IBM Cloud Vision, Hybrid Cloud and Hybrid IT, DevOps ... to accelerate Digital Business

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IBM Cloud Advisor – Europe

Disruptors are reinventing business processes and leading their industries with digital transformations

Frontline Decision Making
Business Leaders go Mobile First

100%

of the LOB apps in customer-facing roles will be built for mobile-first consumption by 2017[1]

Real Time Insight Driven Processes
CIOs enable fast insight-driven decisions

70%

of CIOs say analytics and big data drive innovation at their firm[2]

Digital Innovation
Developers are rewriting the world in code

14000+

APIs published today, public APIs doubled in the past 18 months[3]

IBM

1) The Customer-activated Enterprise, *Insights from the Global C-suite Study*, IBM Institute for Business Value, 2013
2) IDC Directions, "How SaaS Gets Built" Doc # DR2014_T3_RM March 2014
3) See ProgrammableWeb, http://www.programmableweb.com/category/all/apis?order=field_popularity.

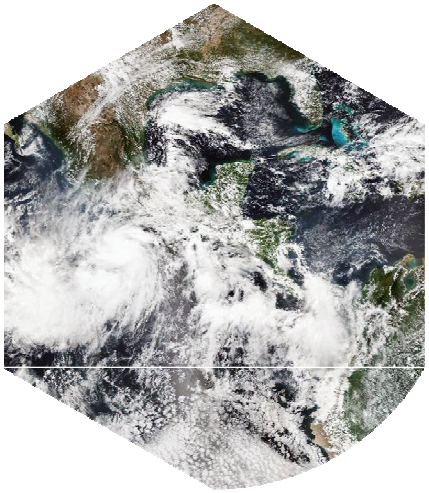
Will you disrupt or be disrupted?

AIRBUS

Bringing insight directly to their maintenance engineers via mobile

DELHAIZE GROUP

Using weather data to predict real time inventory needs



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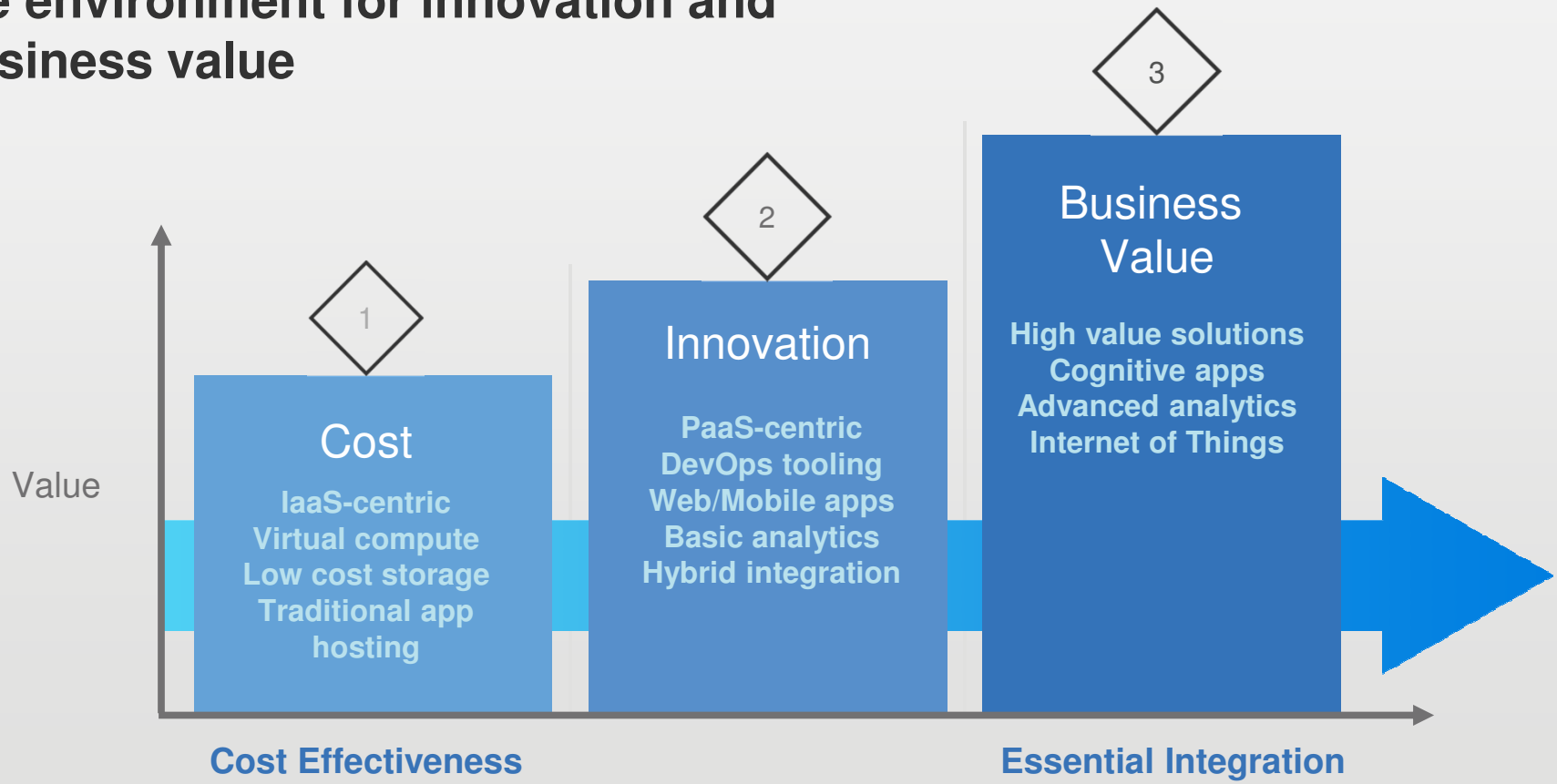
Sourcing new innovation from mobile developer communities

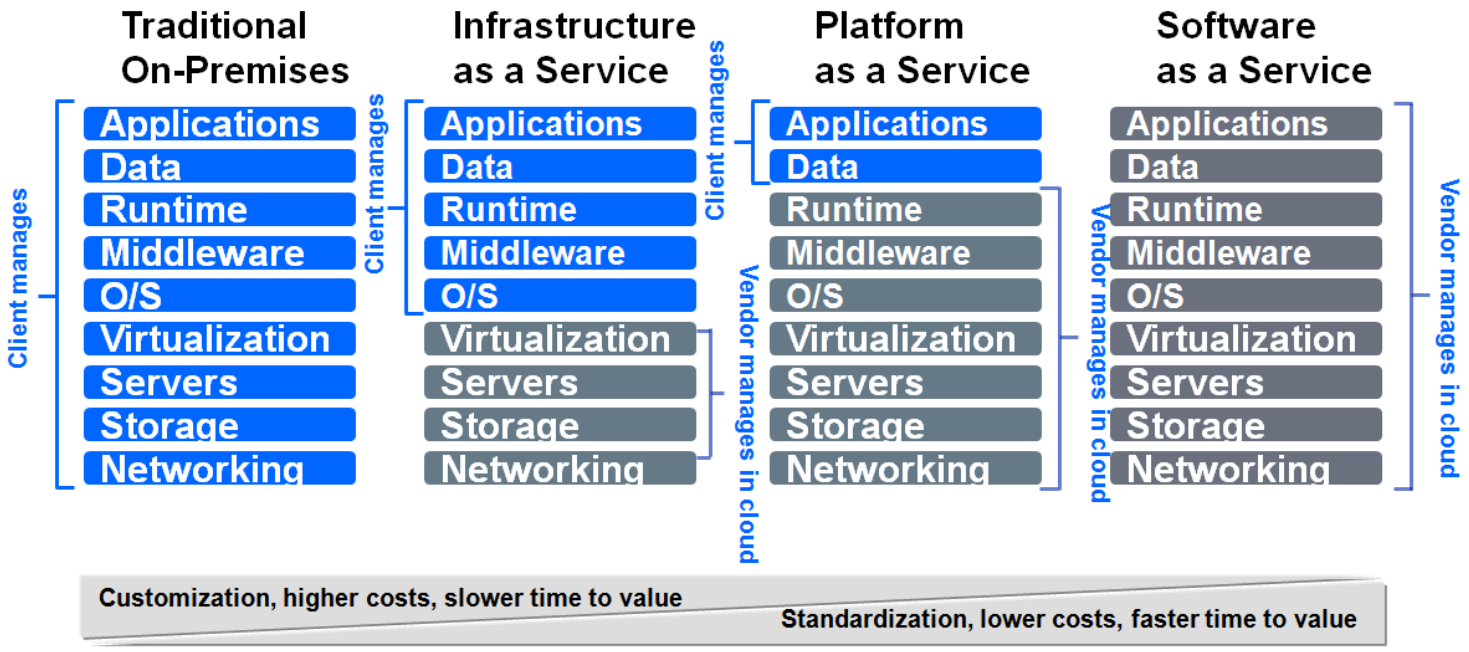
The role of the cloud is maturing into the environment for innovation and business value



Disruptive Threats: Driving Innovation

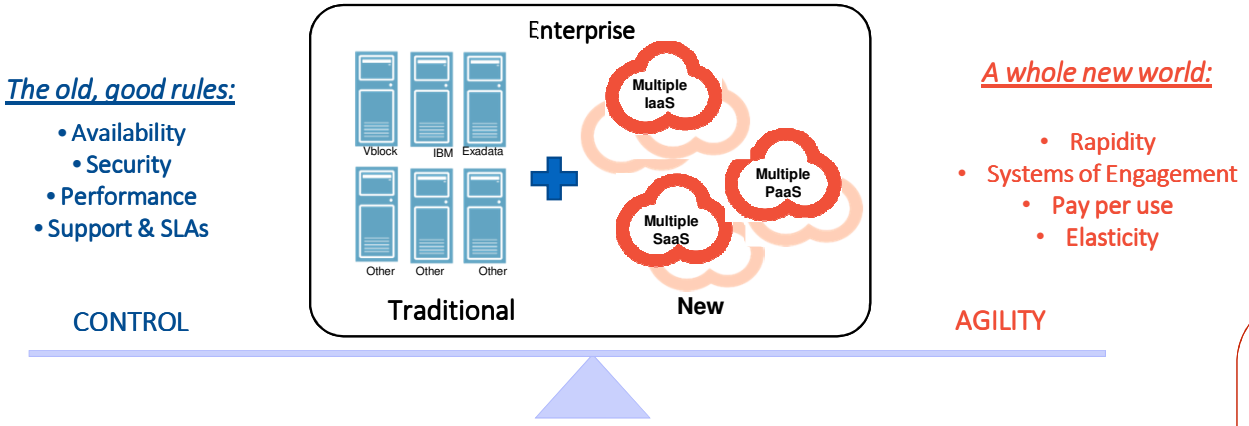
Cloud computing and traditional IT

Cloud has three service models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS).



