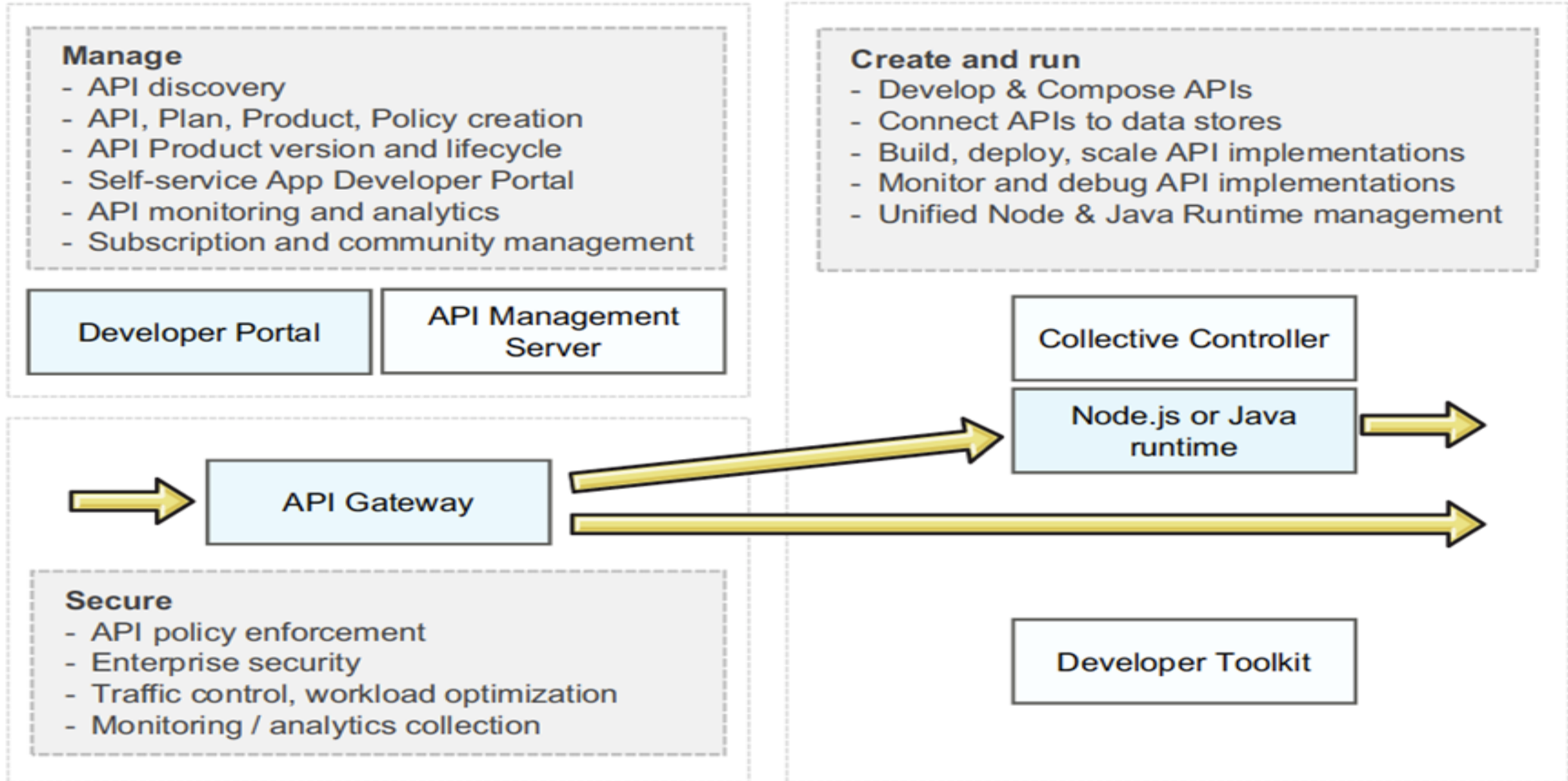
Pay smart

Never over buy again. Pay based on capacity and adjust capacity monthly depending on needs.

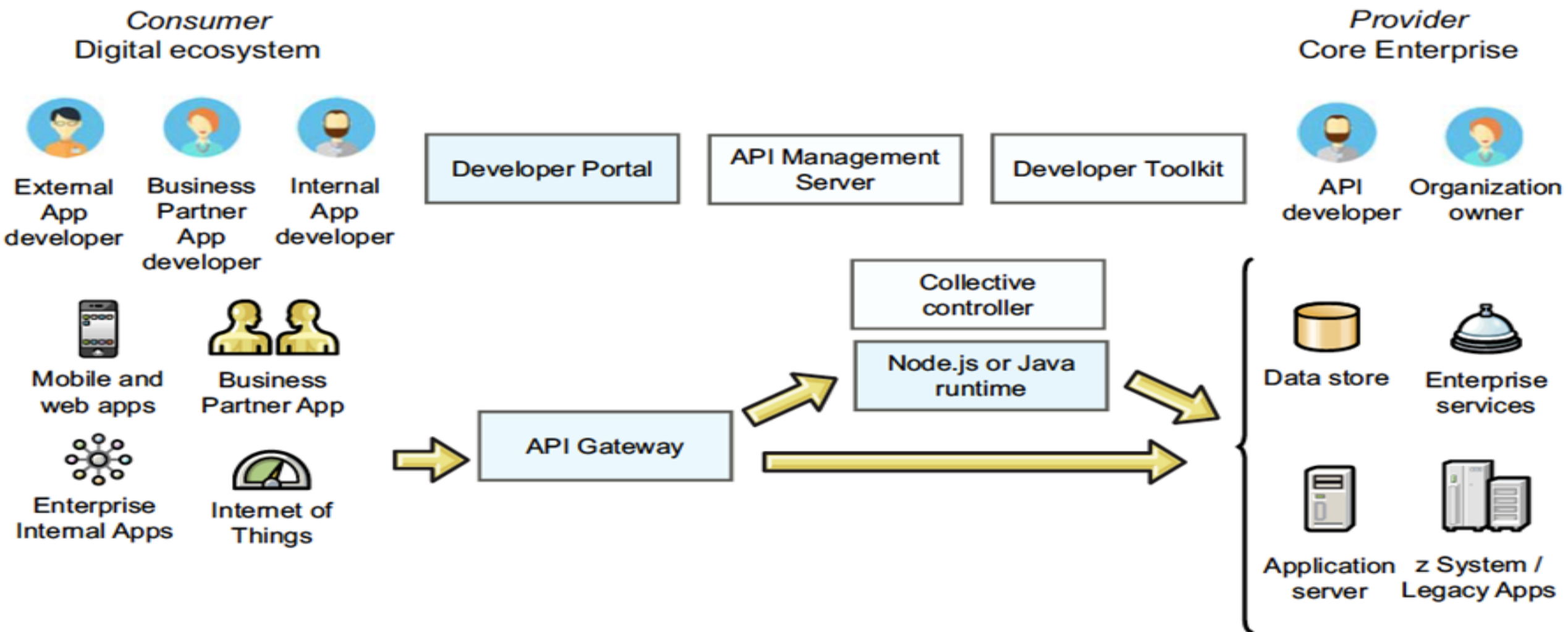
On call 24 x 7

Experts are always on call to solve problems. Premium support options available at request.

API Connect: Components by role



API Connect: Consumers and providers view



IBM Connect API & e-Travel

- Useful to manipulate and consume existing e-Travel services
- A **Software House** can easily develop and deploy own services as “product”
- Speed up & simplify development
- Develop locally, publish on cloud and define your product policies
- Deploy & apply security layer to your service (Data Gateway or Bluemix.)
- Two examples (...)



Two Use Cases of Integration:



1. **Consume Existing e-Travel** Service and **simplify flow** by adding your security policies.



2. **Customize** an Existing Service and provide extra info by getting values from “local” database

Extension: IBM API Connect Service Integration

Demonstration:

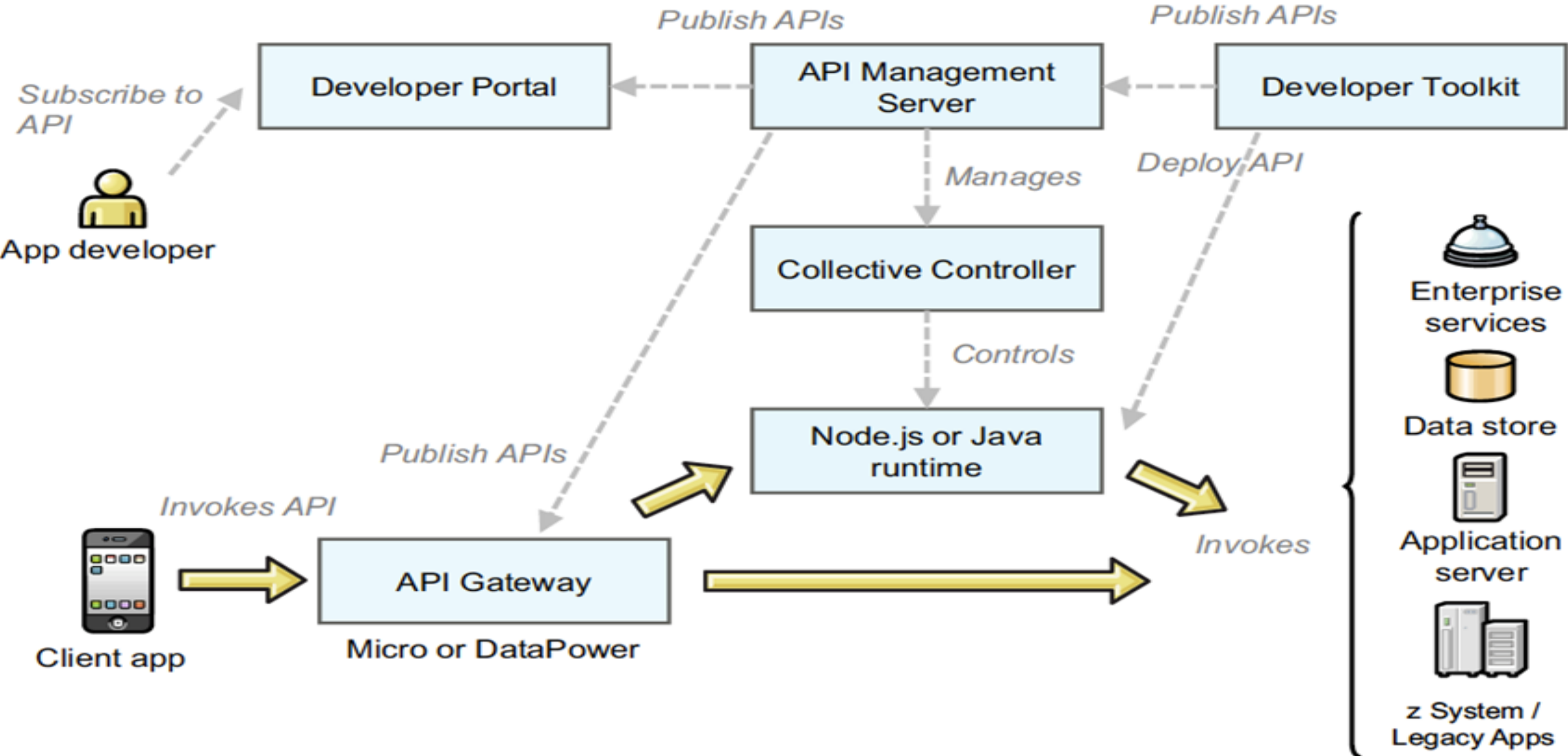
Consuming a Service

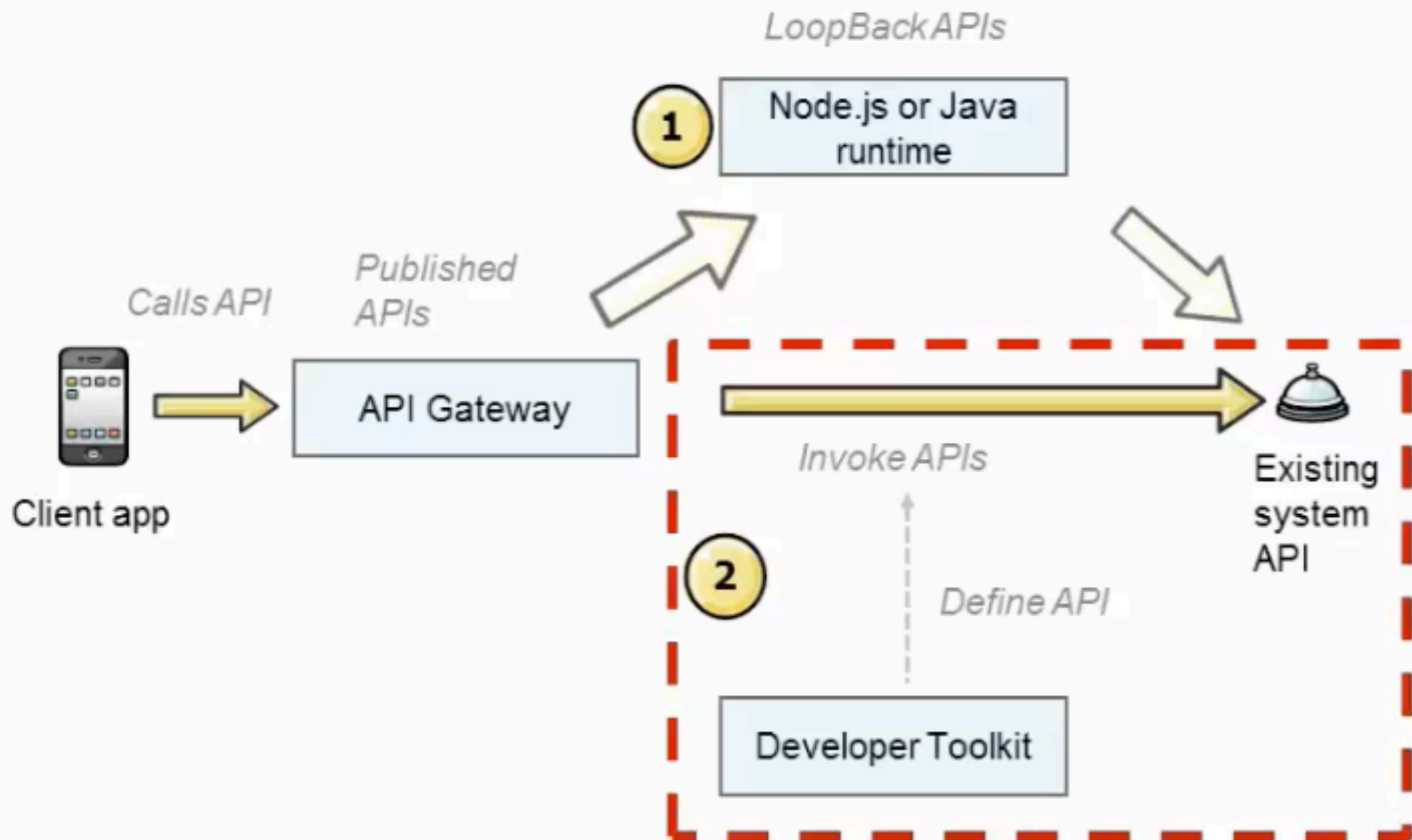
Consuming existing services

- **The “CLOSEST” Hotel Service**
- Somebody else provides the hotel search service
- We create and develop a local Application
- We create data model and consume the service
- We parse the provider response
- We test & deploy the application
- We Expose the Consumed Service



API Connect: Topology view





Start & Login

IBM Api Connect

> **apic** edit

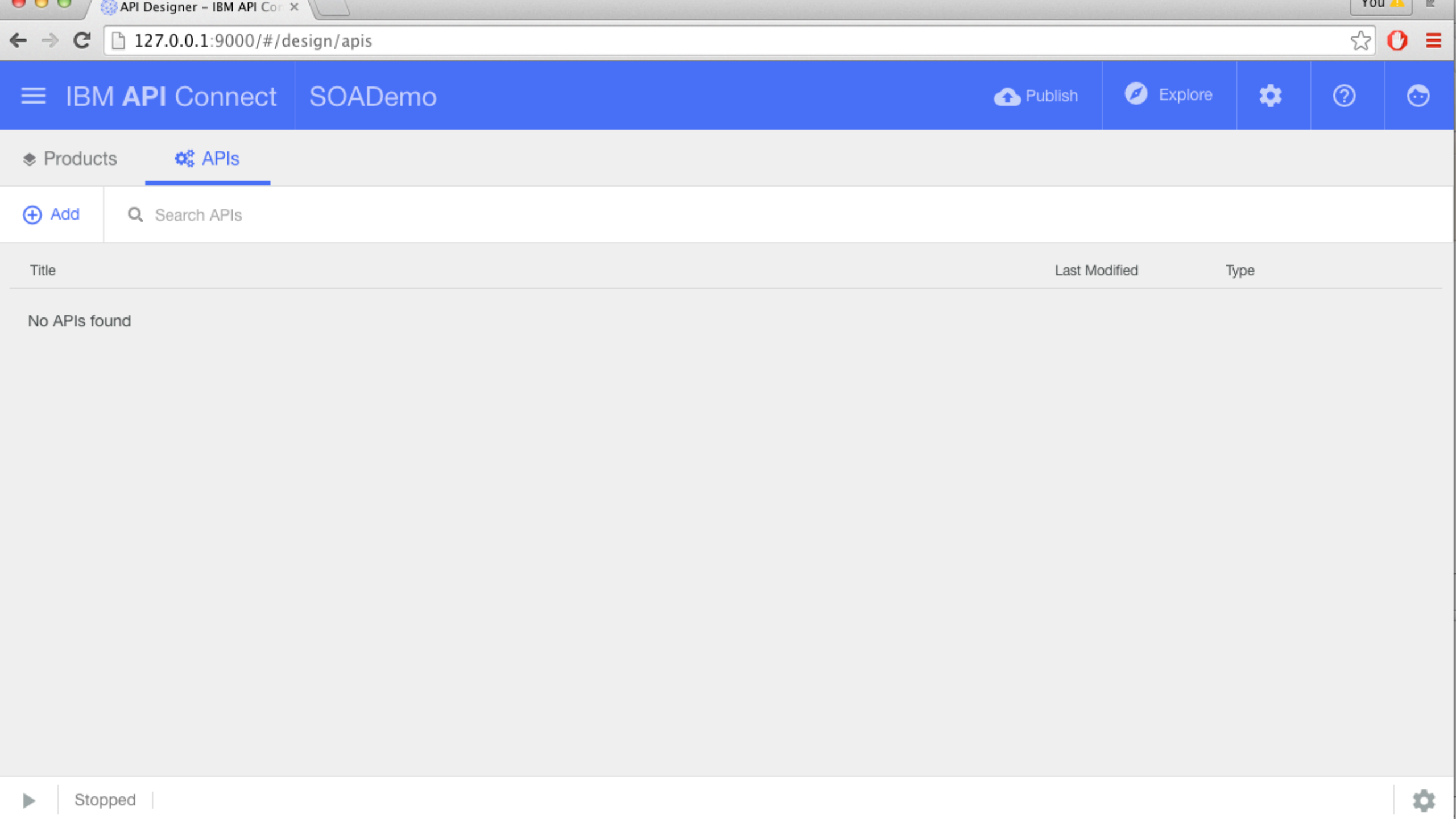
IBM API Connect

API Designer

Sign in with Bluemix

Don't have an account? [Register for IBM Bluemix](#)

Using Bluemix Dedicated or Local? [Sign in here](#)

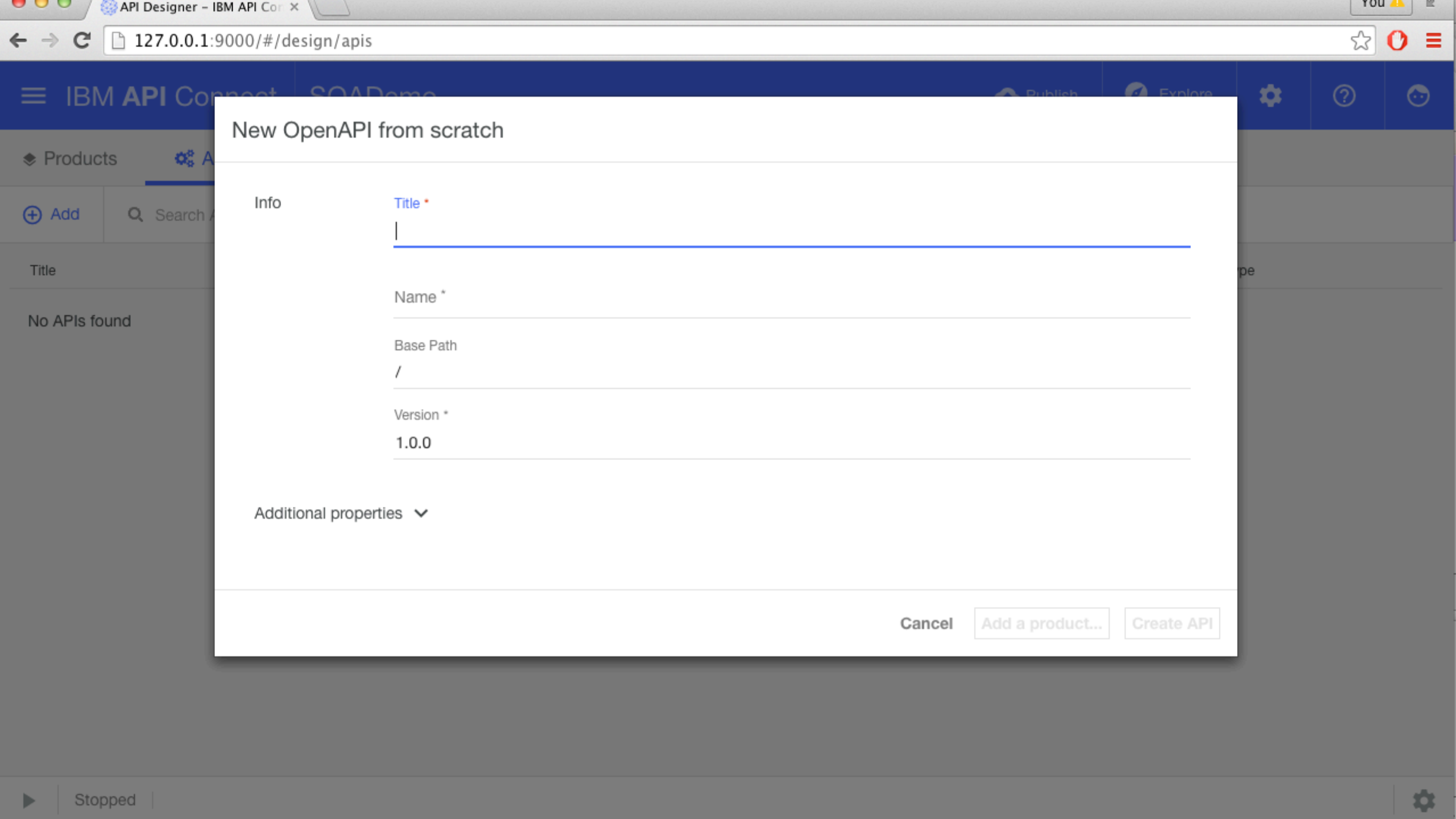


Title			Last Modified	Type
No APIs found				

Create and Configure Your Application From Scratch

- New OpenAPI from scratch
- New OAuth 2.0 Provider API
- New OpenAPI from SOAP service
- Import an existing OpenAPI

Last Modified	Type
---------------	------



New OpenAPI from scratch

Info

Title *

|

Name *

Base Path

/

Version *

1.0.0

Additional properties ▼

Cancel

Add a product...

Create API

Stopped

API Designer - IBM API Cor x

127.0.0.1:9000/#/design/apis

☆

🔥

☰

IBM API Co

Products

⚙️ A

➕ Add

🔍 Search /

Title

No APIs found

⚙️

?

👤

Info

Title *

closest-hotels

Name *

closest-hotels

Base Path

/closest-hotels

Version *

1.0.0

Additional properties

⬆

API template

Create API using template

Default

▼

Target

Target endpoint (if known)

Security

Identify using

Client ID

▼

☒ Enable CORS

Gateway

Micro and DataPower Gateways

▼

Cancel

Add a product...

Create API

▶

Stopped

⚙️

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Info

Schemes

Host

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

Info

Title *

closest-hotels

Name *

closest-hotels

Version *

1.0.0

Description

EditPreview

Contact

Name

Email

Stopped

API Designer - IBM API Cor x

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

☆🔥☰

☰IBM API ConnectSOADemo 1.0.0PublishExplore⚙️❓👤

⬅️ All APIs🌐 Design<> Source🔧 Assemble

📁⋮

Info

Schemes

Host

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

Terms and License

Terms of Service

License Name

License URL

External Documentation

Description

URL

Schemes

☐ http☒ https☐ wss☐ ws

▶️ | Stopped | ⚙️

API Designer - IBM API Cor x

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

☆

🔥

☰

☰ IBM API Connect

SOADemo 1.0.0

☁️ Publish

🔍 Explore

⚙️

❓

👤

⬅️ All APIs

🌐 Design

⌕ Source

🔧 Assemble

📁

⋮

Info

Schemes

Host

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

Base Path

Consumes

Produces

Lifecycle

Base Path

Consumes

Produces

Lifecycle

Base Path

Base Path

/closest-hotels

Consumes

☒ application/json

☐ application/xml

Additional media types

Add media type

Produces

☒ application/json

☐ application/xml

Additional media types

Add Media Type

Lifecycle

Phase

▶ Stopped

⚙️

Consume Service Through **Operation**

- Info
- Schemes
- Host
- Base Path
- Consumes
- Produces
- Lifecycle
- Policy Assembly
- Security Definitions
- Security
- Extensions
- Properties
- Paths
 - /do-search
- Parameters

/do-search

Path *

/do-search

Parameters

No parameters defined

POST /do-search

Add Operation

Add Parameter

Parameters

Parameters

No parameters defined

Define In/Out

Data Models

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

Success

API saved.

