

Enabling APIs in a Modern Hybrid Cloud Environment

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Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics (On-demand self-service, Broad network access, Resource pooling, Rapid elasticity, Measured Service); three service models (Cloud Software as a Service (SaaS), Cloud Platform as a Service (PaaS), Cloud Infrastructure as a Service (IaaS)); and, four deployment models (Private cloud, Community cloud, Public cloud, Hybrid cloud). Key enabling technologies include: (1) fast wide-area networks, (2) powerful, inexpensive server computers, and (3) high-performance virtualization for commodity hardware.



The Belief

- Old, Slow and Obsolete
- I wouldn't even know where to start
- I don't know any of the mainframe people
- Not relevant to my work
- COBOL and Punch cards

The Belief



The Expectation

- I can connect to whatever I want
- I can try things out without penalty
- I won't be tied to any one single solution
- Everything will be familiar and standard
- I can do this all at my own schedule

The Expectation

cURL Ruby Python PHP Java Node Go Swift

Subscribe

 IBM API Connect /dev

 **swagger**

IBM Explorer
for z/OS Aqua

default

GET /hotels

Response Class (Status 200)

normal response

Model | Example Value

Example Response

Definition

```
GET https://api.us.apiconnect.ibmcloud.com/jbistiusibmcom-dev/sb/travel_jbisti/hotels
```

Response

```
{
  "HOTEL_LIST_OUT": {
    "HOTELS": [
      {
        "HOTEL_NAME": "Maud Morales",
        "GEO": {
          "HOTEL_LAT": "ruhvmcucol",
          "HOTEL_LNG": "otie"
        },
        "HOTEL_LOCATION": "rawinelapracruduwtefebjujum",
        "HOTEL_RATING": "duol"
      }
    ]
  }
}
```

The Reality

- Mainframe applications are integral to business
- They can be published as services
- Modern z/OS is built around cloud development
- You can drive a CICS tran from a mobile app
- ... without even knowing it

The Reality

Why ReST-ful APIs?

