

PureSystems

Changing the economics
and experience of IT



PureApplication System and Patterns

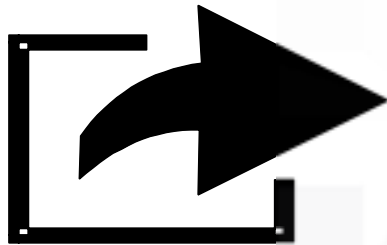
Jason R McGee – IBM Fellow, CTO Cloud And PureApplication System

03/08/2014

Market shifts are changing business and IT



Application cycle time is shrinking



Data is emerging as the world's newest resource



Cloud is the new delivery model



Increasing the need for
Speed

- Very short cycle times
- Rapid iteration
- Real-time access
- Faster insight
- Immediate context
- Rapid scaling for unpredictable demand and large volume

Reducing lifecycle time, cost and risk



General Purpose Components Typical IT Project Time and Budget

Phase	Time (days)
Specify/design	73 - 96
Procure	57 - 112
Implement	74 - 93
Configure/test	74 - 80
Cluster & HA	66 - 104
Backup	44 - 108
Tune	89 - 98
Management	67 - 110

From a commissioned study conducted by Forrester Consulting on behalf of IBM

Custom Built System

PureSystems

- Pre-integrated, pre-tested, ready to run
- Up and running in hours
- Rapid application and data deployment
- Rapid dev/test environment replication
- Dynamic scaling
- Automatic failover and high availability
- Fully integrated management
- Single support number
- System level updates and upgrades
- Simplified problem determination

Expert integrated systems change the economics and experience of IT



PureSystems

Systems with integrated expertise and built for cloud

Built-in Expertise
Capturing and automating what experts do

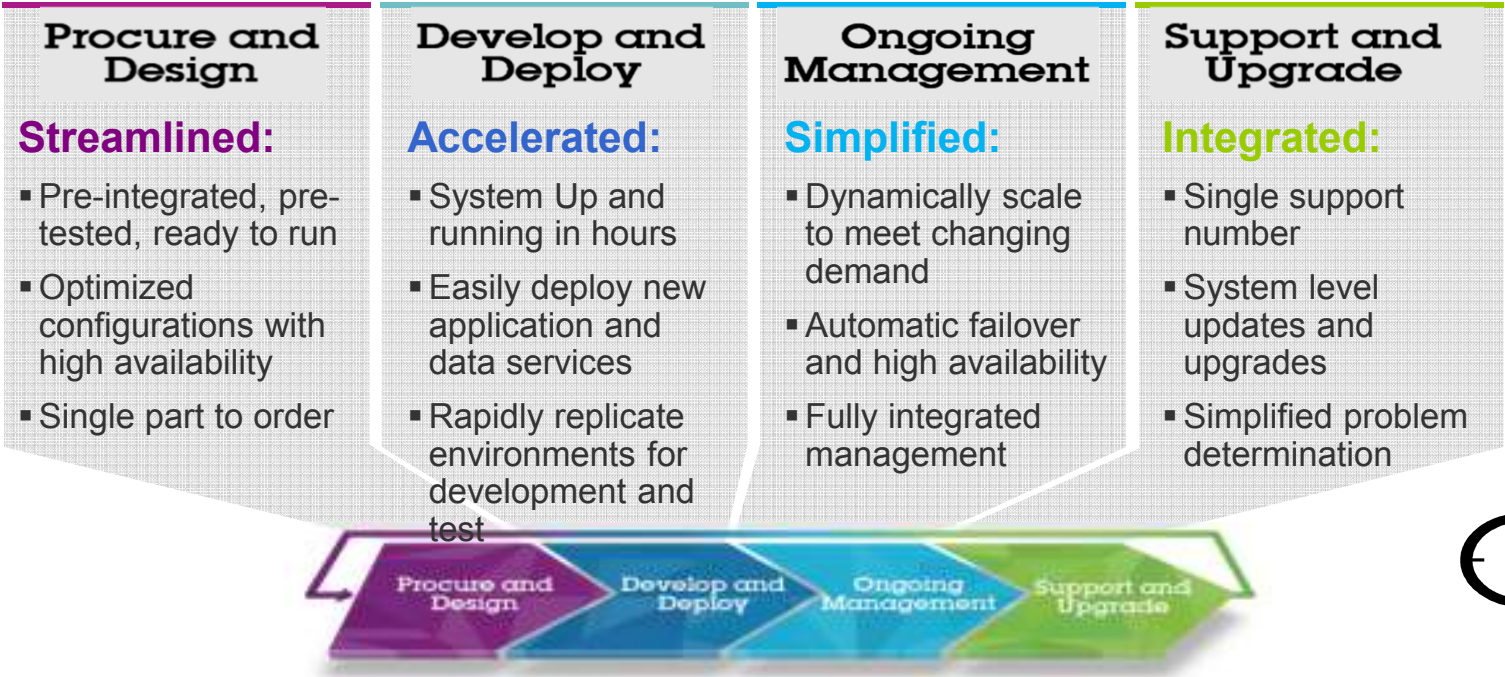


Integration by Design
Deeply integrating and tuning hardware and software

Simplified Experience
Making every part of the IT lifecycle easier



PureSystems simplify each phase of the systems lifecycle



Reducing:

- Time
- Cost
- Risk



The IBM PureSystems family



Expert
Integrated
Systems

*Flexible
Infrastructure*



PureFlex

*Optimized Application
System*



PureApplication

*Dedicated Big Data
Systems*



PureData

Technology
Building Blocks

Flex System



Advanced Blade Technology

Quick Review of PureApplication System



Install, Config, Tune:

Up and running in **less than 4 hours**¹

Deploy:

Deploy a 3-tier web application in under **15 minutes**² and automatically scale in **minutes**³

PureApplication



Application Platform

Delivering Platform Services

Manage:

Concurrent management of **1000+ VM's** on a single W1500-608 system⁴

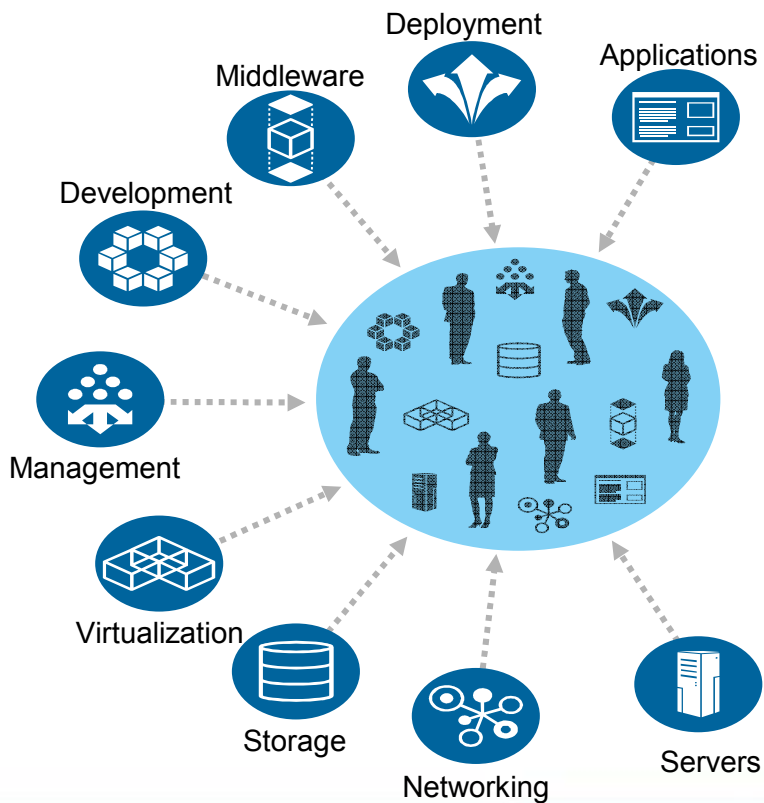
Optimize:

Up to **60% better price/performance**⁵ running typical web and DB applications (over a competitor's configuration)

Automatic throughput improvement of **up to 2.3X** for data intensive applications⁶

* 1,4,6 Based on internal testing of IBM PureApplication System W1500-96. *2, 3 Based on internal testing IBM PureApplication System W1500-192 deploying a single Virtual Application Pattern. *5 Based on Internal testing IBM PureApplication System W1500-96 compared to results of testing of competitors configuration.