Multi speed and bimodal IT

The connection of one or more clouds to on-premises systems and/or to other clouds



The old, good rules:

- Availability
- Security
- Performance
- Support & SLAs

A whole new world:

- Rapidity
- Systems of Engagement
- Pay per use
- Elasticity

CONTROL

AGILITY

- Benefit from simplified infrastructure
- Require cost efficiency through improved virtualization and automation
- Drive controlled data growth

- Require massive scale and rapid pace
- Accelerate business insights
- Rely on data elasticity, supporting diverse hardware

Composable environments to rapidly build and deploy new cloud-native and mobile solutions

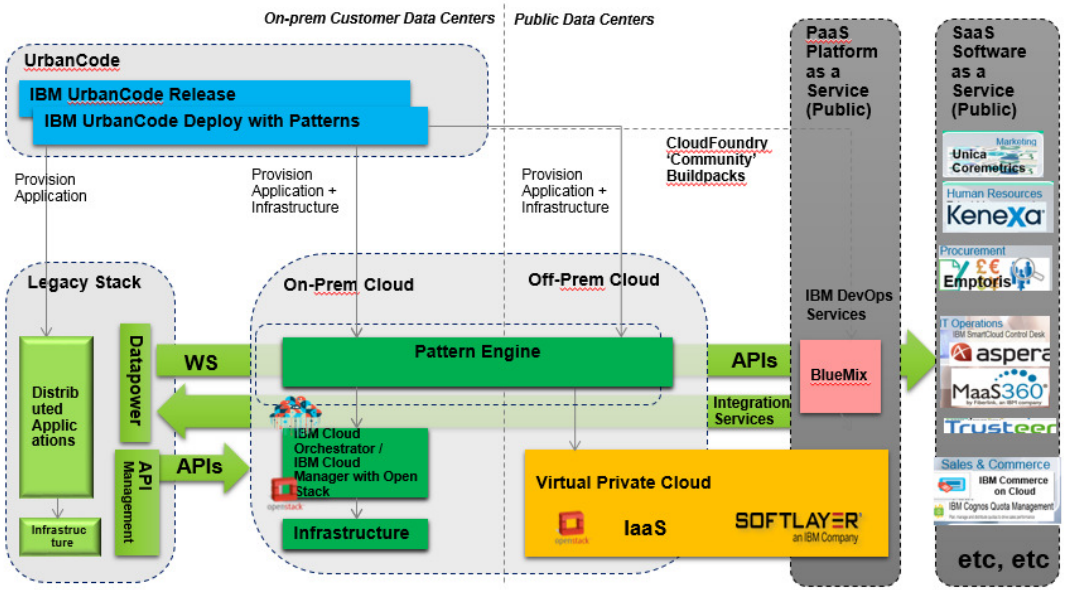
Flexibility to move apps to the cloud as-is or build cloud native solutions

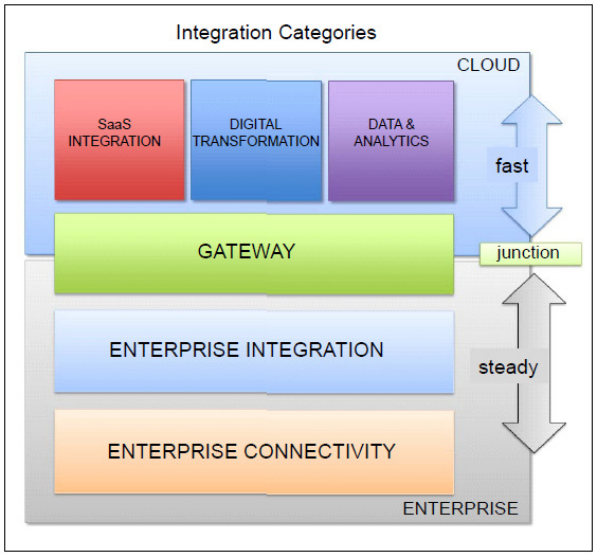
Leverage existing investments by connecting them to cloud services

Hybrid Integration: which level?

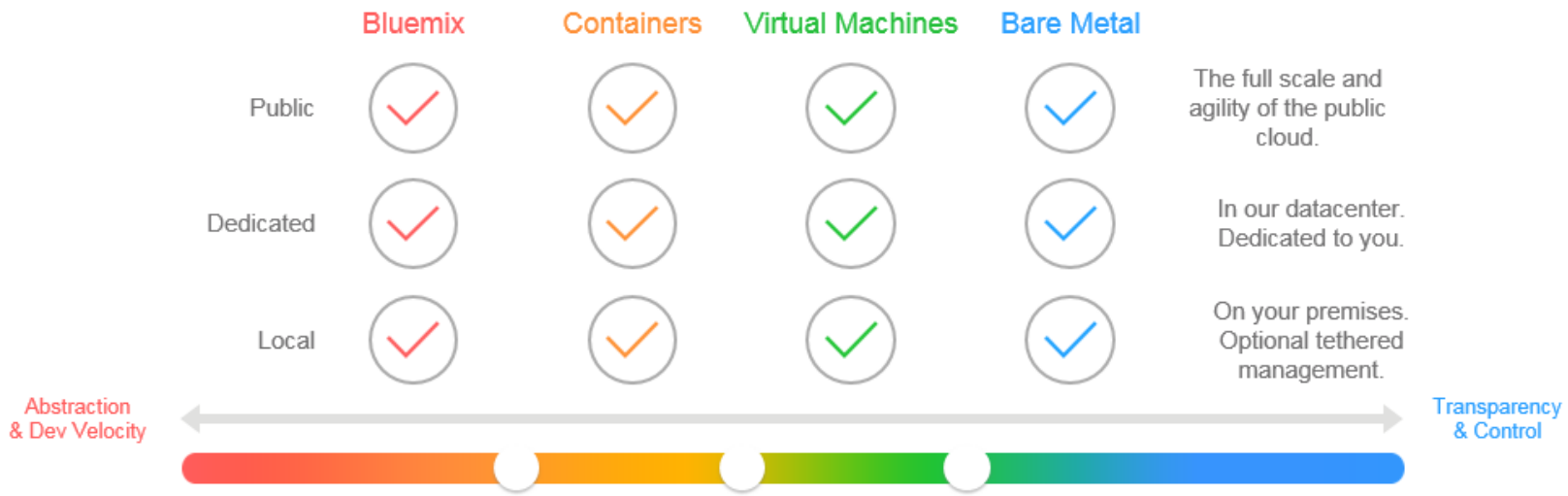
- When discussing cloud integration is important to understand which perspective is approaching since it influences the direction and goals of the discussion

- Cloud integration occurs at different levels within the cloud stack (Iaas or Saas) between different endpoints (cloud-to-cloud, cloud-to-off premise, cloud-to-no cloud). Moreover integration might be at application layer where apps exchange data or at management one (controlling multiple clouds)



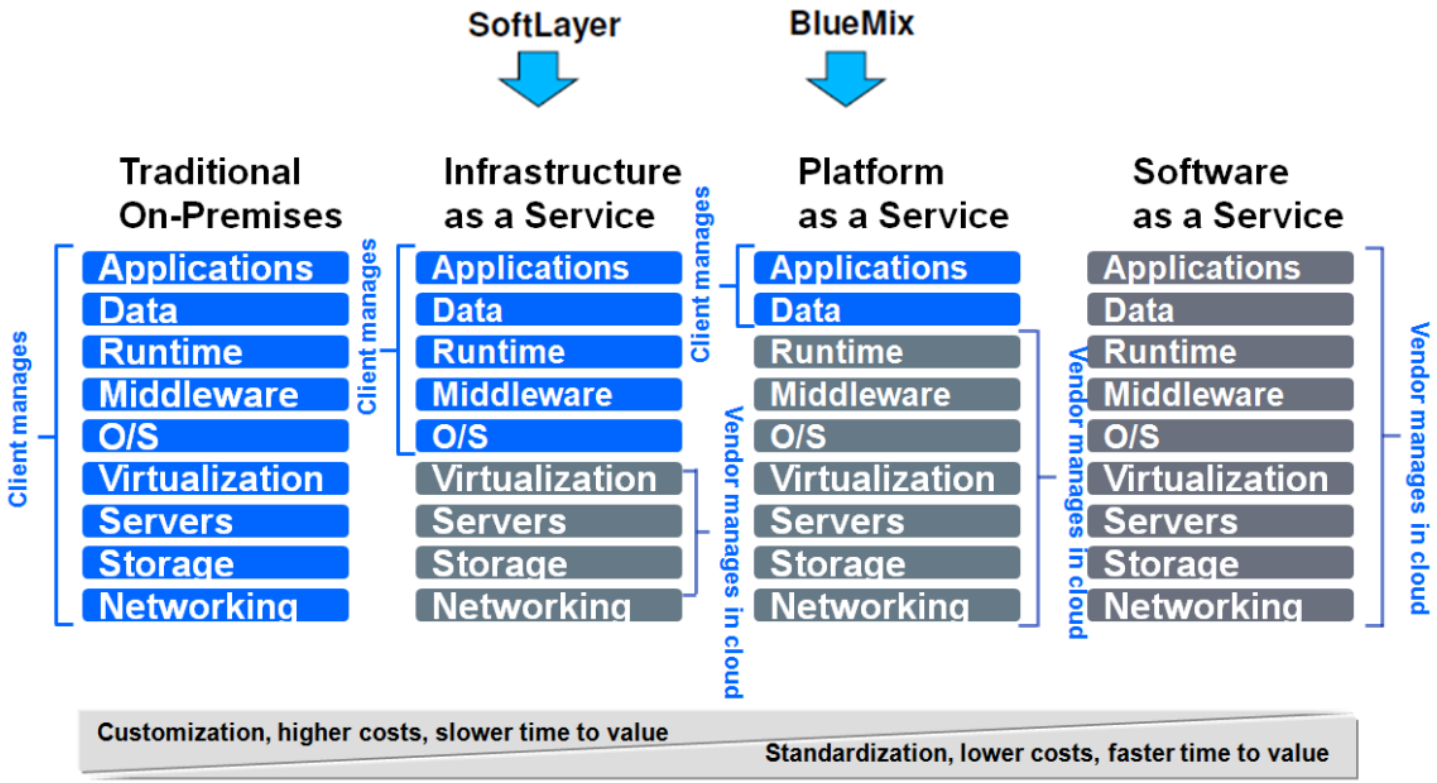


Run-times and delivery models to suit the full spectrum of enterprise needs



Fully managed options and both scale-up & scale-out designs available.

IBM-provided cloud services models



IBM SoftLayer Datacenters: Global Footprint

The expanding SoftLayer global footprint offers access to infrastructure choices through 28 data centers for improved global reach and performance

Triple-network architecture

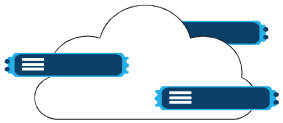
- **Public network**: Connection to public Internet through Tier 1 carriers with multiple 10 Gbps connections
- **Private network:** dedicated, stand-alone third carriers not connected to the public network with unmetered bandwidth usage between servers and data centers
- **Management network**: Out-of-plane management network connection through an unlimited VPN connection for more secure management

How do I get there? Internet, VPN or MPLS

Every aspect of a SoftLayer data center—from location and accessibility to power density and redundancy—is designed to guarantee its security, resiliency, and efficiency. Each is staffed 24x7 with experts to troubleshoot and address the rare issues that can't be directly resolved through the automated management system.