... and how they fit into the larger Hybrid Cloud picture

<https://myhost.com/customer/235>

[GET] = Record for customer #235

[PUT] + Info = New record for customer #235

[GET] + Info = Updated record for customer #235

[DELETE] = Customer #235 Deleted

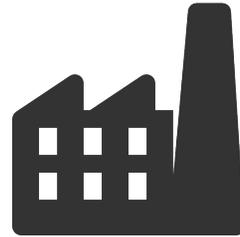
Innovate Like a Startup

**Treat change as an opportunity,
not an excuse**

**Leverage existing assets
as force multipliers**

Don't be afraid to think short-term





90%

60%

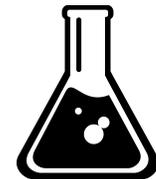
50%

Expedia

eBay

Salesforce

Percentage of Revenue from Public APIs

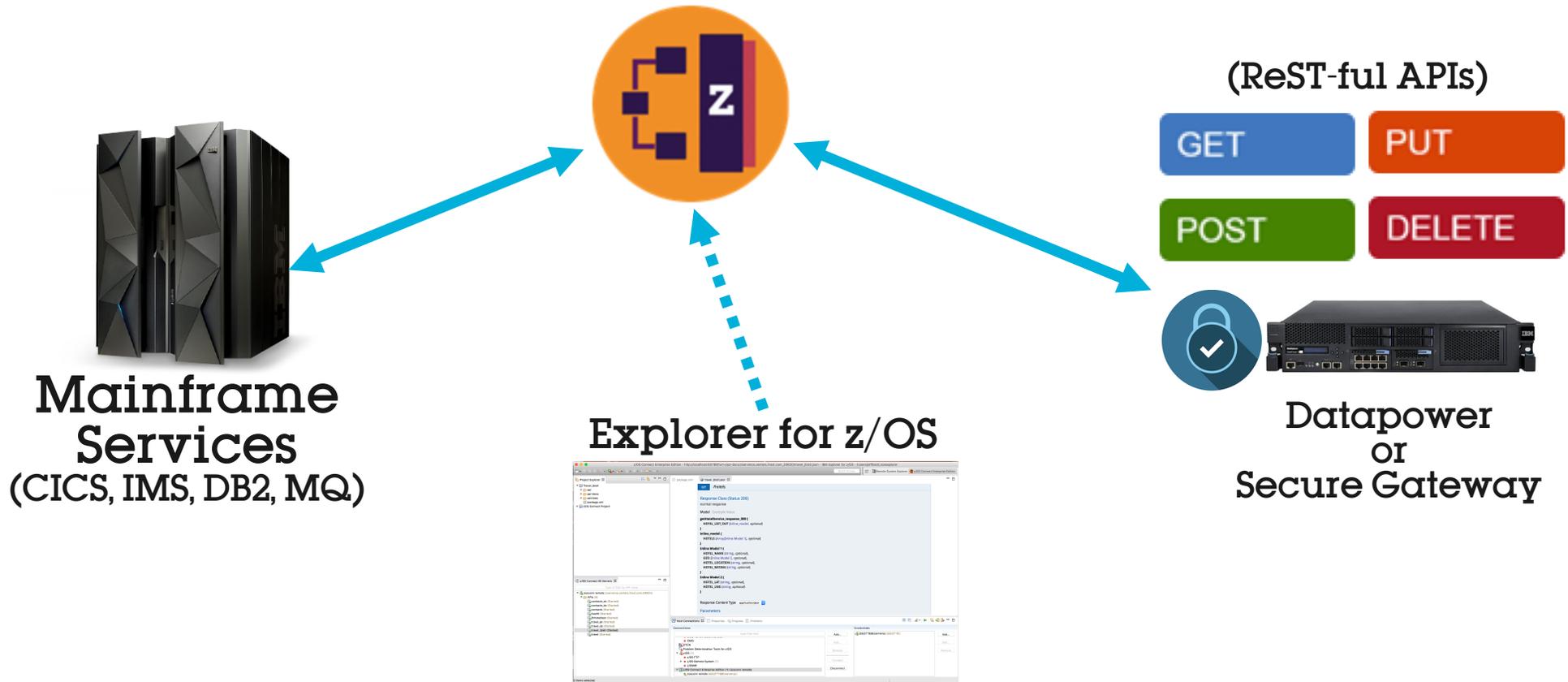


z/OS Connect



