Les outils DevOps et les Cloud Hybride

Virtualisation "La tête dans les nuages"
Common Romandie
Genève, 24 Novembre 2016.

Guilhaume Garcia
Pre-Sales IT Architect – Hybrid Cloud
IBM Client Center Montpellier, France

fr.linkedin.com/in/guilhaumegarcia
guilhaume.garcia@fr.ibm.com

Agenda

- Why Speed and Agility & DevOps?

- Tools and adoption

- IBM Solutions and examples
    - Introduction
    - Demo 1: IBM Bluemix & DevOps services
    - Demo 2: UrbanCode Deploy
    - Demo 3: On-Premise to Public Cloud deployment
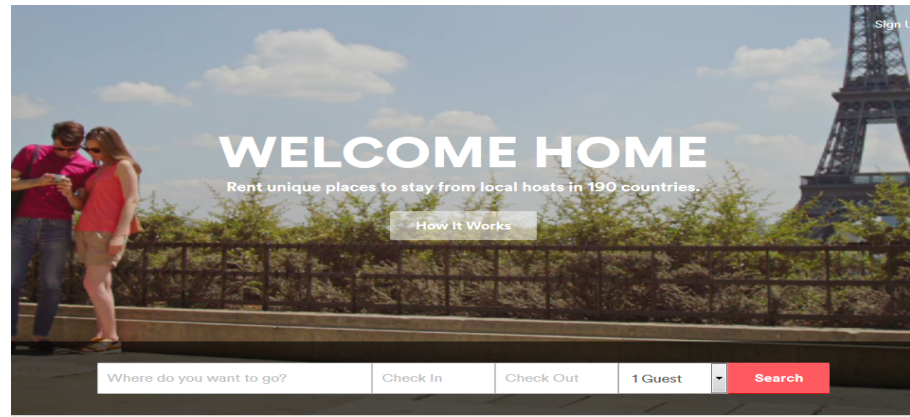
- Hybrid Cloud

Across nearly every industry, innovative entrants are disrupting traditional markets and displacing long-established players

"The 'Uber syndrome' – where a competitor with a completely different business model enters your industry and flattens you."[3]

Judy Lemke, CIO, Schneider, United States

In the next 3-5 years,

54%

of CxOs expect challenges from competitors outside their industry.

WELCOME HOME
Rent unique places to stay from local hosts in 190 countries.

How It Works

| Where do you want to go? | Check In | Check Out | 1 Guest | Search |

Just for the Weekend
Discover new, inspiring places close to home.

And It Is Important To Be the RIGHT Kind of Headline!

Bad

Good

Development in V cycle is very risky !
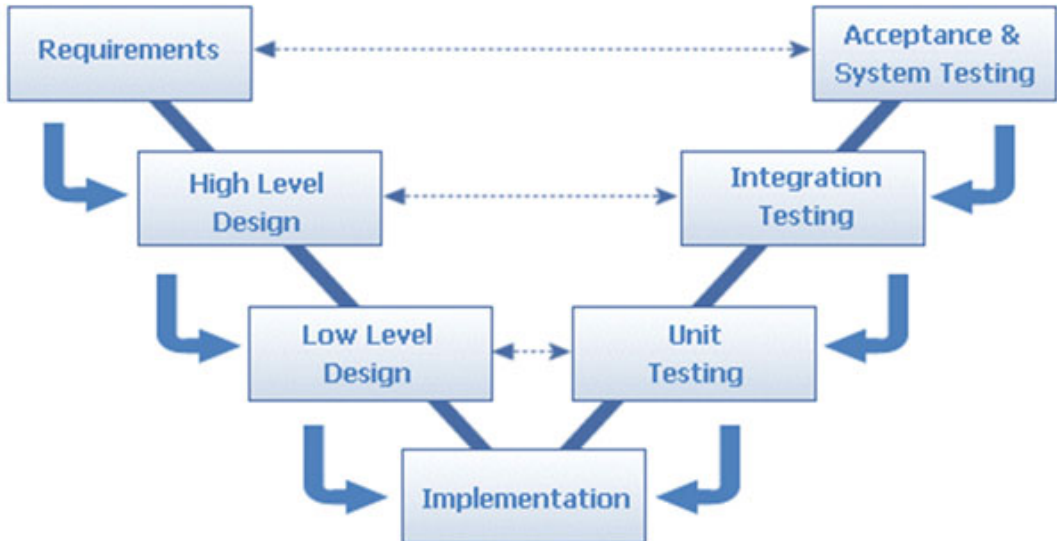
Time?
User feedback?

AMAZON is deploying 300 times per hour

amazon.com

- Created in 1994, 75 Billions$ in2013

- Average time between deployments: 11.6s

- Max deployment in one hour: 1079

- Average host machines number: 10 000

What is the waste we are trying to remove

Manual Efforts

- Deployments require human intervention

- Reliance on scripts

- Environment configuration is done on an "as-needed" basis

Long Wait Times

- Teams waiting on manual handoffs

- Resources not available when needed

- Delayed time-to-test

- Insufficient notification

Unproductive Work

- Using static environments

- Deploying things that have not changed

- Managing infrastructure & apps separately

- Not leveraging virtualization & cloud correctly

Poor Visibility

- Reliance on spreadsheets, meetings, con calls to know status

- Limited understanding of deployment dependencies and status

- Long Outage windows

Workload styles vary, but not release methodology

Traditional IT	Cloud-Enabled	Cloud-Native
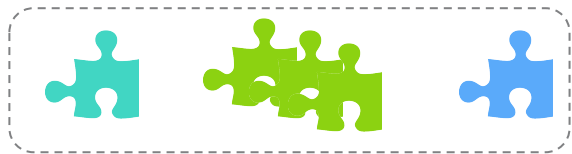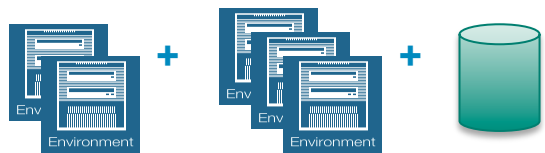
Applications

Applications   Services
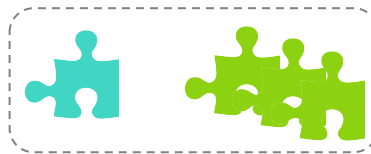
Applications   Services

