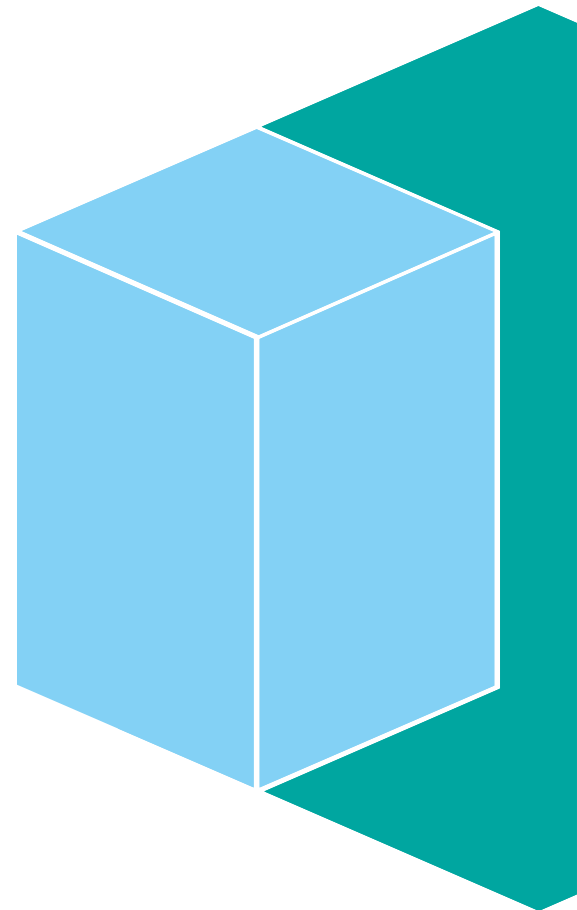


# A09: Accelerating API management with API Connect and z/OS Connect

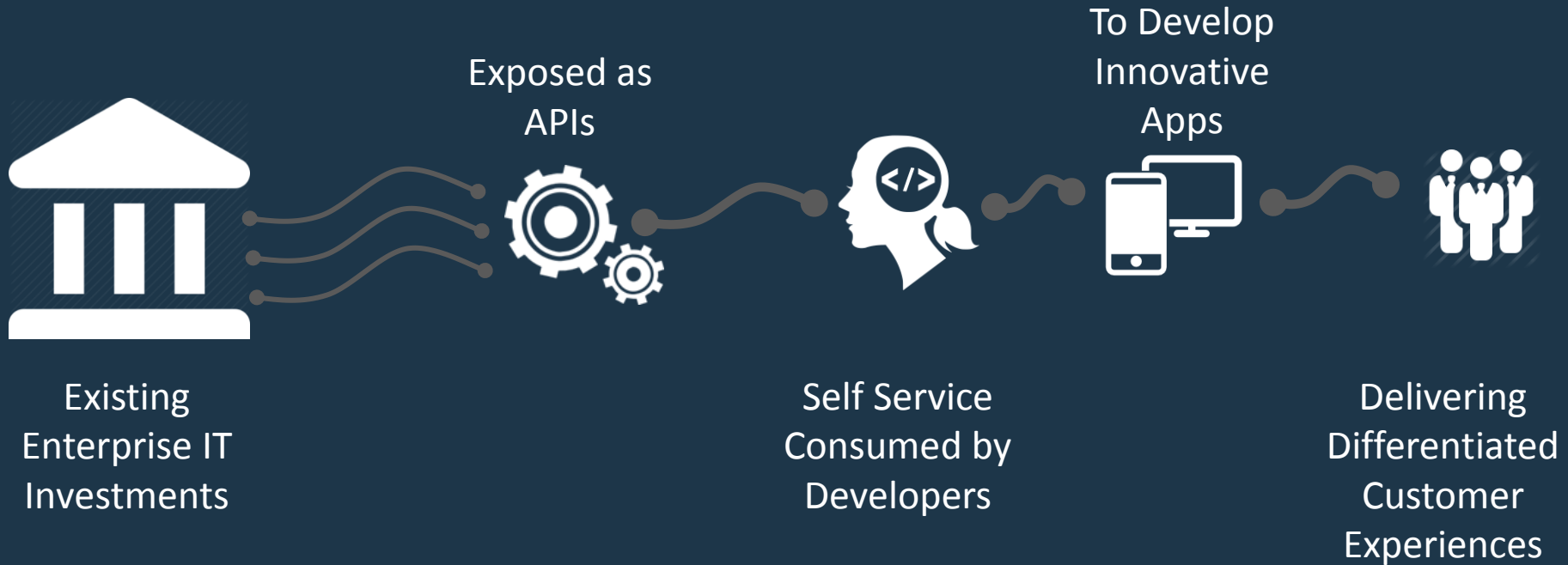
Kyle Charlet  
Distinguished Engineer  
z Systems Architect