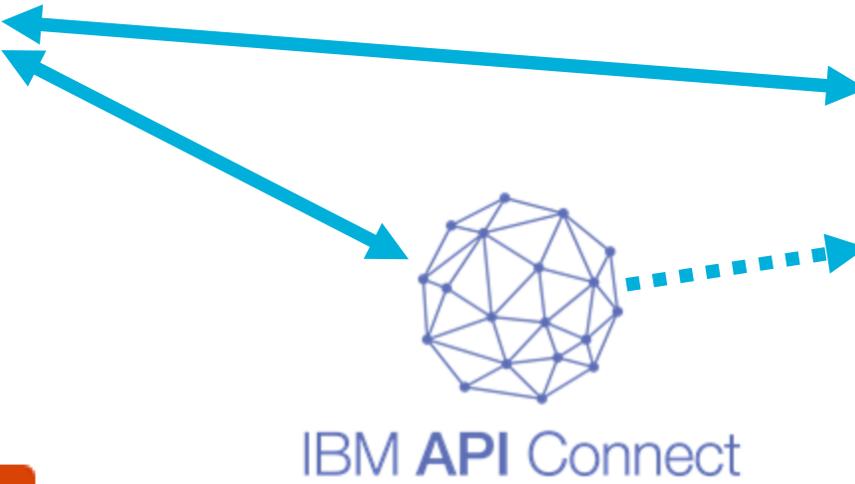
IBM **API** Connect

z/OS Connect

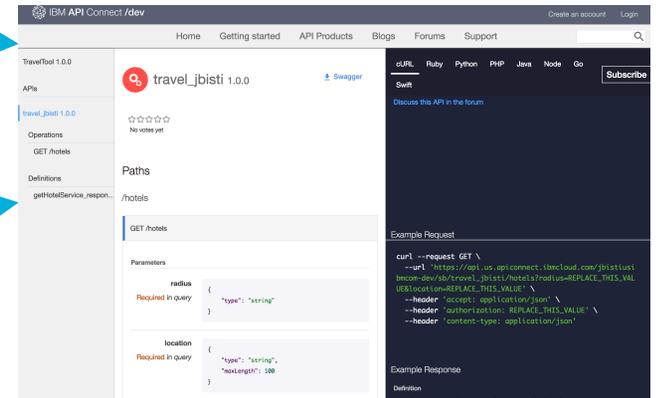




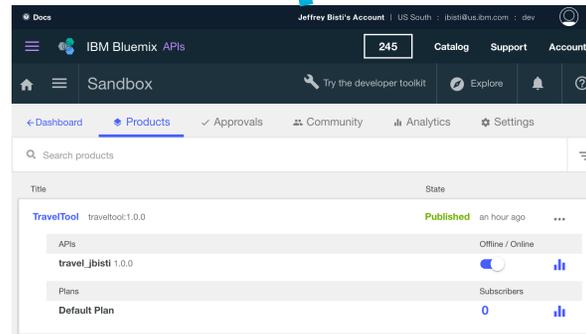
REST-enabled Mainframe Services



IBM API Connect



Developer Portal



API Connect Catalog



Create new



6 intents Sort by: Newest



>	#Get Can I get just a sample?	12
>	#StartOver Let's start over	8
>	#End Nevermind	6
>	#Information What can you tell me about the Chocolate Stout?	9
>	#Feedback That didn't work	16
>	#Recommend Is there an IPA that's not too hoppy?	11



Create new



11 entities

Sort by: Newest



> **@Strength**
Strong, Lite

> **@Feedback**
Bad, Good

> **@Sources**