IBM PureApplication System integration by design



Optimizes the complete solution stack:

- All hardware and software components factory integrated and optimized
- Virtualized across the stack for efficiency
- Unified management, monitoring & maintenance
- Integrated and elastic application and data runtimes
- Application patterns allocate system and application resources for optimal performance, security and reliability

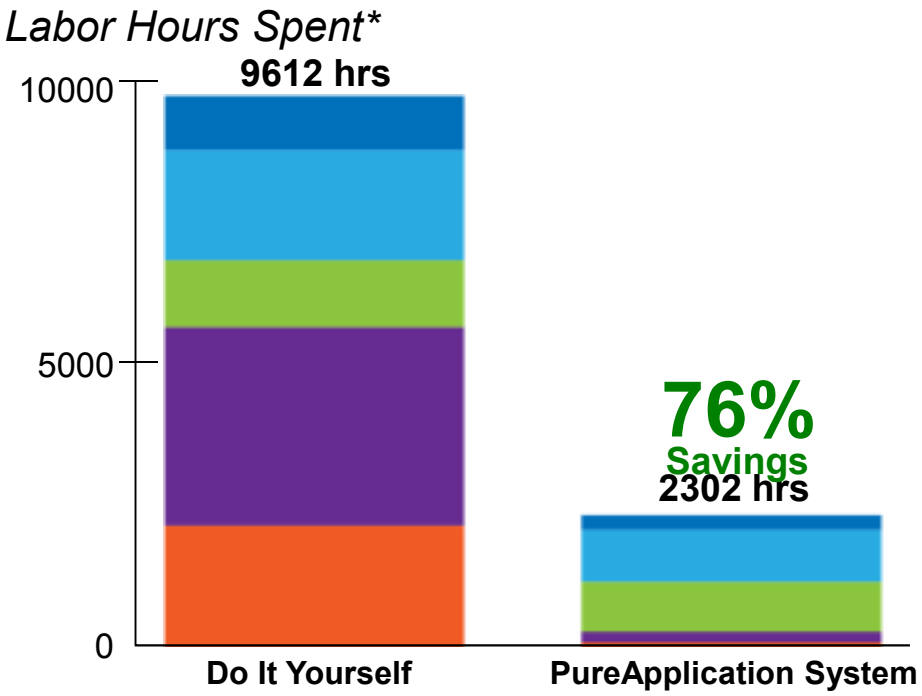
IBM PureApplication System simplified experience



New client experience:

- Single product streamlines ordering, tracking, receiving, installing and running
- Factory installed, fully packaged solutions drive simple setup (pull it out of the box, plug it in and boot it up)
- Management integration across system
- Single point of contact for support
- Upgrade with zero downtime based on integrated patches and system design
- PureSystems Centre – an online catalog of applications and patterns.
- A broad open ecosystem of optimized solutions

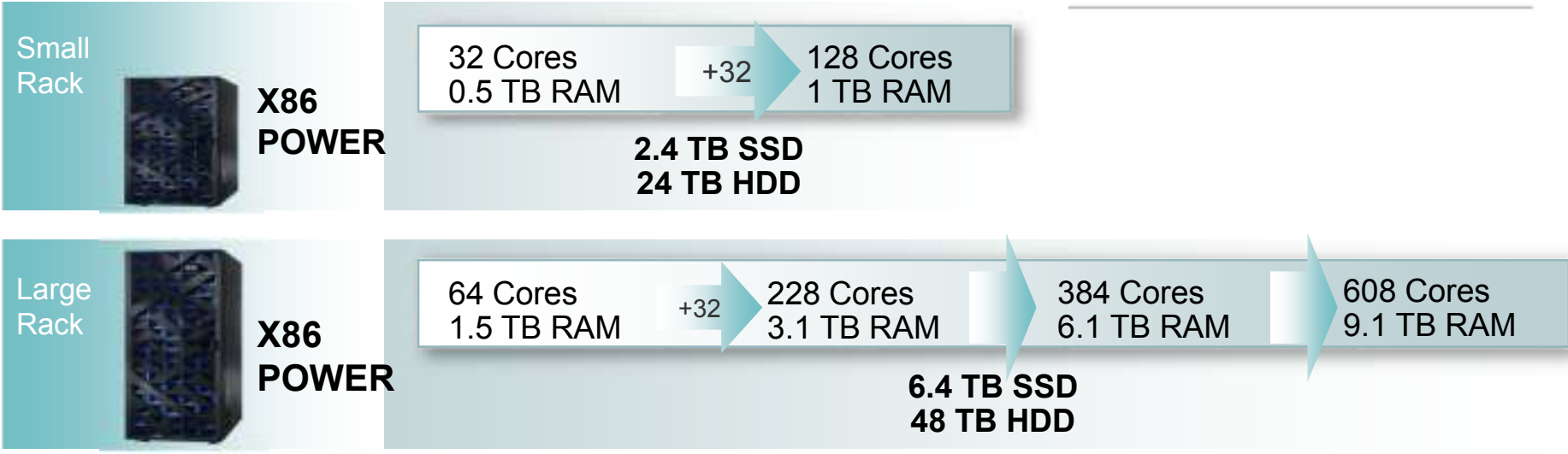
IBM PureApplication System provides savings across the IT lifecycle



- Deployment**
 - Fully assembled and configured
 - Pre-installed management software
 - Fast pattern-based deployment
- Incident/capacity management**
 - Centrally monitor and resolve issues
 - Automatic scaling
- Asset management**
 - Track license usage of products
- Security management**
 - Centralized access control
- Change management**
 - Visibility into relationships of virtual images in a workload
 - Automatically apply changes to desired virtual servers



PureApplication System Configurations



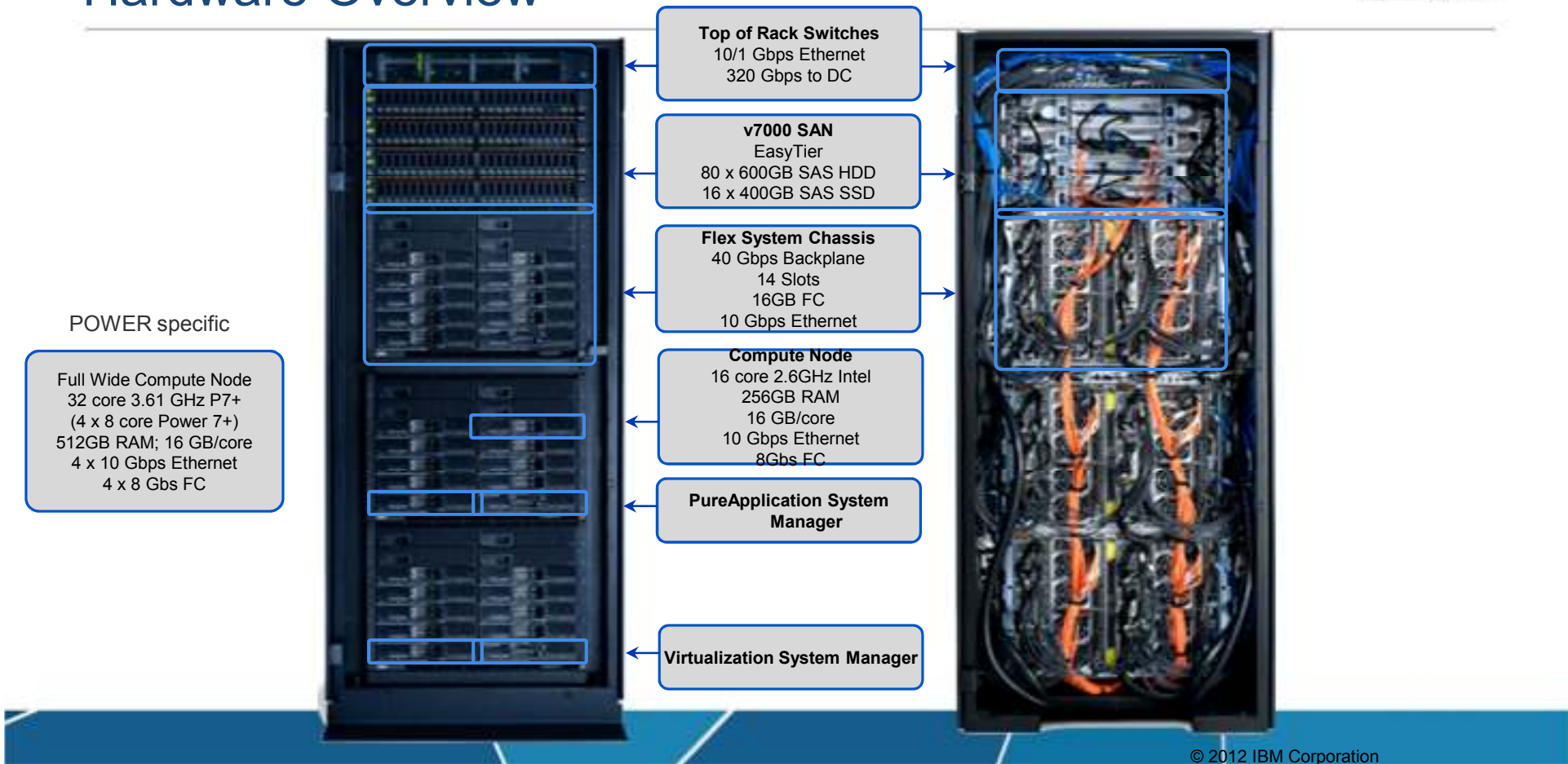
All configurations include:

- Rack, Chassis, PDUs
- Networking (Top of Rack, Chassis & Fibre)
- Pre-integrated software entitled for full capacity of configuration: OS, Hypervisor, application server, database, Java runtime, cloud provisioning, management and full stack monitoring

Upgrade configurations **without taking an outage**



Hardware Overview



Built-in Expertise: Hardware High Availability



- **Management Nodes**
 - Both run in active-passive mode, when a failure occurs the IP address is assigned to the new active one
- **Network Controllers**
 - Switches and cabling are redundant (2 of each).
 - Failure of 1 leads to reduced bandwidth, not service
- **Storage Controllers**
 - All storage volumes are accessible from each controller
 - If one fails, the other handles all I/O
- **Storage**
 - SSD storage is configured in RAID 5 array + spares
 - HDD storage is configured in RAID 5 array + spares
- **Compute Nodes (ITE)**
 - Management system will route around failed DIMMs or cores yielding reduced capacity (server rebalance)
 - If entire node fails, VMs can be moved elsewhere (workload evacuation)





- Legend**
- all
 - CPU utilization
 - Memory utilization
 - Storage utilization
 - Network utilization
 - Virtual machines
 - Volumes
 - Power consumption

- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Virtualization System Manager
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Virtualization System Manager



- Top of Rack System
- Top of Rack System
- Storage Node Expansion
- Storage Node
- Storage Node Expansion
- Storage Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Virtualization System Manager
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Compute Node
- Virtualization System Manager

Compute nodes/014-23A/PPT1

Summary

Status:	Available
Machine type:	8737
Serial number:	014-23A/PPT1
Architecture:	AC1
Hardware level:	1A00211 - 01/24/2012 - 1.30-1773
Service processor level:	N/A
Unified extensible firmware interface level:	820111PUS - 03/23/2012 - 1.00
In client group:	
Health status:	
Successful deploy number:	0
Virtual machines:	0
VMU value:	0

Overview

Critical:
Warning:
Information:
CPU utilization: [object Object]
Memory utilization: [object Object]

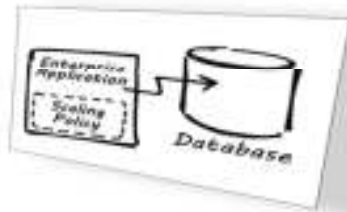
Power consumption:
Event:
Lockdown:
Fault:

Charts

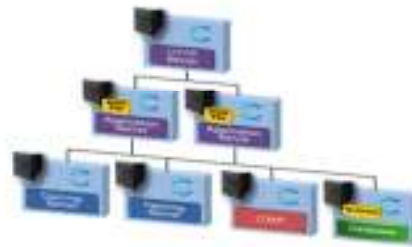
Driving built-in expertise with IBM's patterns of expertise



What the business wants...