Web Servers + App Servers + Database

Web Servers + App Servers + Database

.java liberty   .rb   .py   .go

Managed Runtimes

Virtual Datacenter

Local Cloud   **Dedicated Cloud**   **Shared Cloud**

Local Cloud   **Dedicated Cloud**   **Shared Cloud**
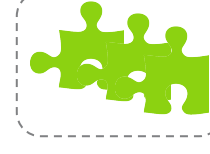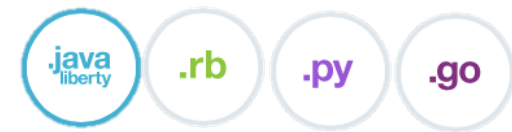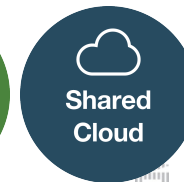
Most enterprises need multiple DevOps patterns

Accelerate Innovation

Think → Code → Deliver → Run → Production

Systems of engagement

API Catalog

Digital Applications

Systems of Record

Enterprise Applications

Shared Services

Operational Excellence

Think → Code → Deliver → Run → Production
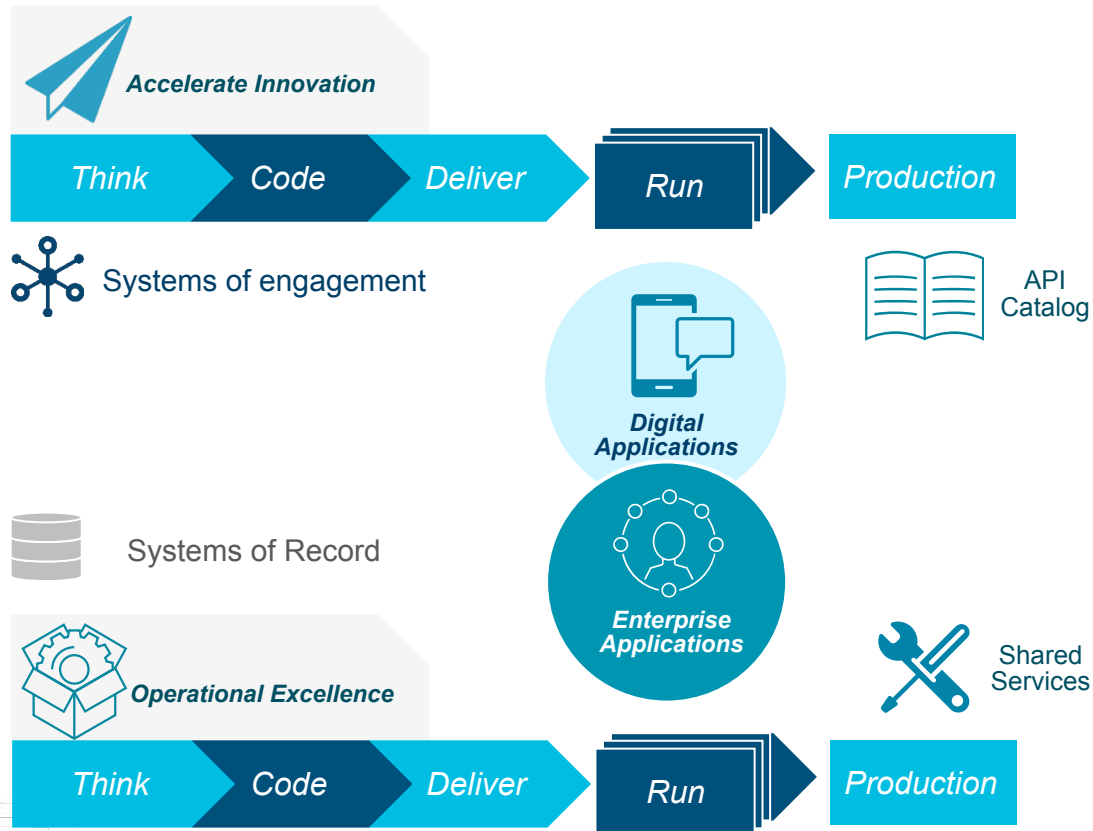
- Coordinating different teams working at different speeds

- Balancing between agility and stability

- DevOps for Hybrid Cloud supports multi-speed IT

Agenda

- Why Speed and Agility & DevOps?

- Tools and adoption

- IBM Solutions and examples
  - Introduction
  - Demo 1: IBM Bluemix & DevOps services
  - Demo 2: UrbanCode Deploy
  - Demo 3: On-Premise to Public Cloud deployment

- Hybrid Cloud

DevOps tools periodic table
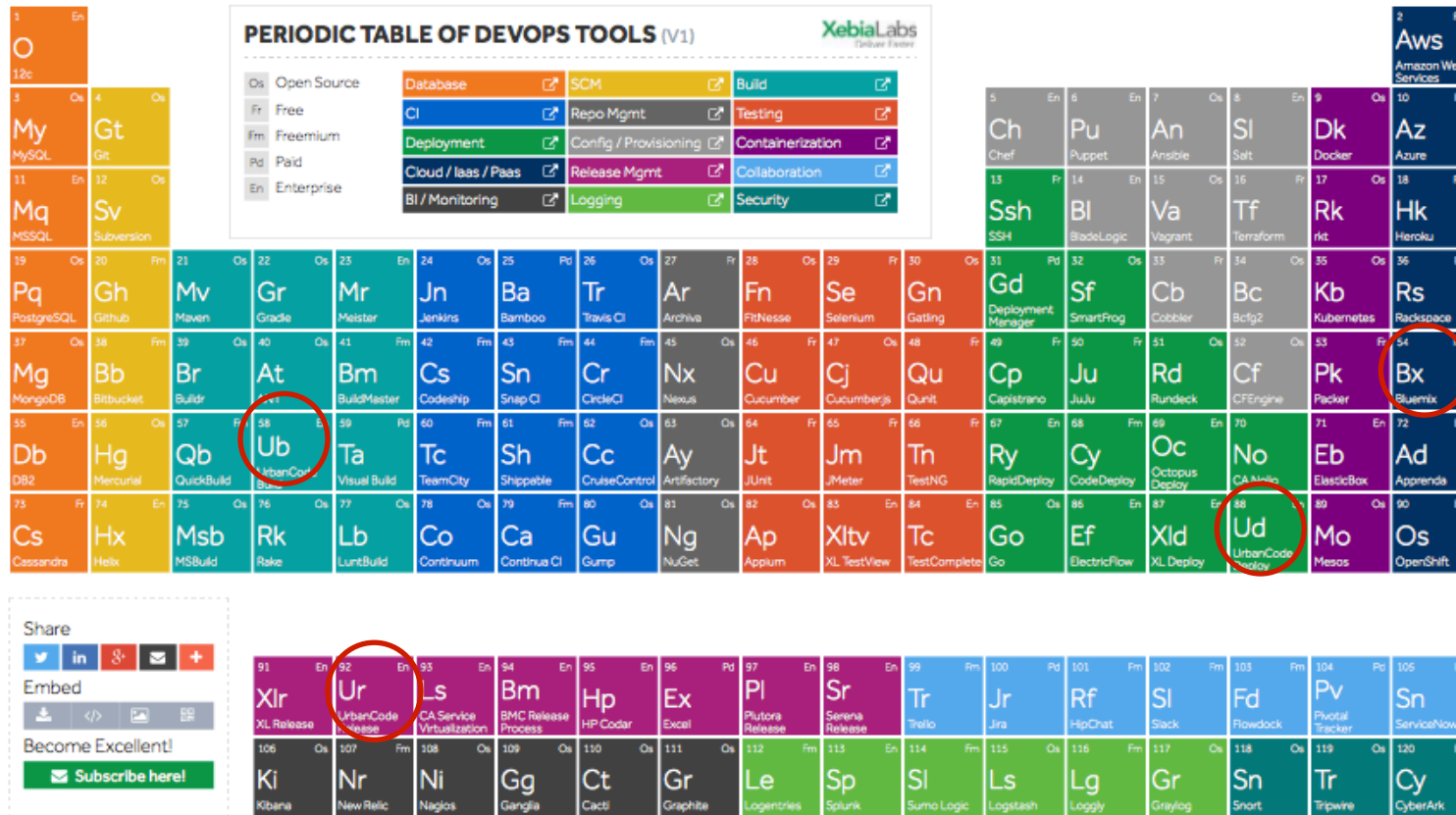
Continuous Integration