Hybrid IT and hybrid cloud delivery model

Mix and match bare metal servers, virtual servers and turnkey private clouds, and manage them from a single control pane or API with unlimited datacenter-to-datacenter networking



Virtual server
environment

For unpredictable, seasonal or research and development workloads

Virtual Private cloud
Non-shared single-tenant virtual infrastructure

Workloads requiring more stringent security, isolation, performance

Bare metal (non-virtual) infrastructure

Build your own Hosted Private Cloud with your own hypervisor stack

24x7 Support	Monitoring	Auto scaling	Image and Flex img.	Email delivery srvs.	Accounting
Firewalls SW/HW	Load balancers	DNS services	CDN	SSL certificate mngt.	Security mngt.
SAN – IOPS/Snapshot	NAS – IOPS/Snapshot	Object Storage	File and Block level Backup		
Virtual and phisycal infrastructure					
x86 Data Center PODs					
Unique Triple Network Architecture allows point-to-point intra-application and inter-data center connectivity					
Infrastructure Management System provides orchestration and automation					

OpenPOWER™

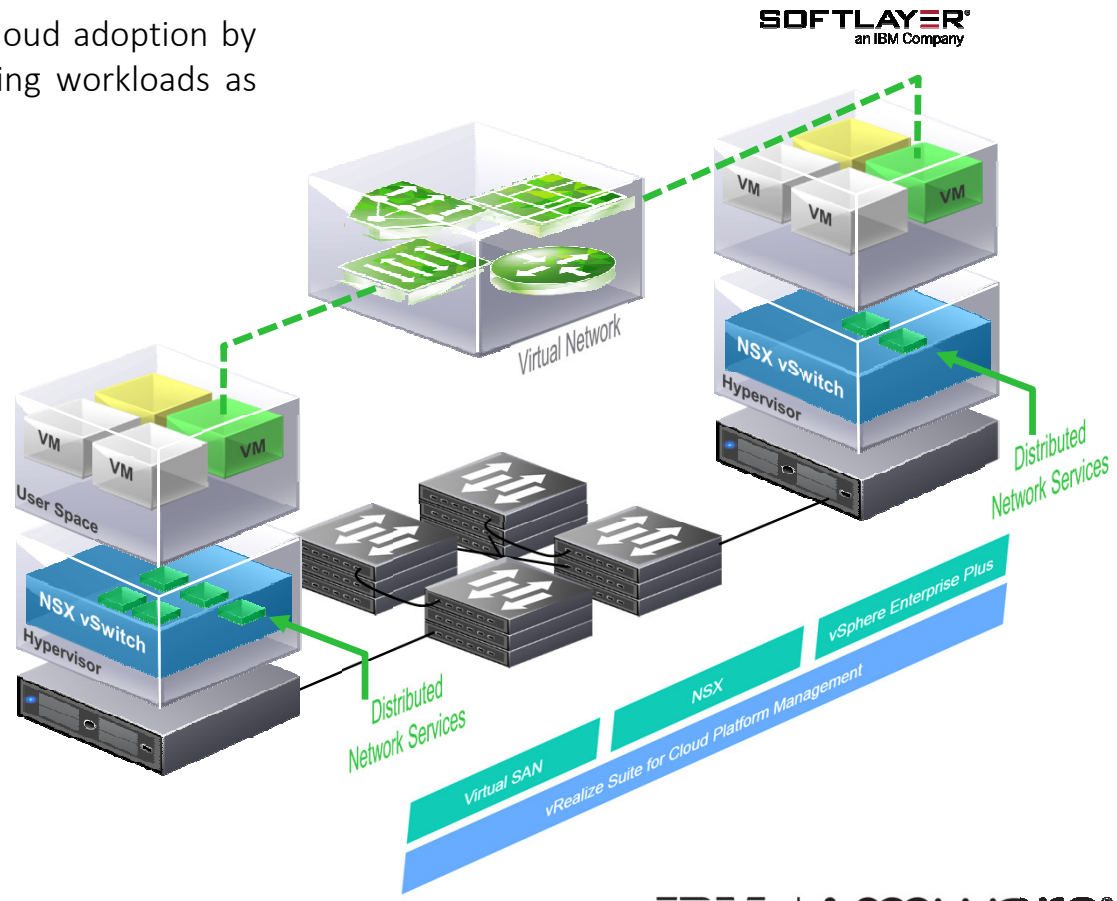
intel

IBM and Vmware @ Softlayer

Global strategic partnership to accelerate enterprise hybrid cloud adoption by enabling customers to easily and securely extend their existing workloads as they are from on premise data center.

VMware software with cost-effective **CPU based pricing**:

- vSphere implementations in SoftLayer enable utilization of vRealize Automation, Operations and Business, vCenter, vSAN, Integrated Openstack, Site Recovery Manager and NSX-V**.
- Automated implementation of VMware's design: the architecture has been created jointly and validated by VMware experts along with cookbooks available*.
- Consistent tools across the enterprise, seamless networking and security, simple and fast deployment with a global reach for a true worldwide hybrid implementation.

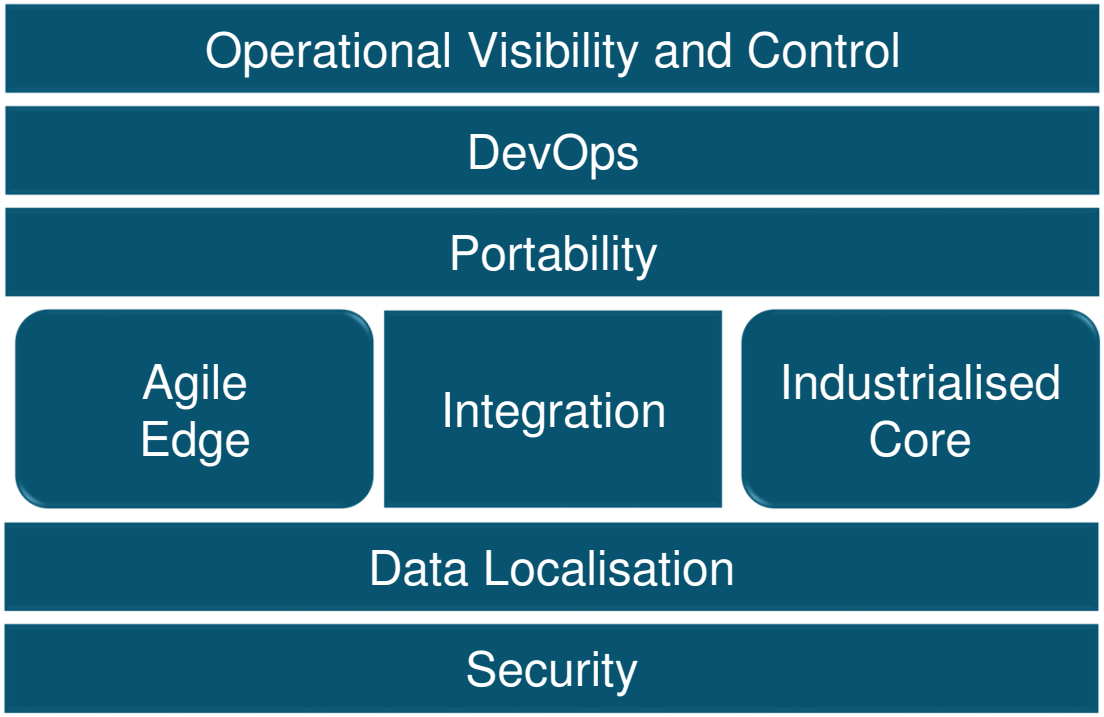


IBM | vmware

**1Q16

* http://www.ibm.com/cloud-computing/solutions/ibm-vmware/

Business Value: It Transformation – Solution Outline



Moving to hybrid service enabled architectures

Investment and data locked in backend systems

Little experience with cloud as an interaction tier

Limited knowledge and skill to implement transformational projects

IBM is leading the market in the API Economy and Hybrid Cloud

By 2016, 50% of B2B collaboration will take place through Web APIs (Gartner)

Over 80% of enterprise IT organizations will commit to hybrid cloud architectures by 2017 (IDC)

IBM is #1 in API and Gateway market share per Gartner Application Service Governance MQ

Reaction to IBM Connect offer announcements were strong Ovum: Roy Illsey—"Workshops and related services are excellent."

Connect To Cloud enables hybrid architectures to speed digital transformation

Enterprise Connections

WebSphere Connect, z/OS Connect,
DB2 Connect

1. **Expose & Publish** logic and data from Systems of Record as APIs
2. **Connect to cloud from** on-premises business logic to enhance applications (Watson API, Data services)

Bluemix Connections

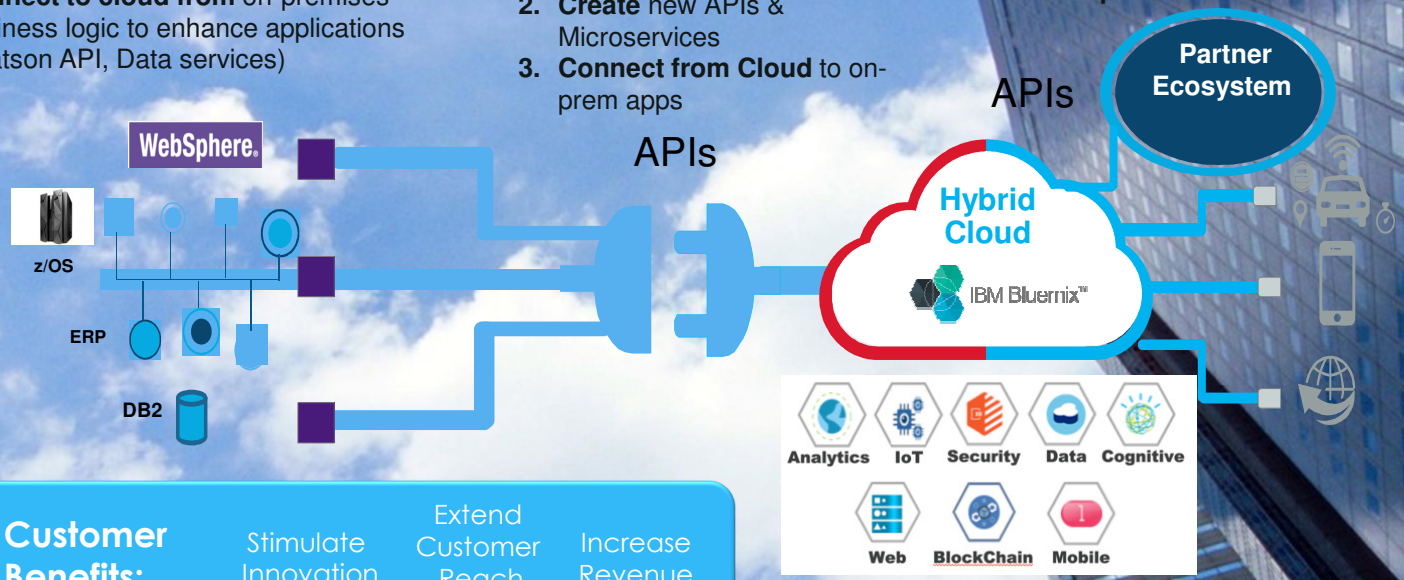
API Connect, App Connect, Message Connect, Business Operations Connect, DataWorks Forge,

1. **Discover & Consume** APIs
2. **Create** new APIs & Microservices
3. **Connect from Cloud** to on-prem apps

Analytics Connections

DB2 on Cloud, Analytics for Apache Spark

1. **Deploy** data stores built for volume and scale
2. **Transform, Combine and Shape** data



Customer Benefits: Stimulate Innovation | Extend Customer Reach | Increase Revenue

Usage Scenarios

Existing IBM Backends

Customer has extensive data and internal applications that they have invested in and want to leverage in new ways.