Sharpen your competitive edge  
**2016 IMS Technical Symposium**  
March 7 – 10, 2016  
Wiesbaden, Germany

[www.ims-symposium.com](http://www.ims-symposium.com)

# Unleash enterprise investments to disrupt competitors



# An API strategy to...

1

## **Speed application development**

and ongoing application evolution via a self service library of reusable APIs



2

## **Securely expose system of record**

apps and data to Mobile, IoT, & hybrid cloud apps



3

## **Publish APIs publicly to expand brand reach**

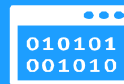
tap into broad developer ecosystem and drive innovation



4

## **Enable new business**

channels by monetizing existing data & algorithms



# Or put another way, get from...

What was

To..

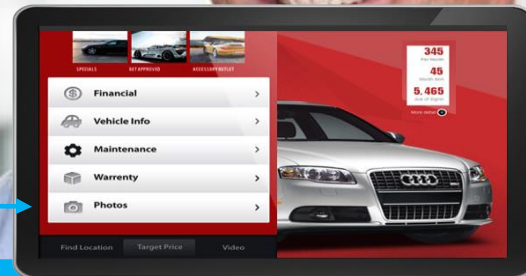
Is now

**Insurance APIs**

Life  
Home  
Auto  
Claims

**Bank APIs**

Mortgage  
Online Payment  
Loans  
Account Query



**Crossing industries and transforming customer experience**

# API Connect: Simplified & Comprehensive API foundation

*to jumpstart your entry into the API Economy*

Create

Run

Manage

Secure



/apimanagement



IBM DataPower  
Gateways

- API Discovery
- API Policy Management
- Publish to Developer Portal
- Self-service Developer Portal
- Subscription Management
- Social Collaboration
- Community Management
- API Monitoring & Analytics
- Lifecycle Mgmt & Governance