- Jenkins : Very flexible and easy to use

- CodeShip : Specialize in continuous deployment

- GitLab-CI : Fully integrate with GitLab

Automated Provisionning

- Well-established support community through Puppet Labs.
- It has the most mature interface and runs on nearly every OS.
- Simple installation and initial setup.
- Most complete Web UI in this space.
- Strong reporting capabilities.

- Rich collection of modules and configuration recipes.
- Code-driven approach gives you more control and flexibility over your configurations.
- Being centered around Git gives it strong version control capabilities.
- 'Knife' tool (which uses SSH for deploying agents from workstation) eases installation burdens.

- SSH-based, so it doesn't require installing any agents on remote nodes.
- Easy learning curve thanks to the use of YAML.
- Playbook structure is simple and clearly structured.
- Has a variable registration feature that enables tasks to register variables for later tasks
- Much more streamlined code base than some other tools

Use standards and cloud platforms

- OpenStack is now considered mature

- IBM Bluemix is a IaaS and PaaS as well as a Run environment

Agenda

- Why Speed and Agility & DevOps?

- Tools and adoption

- IBM Solutions and examples
  - Introduction
  - Demo 1: IBM Bluemix & DevOps services
  - Demo 2: UrbanCode Deploy
  - Demo 3: On-Premise to Public Cloud deployment

- Hybrid Cloud

IBM Cloud ®

Guiding Principles

DevOps Productivity

Hybrid Integration

Powerful, Accessible Data and Analytics

Cognitive Solutions

Choice with Consistency

IBM

Timing is critical…

Today's apps must keep up with the speed of the app revolution.

● Customer Managed

Core IT

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking

Benefits
Fully customizable.
Necessary for some Business Critical solutions.
Leverage Existing Investments.

Time Commitment
Weeks to setup and deploy.
Maintenance/upgrades of hardware and software.

Time to initial deployment

← ~ Weeks   ~ Days   ~ Minutes →
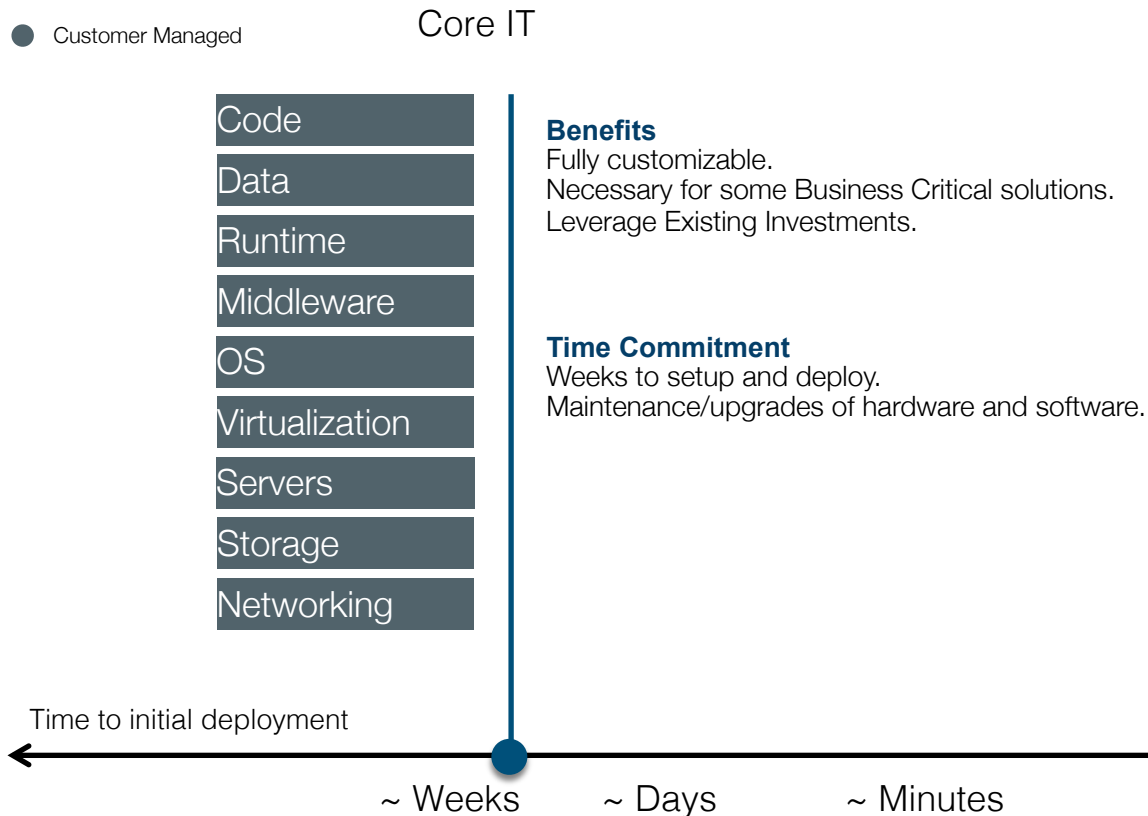
Timing is critical…

Today's apps must keep up with the speed of the app revolution.

- ● Customer Managed
- ● Service Provider Managed

Infrastructure as a Service

Code
Data
Runtime
Middleware
OS
Virtualization
Servers
Storage
Networking

Benefits
Most control in the cloud.
Necessary for some solutions
Infrastructure managed by SP.