WebSphere

Customer uses **WebSphere Connect** to expose **WAS** resources to business partners through **Bluemix**

External API

The pre-built Connect integrations to IBM Systems along with the Connect package allow for speed to expose backend resources and management of those interfaces to enable new consumption models

Non-IBM Backends

Customer needs to be able to speed their delivery of mobile apps and new mobile capabilities while gaining better insight to customer behavior.

Customer uses **API Connect** to expose their CRM system to **Bluemix** and leverages cloud services

Watson Cloudant OpenWhisk

Through the connection of their CRM Data to Bluemix and the use of Watson, Cloudant and OpenWhisk cloud services. The customer gains quick market advantage

Cloud Native

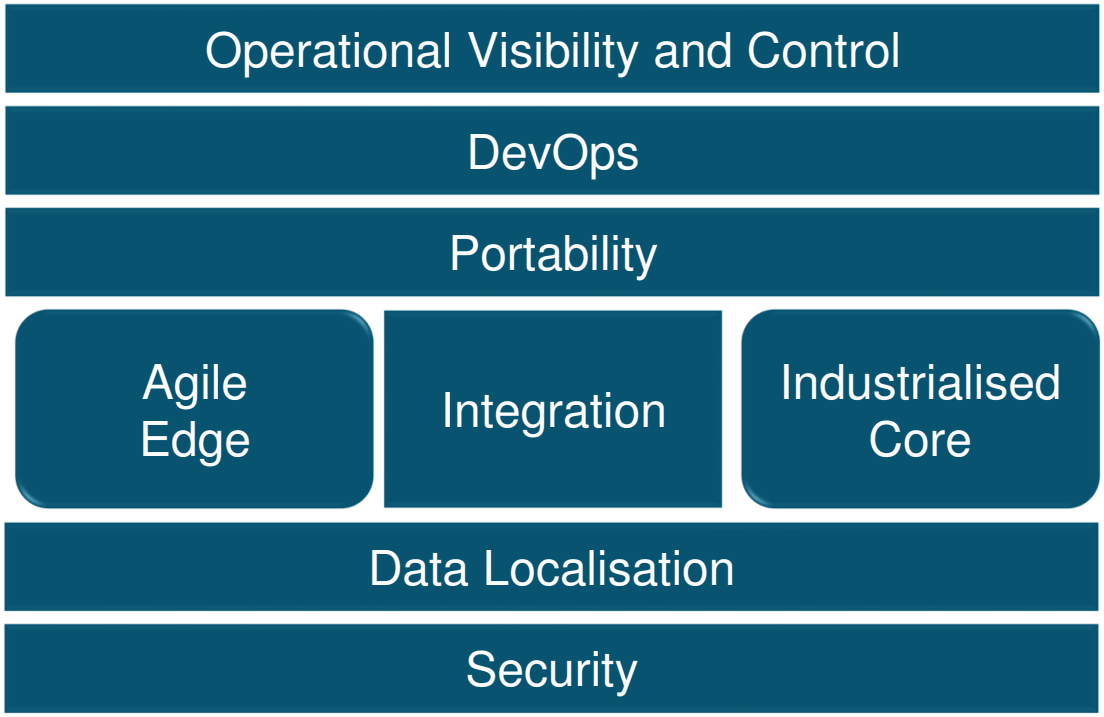
Customer is using sensors in their products to track usage and maintenance. They want a cloud based backend to aggregate the volumes of data which they will then feed to third party maintenance fulfillers.

Customer uses **DataWorks** Connect Offer to transform data from sensors storing them in the **dashDB** service on **Bluemix**

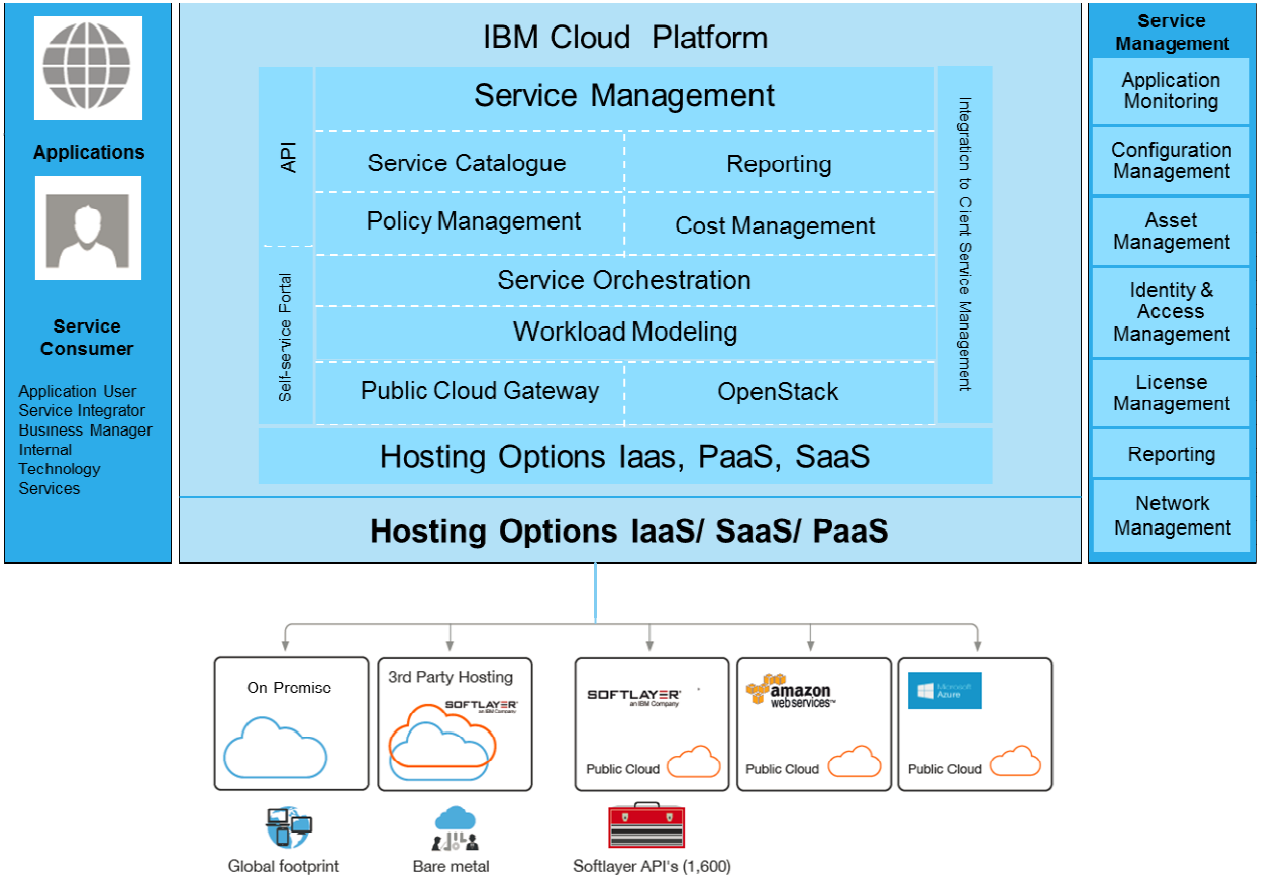
DataWorks dashDB

With auto scaling storage to hold large volumes of data and data transformation the company is able to rapidly deploy service service orders to regional partners to repair equipment providing service differentiation