8 minutes ago

All APIs

Design

Source

Assemble

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

Parameters

No parameters defined

Definitions

new-definition-1

Services

Services can be loaded here for use within the implementation of this API. Any services loaded here will be available in the assembly view.

Tags

Stopped

API Designer - IBM API Cor x

127.0.0.1:9000/#/design/apis/editor/closest-ho

scratch - Dizionario inglese-italiano WordReference

☆

🔥

☰

☰ IBM API Connect

SOADemo 1.0.0

📁 Publish

🔍 Explore

⚙️

❓

👤

⬅️ All APIs

🌐 Design

⌕ Source

🔧 Assemble

📁

⋮

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

/do-search

Parameters

Definitions

HotelResponse

HotelRequest

Services

Tags

No parameters defined

Definitions

HotelResponse

<>

🗑️

HotelRequest

<>

🗑️

Services

Services can be loaded here for use within the implementation of this API. Any services loaded here will be available in the assembly view.

Tags

■

🔄

Running

Micro Gateway: https://127.0.0.1:4001/

⚙️

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

HotelRequest

<>

Name *

HotelRequest

Type

object

Description

Hotel Request for remote Service

Edit

Preview

Properties

Add Property

*

Property Name

Description

Type

Example

Actions

latitude

Latitude Where you Are

string

12222

<>

longitude

Longitude Where you Are

string

3333333

<>

Allow additional properties

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

HotelResponse

HotelRequest

Services

Tags

HotelResponse

Name *

HotelResponse

Description

Hotel Response

Properties

*	Property Name	Description	Type	Example	Actions
<input type="checkbox"/>	promo	Customized Promo Message	string	Save 10% Today	
<input checked="" type="checkbox"/>	status	Response status: OK or KO	string	ok	
<input type="checkbox"/>	error	Error Message (blank if response ok)	string	Invalid API Key	

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

error

Error Message (blank if response ok)

hotelName

Hotel Name

hotelAddress

Hotel Address

hotelCity

Hotel City

Allow additional properties

HotelRequest

dateTime

password

array

object

HotelResponse

string

id API Key

edium

Street

London, UK

<>

<>

<>

<>

Services

Services can be loaded here for use within the implementation of this API. Any services loaded here will be available in the assembly view.

Running

Micro Gateway: https://127.0.0.1:4001/

**Configure & Join your
Remote Service
And Select Gateway Type
(Assemble Section)**

API Designer - IBM API Connect x

Posta in arrivo (44.348) - x

Redirecting x

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

★

🔥

☰

☰ IBM API Connect SOADemo 1.0.0

☁️ Publish

🔍 Explore

⚙️

❓

👤

Success API saved.

2 minutes ago X

⬅️ All APIs

🌐 Design

⌕ Source

🔧 Assemble

⚠️

💾

⋮

🔍 Filter

⌵

⏪

⏩

🔍 Search

⌵

🔴 Show catches

🎯

—

🕒

+

🔵

Micro Gateway policies

🔵

DataPower Gateway policies

Logic ^

🔼

operation-switch

🔼

switch

🔼

if

🚨

throw

Policies ^

✅

validate

🕒

🔵 invoke

⬤

▶️ invoke

🔗

⌕

📄

✕

Title

Description

URL *
https://soatravel-blue.eu-gb.mybluemix.net/rest/hotel
The URL to be invoked.

TLS Profile
The TLS Profile to use for the secure transmission of data.

Timeout
Time to wait before a reply back from the endpoint. Default is 60 seconds.

Username

▶️ Stopped

⚙️

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Filter

Search

Show catches

Micro Gateway policies

DataPower Gateway policies

switch

if

throw

Policies

validate

invocation

javascript

get variable

Use the validate policy with a DataPower Gateway to validate the payload in an assembly flow against a JSON or XML schema.

SOATravel

SOATravel

Title

SOATravel

Description

URL *

https://soatravel-blue.eu-gb.mybluemix.net/rest/hotel

The URL to be invoked.

TLS Profile

The TLS Profile to use for the secure transmission of data.

Timeout

Time to wait before a reply back from the endpoint. Default is 60 seconds.

Username

The username to use for HTTP Basic authentication.

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Filter

Search

Show catches

Micro Gateway policies

DataPower Gateway policies

switch

if

throw

Policies

map

Use the map policy to specify the relationships between variables within your API flow, and to apply transformations to these variables.

json-to-xml

validate

SOATravel

SOATravel

Title

SOATravel

Description

URL *

https://soatravel-blue.eu-gb.mybluemix.net/rest/hotel

The URL to be invoked.

TLS Profile

The TLS Profile to use for the secure transmission of data.

Timeout

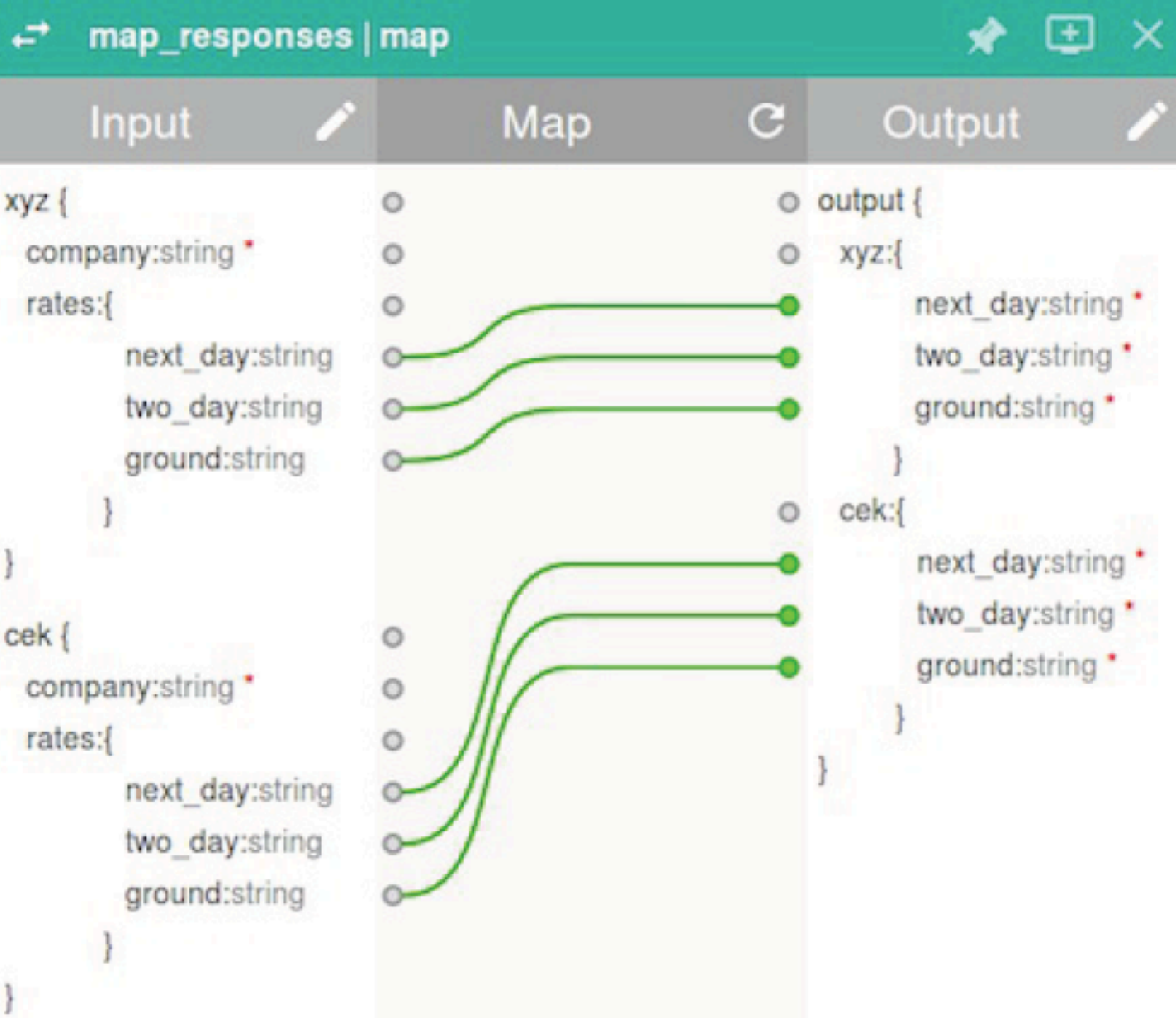
Time to wait before a reply back from the endpoint. Default is 60 seconds.

Username

The username to use for HTTP Basic authentication.

Running

Micro Gateway: https://127.0.0.1:4001/





Title

operation-switch

Description



case 0

shipping.calc X



search operations...



case 1

get.stores X



search operations...

[+ Case](#)



Search



activity-log



operation-switch



shipping.calc



get.stores



activity-log

operation-switch

shipping.calc



invoke_xyz

invoke_cek

map_responses

get.stores



invoke_google_geolocate

gws-format-maps-link

Gateway capabilities (1 of 2)

Capability	DataPower Gateway	Micro Gateway
Built for	Departments and cross-enterprise	Developers, single API project
Deployment form factor	Physical, virtual, cloud, Docker	Node package manager
Programmable gateway	Limited (1)	Yes
Embedded in native developer experience	No	Yes
Purpose-built, DMZ-ready, secure gateway platform	Yes (2)	No
Multi-channel gateway: mobile, web, API, B2B, SOA	Yes	No
Enterprise-grade performance	Yes (3)	No
Reverse proxy, SSL/TLS termination	Yes	No (4)
Built-in policies	Advanced (5)	Standard
Rate limit	Yes	Yes
Any-to-any message transformation	Advanced	Yes (6)
Database connectivity, IBM System z connectivity	Yes	Yes (7)
Identity and Access Management system integration	Advanced	Yes (8)

Gateway capabilities (2 of 2)

Capability	DataPower Gateway	Micro Gateway
Built-in JSON to SOAP transformation	Yes	No
Built-in threat protection (JSON, XML)	Yes	No
Built-in advanced authentication, authorization, and security token conversion	Yes (9)	No
Built-in message encryption, digital signature, compression	Yes	No
Built-in response caching	Yes	No
Front-end self-balancing, back-end load balancing	Yes	No
Non-HTTP protocol and transport protocol conversion	Yes (10)	Yes
Integration with IBM Security Access Manager, MobileFirst, WebSphere Service Registry and Repository	Yes	No
Integration with network hardware security module, anti-virus scanners	Yes (11)	No

Behind the Scenes: The “Source” Tab

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Base Path

Consumes

Produces

Lifecycle

Policy Assembly

Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

```
1  swagger: '2.0'
2  info:
3    x-ibm-name: closest-hotels
4    title: closest-hotels
5    version: 1.0.0
6  schemes:
7    - https
8    host: $(catalog.host)
9    basePath: /closest-hotels
10 consumes:
11   - application/json
12 produces:
13   - application/json
14 securityDefinitions:
15   clientIdHeader:
16     type: apiKey
17     in: header
18     name: X-IBM-Client-Id
19 security:
20   - clientIdHeader: []
21 x-ibm-configuration:
22   testable: true
23   enforced: true
24   cors:
25     enabled: true
26   assembly:
27     execute:
28       - invoke:
29         target-url: 'https://soatravel-blue.eu-gb.mybluemix.net/rest/hotels/search/closestHotel?apiKey=1234567'
30         compression: true
31         title: SOATravel
32         cache-response: no-cache
33   gateway: micro-gateway
34 paths:
35   /do-search:
36     post:
37       responses:
```

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

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Security Definitions

Security

Extensions

Properties

Paths

Parameters

Definitions

Services

Tags

34 paths:

35 /do-search:

36 post:

37 responses:

38 '200':

39 description: 200 OK

40 schema:

41 \$ref: '#/definitions/HotelResponse'

42 parameters:

43 - name: Request

44 required: true

45 in: body

46 schema:

47 \$ref: '#/definitions/HotelRequest'

48 definitions:

49 HotelResponse:

50 properties:

51 promo:

52 type: string

53 description: Customized Promo Message

54 example: 'Save 10% Today'

55 status:

56 type: string

57 description: 'Response status: OK or KO'

58 example: ok

59 error:

60 type: string

61 description: Error Message (blank if response ok)

62 example: Invalid API Key

63 hotelName:

64 type: string

65 description: Hotel Name

66 example: Palladium

67 hotelAddress:

68 type: string

69 description: Hotel Address

70 example: Main Street

Running

Micro Gateway: https://127.0.0.1:4001/

Now... Test The Application

- Solve your https/
ssl issues



Your connection is not private

Attackers might be trying to steal your information from **127.0.0.1** (for example, passwords, messages, or credit cards). `NET::ERR_CERT_AUTHORITY_INVALID`

☐ Automatically report details of possible security incidents to Google. [Privacy policy](#)

[Hide advanced](#)

[Back to safety](#)

This server could not prove that it is **127.0.0.1**; its security certificate is not trusted by your computer's operating system. This may be caused by a misconfiguration or an attacker intercepting your connection.