What's required...



What a pattern automates...



Patterns include:

- Application topology
- Pre-integrated across components
- Pre-configured & tuned
- Pre-configured monitoring & security
- Pre-installed on an operating system
- Lifecycle Management



- Expertise
- Repeatability
- Simplicity
- Agility
- Governance
- Elasticity
- Efficiency



IBM PureApplication System - Virtual Application Builder



Diagram | List View | Source | Sample Java EE Web application * | Pattern Type: Web Application Pattern Type 2.0

Save | Save As | Layout | Undo | Redo | Hints

- Assets
- Application Components
 - Additional archive file
 - Enterprise Application
 - Existing Web Service Provider Endpoint
 - Policy set
 - Web Application
 - Database Components
 - Data Studio web console
 - Database
 - Existing Database
 - Existing Database
 - Existing Database
 - Existing IMS Database
 - Messaging Components
 - OSGI Components
- Layers



Maximum transaction timeout (seconds):

Interim fixes URL:
Click select button to update

Select

Ignore inapplicable ifx updates:

Maximum Session Count:

Scaling Policy

Enable session caching:

Maximum Session Cache Grid Size:
UNCAPPED

Scaling Type

Response Time Based

Scaling in and out when Web response time is out of threshold range(ms):

0 10000

Range: 1000 - 2036

* Instance number range of scaling in/out:

1 60

Range: 2 - 10

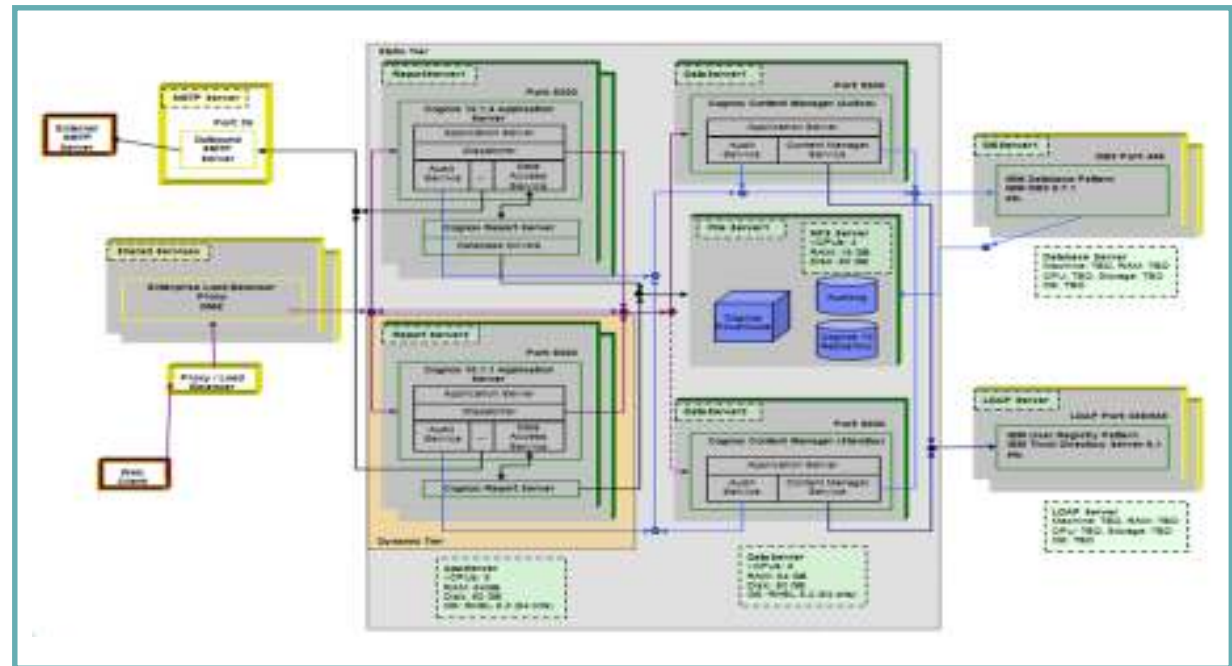
* Minimum time (seconds) to trigger add or remove:

300

IBM Business Intelligence Pattern



< 30 minutes
0 Errors



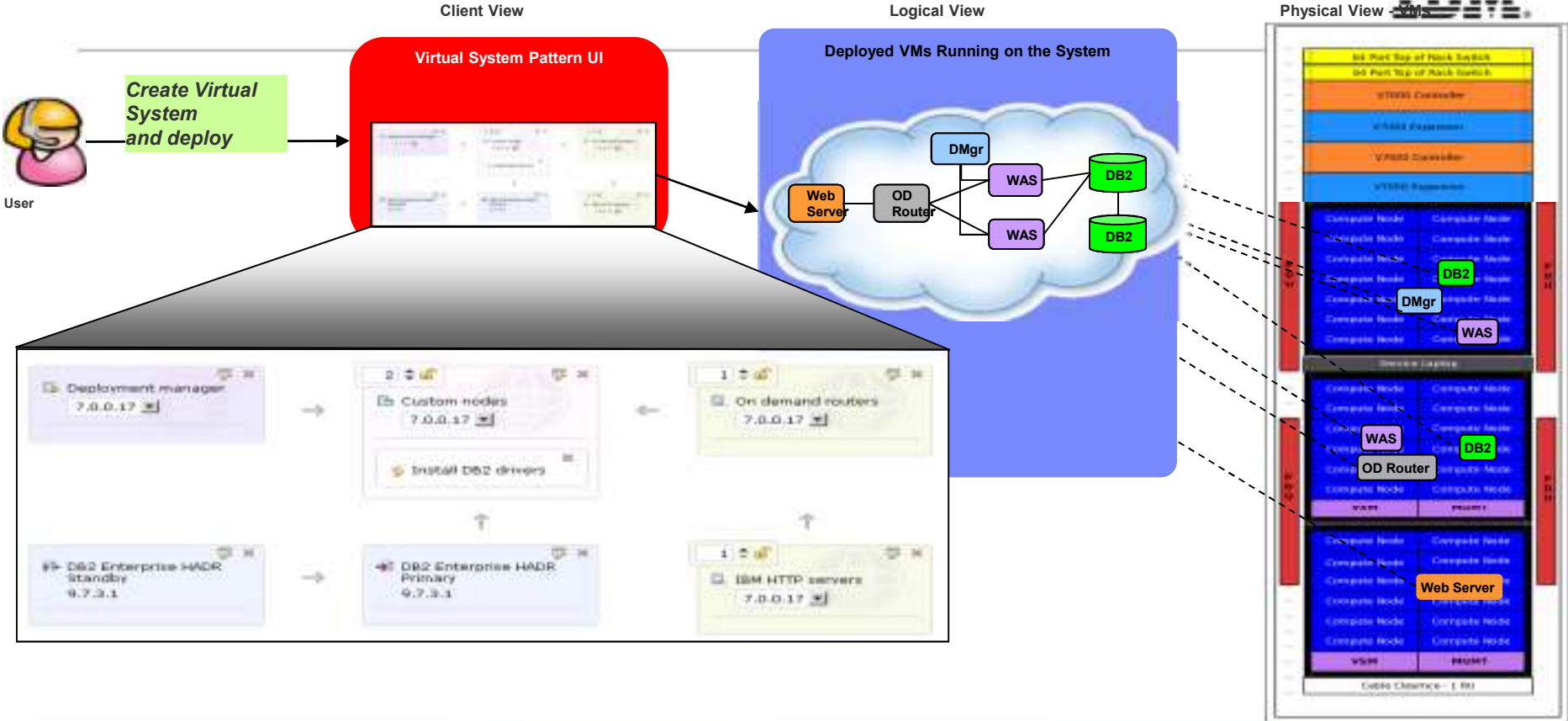
2 to 3 weeks
250+ opportunities for errors

WebSphere Application Server Pattern



The screenshot displays the IBM PureScale Application System System Console interface. At the top, the navigation bar includes 'Welcome', 'Instances', 'Patterns', 'Catalog', 'Reports', and 'Cloud'. The main content area is titled 'Pattern Editor' and shows the configuration for a pattern named 'jbohn DayTrader raf and DB'. The pattern is described as 'Deploys to ESX hypervisors' and was last updated on Oct 7, 2011 2:25:58 PM. The configuration is visualized as a flow diagram with three main components: 'Deployment manager' (version 7.0.0.17), 'Custom nodes' (version 7.0.0.17), and 'IBM HTTP servers' (version 7.0.0.17). The 'Deployment manager' component includes sub-components for 'Cluster configuration', 'RAPW Integration Script', 'iwd_VMCompliance', and 'Create DB2 Data Source to a standalone DB2 Enterprise server'. The 'Custom nodes' component includes 'JVM tuning' and 'iwd_VMCompliance'. The 'IBM HTTP servers' component includes 'iwd_VMCompliance'. A 'Database' component (version 7.0.0.2) is also visible at the bottom. On the left side, a list of parts and scripts is shown, including 'Add IBM HTTP Server node', 'certwTest1', 'certwTest2', and various 'Create DB2 Data Source' and 'Create Servers' scripts. The IBM logo is visible in the bottom right corner of the console interface.