Business Value: It Transformation – Solution Outline

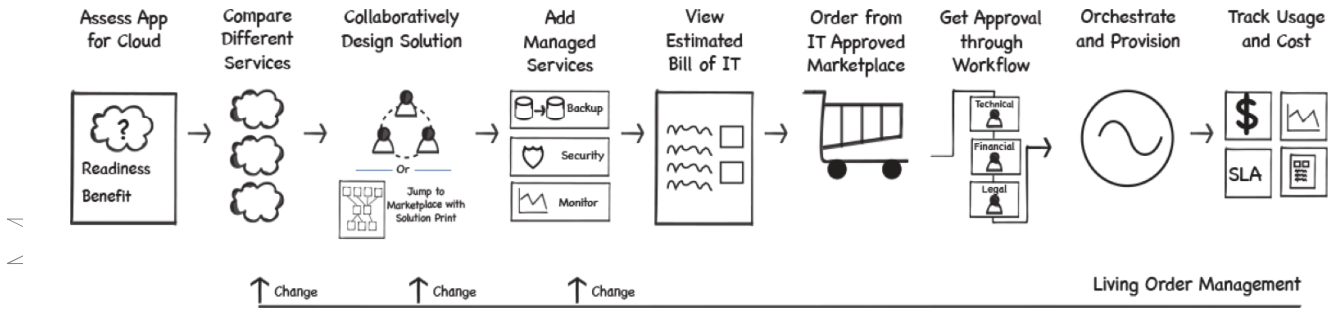


Hybrid Cloud Service Orchestration and Management



IBM Gravitant – Cloud Brokerage & Management

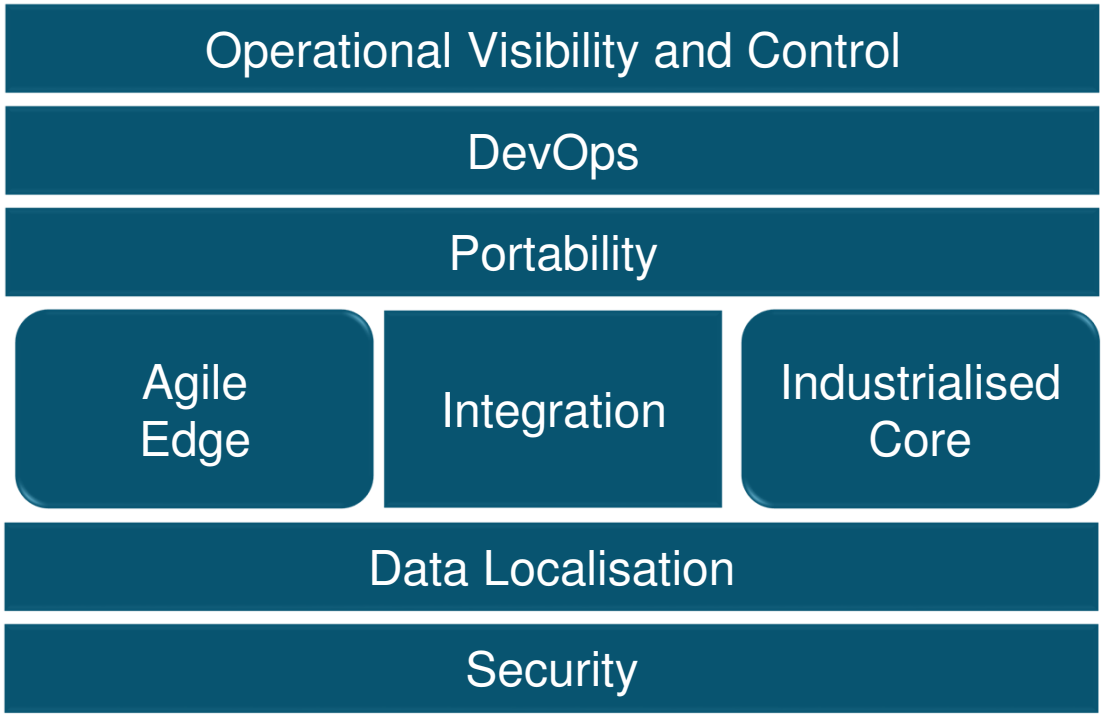
To enable Hybrid IT – multi-sourced consumption and delivery – an IT organization must centralize and manage the entire IT value chain, dynamically.



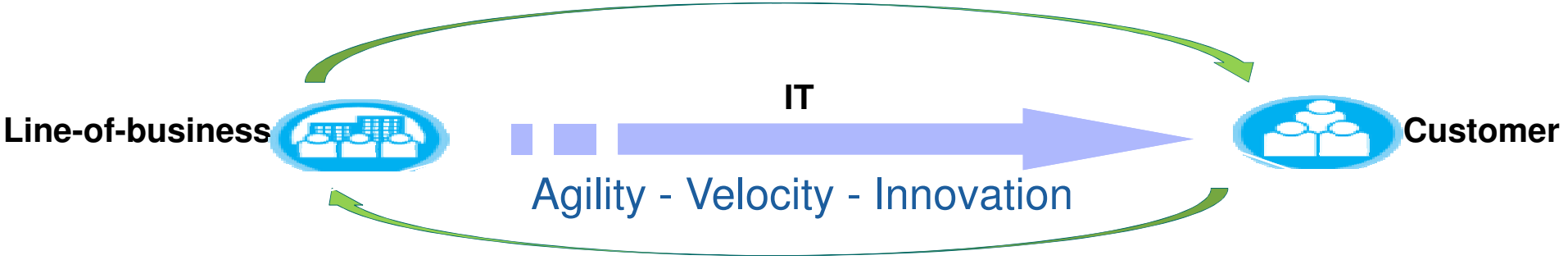
Gravitant cloudMatrix™ cloud brokerage and management software enables IT organizations to **unify planning, consumption, delivery, and management — continuously — in a multi-sourced environment.**

- Compare Clouds
- Calculate RoI
- Decision Analytics
- Self Service IT
- Dynamic Marketplace
- Broker Operations
- Continuous Delivery
- Reduce Shadow IT
- Next Gen. ITO
- Multi-Cloud Governance

Business Value: It Transformation – Solution Outline



What does the Line of Business want from IT?




Team Lead


Team Member


Users


External System Team


Auditors


Domain Experts


Team Member


Team Member


Product Owner


Gold Owner

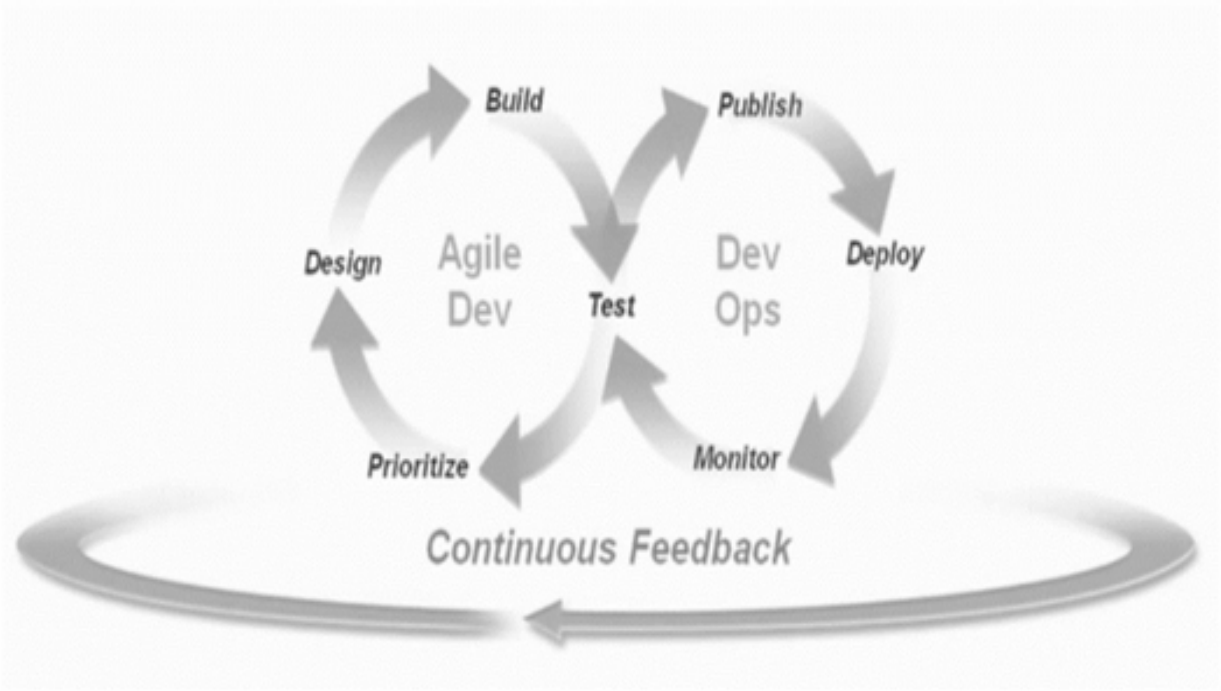

Senior Executives


Support Staff


Operations Staff

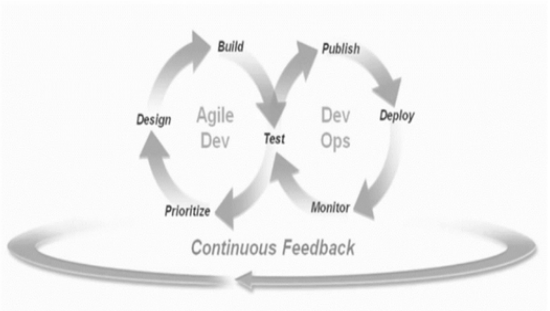
What is DevOps?

If you ask three people what they think DevOps is and chances are, they'll give you three different answers. There are lots of definitions of what DevOps means, but the diagram below is one of the best way to express how it can be described.



The two side of DevOps

- This diagram shows how the “**left hand side**” of the issue, the Development cycle, has been revolutionized over the past ten years or so. We’ve got to a state where the dev cycles are short and snappy. Developers have lots of skills and toolsets available to them, such as agile development and continuous integration, which help them produce code ever quicker.



- However, the **“right hand side”** of the problem, Ops, is not working with the same level of agility. They are increasingly unable to keep up with the speed of deployment requests and are often unable to provide the quick feedback that the agile development system needs. This causes friction at the boundaries.

Defining DevOps

To grossly generalize:

- Devs think Ops are slow and
- Ops think Devs have no idea what they're asking to the Ops folks.
- **DevOps' reason to exist is to reduce that friction**.

Its practical aim is to break down the glass wall between the two groups and make each other aware of the other's view point while also providing more tools on the "right hand side" of the problem to get Ops up to the same velocity as Devs.

In order to achieve this high *velocity* (an agile term) we will need to automate as much as we can throughout our entire software development process, regardless of whether it is for migration purpose or for new development objectives.

Pattern Technology to help Ops

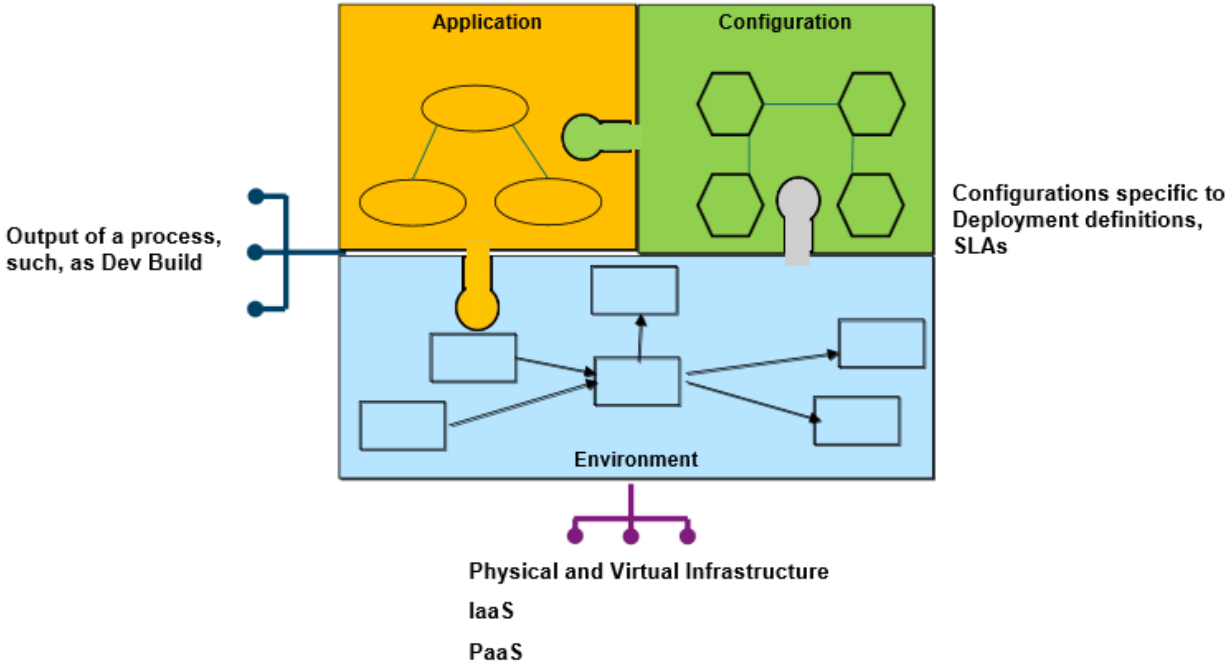
- Continuous integration and agile programming are all well known in the Development cycle.
- What Pattern technology does is bring that level of automation and agility into the right hand side of the issue (Ops).