[Proceed to 127.0.0.1 \(unsafe\)](#)

API Designer - IBM API Cor xhttps://127.0.0.1:4001 xRedirecting x

127.0.0.1:9000/#/design/apis

☆

🔥

☰

Success

API saved.

9 minutes ago X

Products

⚙️

APIs

➕

Add

🔍

Search APIs

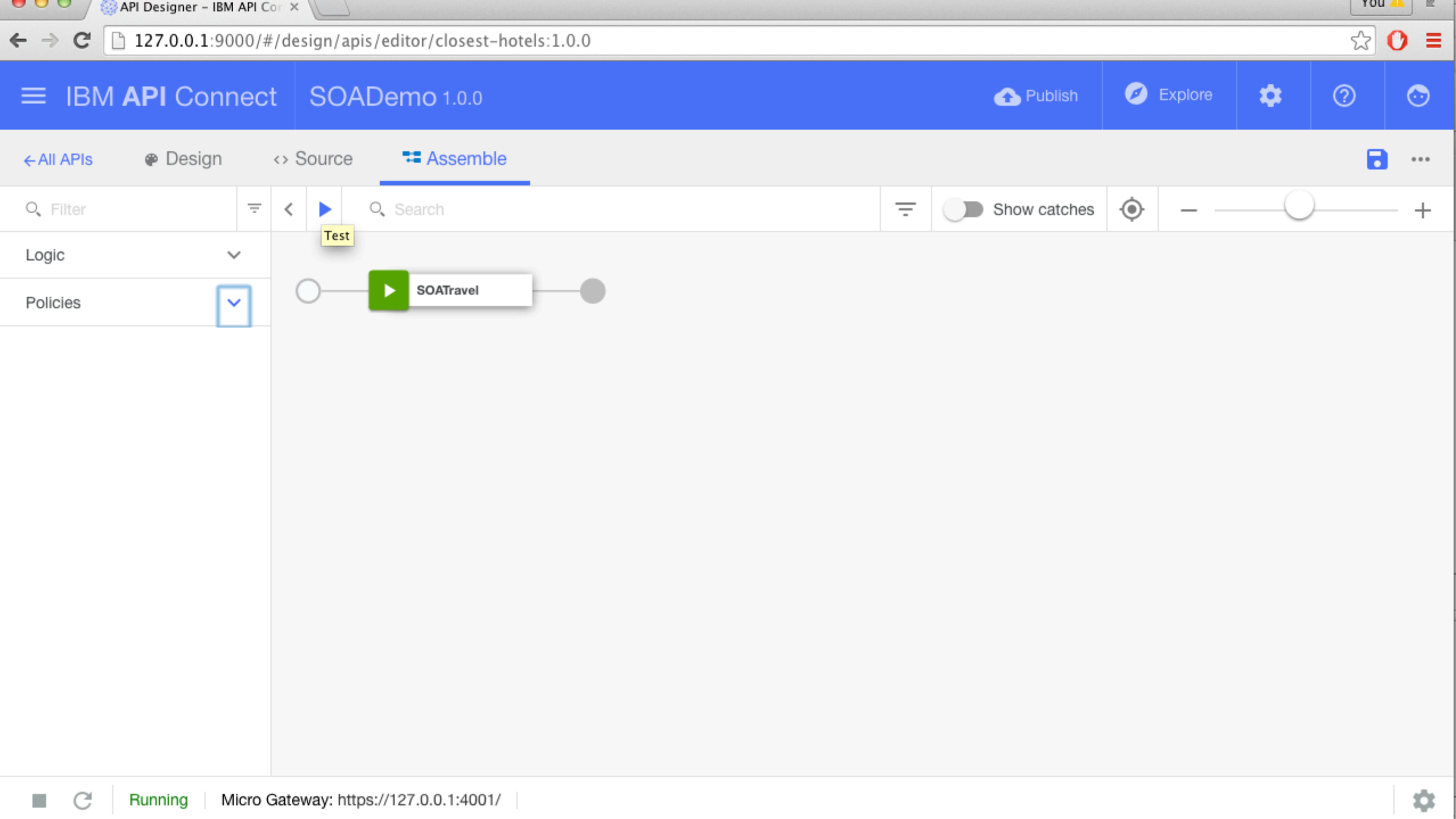
Title	Last Modified	Type	
<div>closest-hotels 1.0.0 [closest-hotels_1.0.0.yaml]</div>	9 minutes ago	REST	<div>🗑️</div>

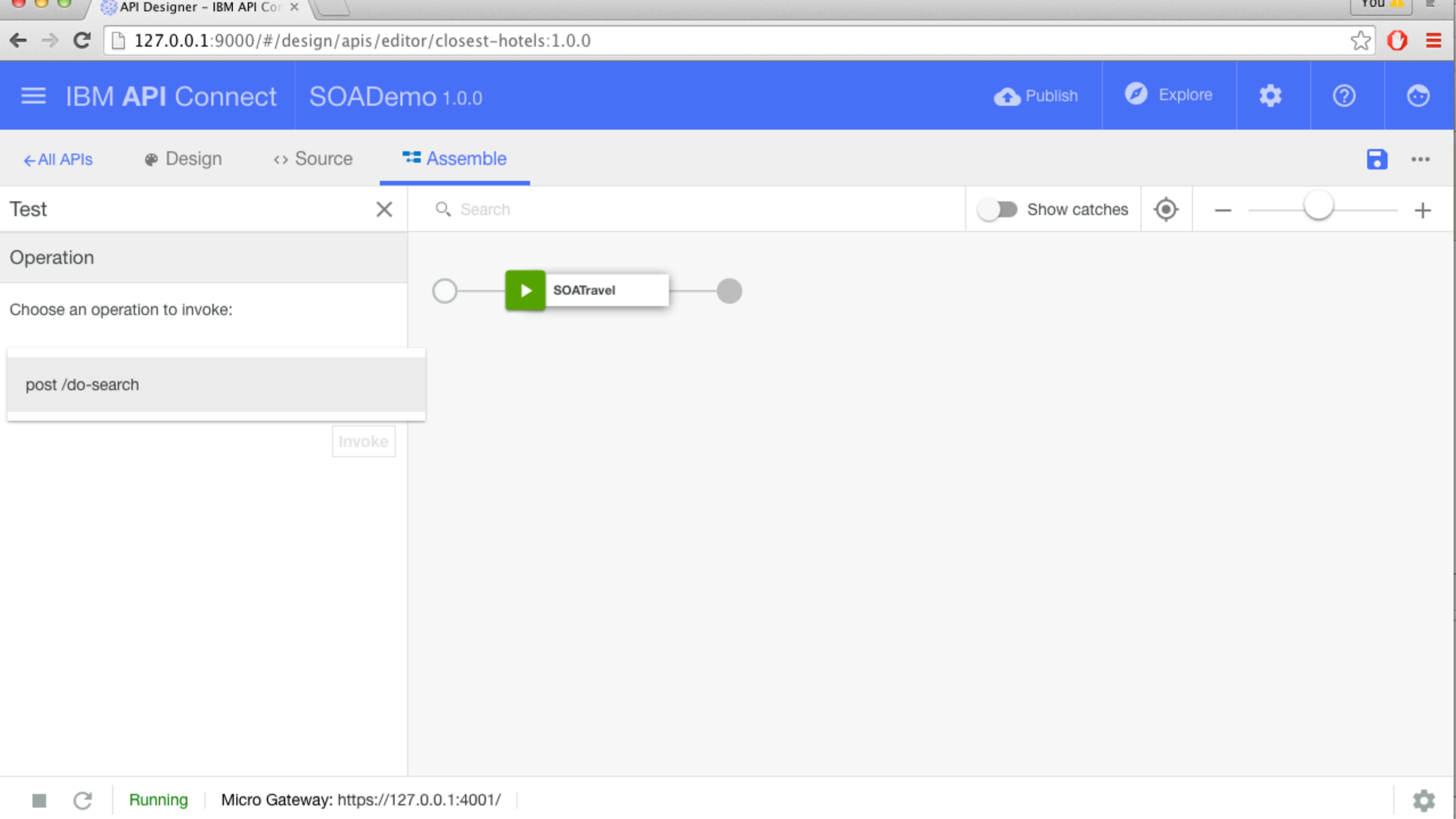
127.0.0.1:9000/#/design/apis

Running

Micro Gateway: https://127.0.0.1:4001/

🔧





IBM API Connect

SOADemo 1.0.0

Publish

Explore

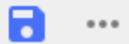


All APIs

Design

Source

Assemble



Test



Search

Show catches

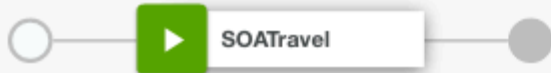


Operation

Choose an operation to invoke:

post /do-search

Invoke



API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Test

Search

Show catches

Operation

Choose an operation to invoke:

Operation

post /do-search

Identification

Client ID

default

Parameters

Content-Type

application/json

Accept

application/json

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Test

application/json

Accept

application/json

Request *

Show schema | Generate

- {
latitude: - string *
longitude: - string *
}

☐ Repeat

Repeat the API invocation a set number of times, or until the stop button is clicked

Stop after: 10 ☒ Stop on error

Search

Show catches

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Test

application/json

Accept

application/json

Request *

{
 "latitude": "36.092938",
 "longitude": "115.173179"
}

Show schema | Generate

- {
 latitude: - string *
 longitude: - string *
}

☐ Repeat

Repeat the API invocation a set number of times, or

Search

Show catches

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Test

X

Search

Show catches

latitude: 38.922300 ,
"longitude": "115.173179"
}

Show schema | Generate

- {
latitude: - string *
longitude: - string *
}

Repeat

Repeat the API invocation a set number of times, or until the stop button is clicked

Stop after: 10

Stop on error

Invoke

Invoke

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Test

Invoke

Search

Show catches

Response

Status code:
200 OK

Response time:
1037ms

Headers:
x-ratelimit-remaining: 99
content-language: en-US
x-global-transaction-id: 782273615
x-ratelimit-limit: 100
content-type: application/json

Body:

```
{
  "status": "ok",
  "error": "",
  "hotelName": "Mandalay Bay",
  "hotelAddress": "Rue 122332132",
  "hotelCity": "Las Vegas, Nevada, US
A",
  "hotelStars": "4.0"
}
```

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

Before Publish...

“Explore your App”

API Designer - IBM API Connect

127.0.0.1:9000/#/design/apis/editor/closest-hotels:1.0.0

IBM API Connect

SOADemo 1.0.0

Publish

Explore

All APIs

Design

Source

Assemble

Filter

Search

Show catches

Logic

operation-switch

switch

if

throw

Policies

validate

invoke

javascript

set-variable

SOATravel

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

closest-hotels 1.0.0

Security

Name	Type
clientIdHeader	apiKey header

POST /do-search

Parameters

Name	Located in	Required	Schema
Request	body	true	HotelRequest

Responses

Code	Schema
200	HotelResponse
200 OK	

curl --request POST \
--url https://localhost:4001/closest-hotels/do-search \
--header 'accept: application/json' \
--header 'content-type: application/json' \
--header 'x-ibm-client-id: default' \
--data '{"latitude":"12222","longitude":"3333333"}'

Definition

POST localhost:4001/closest-hotels/do-search

Example response

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

Responses

Code	Schema
200	HotelResponse
200 OK	

Definition

POST localhost:4001/closest-hotels/do-search

Example response

```
{  "promo": "Save 10% Today",  "status": "ok",  "error": "Invalid APi Key",  "hotelName": "Palladium",  "hotelAddress": "Main Street",  "hotelCity": "London, UK"}
```

https://localhost:4001/closest-hotels/do-search

Identification

Client ID

default

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

Definitions

Hotel

application/json

Accept *

application/json

Parameters

Request *

Show schema | Generate

- {
latitude: - string *
longitude: - string *
}

Call operation

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Connect

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

application/json

Accept *

application/json

Parameters

Request *

{

"latitude": "35",

"longitude": ""

}

Show schema | Generate

- {

latitude: - string *

longitude: - string *

}

Call operation

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Cor x

127.0.0.1:9000/#/explore#%2Fexplore

☆

🔥

☰

☰ IBM API Connect

SOADemo

📤 Publish

🔍 Explore

⚙️

?