Time Commitment
Minutes to provision VM.
Time to configure software and apps varies.
Maintenance/upgrades of OS, middleware, runtime.
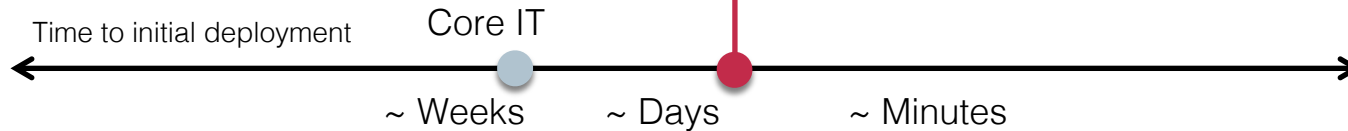
PowerVC   openstack   IBM **SoftLayer**

Time to initial deployment   Core IT

~ Weeks   ~ Days   ~ Minutes
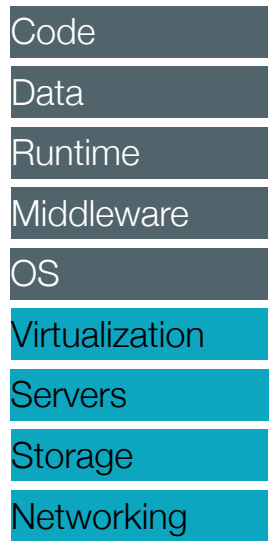
Timing is critical…

Today's apps must keep up with the speed of the app revolution.

● Customer Managed
● Service Provider Managed

Platform as a Service

| Code |
| Data |
| Runtime |
| Middleware |
| OS |
| Virtualization |
| Servers |
| Storage |
| Networking |

Benefits
Setup environments and deploy apps *very* quickly.
Infrastructure and platform managed by Service Provider.

Time Commitment
Minutes to setup and deploy.
Focus on your apps and their data.

IBM **Bluemix**

Time to initial deployment

Core IT   IaaS

← ~ Weeks   ~ Days   ~ Minutes →
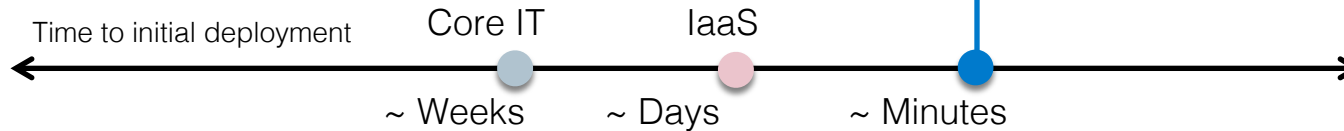
World-class tooling and the broadest catalog of composable services DevOps Productivity

The Best

Tools

+

The Broadest

Catalog

+
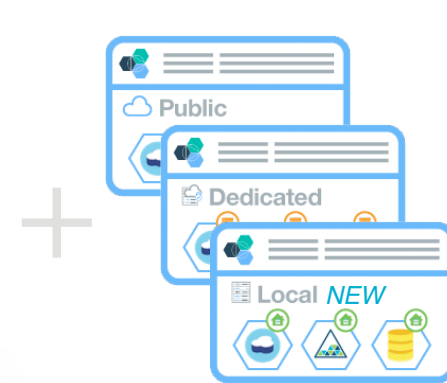
The Most Choices

for Delivery Model

IBM Cloud Platform Stack

Bluemix is built on three key open compute technologies: **Cloud Foundry**, **Docker**, and **OpenStack**.

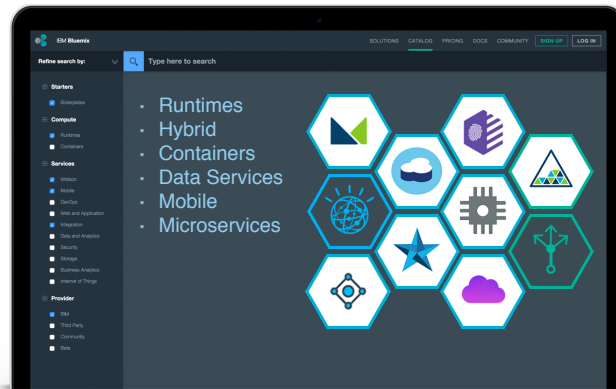It extends each of these with a growing number of **services**, robust **DevOps tooling**, **integration** capabilities, and a seamless **developer experience**.

DevOps Tooling

urban{code}

Integration and API Mgmt

Your Own Hosted Apps / Services

Catalog of Services that Extend Apps' Functionality

| Web | Data | Mobile | Cognitive | Analytics | IoT | Security | Yours |

Flexible Compute Options to Run Apps / Services

Event Driven | Instant Runtimes | Containers | Virtual Machines

CLOUD FOUNDRY | docker | openstack

Platform Deployment Options that Meet Your Workload Requirements

Bluemix Public | Bluemix Dedicated | Bluemix Local

Powered by IBM SoftLayer | In Your Data Center

Meeting the Hybrid DevOps Challenge

"DevOps is a philosophy, a cultural shift that merges operations with development and demands a linked toolchain of technologies to facilitate collaborative change." (Gartner)

http://www.ibm.com/devops/method

Method & Architectures
Bluemix Garage Method & Consulting Services

Integrated Toolchain
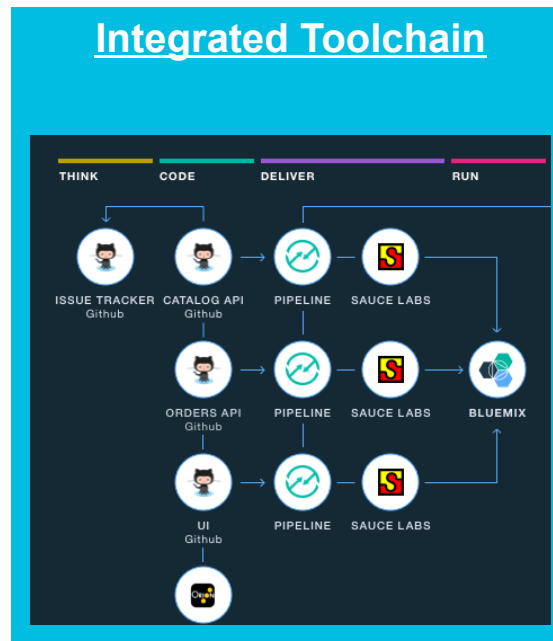
Innovation Platform
IBM Cloud / Bluemix