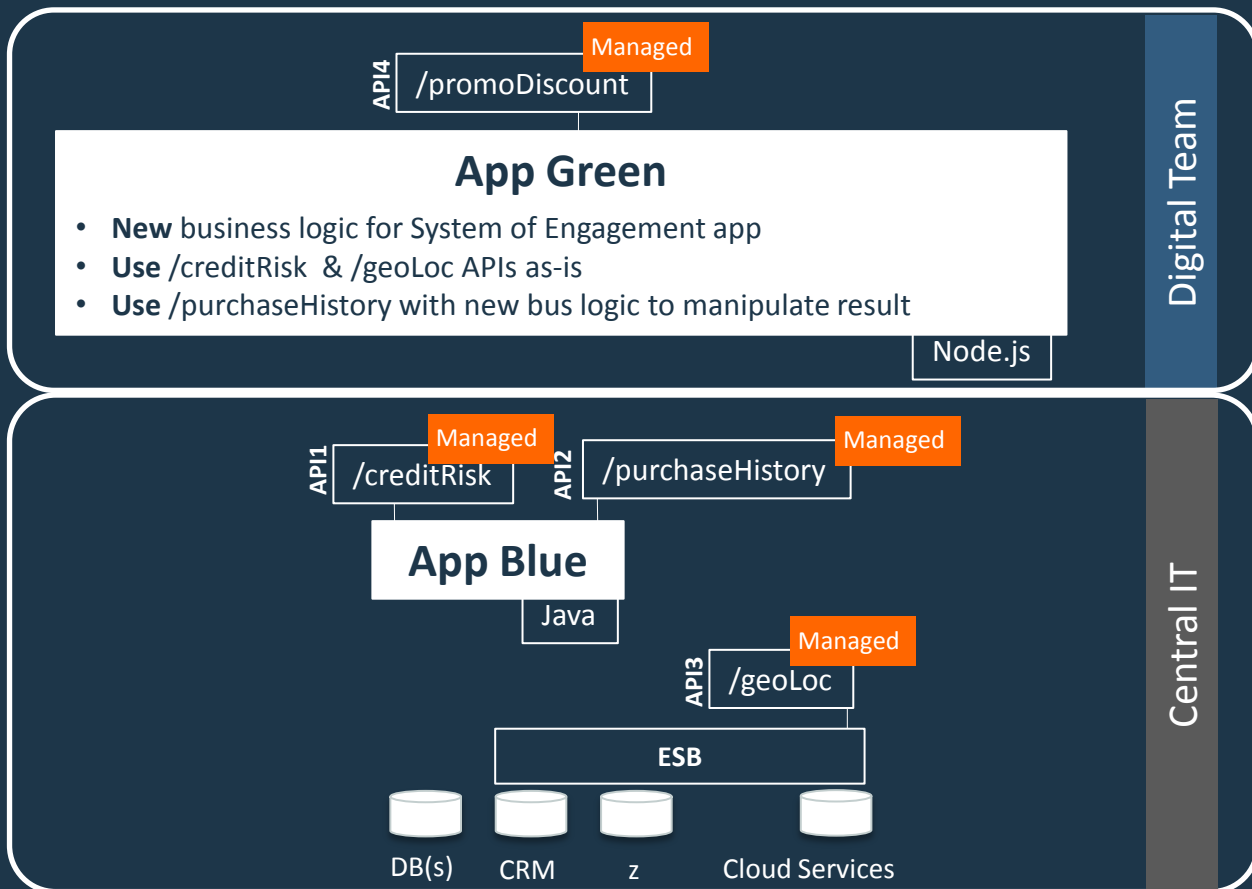
- API Policy Enforcement
- Security & Control
- Connectivity & Scale
- Traffic control & mediation
- Workload optimization
- Monitoring/Analytics Collection

# Before You Manage & Secure, You Need to Create &

## Run

### What's Happening:

- API1 & API2 created to expose services from System of Record App Blue
- API3 created to expose service from ESB
- System of Engagement App Green created & running using new business logic & API1, API2, API3.
- New API4 created to expose service from App Green
- API policies managed against API1, API2, API3 & API4 to provide enterprise security



# Before You Manage & Secure, You Need to Create &

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## Modern Digital Applications need to