Local, California, New York, Oregon, Washington, Maine, West Coast, East Coast

> **@ServingSize**
Glass, Bottle, Can, Sample

> **@Food**
Nachos, Hamburger, Pizza, Roasted Duck, Steak, Cheeseburger, Chicken Salad, Soup, Hot Dog, Lasagna, Chicken Wrap

> **@Beer**
Pilsner, Cider, IPA, Ale, Lager, Bock, Russian Imperial Stout, Heffeweizen, Stout



Conversation starts



Recommend

Trigger
#Recommend

Watson responses
No response yet

Trash, Move, Copy, Edit icons

Jump to...
Prompt for Food

Link, Trash icons

Prompt for Food

Trigger
#Recommend

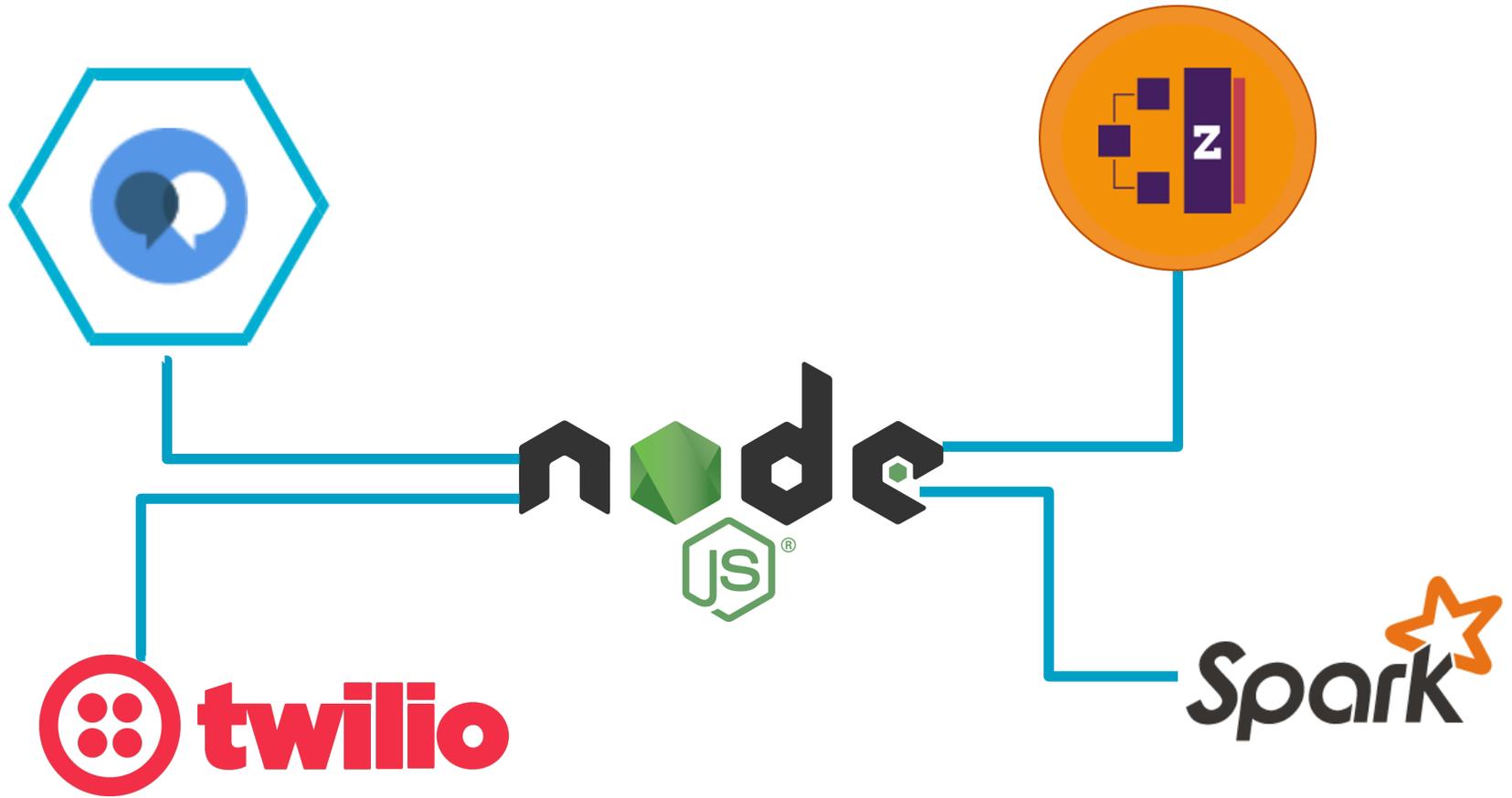
Watson responses
1
No condition yet
I'd love to help! What are you eating today?