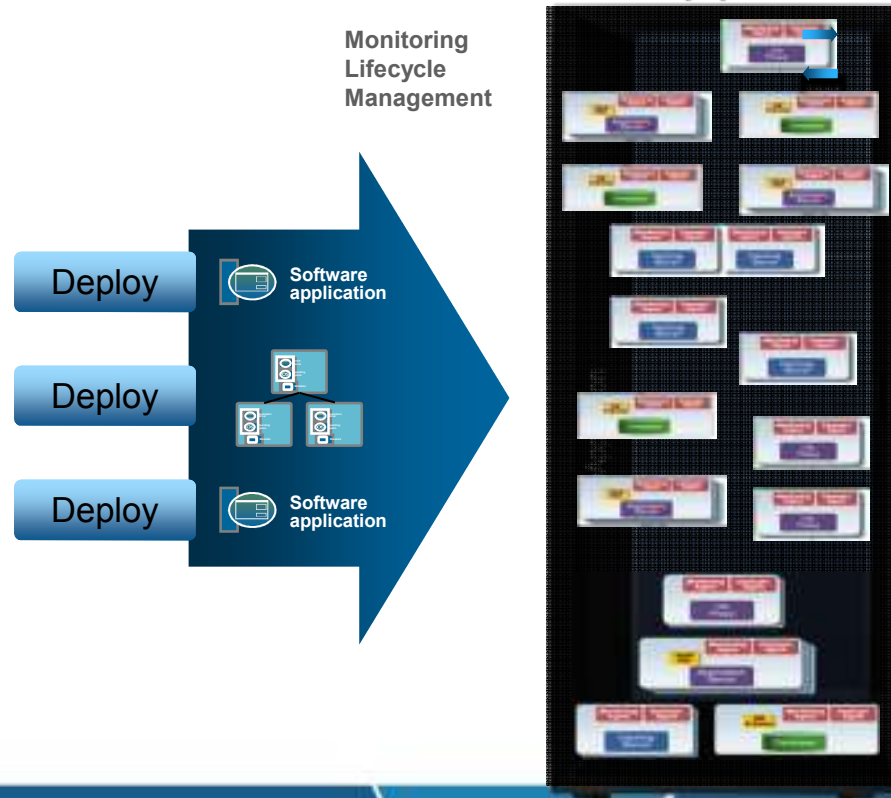
Pattern Deployment



Continuous application level optimization and management



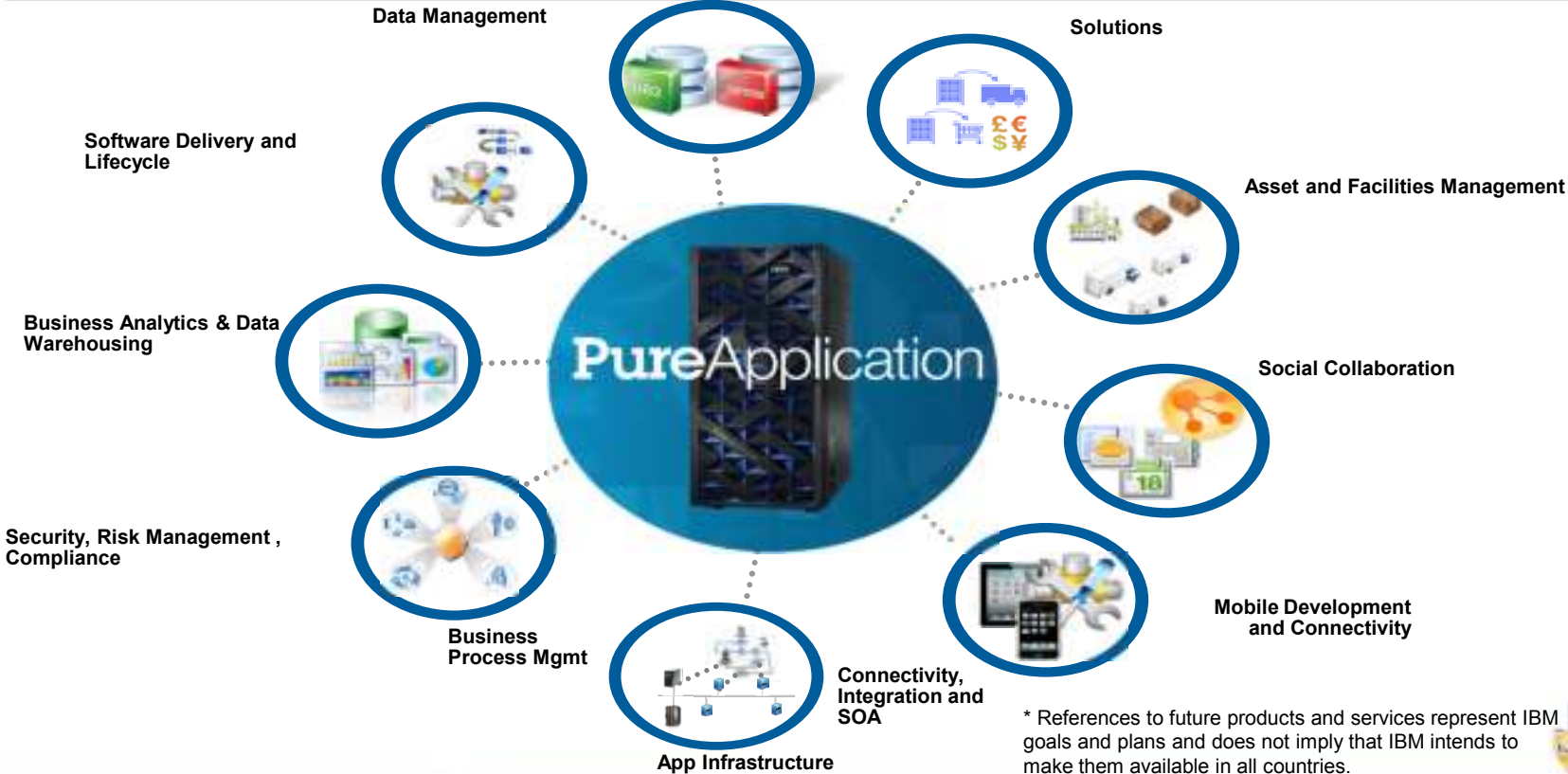
PureApplication



• Application Optimization

- Policy-based placement
- Application level prioritization
- Dynamic scaling of applications and VM resources
- High Availability of applications and individual VMs
- Mobility of VMs for performance, management and maintenance
- Performance optimization
- Application level isolation
- System, Application and VM level monitoring

IBM Patterns of Expertise Optimize Leading Software Capabilities



* References to future products and services represent IBM goals and plans and does not imply that IBM intends to make them available in all countries.



IBM Software Patterns for PureApplication System



Pre-Entitled

- Web Application Pattern (1.0, 2.0)
- IBM Transactional Database Pattern 1.1
- IBM DataMart Pattern 1.1
- IBM Application Pattern for Java 1.0
- WebSphere App Server HV (7.0, 8.0, 8.5)
- DB2 Enterprise Server Edition (9.7 FP5, V10.1)

Separately Purchased

- Messaging Extension for Web App Pattern 2.0
- Business Intelligence 1.0
- WebSphere Message Broker 8.0
- WebSphere MQ 7.5
- WebSphere Portal Server 8.0
- Web Content Management 8.0
- IBM Business Process Manager 8.0.1
- IBM Operational Decision Manager 8.0.1
- WebSphere Transformation Extender Launcher 8.4
- SOA Policy 2.0
- SOA Policy Gateway 2.0
- Informix 11.7
- IBM Connections 4.0
- InfoSphere Information Server 9.1

Separately Purchased (Except where noted)

1Q2013 Patterns

- IBM Mobile Application Platform 5.0.6
- IBM Mixed Language Application Modernization Pattern 1.0 (Runtime pre-entitled, Extensions separate purchase)
- Maximo Asset Management 7.5
- IBM Datapower XG45 and IBM DataPower XI52 V5.0
- InfoSphere Information Server 9.1 Compute Node Pattern

2Q2013 Patterns

- Business Intelligence 2.0
- IBM Business Process Manager 8.5
- IBM Operational Decision Manager 8.5
- IBM Mobile Application Platform 6.0
- IBM Datapower XG45 and IBM DataPower XI52 V6.0
- IBM API Management 2.0
- IBM Cast Iron 6.4
- WebSphere Commerce Pattern 1.0 (for WC Enterprise 7.0)
- WebSphere Transformation Extender Launcher 8.4.1
- WebSphere Application Server 8.5.5 (pre-entitled)
- IBM Integration Bus 9.0
- Microsoft Sharepoint V2010 SP1
- Microsoft SQL Server V2008 R2
- IBM Encryption Pattern for Guardium Encryption Expert
- IBM Software Delivery and LifeCycle Patterns
 - Collaborative Lifecycle Mgmt 4.0.2
 - Rational Application Developer 8.5

IBM BPM Virtual Application Pattern 8.5



- New application pattern model from application centric abstraction, from pattern types & plug-ins.
- Policy-based scaling management.
- Provision process server from process center with governance process for analysis and deployment planning.
- Pattern integration with other capabilities (reuse DBaaS, LDAP components).