👤

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

Request

POST https://localhost:4001/closest-hotels/do-search

Content-Type: application/json

Accept: application/json

X-IBM-Client-Id: default

Response

Code: 200 OK

Headers:

x-ratelimit-remaining: 99

content-language: en-US

x-global-transaction-id: 160389517

x-ratelimit-limit: 100

content-type: application/json

```
{
  "status": "ok",
  "error": "",
  "hotelName": "Mandalay Bay",
  "hotelAddress": "Rue 122332132",
  "hotelCity": "Las Vegas, Nevada, USA",
  "hotelStars": "4.0"
}
```

■ ↺

Running

Micro Gateway: https://127.0.0.1:4001/

⚙️

Finally...

“Publish your App”

- Select your Target
- Define a “Product Plan”

API Designer - IBM API Cor x

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

Request

POST https://localhost:4001/closest-hotels/do-search
Content-Type: application/json
Accept: application/json
X-IBM-Client-Id: default

Response

Code: 200 OK
Headers:
x-ratelimit-remaining: 99
content-language: en-US
x-global-transaction-id: 160389517
x-ratelimit-limit: 100
content-type: application/json

{
 "status": "ok",
 "error": "",
 "hotelName": "Mandalay Bay",
 "hotelAddress": "Rue 122332132",
 "hotelCity": "Las Vegas, Nevada, USA",
 "hotelStars": "4.0"
}

Running

Micro Gateway: https://127.0.0.1:4001/

API Designer - IBM API Cor x

127.0.0.1:9000/#/explore#%2Fexplore

IBM API Connect

SOADemo

Publish

Explore

Local Gateway https://127.0.0.1:4001/

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

Hotel

HotelResponse

HotelRequest

Request

POST https://localhost:4001/closest-hotels/do-search
Content-Type: application/json
Accept: application/json
X-IBM-Client-Id: default

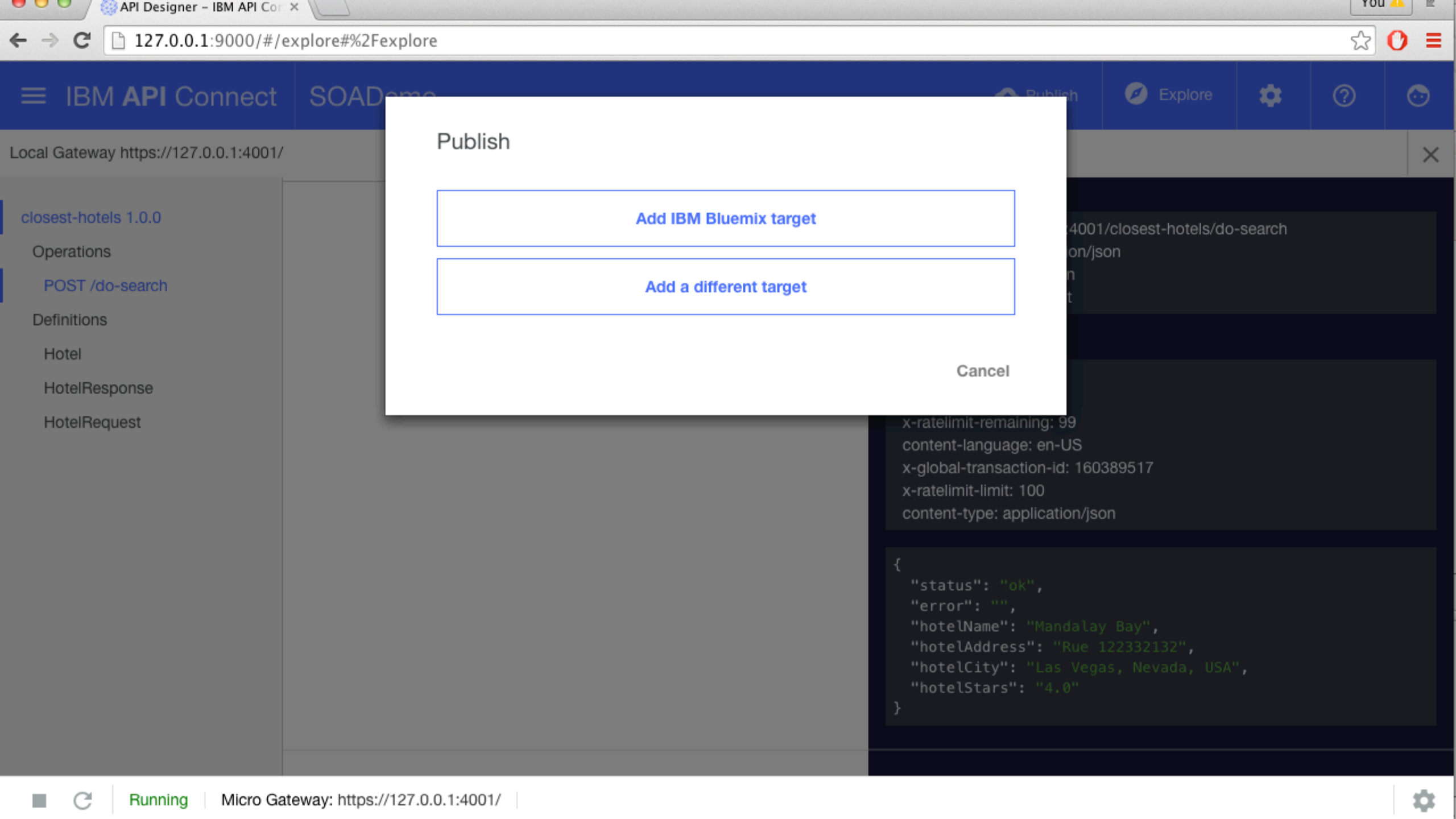
Response

Code: 200 OK
Headers:
x-ratelimit-remaining: 99
content-language: en-US
x-global-transaction-id: 160389517
x-ratelimit-limit: 100
content-type: application/json

```
{
  "status": "ok",
  "error": "",
  "hotelName": "Mandalay Bay",
  "hotelAddress": "Rue 122332132",
  "hotelCity": "Las Vegas, Nevada, USA",
  "hotelStars": "4.0"
}
```

Running

Micro Gateway: https://127.0.0.1:4001/



Publish

Add IBM Bluemix target

Add a different target

Cancel

closest-hotels 1.0.0

Operations

POST /do-search

Definitions

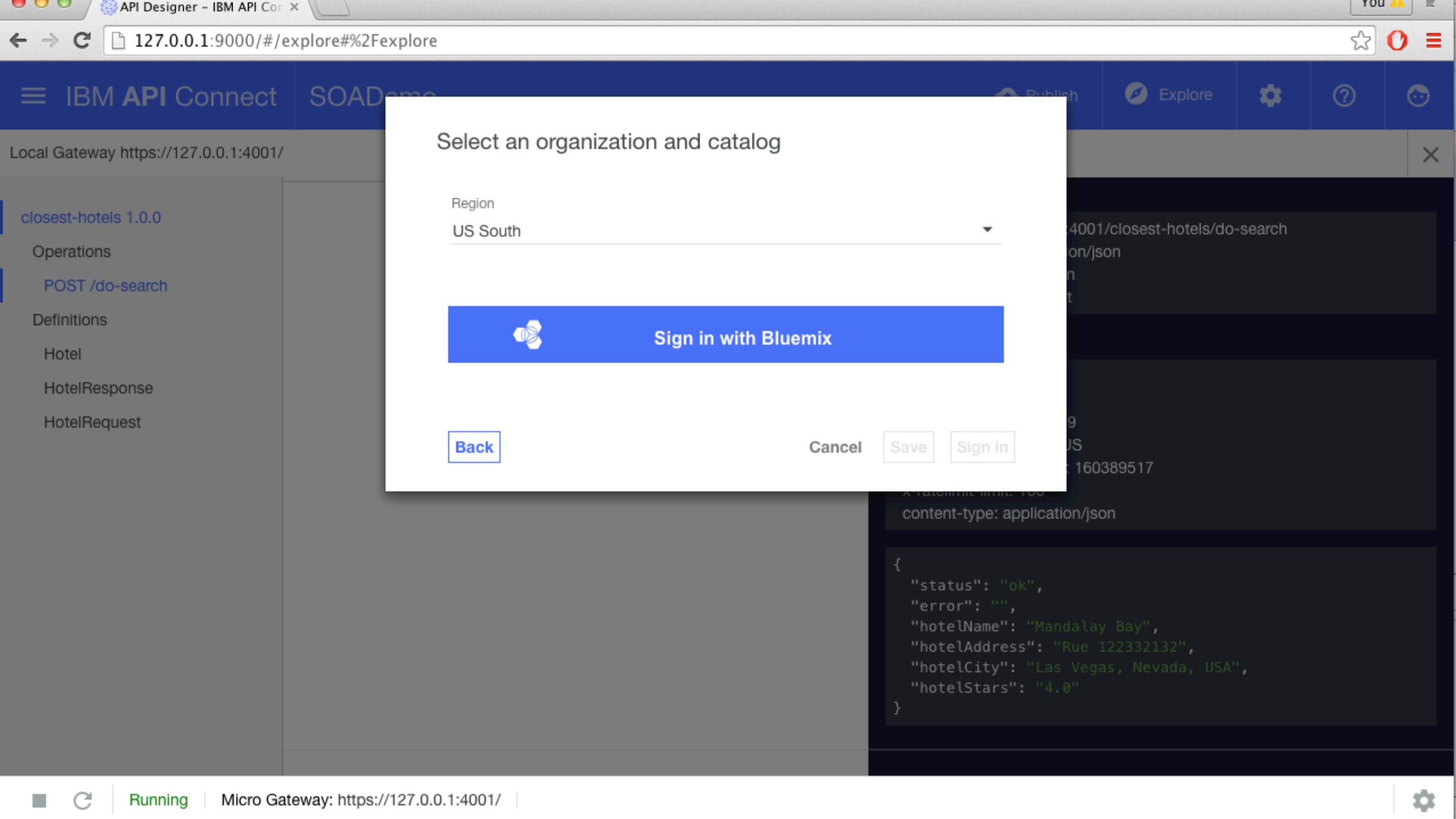
Hotel

HotelResponse

HotelRequest

x-ratelimit-remaining: 99
content-language: en-US
x-global-transaction-id: 160389517
x-ratelimit-limit: 100
content-type: application/json

```
{  
  "status": "ok",  
  "error": "",  
  "hotelName": "Mandalay Bay",  
  "hotelAddress": "Rue 122332132",  
  "hotelCity": "Las Vegas, Nevada, USA",  
  "hotelStars": "4.0"  
}
```



Select an organization and catalog

Region

US South



Sign in with Bluemix

Back

Cancel

Save

Sign in

Running

Micro Gateway: https://127.0.0.1:4001/

IBM API Connect Service Integration

Customize a Service:
The LoopBack Framework

Extend a Service - Scenario

- Get Travel Service data from a source provider (e.g. : Hotels)
- Enhance the final response by adding information stored into your local databases
 - User Ranking
 - Comments
- Change prices by applying your customized rules (markups)
- We need an advanced solution