- **Pattern Technology** lets you create environments on-demand, in a repeatable manner so that the *devs* and *testers* can have access to the platforms they require when they need them.
- **Pattern Technology** enables the Ops guys by giving them re-usable components in a modelling environment which they can then create instances of at a click of a button – helping them to become more agile.

Work with Patterns

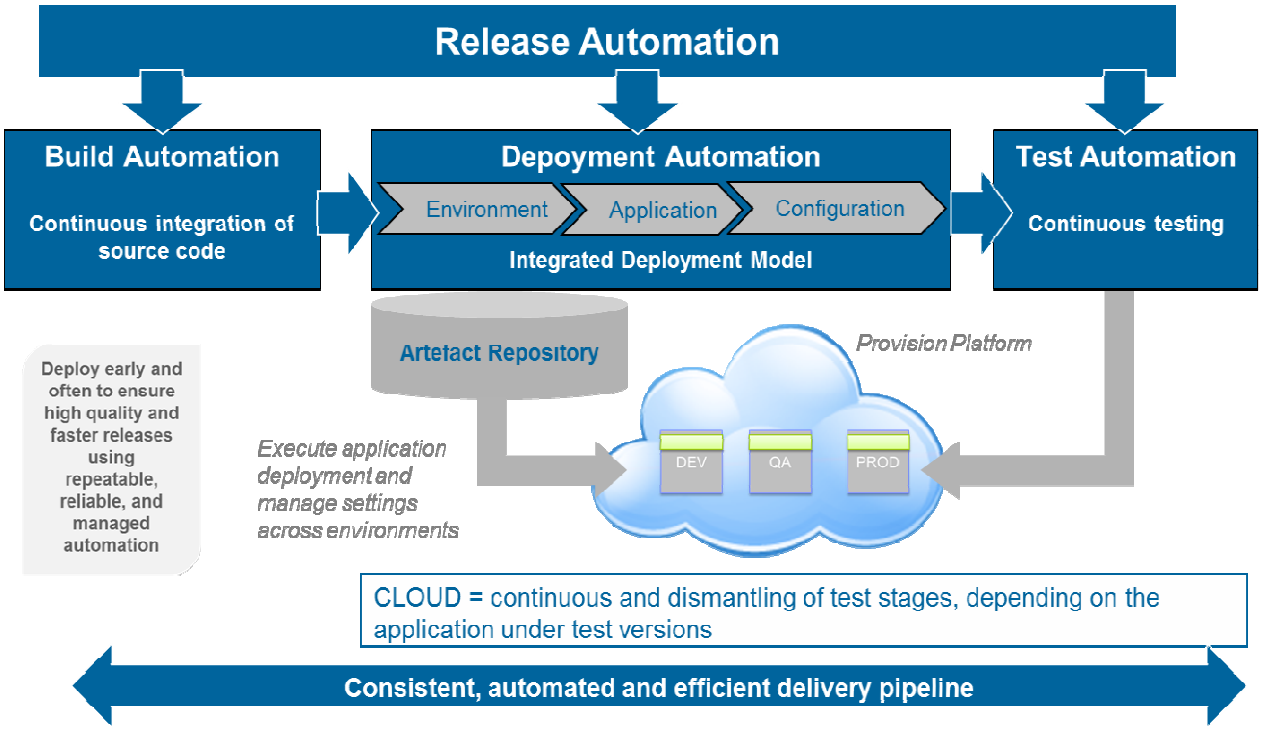
- **Both new development and migration** implies several activities that span from environment (infrastructure + middleware), configuration, applications code.

What is a Pattern? - The pre-defined architecture of an application in a **deployable form**, resulting in **repeatable deployment** with **full lifecycle management**



A “Continuous Delivery Pipeline” with Cloud

A seamless process flow for incremental and full stack application deployment automation and infrastructure provisioning

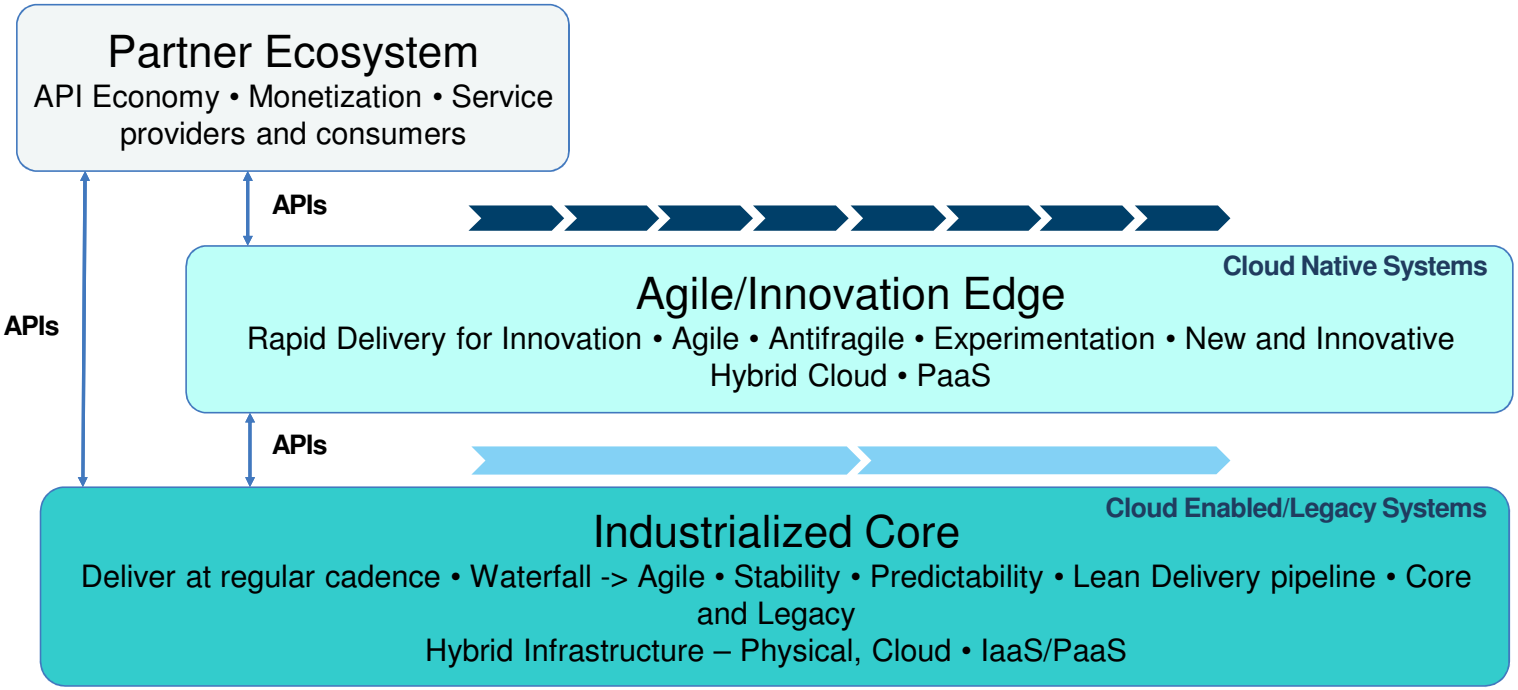


Building a DevOps Culture

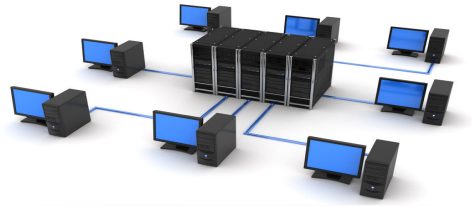
- Setup a DevOps ***Center of Excellence***
- ***Everyone*** is responsible for Delivery, including external Stakeholders
- Common Measures of Success

It's all about the people!

Adopting Multi-Speed IT



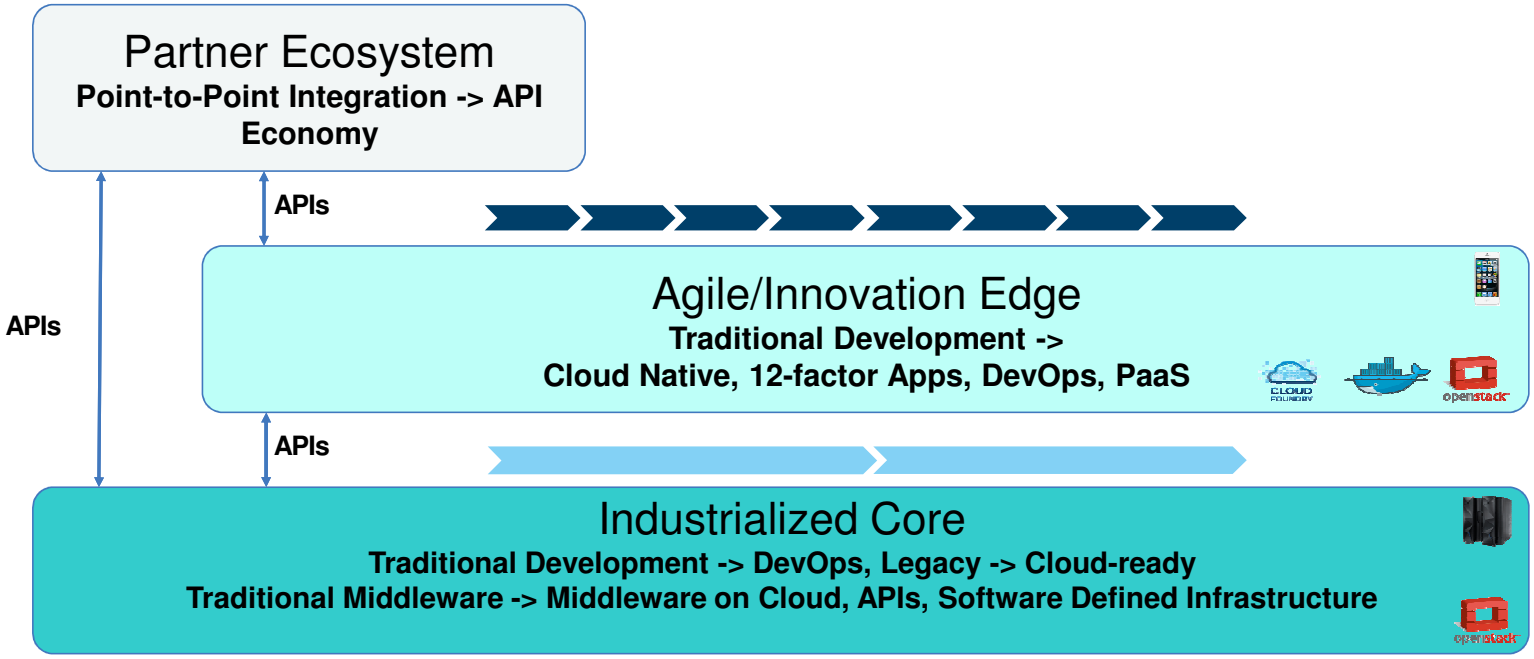
Differing Assumptions: Cloud Ready v Cloud Native



- Industrialized Core (Cloud Ready) Assumptions
  - The infrastructure provides my NFR's.
  - The infrastructure is stable.
  - The components of my application are co-located.
  - My ops team controls the production servers.
  - If a disaster happens, it's someone else's responsibility to fix it.
- Innovation Edge (Cloud Native) Assumptions
  - My application and my services provide my NFR's.
  - The infrastructure is constantly changing (elastic).
  - My application components may be globally distributed.
  - As a Dev/Ops team member I control the production servers.
  - If a disaster happens, it's my responsibility to make sure my app stays up.