### App Green

#### 1. Create & Run new APIs to existing & new apps

#### 2. Create & Run microservice apps with new business logic

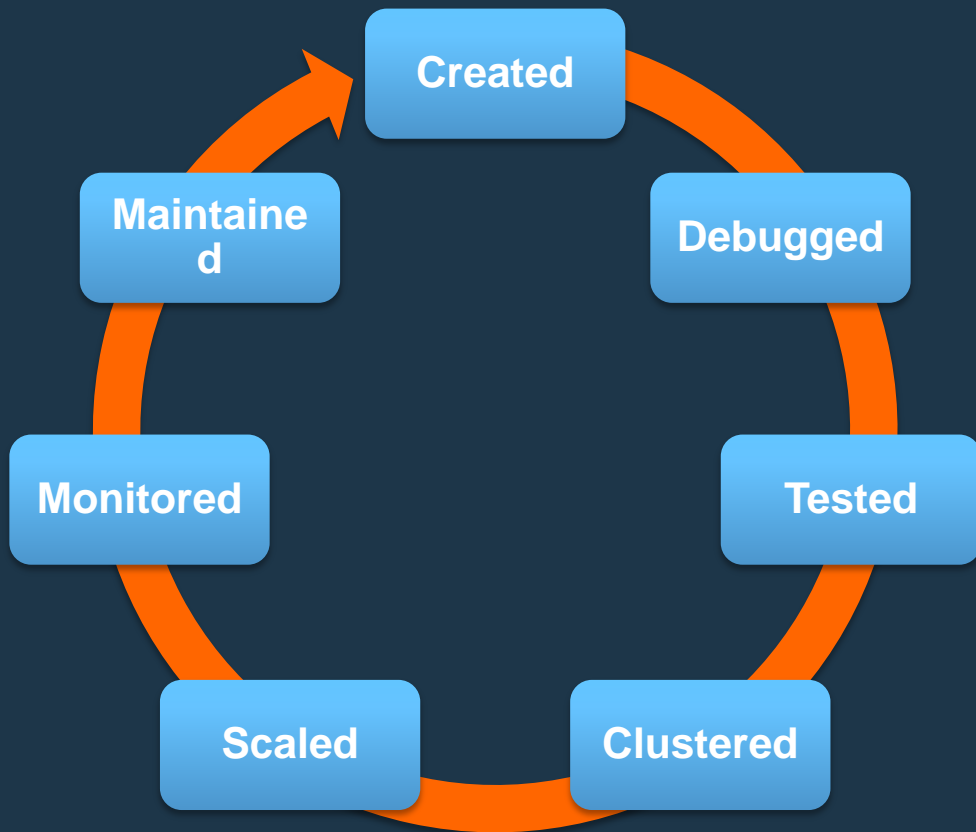
#### 3. Manage API policies

#### 4. Secure apps & back ends by enforcing API policies

Digital Team

Central IT

# APIs as Applications



# API Connect: Simplified & Comprehensive API foundation

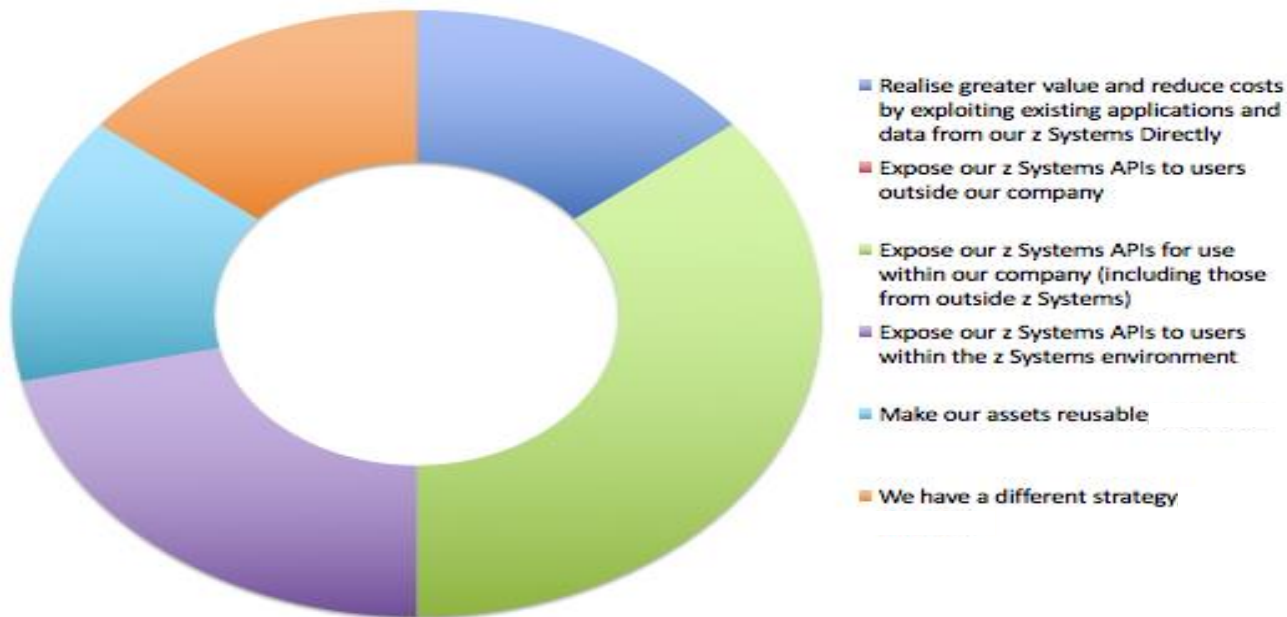
*to jumpstart your entry into the API Economy*