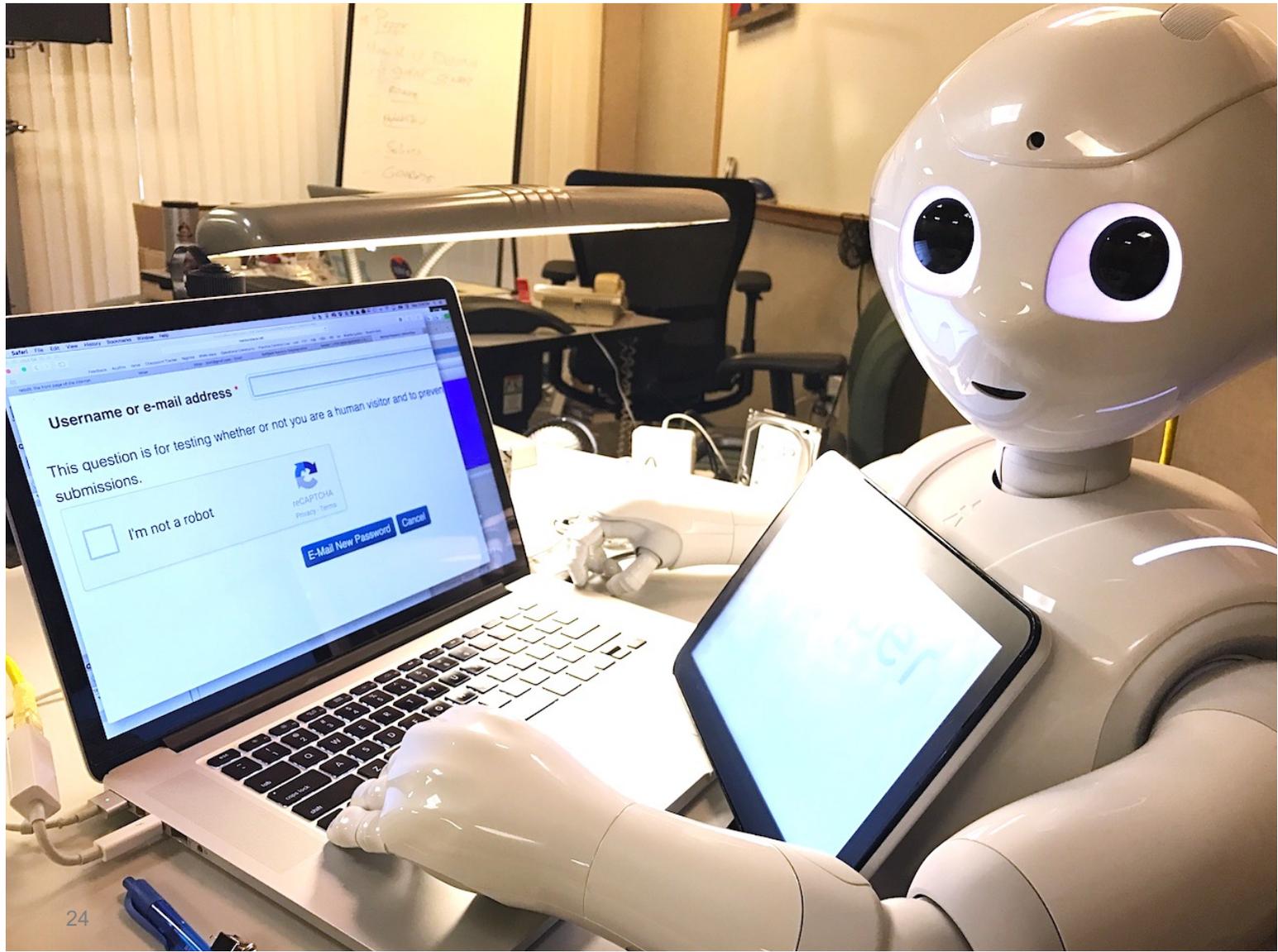
Trash, Move, Copy, Edit icons

> St

> Feedback

22





IFTTT

If [this], then [that]

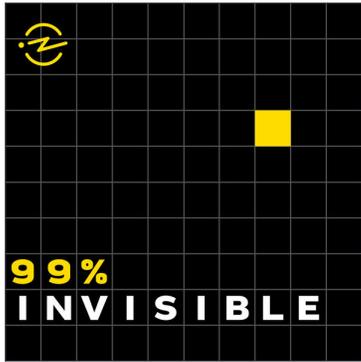
The technology exists

It is proven

It is in use

The challenge is cultural

SERIAL







This organization Search

Pull requests Issues Gist



Walmart

Bentonville, AR

Repositories

People 26

Teams 3

Projects 0

Type: All

Language: All

Customize pinned repositories

New

3 results for repositories matching z*

Clear filter

zUID

z/OS-based Unique Identifier generator

Assembly ★ 1 🍴 3 Updated on Nov 30, 2016



zECS

z/OS-based Enterprise Cache Service

COBOL ★ 1 🍴 1 Updated on Nov 29, 2016



zFAM

z/OS-based File Access Manager

Assembly ★ 1 🍴 2 Updated on Dec 8, 2016

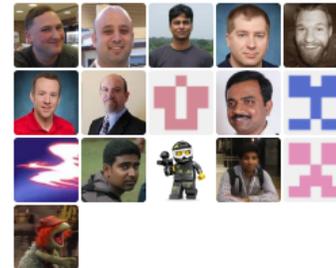


Top languages

Java Assembly JavaScript Go COBOL

People

26



All teams will henceforth expose their data and functionality through service interfaces.

Teams must communicate with each other through these interfaces.

There will be no other form of inter-process communication allowed: no direct linking, no direct reads of another team's data store, no shared-memory model, no back-doors whatsoever. The only communication allowed is via service interface calls over the network.

It doesn't matter what technology they use.