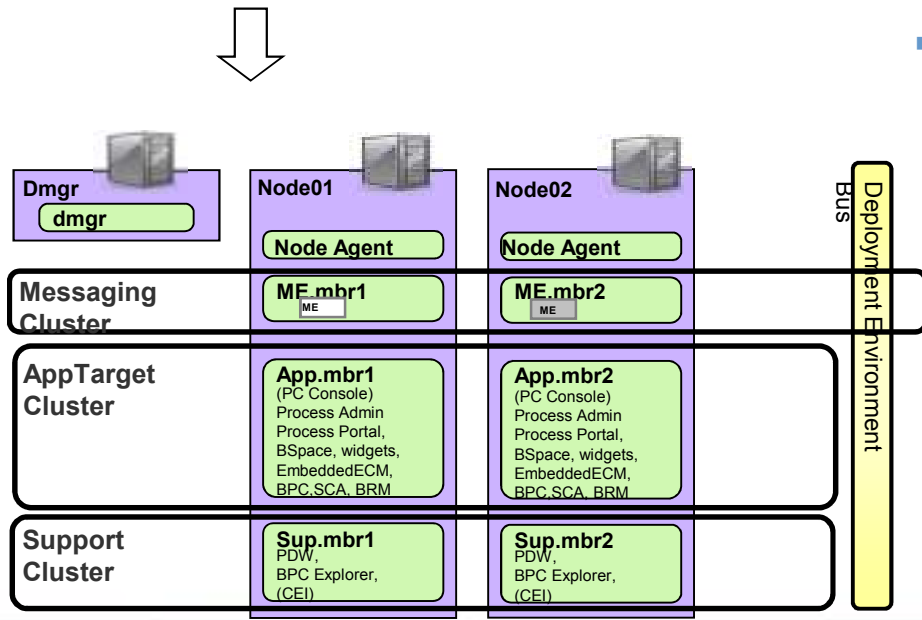
The screenshot displays the configuration interface for the IBM BPM Virtual Application Pattern 8.5. It is organized into several sections:

- Pattern Types:** A search bar contains the text "BPM". Below it, a list shows "BPM Pattern Type 8.5" and "BPM Pattern Type 8.5.0.0", each with a green checkmark icon.
- System Plug-ins:** A search bar contains "Search...". Below it, a list shows "BPM Pattern Type 8.5.0.0" and "bpm.app 8.5.0.0", both with green checkmark icons.
- Components:** A list of components with expandable icons (plus signs) to their left:
 - Process Application
 - Process Center
 - BPM Database
 - External BPM Database
 - Existing Process Center
 - Link from Process Application to Process Center
 - Link from Process Application to Existing Process Center
 - Link from BPM component to remote user registry
 - Scaling Policy

BPM Pattern and Clustered Topology



- CELLDB (cell)**
AppSched, Meds, Rels
- CMNDB (DE)**
FEM, ES
- MEDB**
1 set of ME tables
- BPMDB**
Process Server, EmbeddedECM
- PDWDB**
PDW
- BPEDB**
BPC
- BSPACE**
BSpace



- Build-in best recommended topology in the patterns
- 3-clustered topology
 - Application cluster
 - Messaging cluster
 - Support cluster

IBM Web Experience Patterns for WebSphere Portal Server and Web Content Manager 8.0

Features/Business Value

- Enables delivery of engaging web content and applications in an integrated, differentiated and personalized web experience
- **New** installation patterns / script packages based on expert practices to further automate setup of simple to complex web experience deployments..
- **New** script package automates configuration of Connections 4.0 Files and Profiles to Web Experience Pattern deployments
- Enables organizations to achieve superior IT economics in cloud environments
- Gives LOB managers flexibility and speed to support a dynamic portfolio across multiple web properties

Client Benefits

- Reduces configuration and deployment time from 1-3 weeks to only 30 minutes, accelerating availability of new web experience solutions for lower cost
- Reduces configuration and deployment errors allowing your team to focus on value add solutions



30 minutes to deploy
30% error reduction

Deploy Web Experience Virtual
System Pattern using
PureApplication System

IBM Business Intelligence Pattern 1.0



Features/Business Value

- Uses proven practices for deploying optimized BI environments
- Automated installation and configuration of components to help minimize cost of installation, configuration, testing and tuning of hardware and software components
- Elastic scaling that enables you to maintain minimal resource allocation during low utilization times and to increase capacity as usage demands increase
- Single management interface for configuration, software updates, access to logs and monitoring system resources
- Automated recovery of failed environments to provide high availability

Client Benefits

- Faster time to value → From weeks to minutes
- Scalability → Automated based on workload
- Lower cost of ownership → Single pane of glass for monitoring and updates
- Repeatability → Templates allow for consistency across deployments



*Quickly deploy and manage your
Cognos Business Intelligence
environment in a private cloud*

IBM Mobile Application Platform Pattern



Features/Business Value

- Accelerate deployment of a mobile application infrastructure with rich integrations to back-office systems and advanced security capabilities
- Speed time-to-value by reducing the time and in-house expertise needed to deploy and manage your mobile application operating environment
- Leverage built-in virtualization capabilities and scaling policies to improve the performance and availability of your mobile applications



Client Benefits

- Speed time-to-value
- Streamline server deployment
- Focus on building app vs. managing infrastructure

Quickly build, manage and secure mobile applications by extending your existing investments in skills, data, and IT infrastructure.



Mobile Pattern Demo

PureApplication System enables optimized solutions...out of the box!



Smarter Process (BPM)



Jumpstart your Smarter Process solution with significant savings leveraging optimized BPM solution

Business Analytics



A complete Cognos BI pattern deployed in 22 minutes versus 2 weeks while avoiding more than 250 opportunities for errors

Mobile, DevOps, Commerce, Portal, etc

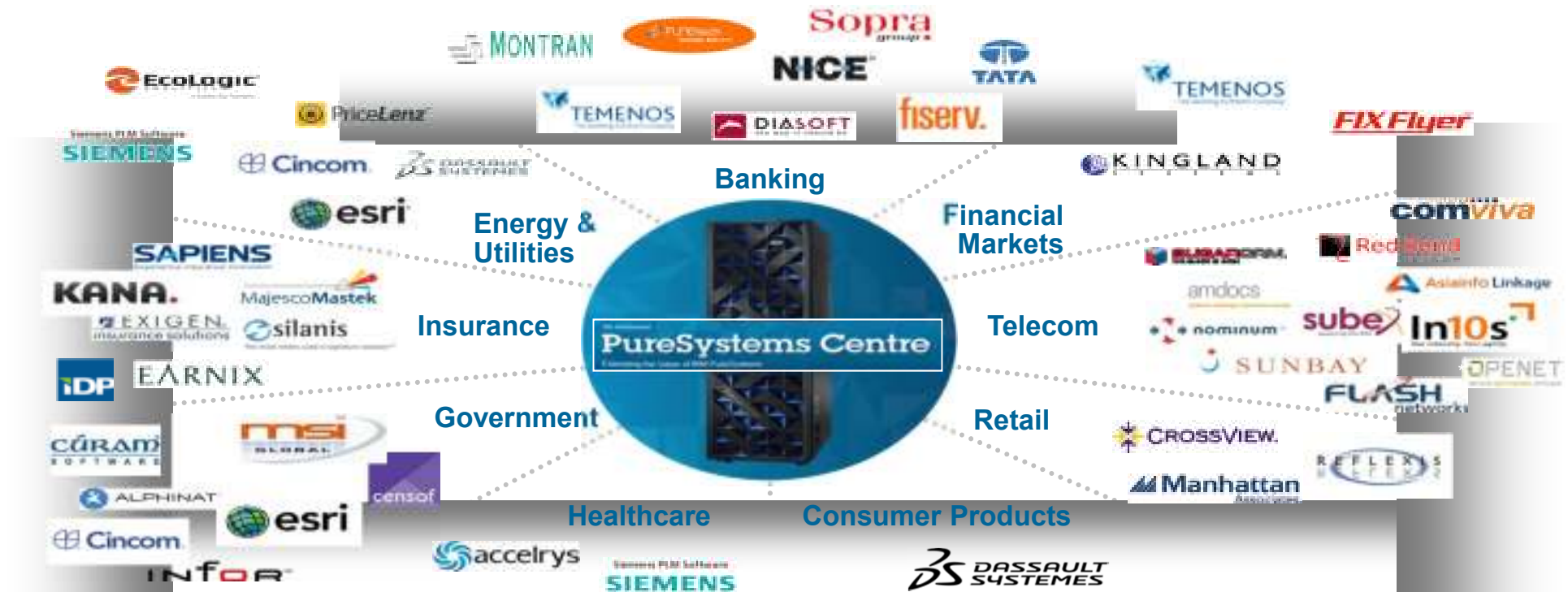


Over 200 pre-built patterns are ready to deploy on PureApplication System from IBM and its extensive Business Partner ecosystem

With Partner Solutions and Services Incremental Value!