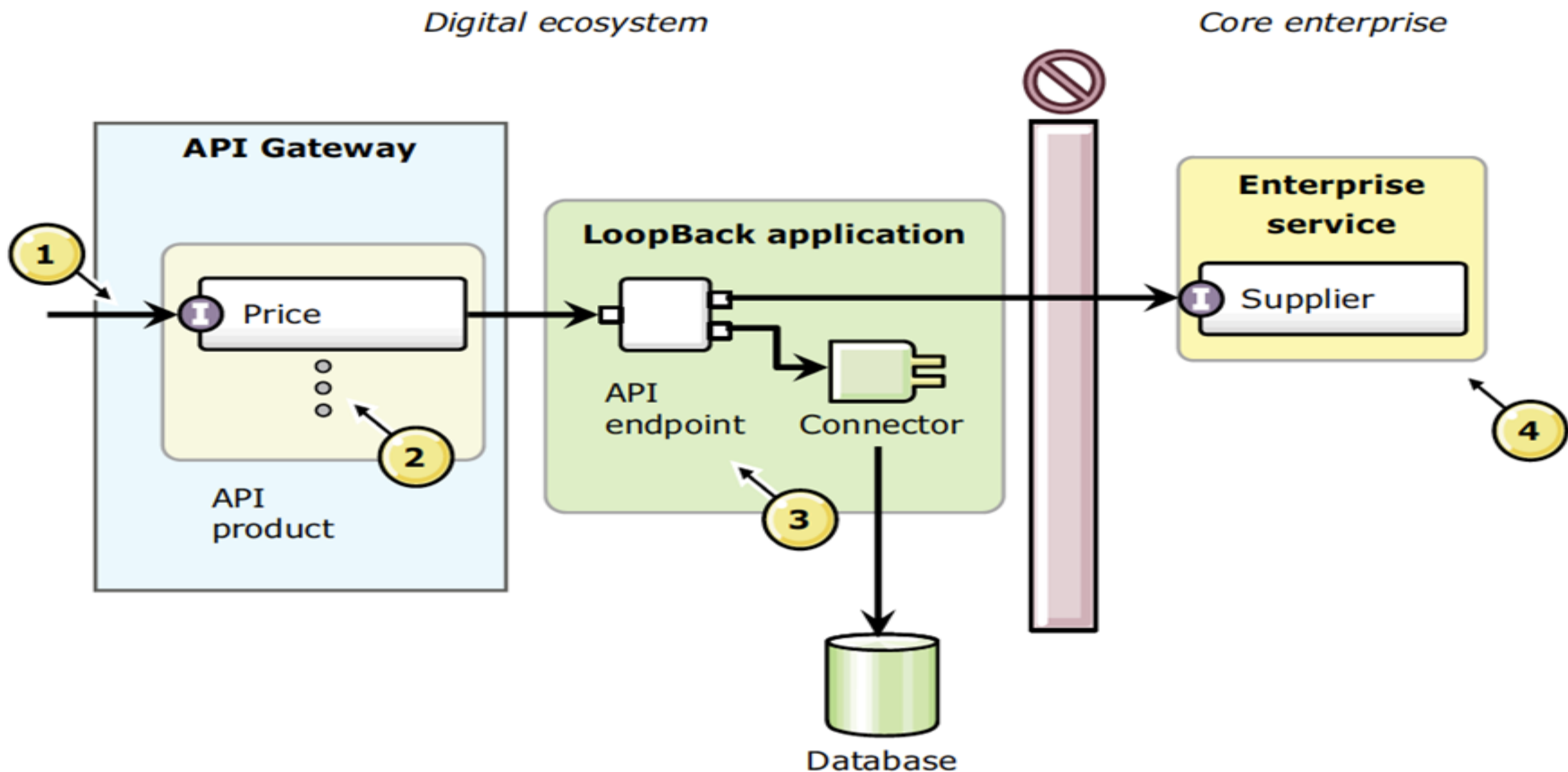


LoopBack, the Perfect Choice

- <https://loopback.io/>
- Extends Node.js / Open Source
- Fully Integrated within API Connect
- Native connection with most popular **databases** (DB2,**MySQL**, **MongoDB**) and REST providers
- Wizards that help you in application designing, development and relationship management
- Extensible through **Hooks**

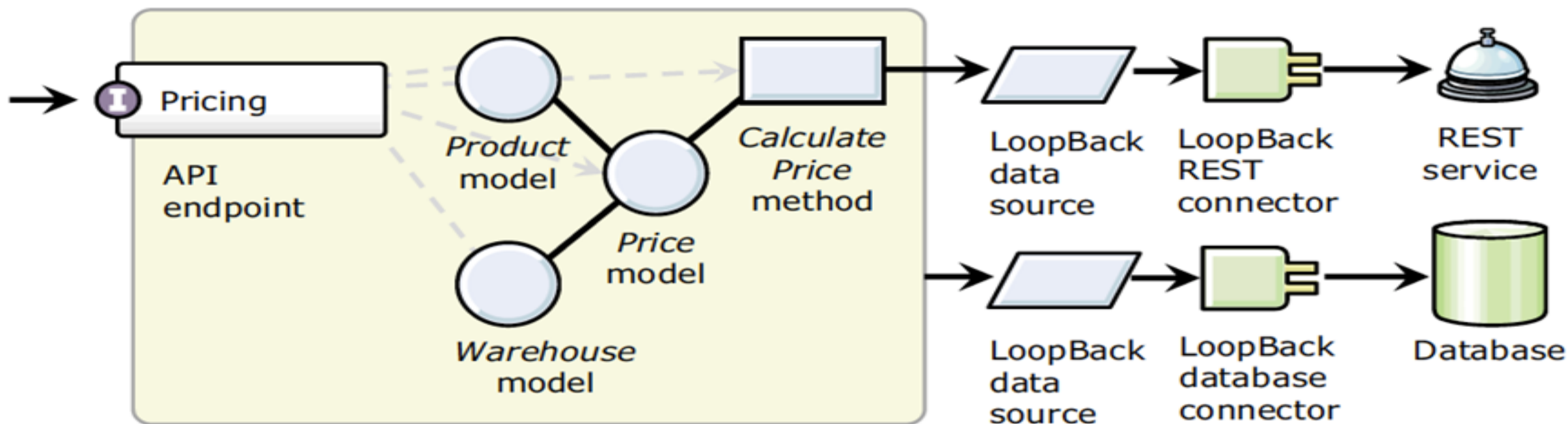


LoopBack applications in an API Connect solution



LoopBack framework: non-database connectors

- Not all LoopBack connectors persist model data to a data source.
 - For example, the **REST** and **SOAP connectors** make remote web services available to your API implementation.
- In this example, you install and configure the REST connector to call an existing REST service from your LoopBack application.



Example: Create a LoopBack application

```
$ apic loopback
```

1

$$\begin{array}{c} \text{---} \\ | \text{---} (o) \text{---} | \\ \text{---} \\ (\text{---} U \text{---}) \\ / \text{---} A \text{---} \backslash \\ | \sim | \\ \text{---} \cdot \text{---} \cdot \text{---} \\ | \circ \text{---} Y \end{array}$$

Let's create a LoopBack application!

2

3

4

? What's the name of your application? pricing

```
? Enter name of the directory to contain the project: pricing
```

? What kind of application do you have in mind? (Use arrow keys)

- `empty-server` (An empty LoopBack API, without any configured models or data sources)

```
hello-world (A project containing a basic working example,
including a memory database)
```

5

Example: Create a model and properties

```
$ apic create --type model
```

← 1

```
? Enter the model name: product
```

```
? Select model's base class: PersistedModel
```

```
? Expose product via the REST API? Yes
```

```
? Custom plural form (used to build REST URL):
```

```
? Common model or server only? Common
```

Let's add some product properties now.

Enter an empty property name when done.

```
? Property name: name
```

```
  invoke    loopback:property
```

```
? Property type: string
```

```
? Required? Yes
```

```
? Default value[leave blank for none]:
```

Let's add another product property.

Enter an empty property name when done.

```
? Property name:
```

← 2

← 3

← 4

← 5

← 6

Example: Model script file

```
module.exports = function(Product) {  
  }  
}
```

The **model script** file defines the **behavior** that you add to your model.

common/models/**product.js**

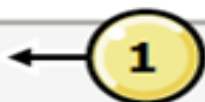
The code that you write in the model script extends or modifies behavior from the base class.

For example, the **product** model extends the **persisted model** base class. Therefore, you do not need to write code to persist model data to a data source.


```
1 module.exports = function (Item) {
2
3   Item.afterRemote('prototype.__create__reviews', function (ctx, remoteMethodOutput, next) {
4     var itemId = remoteMethodOutput.itemId;
5
6     console.log("calculating new rating for item: " + itemId);
7
8     var searchQuery = {include: {relation: 'reviews'}};
9
10    Item.findById(itemId, searchQuery, function findItemReviewRatings(err, findResult) {
11      var reviewArray = findResult.reviews();
12      var reviewCount = reviewArray.length;
13      var ratingSum = 0;
14
15      for (var i = 0; i < reviewCount; i++) {
16        ratingSum += reviewArray[i].rating;
17      }
18
19      var updatedRating = Math.round((ratingSum / reviewCount) * 100) / 100;
20
21      console.log("new calculated rating: " + updatedRating);
22
23      findResult.updateAttribute("rating", updatedRating, function (err) {
24        if (!err) {
25          console.log("item rating successfully updated");
26        } else {
27          console.log("error updating rating for item: " + err);
28        }
29      });
30    });
31  }
32}
```

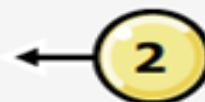
Example: Create model relations

\$ apic loopback:relation



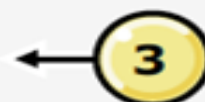
? Select the model to create the relationship from:

- product
- ☐ warehouse



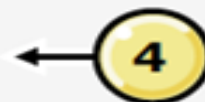
? Relation type:

- ☐ has many
- belongs to
- has many and belongs to
- has one



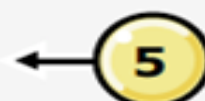
? Choose a model to create a relationship with:

- ☐ product
- warehouse
- (other)



? Enter the property name for the relation:

products



Database connectors

- These LoopBack connectors implement create, retrieve, update, and delete operations to models that extend the **PersistedModel** interface.
 - IBM Cloudant
 - IBM DB2
 - Memory
 - MongoDB
 - MySQL
 - Oracle
 - PostgreSQL
 - Redis
 - SQL Server
- Review the documentation for an up-to-date list of database connectors:
`https://docs.strongloop.com/display/public/LB/Databases+connectors`

Example: Create a memory data source

```
$ apic create --type datasource
```

1

```
? What's the name of your application? memoryds
```

2

```
? Select the connector for memoryds:
```

- ☐ In-memory db (supported by StrongLoop)
- IBM DB2 (supported by StrongLoop)
- IBM Cloudant DB (supported by StrongLoop)
- MongoDB (supported by StrongLoop)

3

```
Connector-specific configuration:
```

```
? window.localStorage key to use for persistence (browser only):
```

4

```
? Full path to file for persistence (server only):
```

```
./server/data/memory.json
```

5

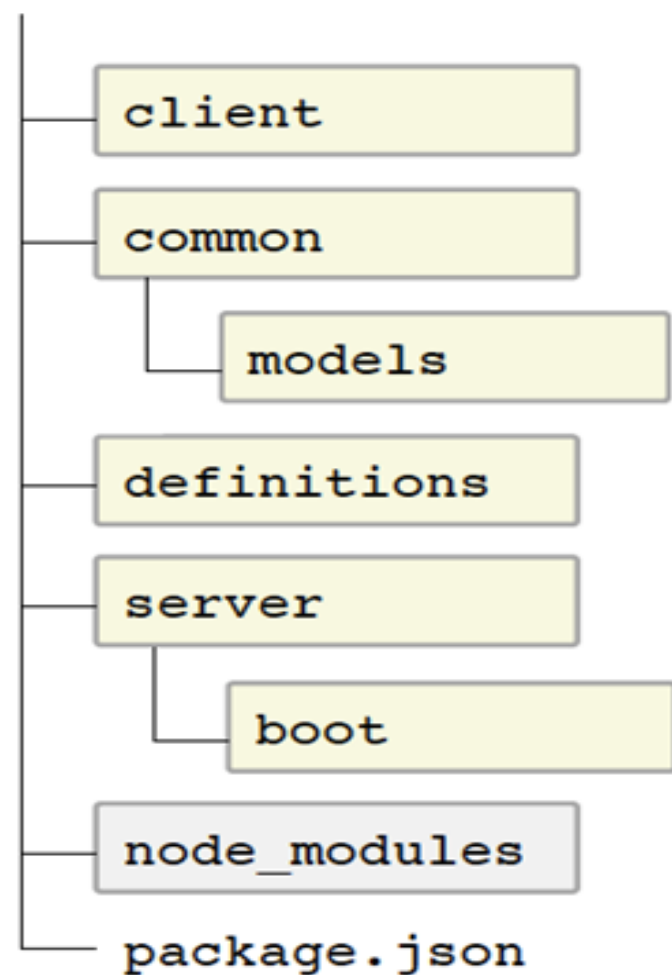
Data Binding

- Very Simple
- What is the Model?
- What is the Datasource?
- Install Connector (if required)
- You can Expose **CRUD** operations (if you like it)

```
Enter the model name:  review
Select the data-source to attach review to
  > mongodb-connection (mongodb)
Select models base class:
  > PersistedModel
Expose review via the REST API? (Y/n):  N
Custom plural form (used to build REST URL)
Common model or server only?
  > common
```

```
? Enter the data-source name:  mongodb-connection
? Select the connector for mongodb-connection:
  > MongoDB (supported by StrongLoop)
? host: mongo.think.ibm
? port: 27017
? user:
? password:
? database: think
? Install loopback-connector-mongodb@1.4 (Y/n) Y
```

LoopBack application: directory structure



- The LoopBack application structure contains four directories:
 - **client** stores the application front-end files
 - **common** stores the model classes and custom Node scripts for your application
 - **definitions** store the interface and product definition files for your API, in Swagger format.
 - **server** stores the boot scripts and configuration files for the LoopBack framework.
- In addition, the `package.json` manifest file describes the name, author, version, and package dependencies to the Node.js runtime.
 - The node package manager saves local dependencies in the `node_modules` folder.

Finally ...

Why should We
use LoopBack?