- Runtimes
- Hybrid
- Containers
- Data Services
- Mobile
- Microservices
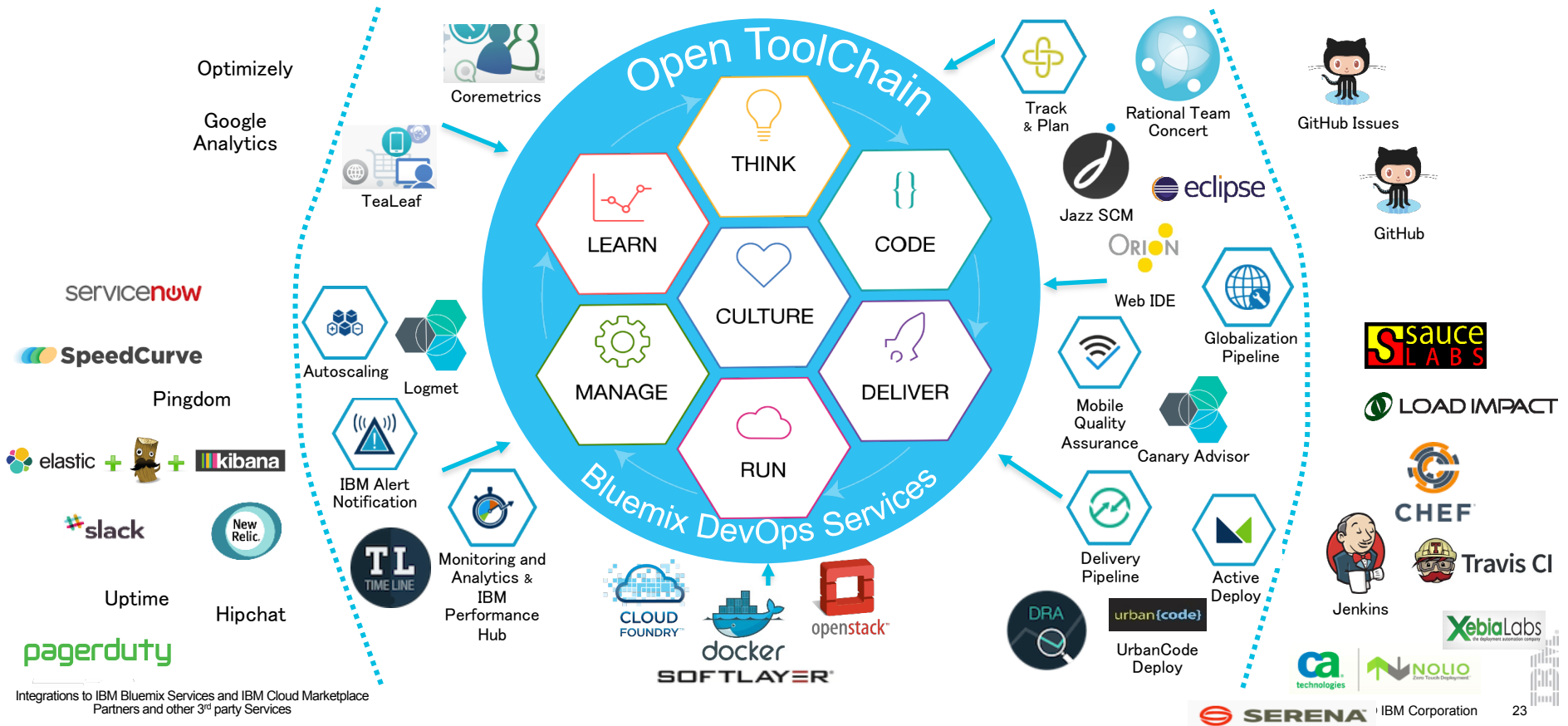
IBM Bluemix Garage Method & DevOps Open Tool Chain Strategy

Rapidly setup and manage an integrated toolchain following DevOps best practices

More complex tool chains created from templates

DEMO 1: IBM Bluemix & DevOps Services

IBM UrbanCode for Continuous Delivery

Enabling clients to continuously deliver applications with high quality and low risk

Development → SCM → Build → Package Repo → Deploy → Test → Stage → Prod

Virtual Datacenter | Local Cloud | Dedicated Cloud | Shared Cloud
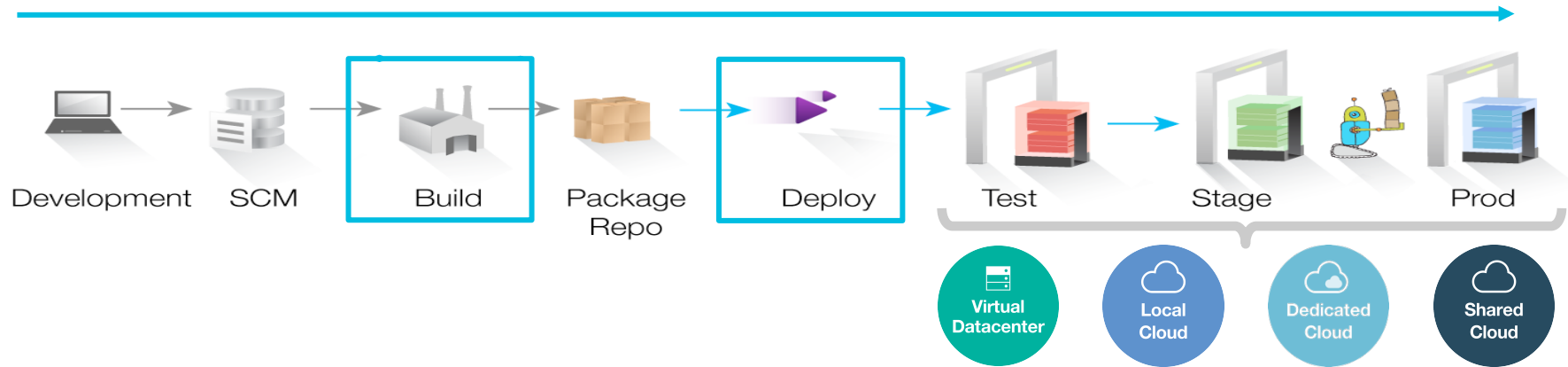
Drive down cost
Reduce amount of manual labor, resource wait-time, and rework by eliminating errors & providing self-service environments

Speed time to market
Increase frequency of software delivery through automated, repeatable deployment processes across development, test and production

Reduce risk
Robust configuration management, coordinated release processes, audits, and traceability

IBM UrbanCode Build is a continuous integration and build management server optimized for the enterprise, designed to make it easy to scale the configuration and management of build infrastructure and seamlessly plug in to development, testing and release tooling.

IBM UrbanCode Deploy enables hybrid cloud by automating the deployment of applications, databases, configurations and containers into development, test and production on prem or in the cloud, helping to drive down cost, speed time to market with reduced risk. With full-stack environment management and deployment automation, users to design, deploy and update full-stack environments for multiple clouds, including Bluemix, Softlayer, AWS, Azure, and virtualized environments.