“Patterns of Expertise” covering the breadth of industry segments

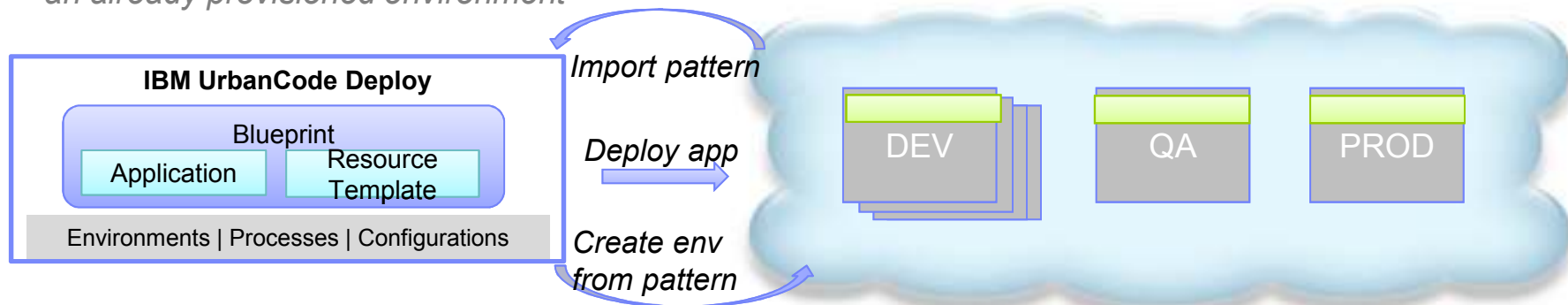


More than 130 leading ISVs have optimized more than 155 applications as IBM PureApplication “Patterns of Expertise” to automate deployment, simplify management, and accelerate time to value

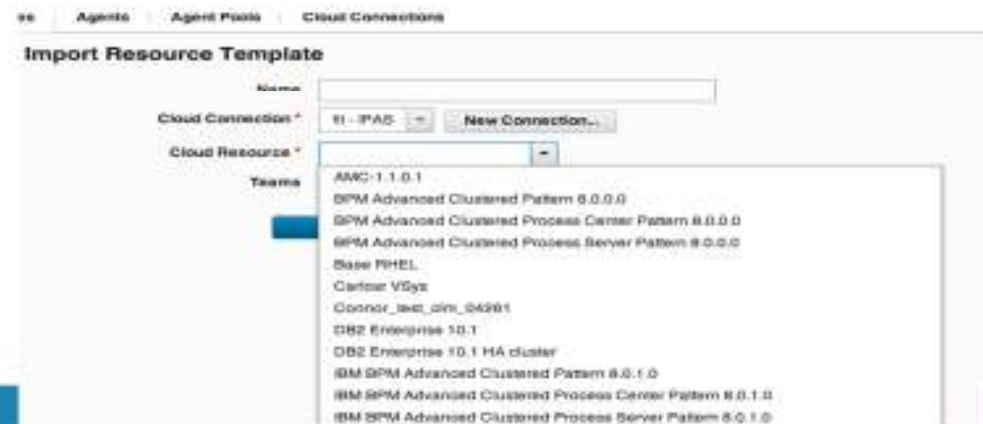


Continuous Delivery to Cloud

The freedom to provision a version of a full stack or incrementally deploy an application version into an already provisioned environment



- Capture cloud pattern to be used for creating an Environment
- Incremental deployment of application builds to cloud environments
- Map the application to multiple cloud patterns



Brazilian Bank selects PureApplication System over Oracle & ECM/Cisco for ATM application



Business Challenge

Replace existing ATM application infrastructure to improve availability, reign in software licensing fees and reduce manual IT provisioning efforts

Solution: Selected PureApplication System for Java app that supports 37,000 ATMs

Win Details:

- Outperforms the competition: PureApplication technology proven in two weeks (Oracle took 8 weeks and EMC and Cisco failed to finish)
- Demonstrated DB2 replacement of OracleDB in PoC

Expected Benefits:

- Reduced setup time by 70 percent
- Improved upgrade times by 30 percent
- Lowered energy costs by 50 percent
- Simplified management and maintenance
- Dynamic scale to meet fluctuating demand
- Uses Patterns of Expertise to speed development, deployment and management

European Bank conquers slow development cycles IBM PureApplication System and IBM Business Intelligence Pattern vs. BI incumbent



Business Challenge

- Speed time to market
- Increase IT efficiency
- Reduce operating costs

Solution: Bank moves towards becoming a real time predictive bank with IBM PureApplication System and patterns

Win Details:

- Purchased PureApp for app platform
- Speed, ease of use and expertise delivered via IBM BI Pattern (ie. Cognos) won vs. incumbent
- Lab services & Cognos & Unica product teams assisting with pattern implementation

Benefits:

- Rapidly delivers a Cognos/Unica environment to mine data for strategic marketing initiatives
- Deploy new BI solution in hours vs. 8 months
- Maintenance reduced from months to < 15 min

SO client Ameriprise Migrates Legacy Applications with PureApplication System & Lab Services for Pattern Creation



GTS SO Client: Ameriprise

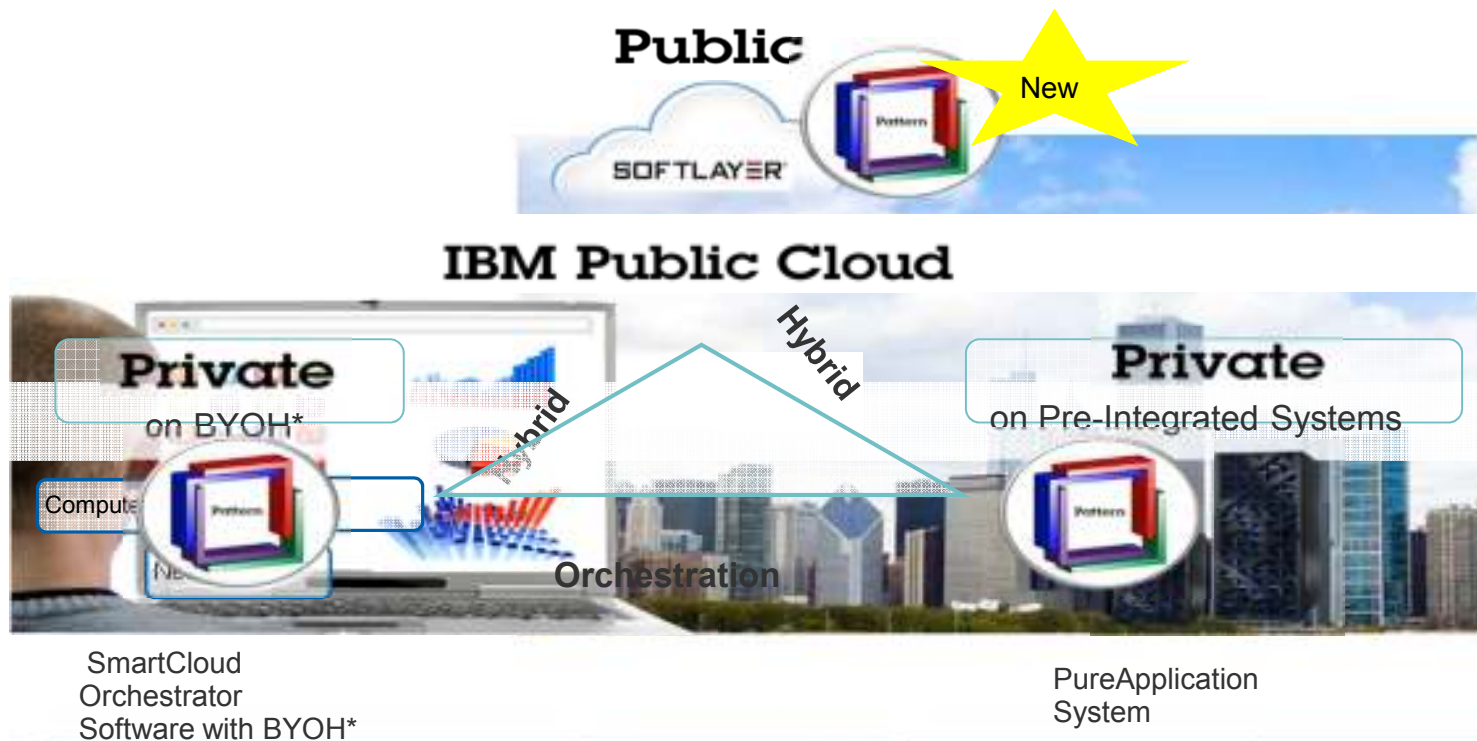
- ***“With PureApp, IBM has changed my vocabulary from months to minutes”***
Venky Ramanan, VP Ameriprise

- **Ameriprise presentation highlights to prospective Pure clients in LaGaude France:**
 - With PureApplication System
 - Reference Architecture patterns pre-defined
 - Application Team can deploy a functional testing environment in less than 60 min.
 - VM Deployment Time of standard images (RHEL, WAS, DB2) reduced by 75%
 - Integrated server monitoring tools
 - Eliminated deploy errors via manual process
 - Enforce use of JDK and version



IBM Patterns Engine:

One software provisioning technology



Pattern Benefits

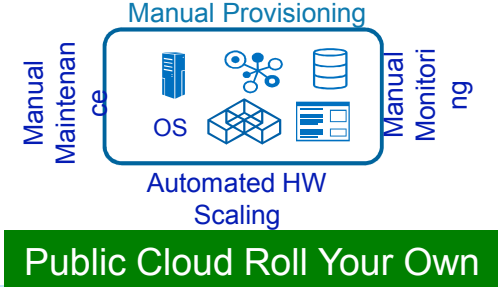
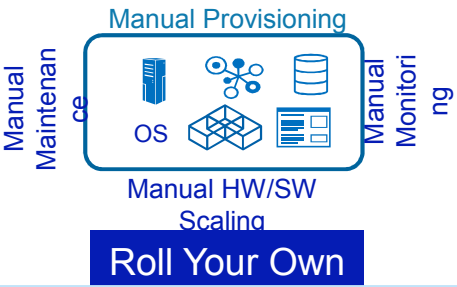
- Context aware execution
- Simple dependency mgmt
- Built in SLAs
- Dynamic elasticity
- Automated application & middleware lifecycle mgmt