Choosing one or the other has an effect on your team composition and roles

Adopting Multi-Speed IT World – Transformation



12 Factor App

https://www.ctl.io/blog/post/appfog-and-twelve-factor-apps-explained/

How can we create, run, and scale new applications quickly and easily?
How do we experiment, get to market faster, and reduce the cost of trying new things?

- The ***twelve-factor app*** is a methodology for building web apps or software-as-a-service apps that:
  - Use **declarative** formats for setup automation, to minimize time and cost for new developers joining the project;
  - Have a **clean contract** with the underlying operating system, offering **maximum portability** between execution environments;
  - Are suitable for **deployment** on modern **cloud platforms**, obviating the need for servers and systems administration;
  - **Minimize divergence** between development and production, enabling **continuous deployment** for maximum agility
  - And can **scale up** without significant changes to tooling, architecture, or development practices.
- The twelve-factor methodology can be applied to apps written in any programming language, and which use any combination of backing services (database, queue, memory cache, etc).

I. Codebase
One codebase tracked in revision control, many deploys

II. Dependencies
Explicitly declare and isolate dependencies

III. Config
Store config in the environment

IV. Backing Services
Treat backing services as attached resources

V. Build, release, run
Strictly separate build and run stages

VI. Processes
Execute the app as one or more stateless processes

VII. Port binding
Export services via port binding

VIII. Concurrency
Scale out via the process model

IX. Disposability
Maximize robustness with fast startup and graceful shutdown

X. Dev/prod parity
Keep development, staging, and production as similar as possible

XI. Logs
Treat logs as event streams

XII. Admin processes
Run admin/management tasks as one-off processes

Stateless and Share-nothing

Stateless apps are designed to withstand failure of underlying hardware components. This is a fact of life in cloud (regardless of the provider you are using).

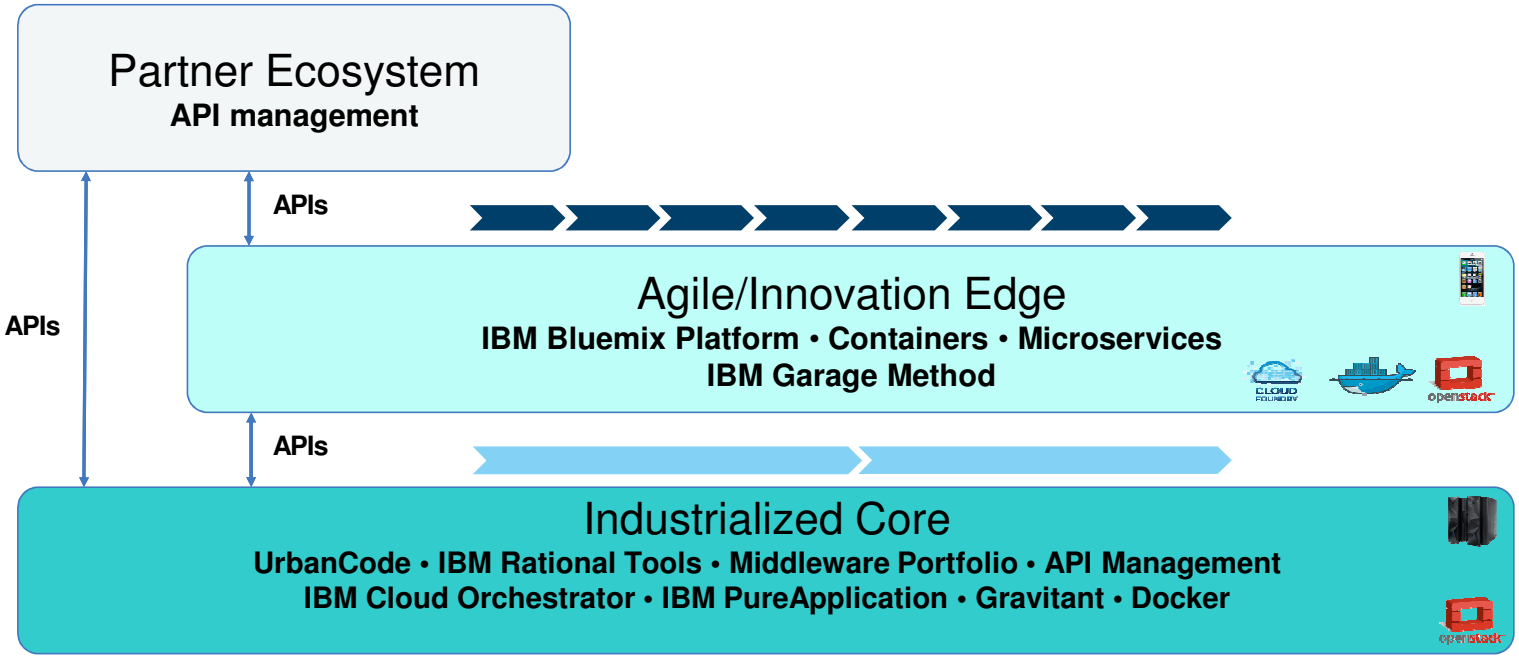
- Each application component must be deployed across redundant cloud components
- Each application component must make no assumptions about the underlying infrastructure
- The state of your system is completely defined by your databases and shared storage, and not by each individual running application instance
- Avoiding failure with Test-driven development, Continuous integration, Continuous Deployment

Execute the app as one or more stateless processes

The app is executed in the execution environment as one or more processes

Twelve-factor processes are stateless and share-nothing. Any data that needs to persist must be stored in a stateful backing service, typically a database.

Adopting Multi-Speed IT– Implementation



DevOps and UrbanCode Deploy with Patterns

✓ **Continuous delivery of applications in the cloud**

Automation the continuous delivery of applications and support scaling of your application's growth. Make it easier to deploy EVERY build by making applications and environments elastic

✓ **Full Stack Environment Design and Provisioning**

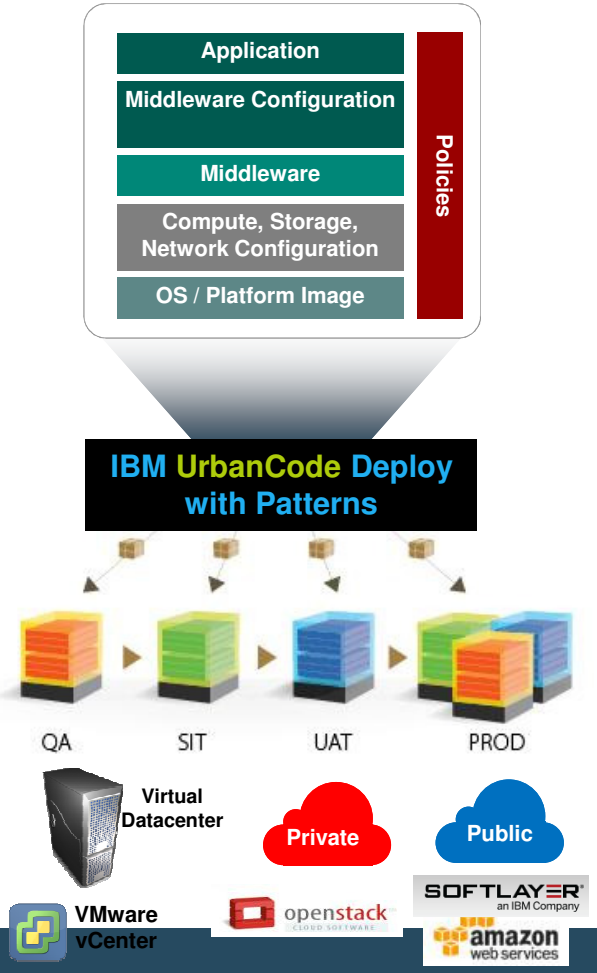
Design complete environment patterns that include applications, infrastructure and middleware. Design and deploy immediately

✓ **Portability to heterogeneous clouds**

Update your running environment in-place. Work across multiple clouds including Softlayer, AWS, Openstack, and VMWare.

✓ **Hybrid clouds: SaaS or on-premises**

Supports automation delivery to different cloud providers and to on-premise. Cloud agnostic environment patterns.



Hybrid Cloud Deployments through a Single Point of Control

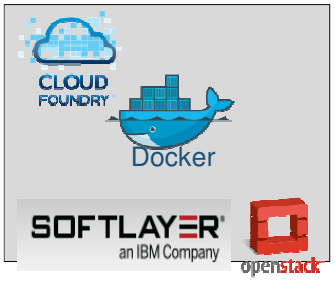
Manage application deployment across dev, test, and production spanning multiple clouds

UrbanCode Deploy

Key Points:

- Enable full stack deployments (OS, patterns and applications) across hybrid cloud applications
- Establish common toolchain framework with plug points to support continuous delivery

IBM **Bluemix**



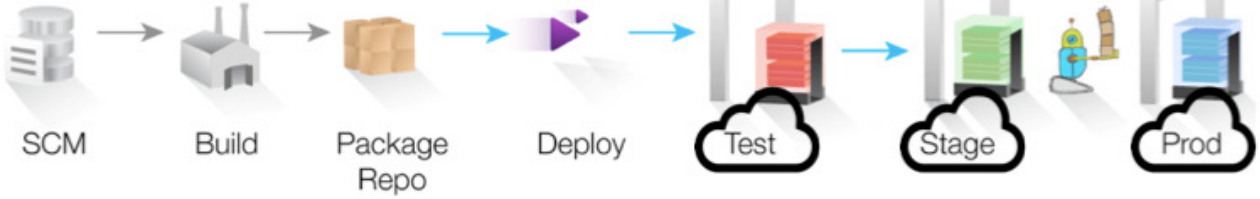
IBM Dev-Test Environment as a Service (IDTES)