*Unified experience across API Lifecycle; not a collection of piece parts.*

- |   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"><li>• Connect API to data sources</li><li>• Develop &amp; Compose API</li><li>• Generate API consumer SDK</li></ul> | <ul style="list-style-type: none"><li>• Build, debug, deploy, Node.js microservice apps</li><li>• Build, debug, deploy Java microservice apps</li><li>• Node.js &amp; Java common management &amp; scaling</li><li>• Stage to cloud or on-prem catalog</li></ul> | <ul style="list-style-type: none"><li>• API Discovery</li><li>• API Policy Management</li><li>• Publish to Developer Portal</li><li>• Self-service Developer Portal</li><li>• Subscription Management</li><li>• Social Collaboration</li><li>• Community Management</li><li>• API Monitoring &amp; Analytics</li><li>• Lifecycle Mgmt &amp; Governance</li></ul> | <ul style="list-style-type: none"><li>• API Policy Enforcement</li><li>• Security &amp; Control</li><li>• Connectivity &amp; Scale</li><li>• Traffic control &amp; mediation</li><li>• Workload optimization</li><li>• Monitoring/Analytics Collection</li></ul> |
|---|--|--|--|

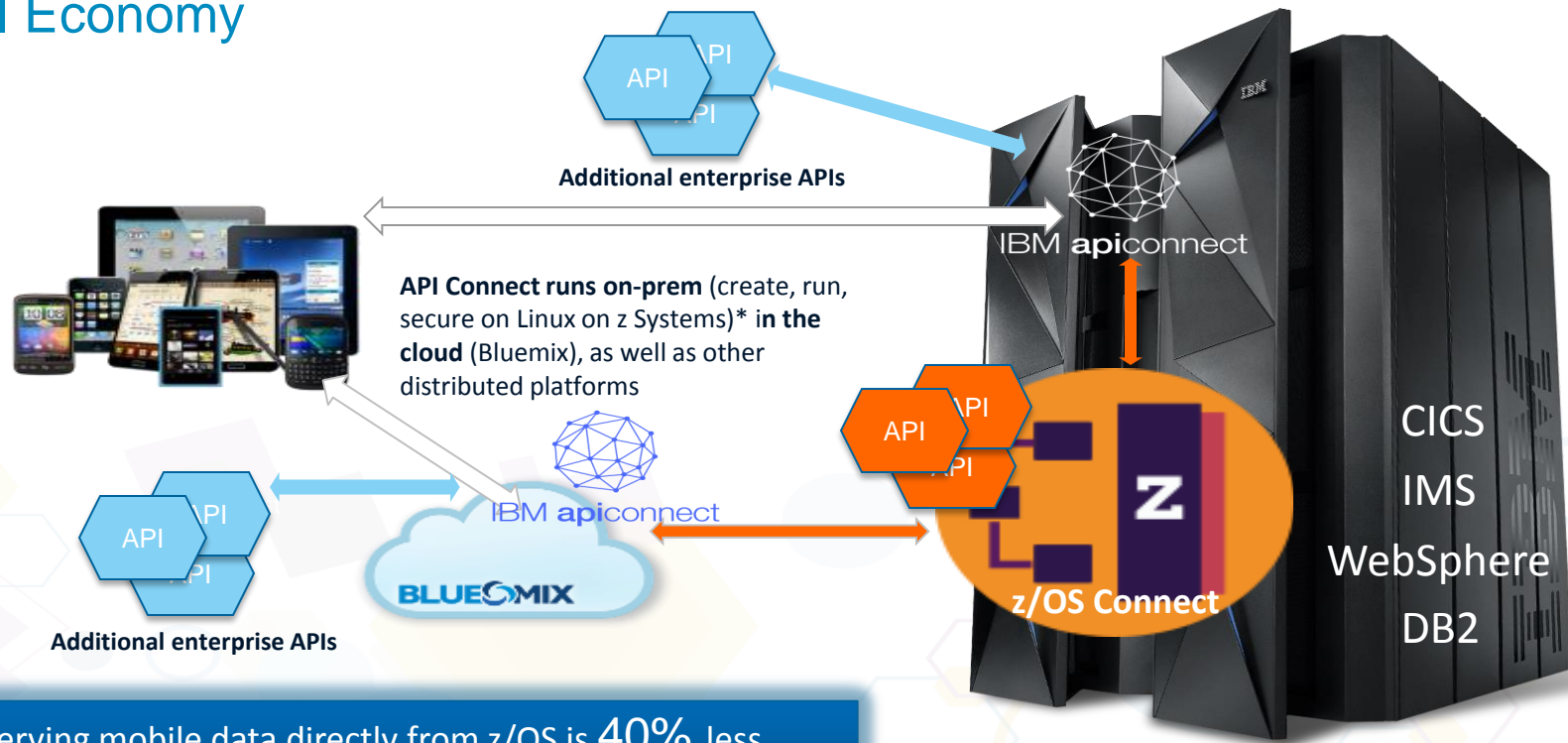
# APIs and z survey results



## Observations

- The API economy **must** include z assets
- Both inner and outer APIs are **essential**