Why LoopBack

- Easily Consumes External Service
- Picks up Remote data from your Environment
- Mixes Remote and Local Data
- Customizable through Scripts
- Less complicated than Java
- Robust Framework
- Accessible through IBM API Connect
- Makes your Application deployable on Public or Private Cloud



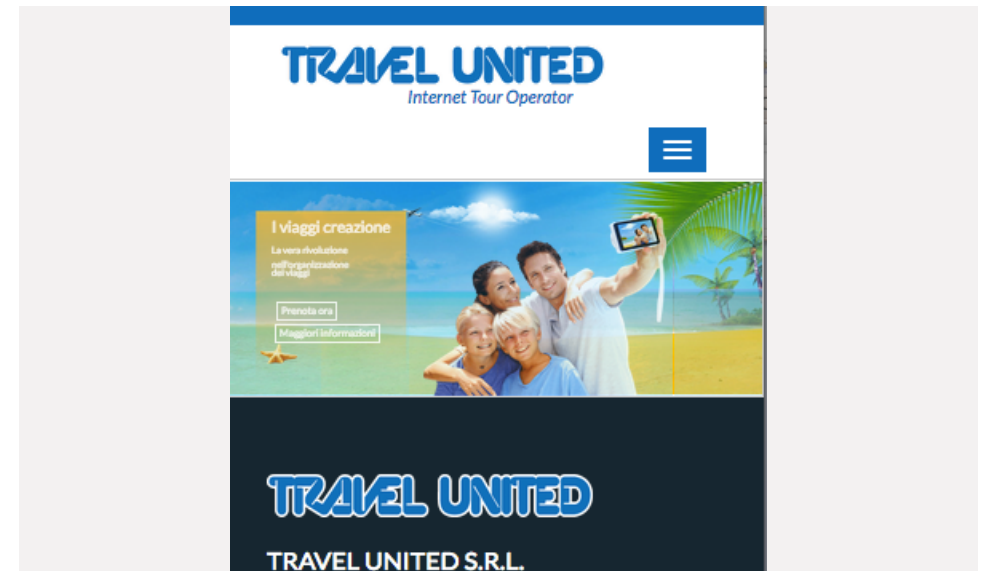
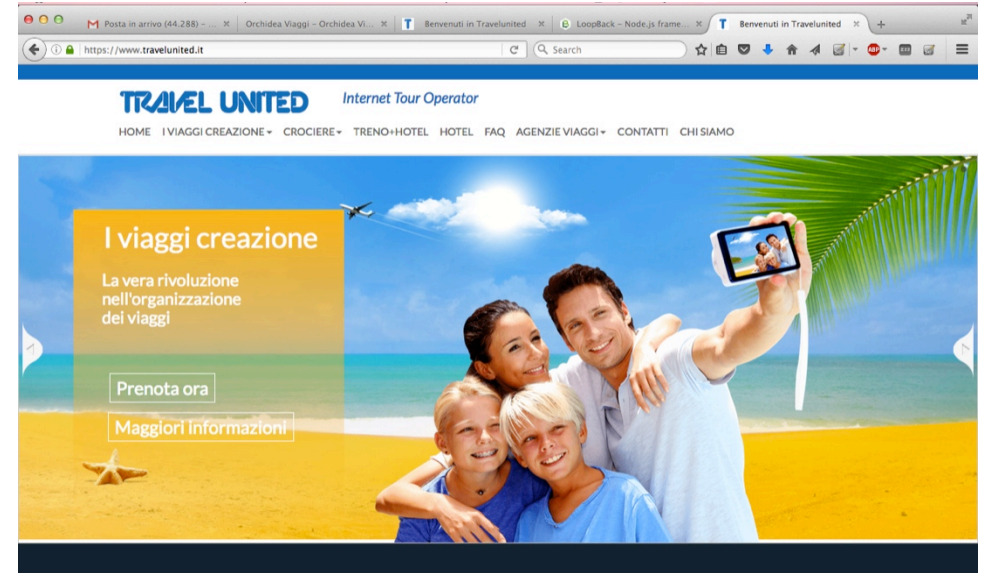
End-User Applications

Client Side Integration

- Real Scenarios
- Enterprise Portals
- e-Travel Portlets
- MVC Approach
- Freemarker
- IBM Portal
- IBM WCM

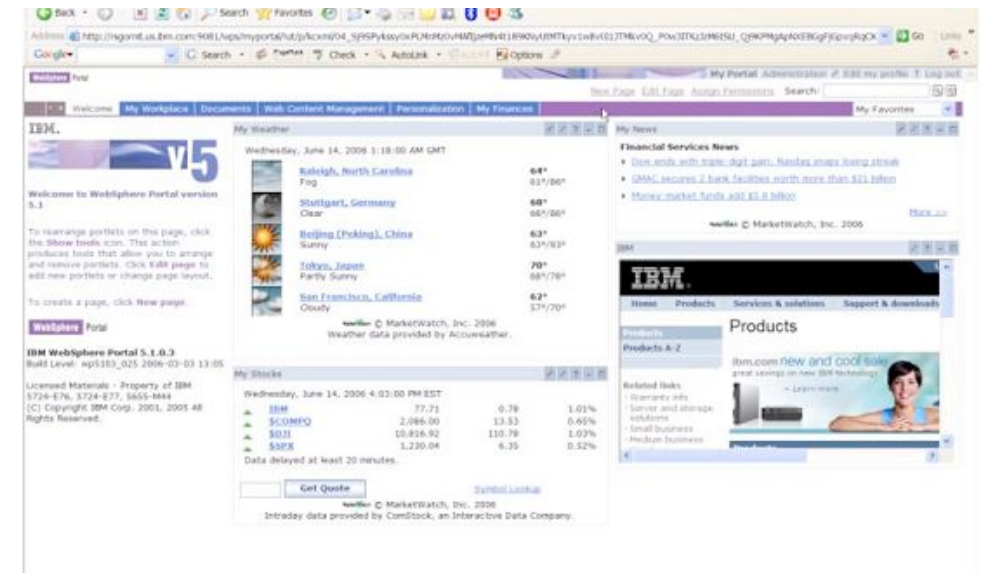
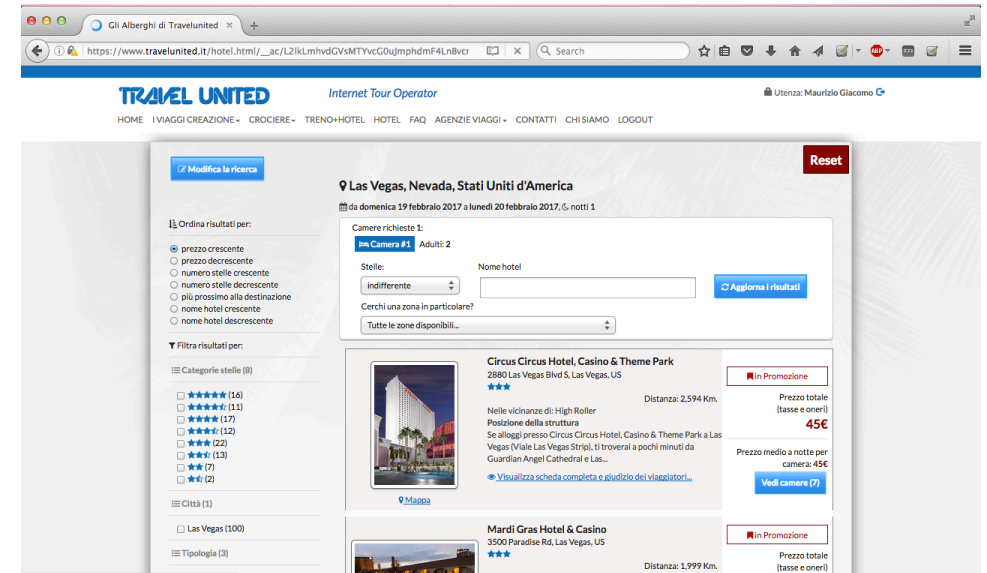
e-Travel Ux Real Scenarios

- Data are important, their representation as well !!!
- **Responsiveness**, multi brand & multichannel
- Travel data might be **mixed** with other contents (CMS, News, Social Content)
- One solution, more environments
- **B2B, B2C, B2B2C** Channels
- **Security & Personalization**
 - Social Authentication, SSO
 - Business Rules, Analytics



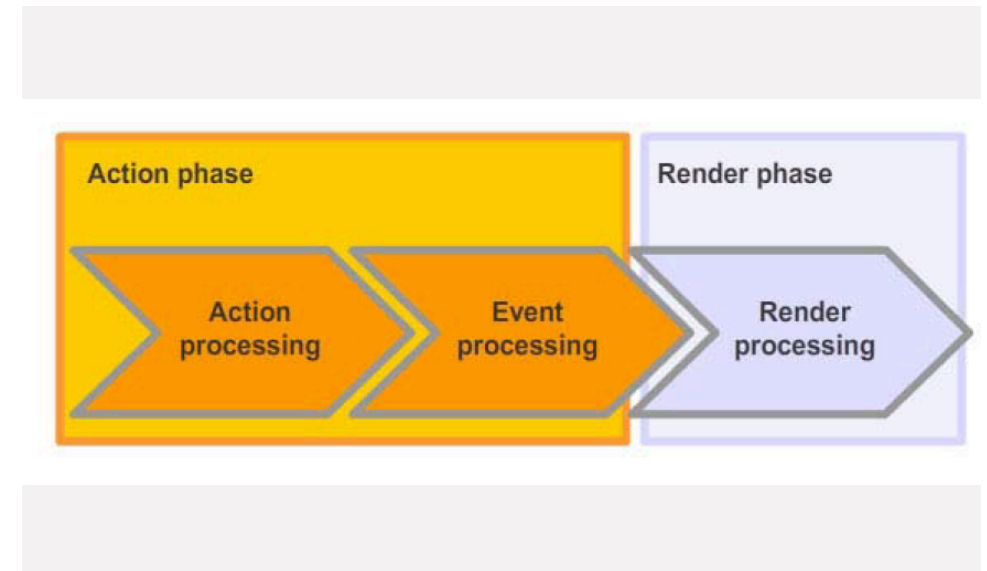
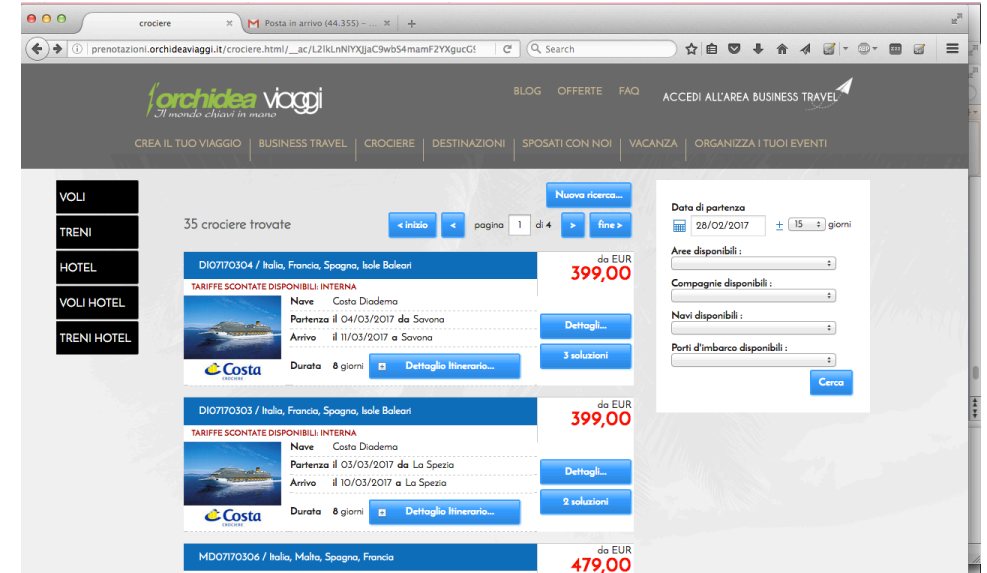
Enterprise (Java) Portals

- Aggregate Wide Variety of Application under common Look & Feel (**Theme**)
- Secure & Profiled User Access
- Have a Rich Web Interface
- **Single Access Point** for Enterprise Resources and SOA
- Are **Extensible** through Portal Apps
- You can define Virtual Portals
- Help you **reducing overhead** for: authentication, security, CMS, monitoring & deploy activities



Portlets

- Independent Applications
- Standard (Portlet API 2.0 – JSR286)
- Run inside a (Portal) container
- Can be placed inside a Portal Page
- Have states and modes
- Are configurable (preferences)
- Access to main Java Frameworks (Spring, Struts, JSF, Axis, Cxf ...)
- Can process Actions and publish Events and cooperate with other portlets...





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21999 / 3 NOTTI ALLE BAHAMAS: MIAMI-MIAMI

NCL NORWEGIAN
CRUISE LINE

Nave Norwegian Sky

Partenza il 10/03/2017 da Miami

Arrivo il 13/03/2017 a Miami

Durata 4 giorni

Dettaglio Itinerario...

da EUR
409,00

Dettagli...

Scegli e continua

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Data di partenza



28/02/2017



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giorni

Aree disponibili : 14



Stati Uniti e Canada



Compagnie disponibili : 2



--- Tutte le compagnie ---



--- Tutte le compagnie ---

Norwegian Cruise Line

Regent Seven Seas Cruises

Porti d'imbarco disponibili : 3



-- Tutti i porti --



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da EUR
409,00

Nave Norwegian Sky

Data di partenza

28/02/2017 ± 15 giorni

Aree disponibili : 14

Stati Uniti e Canada

Compagnie disponibili : 2

--- Tutte le compagnie ---

--- Tutte le compagnie ---

Norwegian Cruise Line

Regent Seven Seas Cruises

Porti d'imbarco disponibili : 3

-- Tutti i porti --

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21723 / GIUGNLA AMAZZONICA & FORESTE PLUVIALI : RIO DE JANEIRO-MIAMI



Regent

Nave Seven Seas Mariner

Partenza il 08/03/2017 da Rio De Janeiro

Arrivo il 29/03/2017 a Miami

Durata 22 giorni

Dettaglio Itinerario...