IBM UrbanCode Release is an intelligent collaboration release management solution that replaces error-prone manual spreadsheets and streamlines release activities for application and infrastructure changes.

The big idea:
UrbanCode: Anywhere to Anywhere
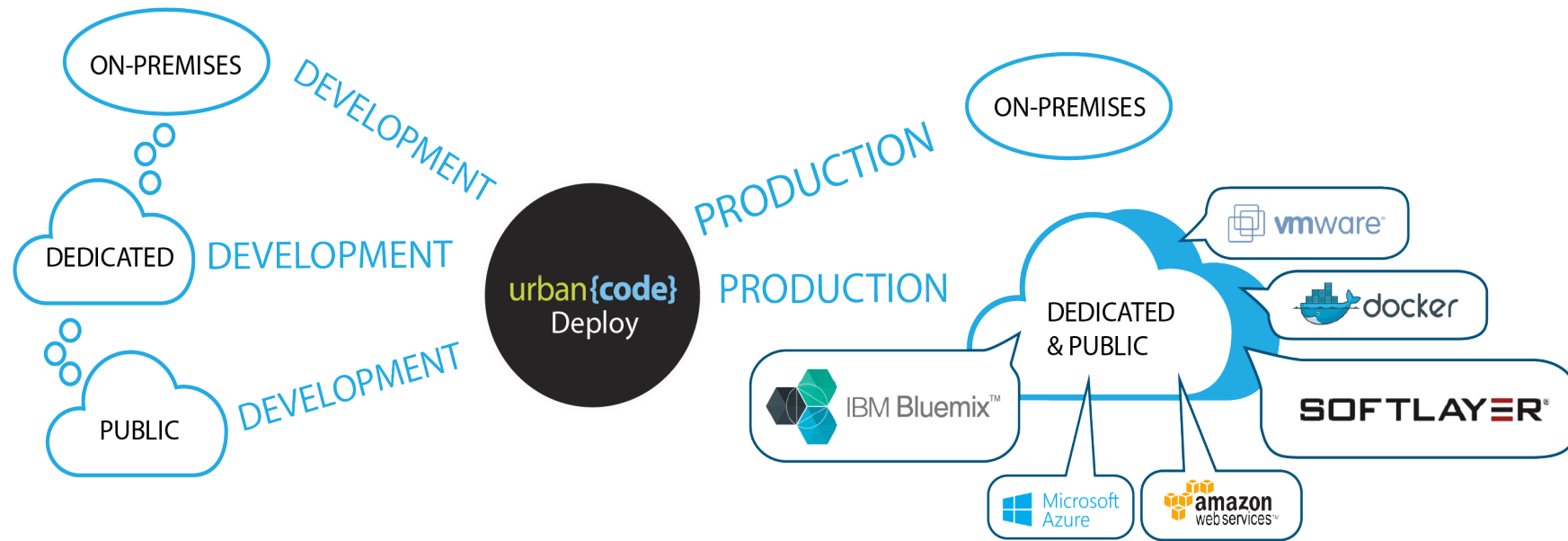
Hybrid cloud deployments with a single point of control

Manage application deployment across dev, test, and production spanning multiple clouds

UrbanCode Deploy

Key Points:
- Enable full stack deployments (OS, patterns and applications) across hybrid cloud applications
- Establish common DevOps pipelines with plug points to support continuous delivery

IBM **Bluemix**

CLOUD FOUNDRY

Docker

SOFTLAYER
an IBM Company

openstack

amazon web services

Microsoft Azure

IBM PureApplication System
IBM Cloud Orchestrator

openstack

bluebox
AN IBM COMPANY

Cloud Foundry
Containers

Virtual Machines

Other Vendors

On-prem IaaS

On-prem Traditional IT

UrbanCode Release

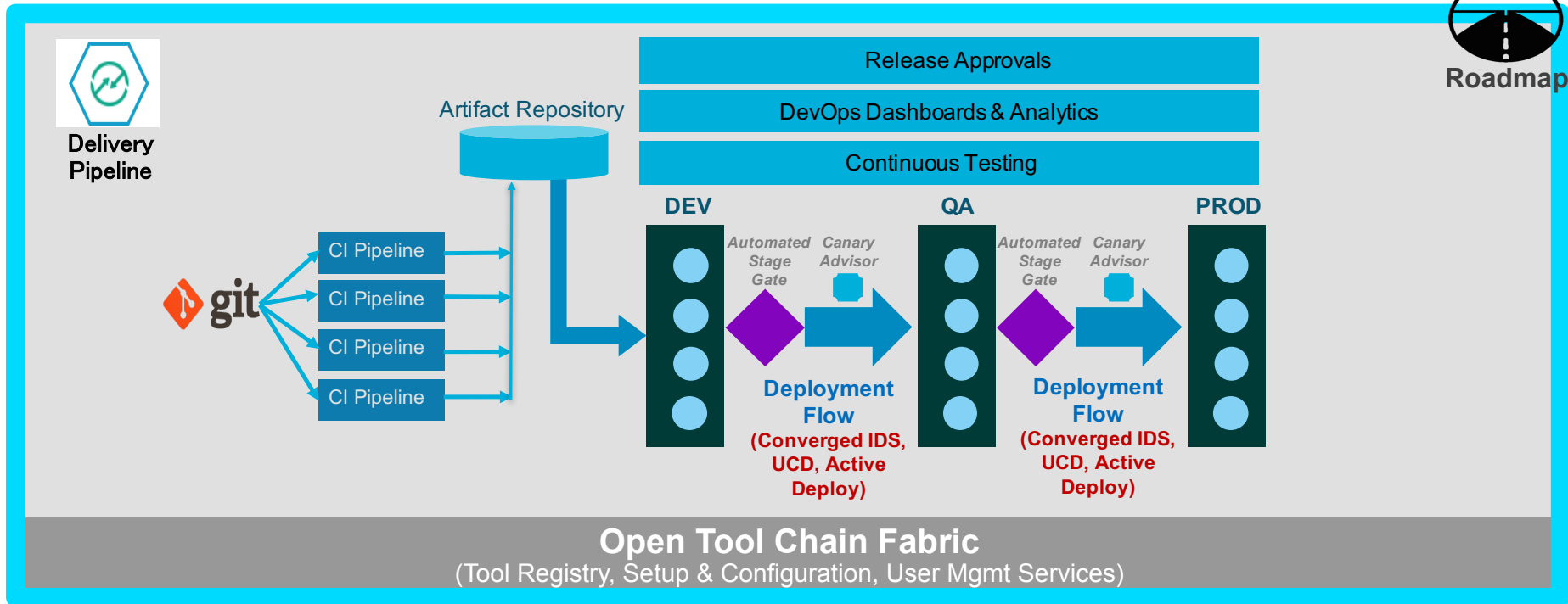https://www.youtube.com/watch?v=fFuRg6l3N44