# z/OS Connect provides optimized infrastructure to meet the demands of the API Economy



Serving mobile data directly from z/OS is **40%** less expensive than exporting to a system of engagement

\*manage does not run on Linux on z

## z/OS Connect Enterprise Edition

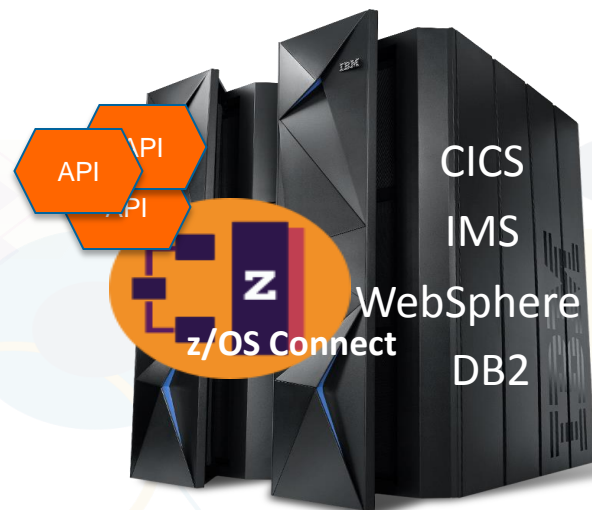
- Delivers RESTful APIs as a discoverable, first-class resource with Swagger 2.0 descriptions
  - Ready for consumption by today's enterprise application developers and integration with API management solutions
- Comprehensive tooling that enables API developers to create RESTful APIs from z/OS-based assets
- Supports standard JSON message format
- Integrated with IBM API Management for enterprise-class API management
  - Consumer registration, API security controls, version control and much more



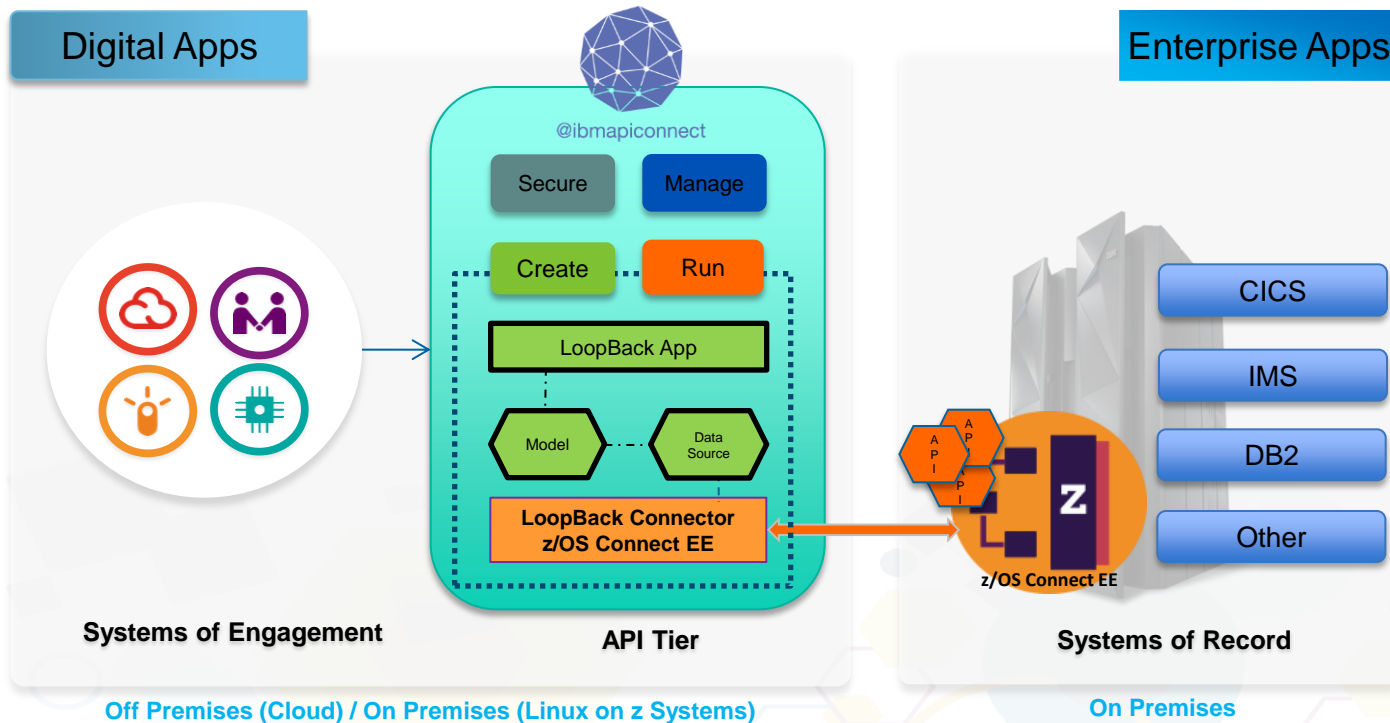
# API Connect and z/OS Connect Enterprise Edition