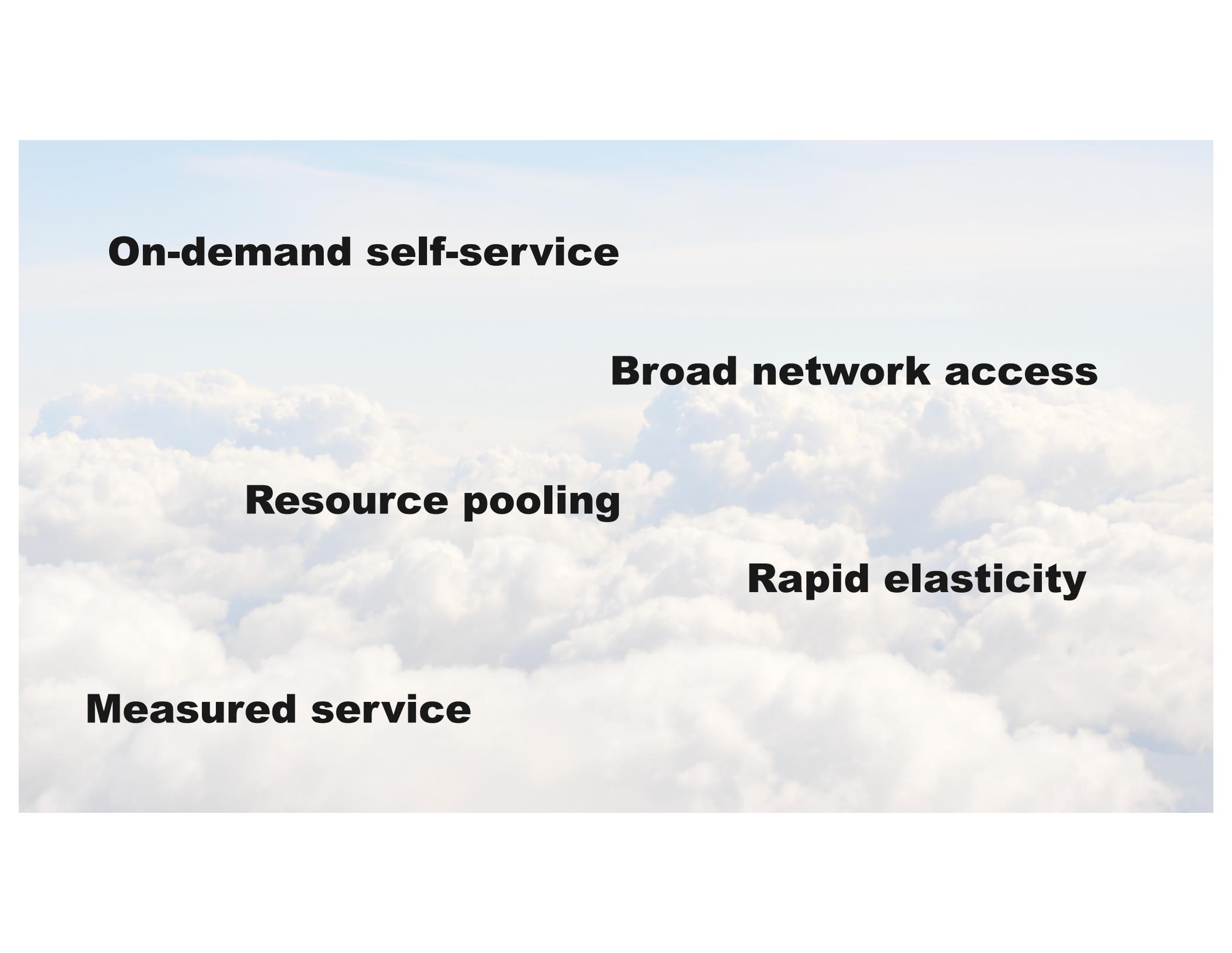
All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say, the team must plan and design to be able to expose the interface to developers in the outside world. No exceptions.

Anyone who doesn't do this will be fired.

Thank you; have a nice day!

Jeff
Bezos
2002





On-demand self-service

Broad network access

Resource pooling

Rapid elasticity

Measured service

Welcome to Bluemix OpenWhisk

Experimental

Open Source

Post your code. We host it. We scale it up. Pay only for what you use.

```
// Define parameter values

// Define endpoint path
var apiBaseUrl="https://openwhisk.ng.bluemix.net/api/v1"
var path = "/namespaces";

// Substitute variables

// Make a REST call
String url = apiBaseUrl+path;
var options = {
  "host": apiBaseUrl,
  "port": 443,
  "path": path,
  method: "GET"
};

http.request(options, function(res) {
  console.log("STATUS: " + res.statusCode);
  console.log("HEADERS: " + JSON.stringify(res.headers));
  res.setEncoding("utf8");
  res.on("data", function (chunk) {
    console.log("BODY: " + chunk);
  });
}).end();
```