28

DEMO 2: IBM UrbanCode Deploy

Continuous Delivery

Build up **cloud** **deployment** capability to deploy multi-component, multi-micro-service releases across multiple environments

Roadmap

Delivery Pipeline

Artifact Repository

CI Pipeline
CI Pipeline
CI Pipeline
CI Pipeline

git

Release Approvals

DevOps Dashboards & Analytics

Continuous Testing

DEV

Automated Stage Gate

Canary Advisor

Deployment Flow

(Converged IDS, UCD, Active Deploy)

QA

Automated Stage Gate

Canary Advisor

Deployment Flow

(Converged IDS, UCD, Active Deploy)

PROD

Open Tool Chain Fabric
(Tool Registry, Setup & Configuration, User Mgmt Services)

Issue Tracking

Track & Plan

GitHub Issues

Rational Team Concert

Z ZenHub.io

Source Code

GitHub.com

GitHub Enterprise

Continuous Integration

Jenkins

Travis CI

Continuous Testing

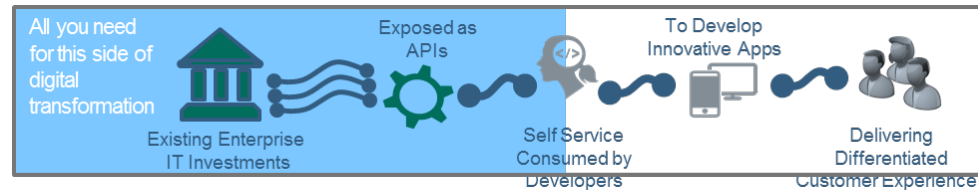sauce LABS

LOAD IMPACT

DEMO 3: IBM UrbanCode Deploy & IBM Bluemix

Agenda

- Why Speed and Agility & DevOps?

- Tools and adoption

- IBM Solutions and examples
  - Introduction
  - Demo 1: IBM Bluemix & DevOps services
  - Demo 2: UrbanCode Deploy
  - Demo 3: On-Premise to Public Cloud deployment

- Hybrid Cloud

Why Hybrid Cloud with Bluemix & Power Systems?

- **SoR-SoE Integration: Hybrid solution based on Power Systems (SoR) & IBM Bluemix / Softlayer (SoE)**
  - Power Systems value + Best of the Cloud
  - More agile & valuable IT services

    Develop new applications rapidly & propose new offerings to end-users
  - Bring data to your Power8-based System of Insight

Power8 extreme performance
Reliability Availability Serviceability Security
Consolidation, low TCO
Openness & Software Vendors Ecosystems
Big Data & Analytics, Critical Core IT Solutions

Rapid development, short time to market
Rich Runtime & Service Catalog
Pay as you go model
IBM Softlayer – Multi-Region
Public, Dedicated, Local

All you need for this side of digital transformation

Exposed as APIs

To Develop Innovative Apps

Existing Enterprise IT Investments

Self Service Consumed by Developers

Delivering Differentiated Customer Experiences

Develop in Bluemix, Deploy & Run on Power Systems!

Liberty for Java™

Develop, deploy, and scale Java web apps with ease. IBM WebSphere Liberty Profile is a highly compos...

Lite   IBM   [i for Business] [AIX] [Linux]

Runtime for Swift

A Kitura based server application that you can use as a starting point to get your own Kitura application...

Lite   IBM   [Linux]

PHP

Develop, deploy, and scale PHP web apps with ease.

Lite   Community   [i for Business] [AIX] [Linux]

Tomcat

Develop, deploy, and scale Tomcat web apps with ease.

Lite   Community   [i for Business] [AIX] [Linux]

SDK for Node.js™

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

Lite   IBM   [i for Business] [AIX] [Linux]

XPages

Develop, deploy and scale IBM XPages applications with ease. The IBM XPages runtime provides you ...

Lite   IBM   [i for Business] [AIX] [Linux]

Python

Develop, deploy, and scale Python web apps with ease.

Lite   Community   [i for Business] [AIX] [Linux]

ASP.NET Core

Develop, deploy, and scale ASP.NET Core web apps with ease.

Lite   IBM   [Linux]

Go

Develop, deploy, and scale Go web apps with ease.

Lite   Community   [Linux]

Ruby

Develop, deploy, and scale Ruby web apps with ease.

Lite   Community   [i for Business] [AIX] [Linux]

Bluemix Runtimes (Cloud Foundry Build packs) have _all_ equivalents on Power Systems!
Bluemix Data Services: Bluemix <-> On premise with no or minor code modifications.

Bluemix DevOps: Build, Deploy, Run - Demonstration

My DevOps: https://hub.jazz.net/user/bmarolleau
Dev & Test: https://daytraderbluemix-dev.iccmpl.mybluemix.net/DayTraderBlueMix/
QA / Staging: https://daytraderbluemix.mybluemix.net/DayTraderBlueMix/

Bluemix Hybrid Cloud capabilities

- Bluemix Integration Services : Extend existing investments and infrastructure

- Bluemix to 'On-premise / other Cloud'
  - API Connect
  - Secure Gateway service
  - + Bluemix Dedicated to 'On-premise / Other Cloud': VPN and/or dedicated link

- 'On-premise / other Cloud' to Bluemix
  - Consume Bluemix Services from 'on-premise / Other Cloud' applications
    - Direct HTTPS API consumption – outbound traffic to the internet
    - Using a tunnel: Secure Gateway, VPN, …

Secure Gateway

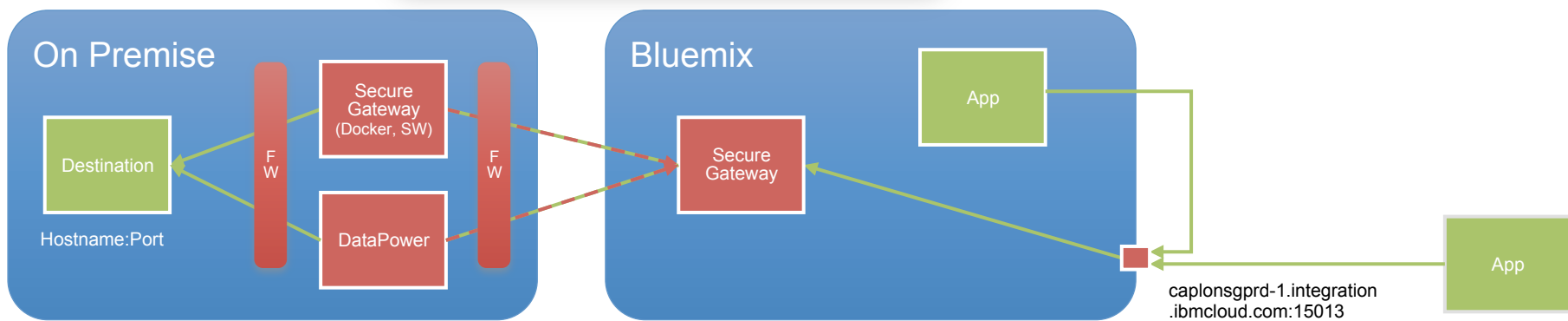IBM Secure Gateway for Bluemix enables users to integrate cloud services with enterprise systems

IBM

API Connect

Create, manage, enforce, and run APIs.