- Create APIs and microservices that consume z Systems APIs
- Manage and secure z System APIs created by z/OS Connect
- *Intend to support: connect to and discover z/OS Connect APIs and generate LoopBack models (1Q 2016)*

- Comprehensive tooling that enables API developers to create RESTful APIs from z/OS-based assets
- Delivers APIs as a discoverable resource using the OpenAPI specification (formerly swagger)
  - *Intend to support: push APIs directly to API Connect catalog (2Q 2016)*



# IBM API Connect LoopBack Connector for z/OS Connect EE

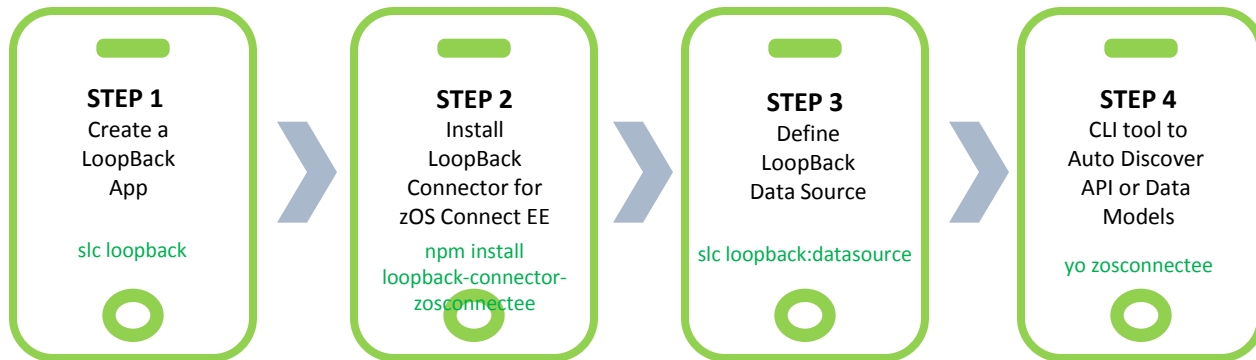


- LoopBack Enterprise connector for accessing z/OS Connect Enterprise Edition services
- A CLI tool to generate models with auto discovery of z/OS Connect Enterprise Edition services

## Easier composition of Node.js apps consuming APIs from z/OS Connect EE

- A LoopBack model abstraction and associated API to work with in your Node.js application
  - **Ease for developers** already working with LoopBack framework to connect with z/OS Connect Enterprise Edition endpoint using generated Model APIs.
- Customize the Model by extending and creating relations with other user defined models
  - **Ease of building real-world applications** that often would require to work with multiple models and interact with multiple data sources
- **Swagger documentation** for generated Models / APIs

# Fast and easy steps to access z Systems



## DEPLOY



# Discover z Systems based services

1

## Define a LoopBack datasource for discovering z Systems based services

- Data source to be associated with the loopback-connector-zosconnectee LoopBack Connector

2

## Search and Identify APIs for creating corresponding model

- Using CLI tool to connect to a z/OS Connect EE data source returning a list of configured REST APIs

3

## Select a API definition to generate LoopBack Model

- Select the REST APIs using an interactive tool and a corresponding LoopBack model is auto generated