★ da EUR
7.129,00
Base 12.961,82
sconto 45,00 %

Dettagli...

Scegli e continua

Data di partenza



28/02/2017



15



giorni

Aree disponibili : 14

Stati Uniti e Canada

Compagnie disponibili : 2

Regent Seven Seas Cruises

Navi disponibili : 1

Seven Seas Mariner

Porti d'imbarco disponibili : 1

Rio de Janeiro

Cerca

eTravel (SoaTravel) Portlets

- We created Portal Applications
- A **Portlet Set** for Each Service
- Portlets Configured by Portal Admins
- Portlets "consume" Soatravel Services
- Portlets "render" Content
- Portlets are combined and placed inside a Portal by Portal Admins
- Portlets inherit logged user info & roles and all Context information
- Portlets can be easily customized

Cerca volo

Tipo di viaggio:
☐ Solo andata ☒ Andata e ritorno ☐ Più scali ☐ Voli diretti

Partenza: Arrivo:

Ora:

Infanti (0-1 anno):

☐ Voglio esattamente questa/e.

<

Portlet MVC Approach

Portlet is **Controller**:

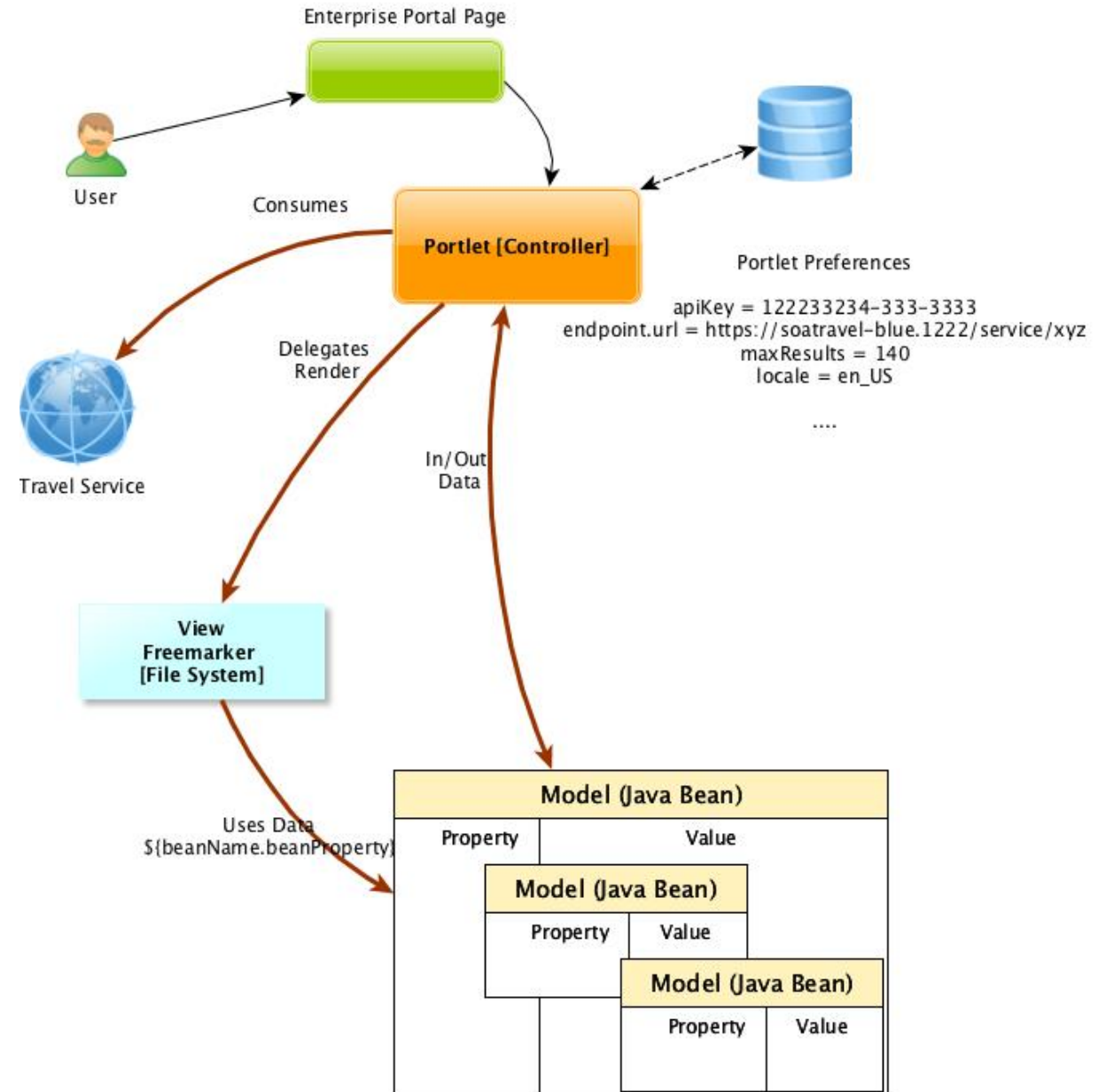
- Gets Configuration Preferences
- Calls Soatravel Services
- Fills Response into Models
- Places Entities into View Context
- Delegates render to “view”

Model:

- Java Beans (e.g. HotelItem..)

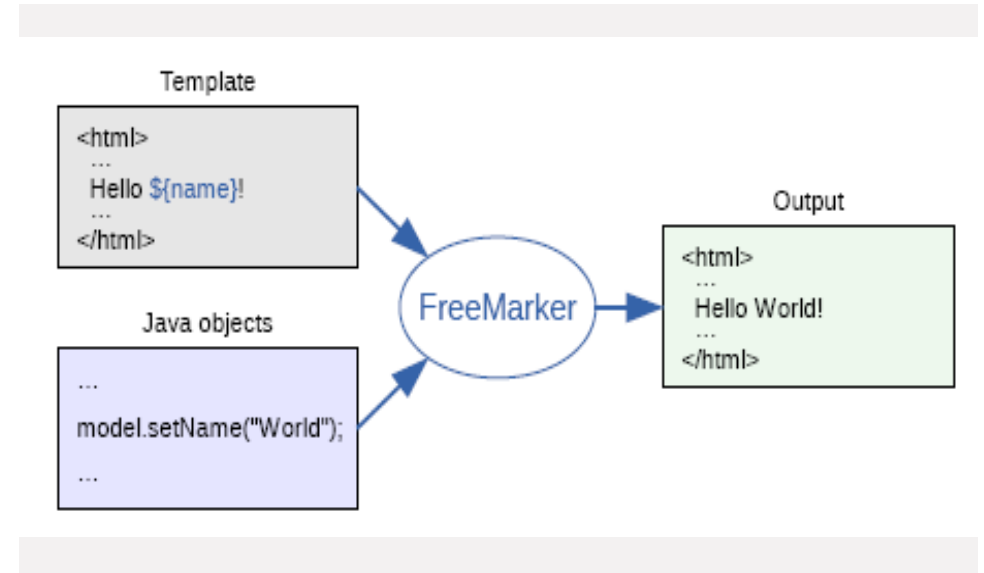
View:

- **Freemarker** (text Files)
- Placed “outside” [File System]



Apache Freemarker

- <http://freemarker.org/>
- Text Files
- Scripting Language
- Conditional blocks, iterations, assignments, string and arithmetic operations and formatting
- Internationalization/localization-aware: Locale sensitive number and date/time formatting
- XML processing capabilities: Drop XML DOM-s into the data-model and traverse them



```
<div style="margin-top:10px; margin-bottom:8px;"><i aria-hidden="tr
${bundle.getString('results.upto')} <b>${hotelSearchForm.checkOutDa

<#if hotels??>
<#if hotels?size gt 0>
<i aria-hidden="true" class="fa fa-moon-o"></i>
${bundle.getString('results.nights')} <b>${hotels[0].duration}</b>
<#assign hotelDuration = hotels[0].duration>
</#if>
</#if>

</div>
```

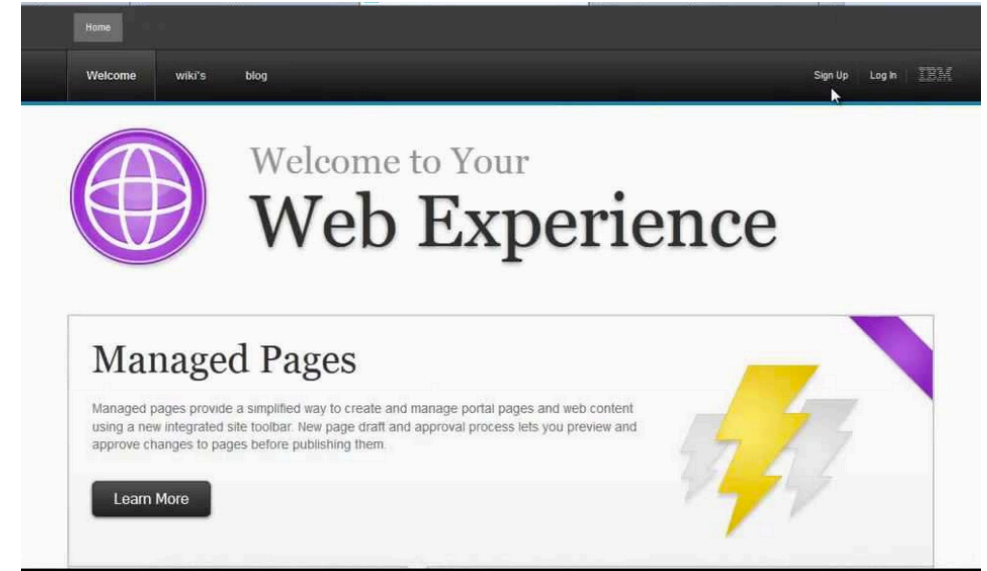
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${bundle.getString('results.nights')} <b>${hotels[0].duration}</b>
<#assign hotelDuration = hotels[0].duration>
</#if>
</#if>

</div>
```

IBM Portal

- IBM Portal Enterprise Server
- Fully compliant with JSR 286
- CMS Features
- Huge quantity of enterprises features
- Fully integrated with other products :
 - Forms, WCM, Connections
 - SAP, Domino, WEF
- High Performances, Scalable
- Can host Soatravel Portlets



Portal Server

IBM WCM

- Content Management System
- Powered By IBM
- Standard Compliant (JCR)
- Can Consume e-Travel Data:
 - **DDC (Digital Data Connector)**
 - Ad Hoc Content & Managed Pages
- WCM Items can be used inside any IBM Portal Instance



IBM Portal,

IBM WCM,

Soatravel Portlets,

What Else?

Useful Links

SOATRavel:

<http://www.soatravel.com>

SOATRavel-BLUE:

<http://soatravel-blue.eu-gb.mybluemix.net/>

Bluemix:

<http://bluemix.net>

Hub Jazz:

<http://hub.jazz.net>

IBM API Connect

<http://www-03.ibm.com/software/products/en/api-connect>

IBM Liberty Profile

<https://developer.ibm.com/wasdev/websphere-liberty/>

IBM Cloudant

<https://cloudant.com/>

Apache Freemarker

<http://freemarker.org/>

Portlet API 2.0

<https://jcp.org/en/jsr/detail?id=286>

IBM Digital Data Connector (DDC) for WebSphere Portal Express

http://www.ibm.com/support/knowledgecenter/en/SSYJ99_8.5.0/social/plrf_ovu.html

IBM Portal

http://www-03.ibm.com/software/products/en/portal_server

IBM WCM

<http://www-03.ibm.com/software/products/en/ibmwebcontmana>

Useful Links (...)

Cloud Foundry Command Line Interface:

<https://docs.cloudfoundry.org/cf-cli/getting-started.html>

Custom Server Configuration on Bluemix

<https://www.ibm.com/blogs/bluemix/2015/01/modify-liberty-server-xml-configurations-ibm-bluemix/>

IBM Api Connect 5: End to End Demo

https://www.ibm.com/developerworks/websphere/library/techarticles/1605_baker-trs/1605_baker.html

SOATravel Big Customers

Travelunited:

<https://www.travelunited.it>

I'Orchidea Viaggi:

<https://www.orchideaviaggi.it>

Alidays Spa

<http://www.alidays.it>

Partners

Travelport

<https://www.travelport.com/>

Travelport Universal API

<https://developer.travelport.com/app/developer-network/universal-api>

Expedia Affiliate Network

<http://www.ean.com/>

Expedia Affiliate Network - Developer Section

<http://developer.ean.com/>

!!! Thank You !!!

InterConnect
2017