Write event-driven code, don't maintain servers



Pay for usage, not peak projections

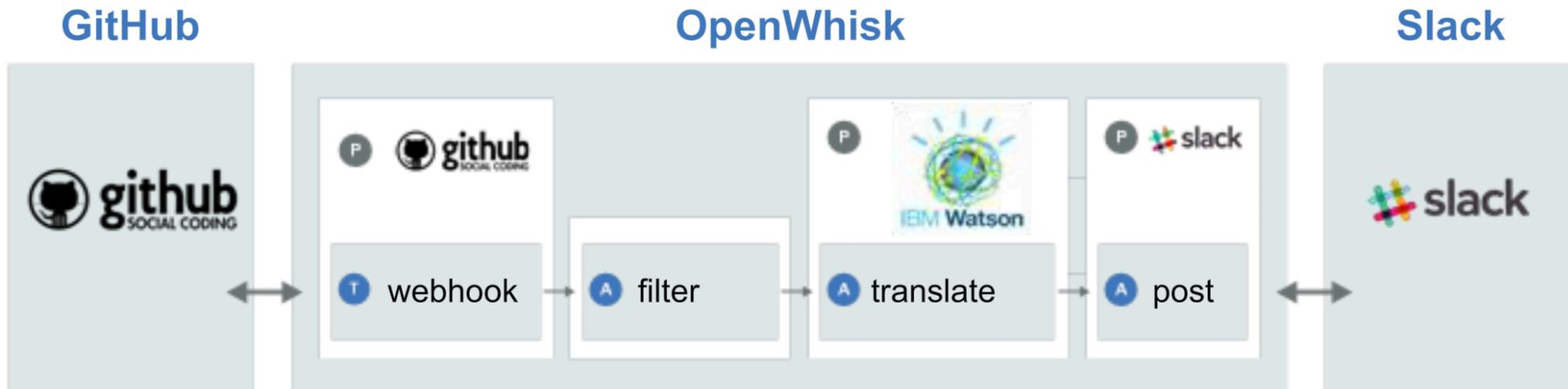


Integrate instantly with a catalog of services



Quickly implement your mobile backend

Git2Slack



1. github package installs github.com webhooks
2. user logic to extract interesting data, format conversion
3. Watson language translation
4. post slack package

cobol.run

Docker cobol.run Linux / OSX passing Follow @morecobol 196

Run serverless COBOL programs on [OpenWhisk](#). Built with [Trails.js](#) and Node.

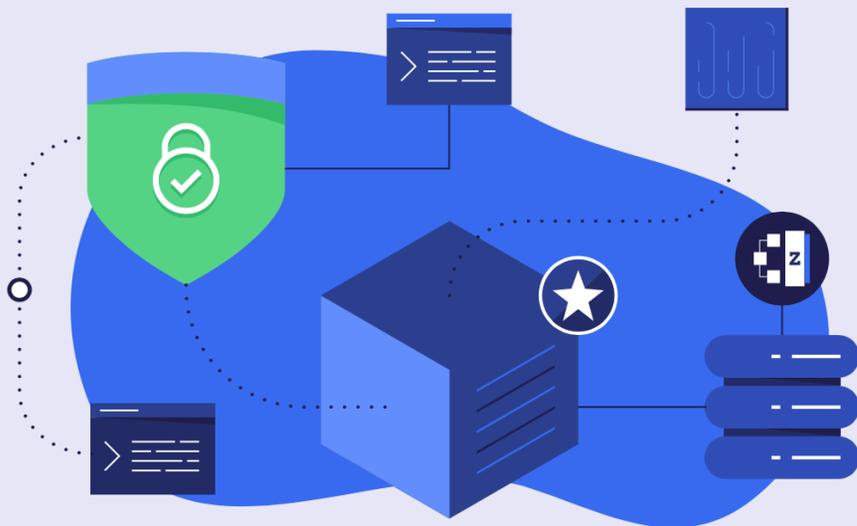
 = Your Existing Application



Response

cobol.run FaaS on IBM Bluemix

z/OS Provisioning Toolkit



What's new

On April 11th 2017 V1.0.1 was released. It includes the following enhancements:

- Provision stand-alone z/OS Connect EE servers using a supplied workflow
- Provision Liberty servers (workflow provided by Liberty)
- An enhanced inspect command to get information on provisioned containers
- Truststore support for connecting to z/OSMF from the command line utility

On January 10th 2017 V1.0 was released. It includes the following capability:

- Provision a CICS region using a supplied workflow
- Provision an MQ queue manager (using workflows supplied with the product)
- Examples for different CICS applications including provisioning embedded z/OS Connect EE, Liberty, and web services

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The Generation Z "Welcome to the Mainframe" workshop is a fun, free, one-day event to connect and energize your new mainframe employees. Attendees will come away with a better understanding of the critical role they play in pushing the boundaries of computing.



THANK YOU