* Bring Your Own Hardware

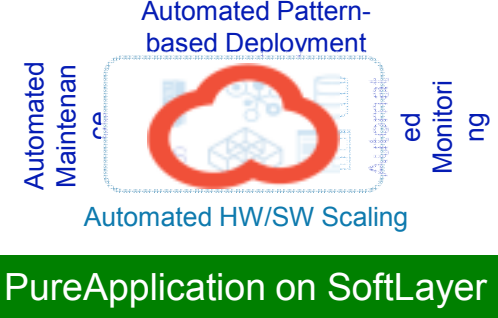
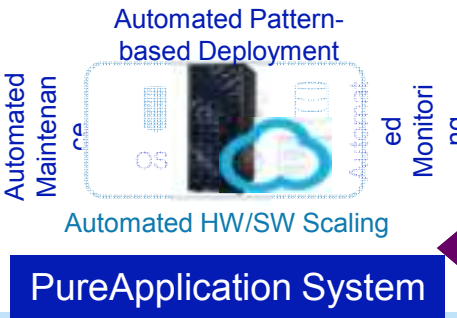
PureApplication on SoftLayer brings **cloud economics & hybrid cloud** to proven PureApplication platform



Manual
Deployment Monitoring, Scaling & Maintenance is manual



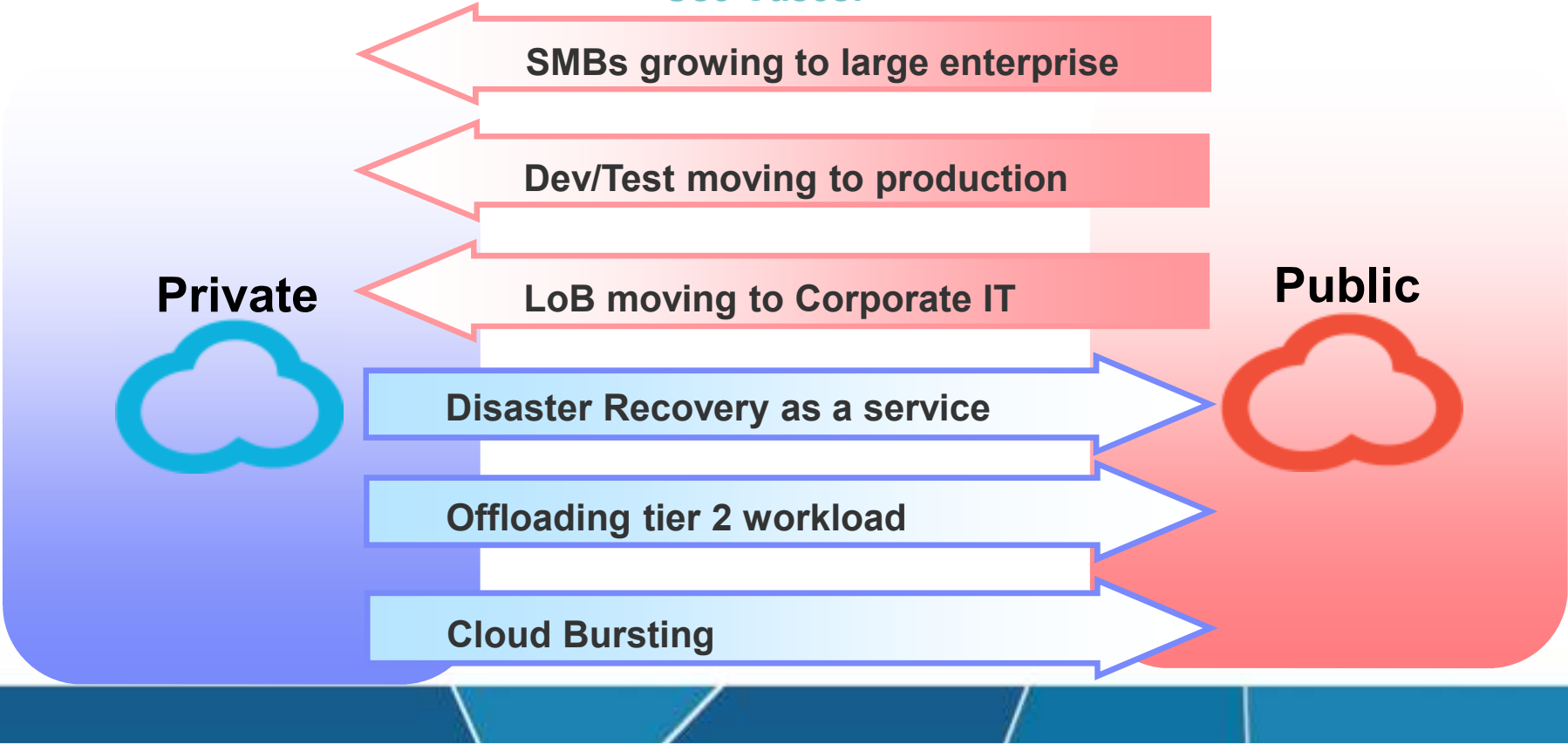
Automated
Simplicity, Speed & Lower TCO



Using Private & Public Cloud Together Strategically



Use Cases:





Codename: BlueMix

Delivering a Composable Services development environment



Run Your Apps

The developer can choose any language runtime or bring their own. Just upload your code and go.

DevOps

Development, monitoring, deployment and logging tools allow the developer to run the entire application

APIs and Services

A catalog of open source, IBM and third party APIs services allow a developer to stitch together an application in minutes.

Cloud Integration

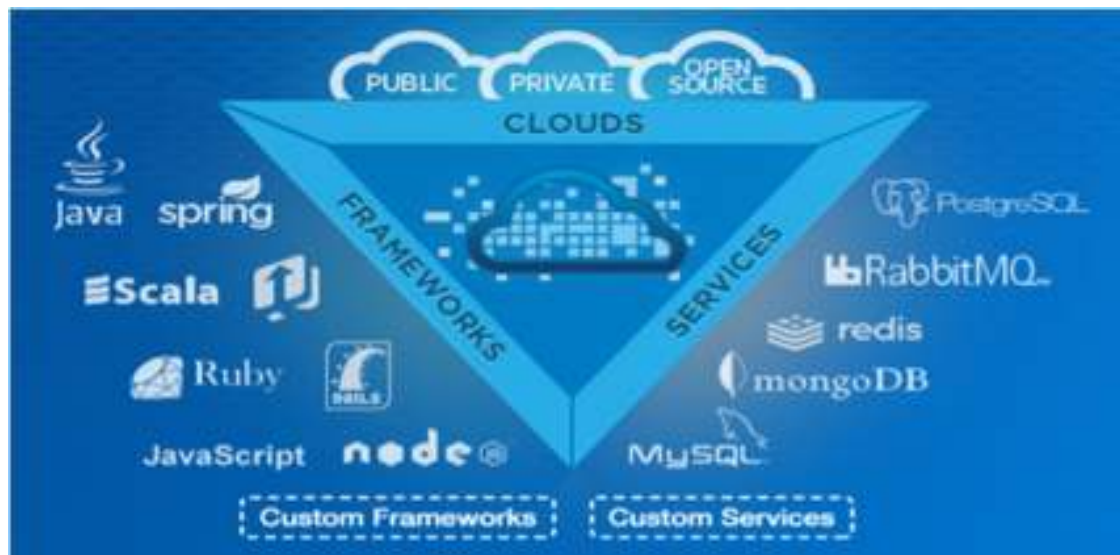
Build hybrid environments. Connect to on-premises systems of record plus other public and private clouds. Expose your own APIs to your developers.

Extend SaaS Apps

Drop in SaaS App SDKs and extend to new use cases (e.g., Mobile, Analytics, Web)

Embracing Cloud Foundry As An Open Source PaaS

Continuing our history of embracing and extending Open Source



TOTAL CONTRIBUTORS	
1,118	Average per month: 2013 average: 133 12mo average: 98 Lifetime average: 58
LINES OF CODE	
646k	
PULL REQUESTS	PUBLIC REPOSITORIES
1025+	133+



Run Your Apps, Any Language

Upload your code and run your application in seconds.

The screenshot displays the IBM Cloud Code Engine dashboard. The left sidebar contains navigation options: Overview, WODS (selected), MicroLog, CloudCode, MAN, MicroStats, and PUSH. The main content area is titled 'WODS' and shows a 'Resources' section with configuration fields for 'Instances' (set to 4) and 'Memory Size (per instance)' (set to 1GB). A 'Deploy' button is visible. To the right, a 'Summary' table shows resource usage: Total (8,000GB), Other Apps (120GB), This App (512GB), Per Instance (130GB), Instances (4), and Available (7,870GB). Below this is an 'Instance Details' table with columns for Instance ID, State, CPU, Memory Usage, Disk Usage, and Start Time. It shows 4 instances in a 'Running' state. At the bottom, there is an 'Environment Variables' section.