IBM

Secure Gateway

How would you like to connect this new gateway?

IBM Installer   docker   IBM DataPower

On Premise

Destination

Hostname:Port

F W

Secure Gateway (Docker, SW)

DataPower

F W

Bluemix

Secure Gateway

App

App

caplonsgprd-1.integration.ibmcloud.com:15013

| Description	Destination ID	Destination Host:Port	Cloud Host:Port
MyDestination	9Kw0MhRIQHd_1yM	Hostname:Port	caplonsgprd-1.integration.ibmcloud.com:15013

Bluemix Dedicated – VPN Access

- Use case:
  – Internal teams access the Bluemix GUI and push applications through the tunnel
  – Bluemix Apps access internal (on-premise) corporate components: LDAP, Services…
- Default: VPN / Internet link
- Optional: Softlayer Direct Link 1 / 10Gbps
- Cloud Integration & Secure Gateway services available for application level integration
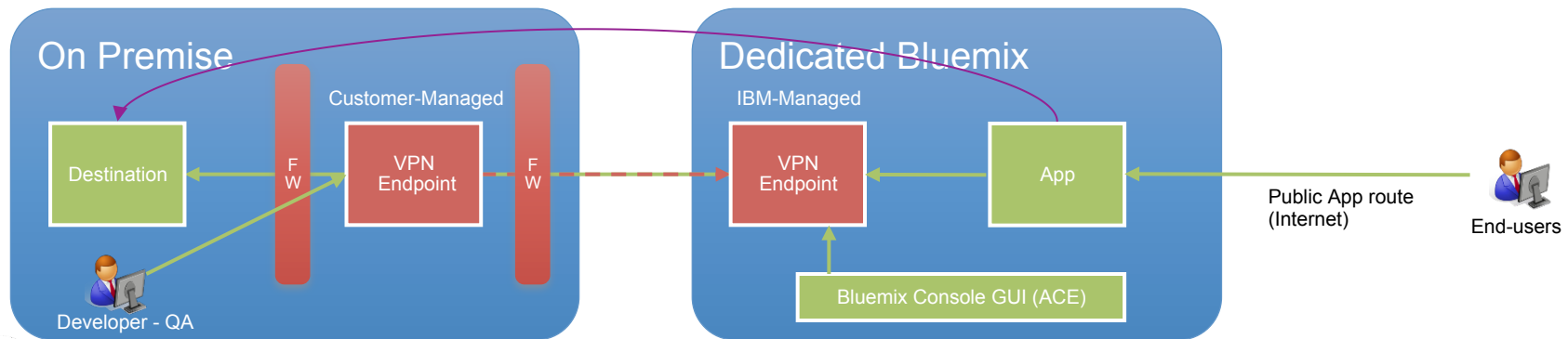
SoftLayer Direct Link

- Secure, and speed up data transfer between your private infrastructure and your SoftLayer services.
- Create a new hybrid solution that leverages the best of your in-house resources and the Softlayer platform
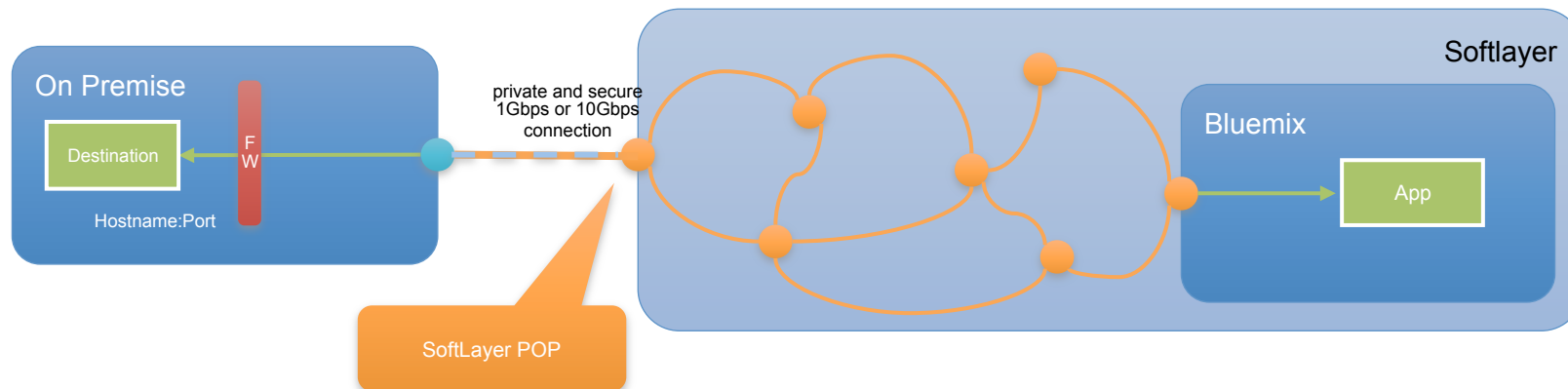
- How-to
  - Order a Direct Link in the Softlayer customer portal
  - Once approved, you will need to order a physical cross-connect from your network vendor's equipment to Softlayer router in Softlayer PoP.
  - Once the cross-connect is in place, Softlayer engineering team will activate your Direct Link.

Take away

- DevOps efficiency is proven
- Ops need to delegate more power to Dev
- Dev needs to understand Ops constraints

- IBM Bluemix is the innovative platform Open by design
- IBM UrbanCode with Bluemix for managing the continuous deployment on an Hybrid Cloud

- To get started: IBM Bluemix Garage and Design Studio

IBM

Follow us!

IBM **Client Center**
Montpellier

Website: ibm.com/ibm/clientcenter/montpellier/

Twitter: @IBMCCMPL

YouTube: IBM Client Center Montpellier

Pinterest: ibm-client-center-Montpellier

IBM connections:
w3-connections.ibm.com/communities/community/ibmccmpl