## Customization of LoopBack Model

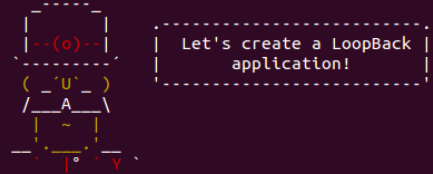
- Ability to customize by extending or creating relations to the created models

## 1

## Define a LoopBack datasource for discovering z based services

- Data source to be associated with the loopback-connector-zosconnectee LoopBack Connector

```
> slc loopback
```



```
Let's create a LoopBack
application!
```

```
? What's the name of your application? catproj
Generating .yo-rc.json
```



```
> slc loopback:datasource
? Enter the data-source name: zosds
? Select the connector for zosds: other
? Enter the connector name without the loopback-connector- prefix: zosconnectee
>
```

```
> cat datasources.json
{
  "zosds": {
    "host": "10.3.20.1",
    "port": 50743,
    "username": "user",
    "password": "pass",
    "name": "zosds",
    "connector": "zosconnectee",
    "timeout": 0,
    "debug": true
  }
}
```

(edit servers/datasources.json)



## 2

## Search and Identify APIs for creating corresponding model

- Using CLI tool to connect to a z/OS Connect EE data source returning a list of configured REST APIs

```
> slc-zosconnectee
? What would you like to do? Discover Services For Installed Data Source
? Which all data sources you want to Discover?
  ☐ zosds1
  ☐ zosds2
  ☒ zosds3
```

```
> slc-zosconnectee
? What would you like to do? Discover Services For Installed Data Source
? Which all data sources you want to Discover? zosds3
? Which all resources you want to select for Model creation?
  ☐ BOOKREC
  ☐ EMPINFO
  ☐ CATALOG
  ☒ CATALOGM
```

## 3

## Select a API definition to generate LoopBack Model

- Select the REST APIs using an interactive tool and a corresponding LoopBack model is auto generated

```
> slc-zosconnectee
? What would you like to do? Discover Services For Installed Data Source
? Which all data sources you want to Discover? zosds3
? Which all resources you want to select for Model creation? CATALOGM
? Do you want to customize Model CATALOGM? no
? 'GETITEMS' operation on CATALOGM, map to one of HTTP operation (Use arrow keys)
> GET
POST
PUT
DELETE
```

```
> slc-zosconnectee
? What would you like to do? Discover Services For Installed Data Source
? Which all data sources you want to Discover? zosds3
? Which all resources you want to select for Model creation? CATALOGM
? Do you want to customize Model CATALOGM? no
? 'GETITEMS' operation on CATALOGM, map to one of HTTP operation GET
? 'ORDEITEM' operation on CATALOGM, map to one of HTTP operation POST
Model CATALOGM Created Successfully
>
```

### CATALOGM

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)

GET	/CATALOGMs	Find all instances of the model matched by filter from the data source.
POST	/CATALOGMs	Create a new instance of the model and persist it into the data source.
GET	/CATALOGMs/{id}	Find a model instance by id from the data source.

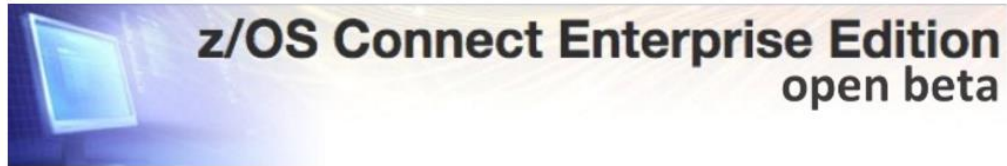
# IBM z/OS Connect Enterprise Edition open beta

## Downloadable files

## Abstract

The z/OS Connect Enterprise Edition open beta offering is to be made available, unsupported by IBM, to enable you to evaluate its features at no charge, for a limited period.

## Download Description



IBM z/OS Connect Enterprise Edition (EE) extends the value of applications that run on z/OS by allowing efficient and scalable APIs for contemporary mobile and cloud applications to be easily created.

*Register your  
interest today*

*Preview potential  
capabilities and have  
the opportunity to  
provide direct  
feedback*

[ibm.biz/zosconnectopenbeta](http://ibm.biz/zosconnectopenbeta)