Instance	State	CPU	Memory Usage	Disk Usage	Start Time
0	Running	0.0%	8.1MB / 1GB	24.1MB / 1GB	Thu 18, 2014, 7:08:11 AM
1	Running	0.0%	8.1MB / 1GB	24.1MB / 1GB	Thu 18, 2014, 7:08:12 AM
2	Running	0.0%	8.1MB / 1GB	24.1MB / 1GB	Thu 18, 2014, 7:08:13 AM
3	Running	0.0%	8.1MB / 1GB	24.1MB / 1GB	Thu 18, 2014, 7:08:14 AM



Catalog of Services & SDKs

Build new mobile and cloud apps using IBM and 3rd party services



DevOps Experience

Continuous Integration, Agile Project Planning, and Integrated IDEs

An Integrated Developer Experience

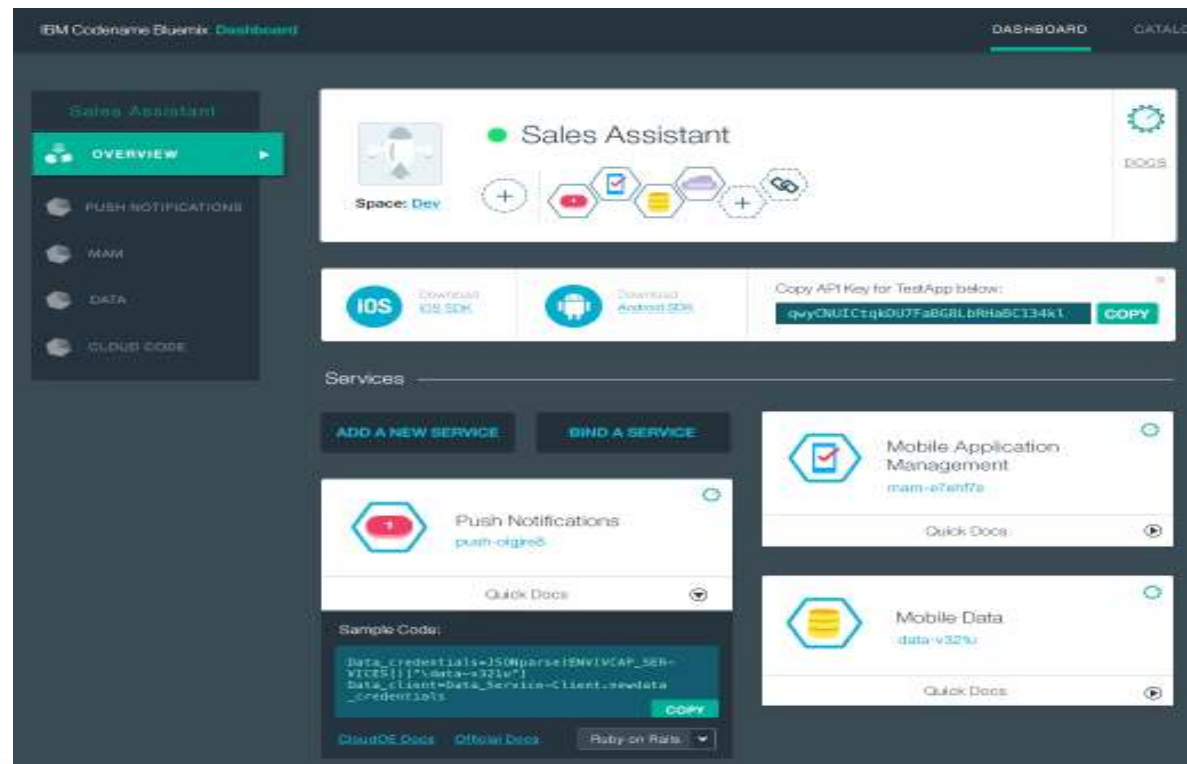
- DevOps Solution in the cloud for developing applications.
- Integrated task tracking, agile planning, source control with auto deploy
- Complementary mobile quality and application performance monitoring
- Use your favorite tools or work from the Web IDE
- Continuous Integration: Automate builds, unit and integration testing and deployment to the Cloud using Jenkins and Rational Team Concert





Scaling and Monitoring

Fully integrated environment for deploying and managing your application



Single Dashboard

Single view of application health, usage and status

Health and Monitoring

Integrated monitoring and diagnostics with the ability to add on features such as code level tracing

Scaling

Ability to scale the application by adding new runtime instances



Mobile Backend-as-a-Service

From Mobile Data Storage to App Quality Assurance, BlueMix can run your mobile app backend services

Mobile Services



Push Notifications



CloudCode



Mobile App Mgmt



Mobile Quality Assurance



Twilio



The Mobile Backend boilerplate provides a bundle of essential developer services that you can use to quickly enhance your mobile application.

[ADD BOILERPLATE](#)



Mobile Application Management

Free Tier (50 MB Memory, 512 MB Storage)

- **Full Containerization**
Protect enterprise applications with full containerization using the MAM service over your apps lifecycle.
- **Increased Productivity**
With MAM, increase employee productivity and satisfaction by eliminating redundant work.
- **Interactive Reports**
Use granular administrative controls and interactive, graphical reports to monitor your mobile applications.
- **App Scalability**
Reduce network load and increase application performance and scalability, giving you peace of mind.

[View full documentation](#)



Integrate Into Existing Applications

Security connect to and leverage data from your existing systems



API Management



Cast Iron Integration



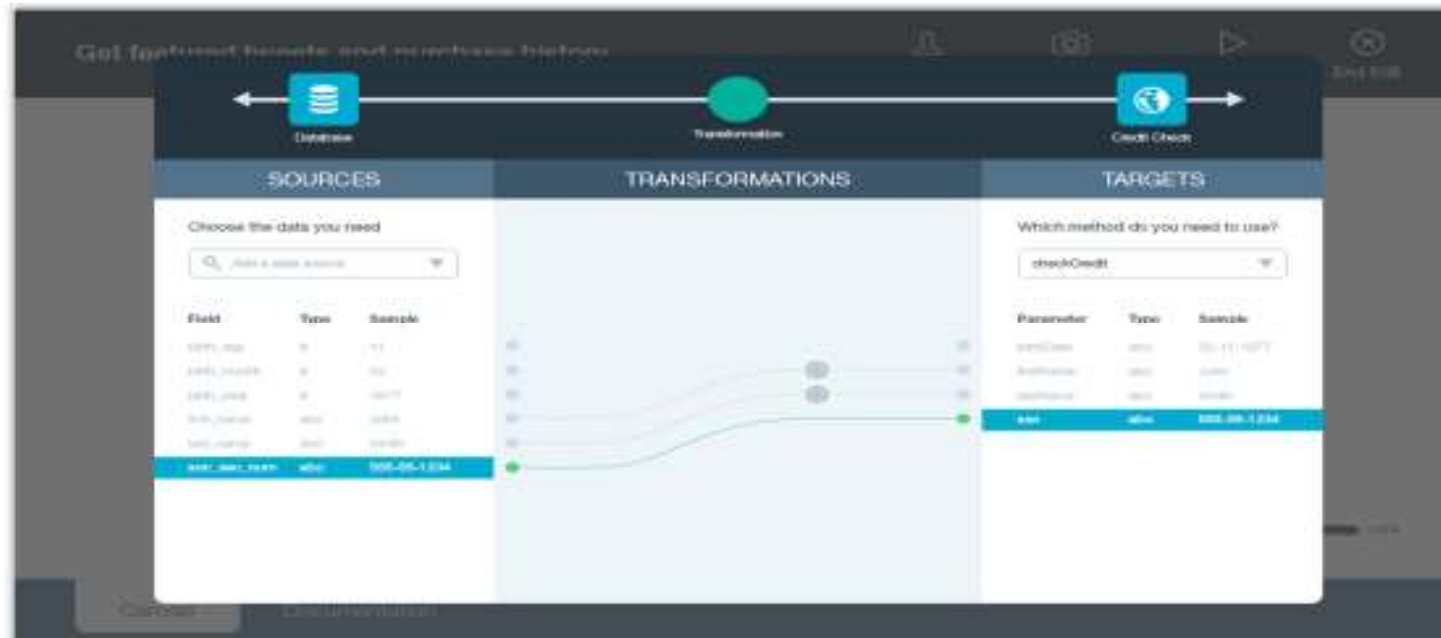
Secure Connector



Data Mapper



Private API Catalog



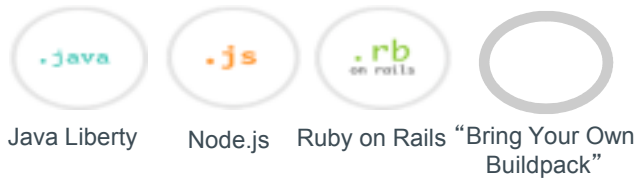


List of Cloud Platform Services

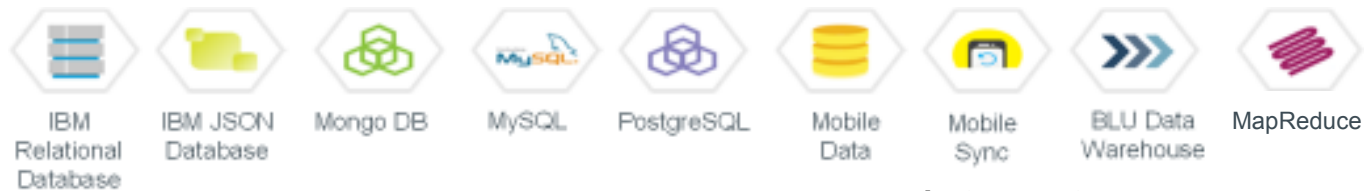
IBM, Open Source and Third Party APIs

Dev
Ops

Runtimes



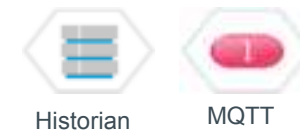
Data Management Services



Mobile Services



Internet
Of
Things



Web & App Application

