IBM SolutionsConnect 2015

Seize the Moment. Dive into Next Generation Technologies.

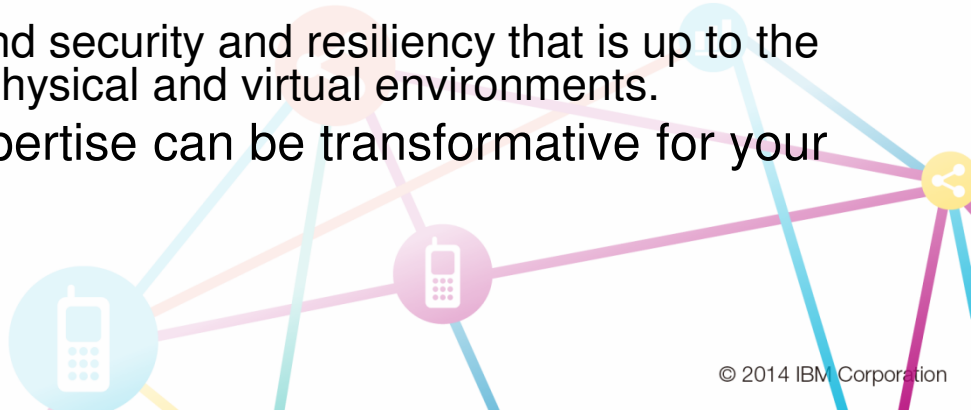
Private cloud in the hybrid cloud era

The critical choices driving business value and agility

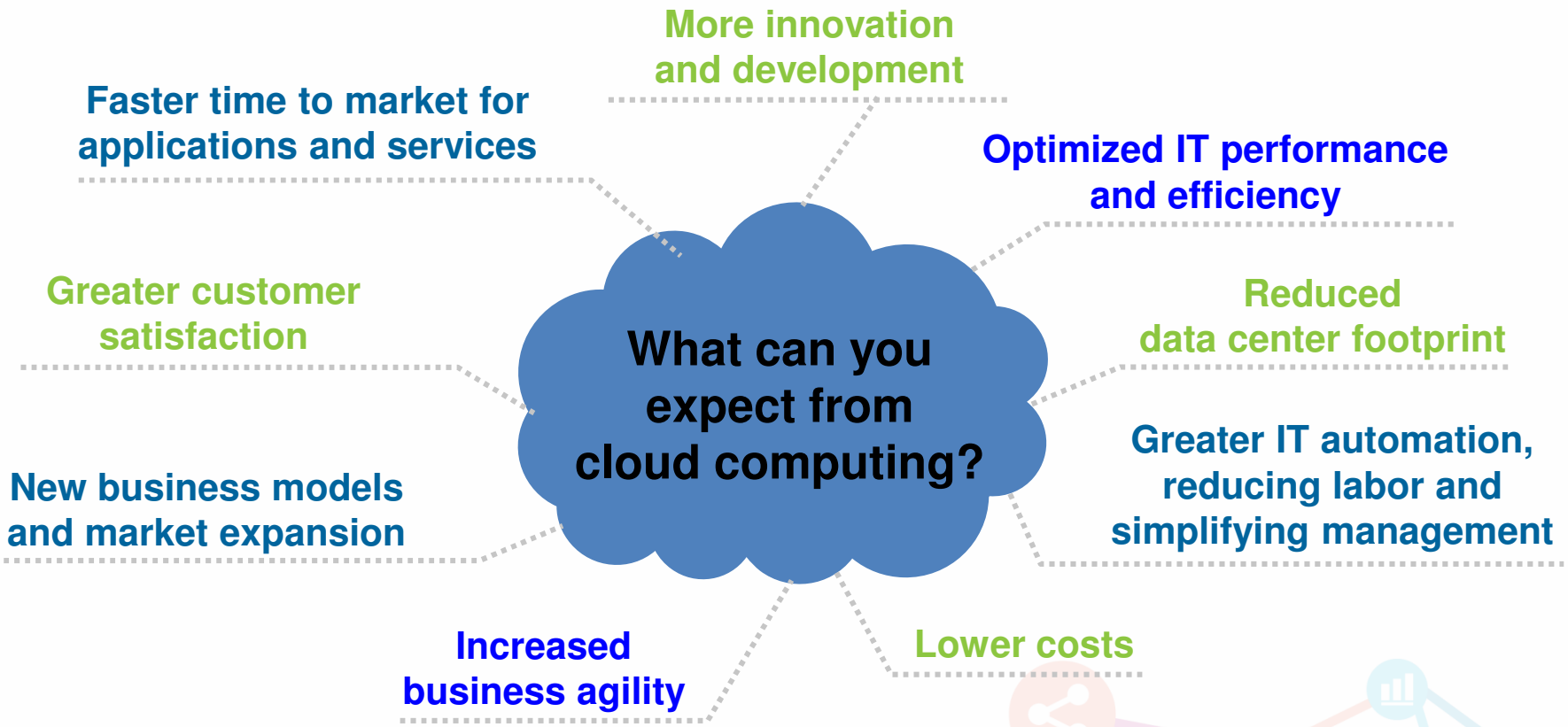
Nazario Pecho
Systems Architect,
IBM Systems Hardware, Asean