IBM PureApplication System

IBM Cloud Orchestrator

On-prem Traditional IT

UrbanCode Release

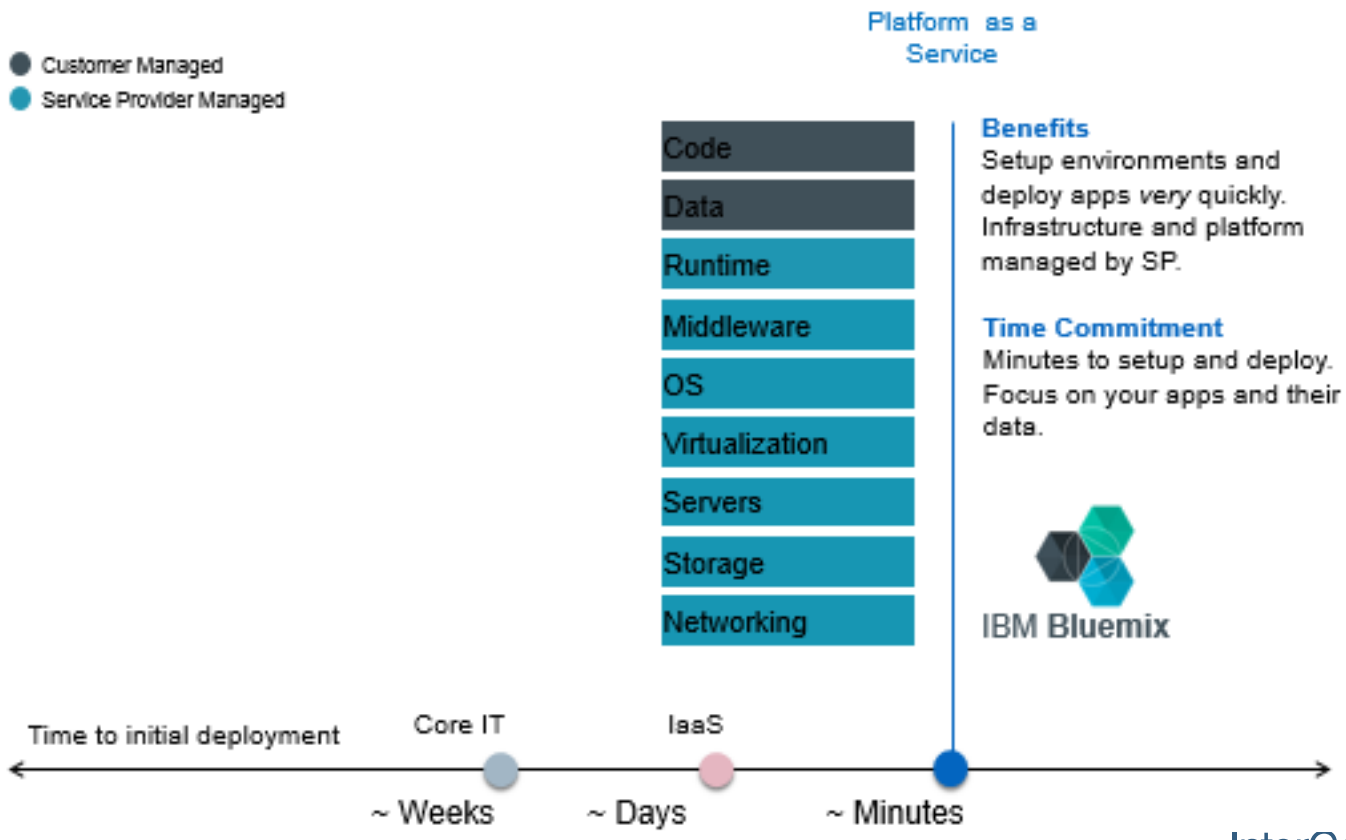


Questions?


KEEP
CALM
AND
DELIVER
CONTINUOUSLY
© 2014 KeepCalmStudio.com

Timing is critical …

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



What is Bluemix? IBM's Cloud Platform

Build, run, scale, manage, integrate & secure applications in the cloud

Developer experience

- Rapidly deploy and scale applications in any language.
- Compose applications quickly with useful APIs and services and avoid tedious backend config.
- Realize fast time-to-value with simplicity, flexibility and clear documentation.

Built on a foundation of open technology.

Enterprise capability

- Securely integrate with existing on-prem data and systems.
- Choose from flexible deployment models.
- Manage the full application lifecycle with DevOps.
- Develop and deploy on a platform built on a foundation of open technology.

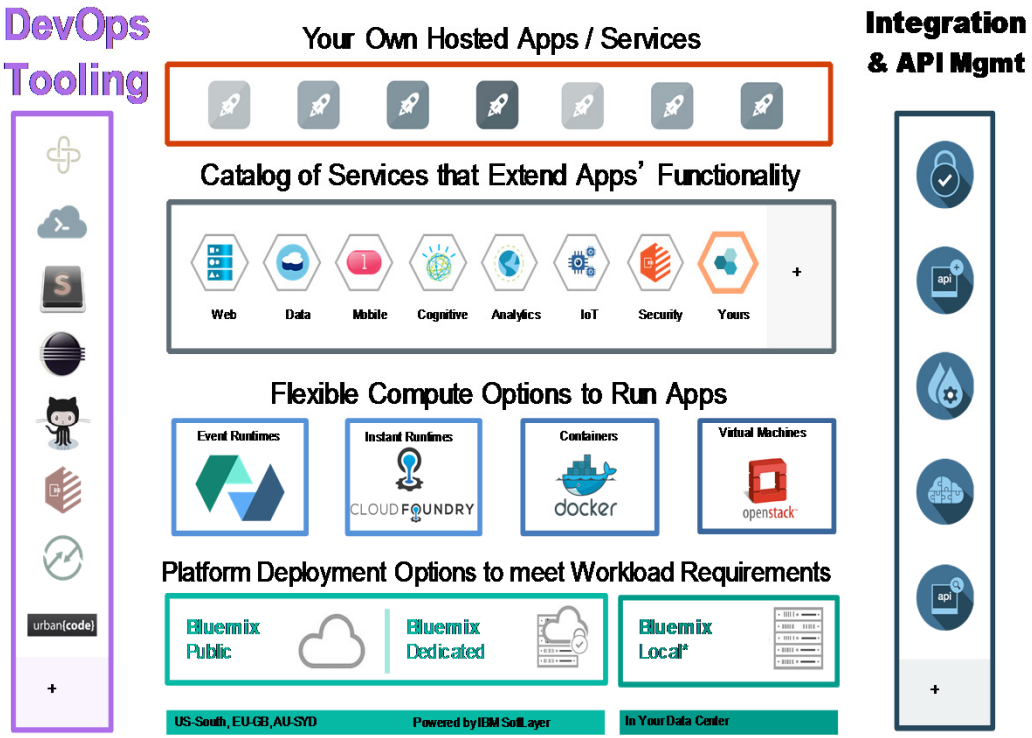
Bluemix service categories

- Network
- Storage
- Data & Analytics
- Watson
- Integrate
- DevOps
- Security
- Application Services
- Mobile
- Internet of Things

Bluemix architecture

Bluemix is built on 4 key open compute technologies: **OpenWhisk, Cloud Foundry**, **Docker**, and **OpenStack**, and delivered by 3 deployment options: **Public, Dedicated** and **Local**.

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



Bluemix deployment models

Public

Tap into over 100 IBM and 3rd party services across mobile, IoT, Watson and more to power your modern apps and services.

Dedicated

Experience an unmatched combination of security and time to value in a cloud that feels like a natural extension of your existing network.

Local

Take advantage of the true value of cloud behind your firewall with the help of our first-of-its-kind approach to private cloud delivery.

A powerful set of hybrid deployment models

Across public, dedicated and local cloud, has the same look and feel

Key experiences unify the platform deployments

Run your apps in seconds

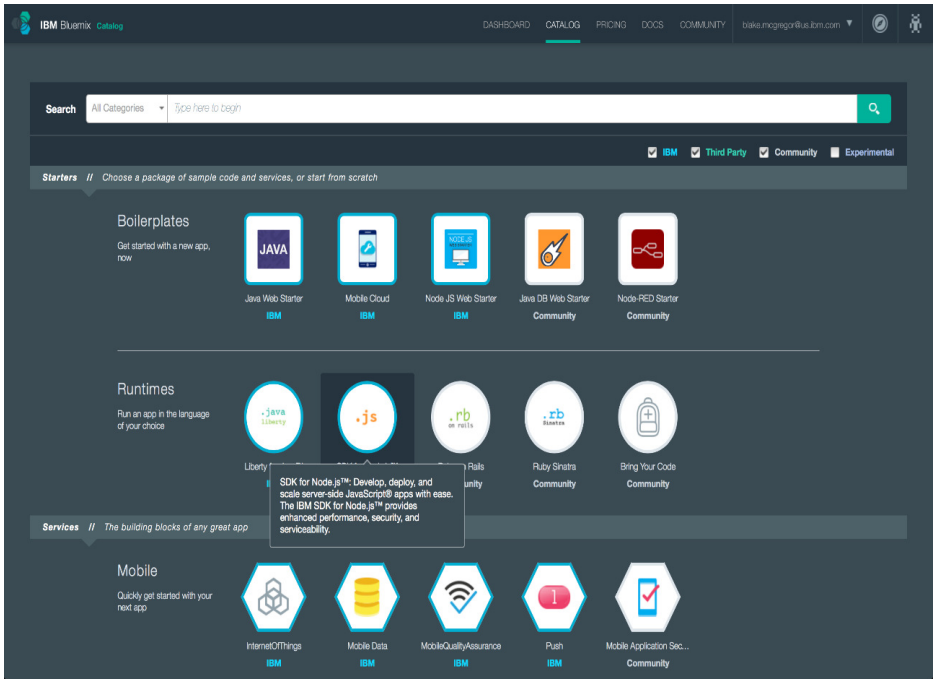
Zero to production in one command. Setup made simple.

No VM or middleware setup

- Provision runtimes in seconds
- Auto and manual scaling options

Multiple language support

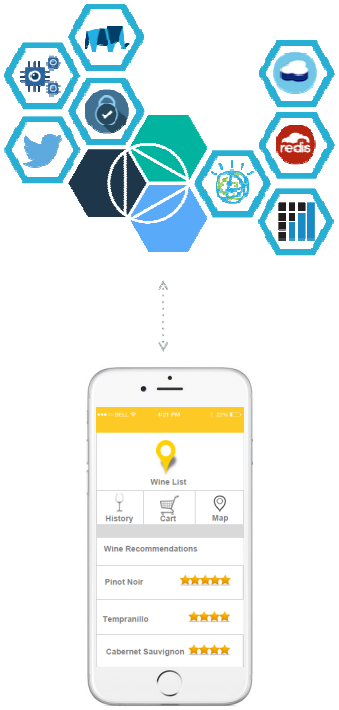
- Java Liberty, JavaScript, and Ruby provided
- Bring any language from the community



To really disrupt … focus on building differentiation and rent the rest

Like a DJ meshes up on his Mixer, Dev's can quickly compose apps using Bluemix and increase engagement in areas like:

Analytics, cognitive computing
Mobile, location
Internet of Things
Social engagement
Identity
API



Thank you

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