Executive summary

- With early cost and complexity challenges a thing of the past, private cloud has emerged as a major catalyst of business value and growth.
- Hybrid computing is inevitable, and private cloud is an essential element.
- The core private cloud differentiators—speed, dynamic scalability and flexibility, optimization and efficiency, and security and resiliency—can drive exponential business value.
  - Automation technologies, especially when combined with platform as a service (PaaS) models, are speeding private cloud deployment, provisioning and management.
  - Open cloud architectures and modular services are providing the flexibility to satisfy rapidly changing capacity and service demands.
  - Private cloud efficiency increases when you can leverage your existing infrastructure, select the right applications for migration and automate daily management.
  - Private cloud environments demand security and resiliency that is up to the same standards as conventional physical and virtual environments.
- IBM private cloud services and expertise can be transformative for your business.



Compelling benefits are driving the adoption of cloud computing



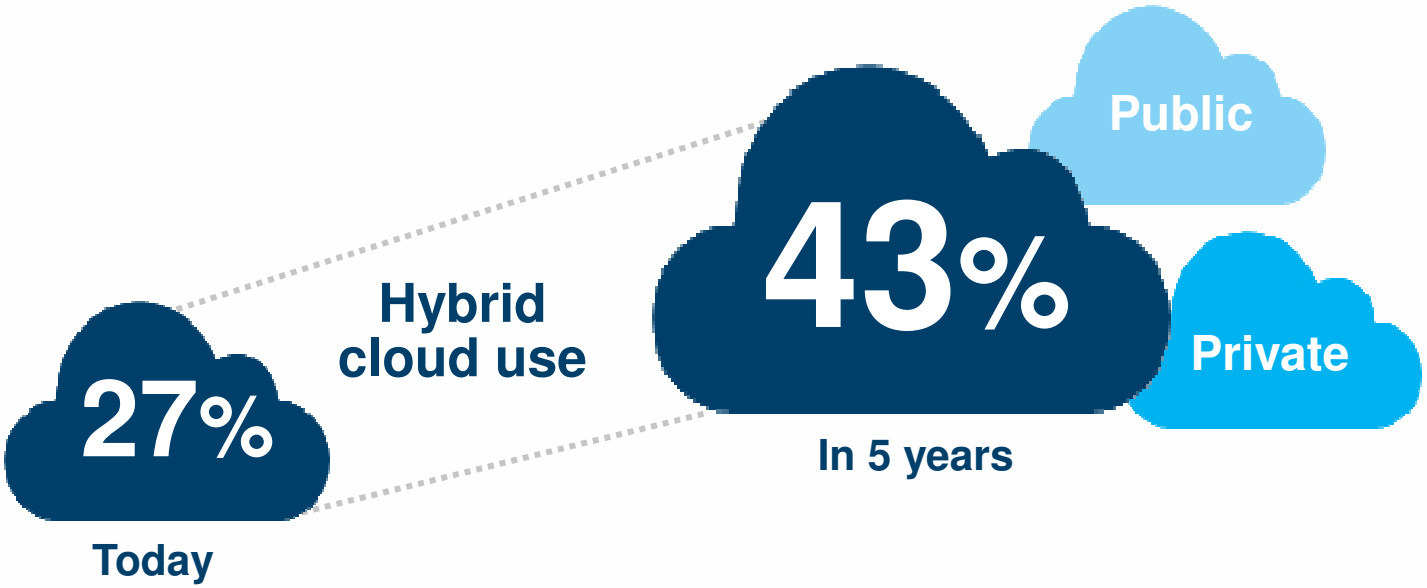
On-demand self-service	Ubiquitous network access	Location-independent resource pooling	Rapid elasticity	Consumption-based pricing

These days private clouds are dominating the cloud conversation for all the right reasons

Delivering on every bit of cloud's speed and agility promise

- **Myriad of deployment options** available to adopters
  - Onsite or offsite
  - Individually or as part of hybrid cloud
  - Hosted or managed by a third party
  - Infrastructure as a service (IaaS) or platform as a service (PaaS)
- **Dynamic scalability** without an additional investment in infrastructure, training or licensing
  - Delivering substantial cost savings
  - Facilitating access to resources for application development and innovation
- **Simplified IT operations and management**
  - Leveraging automation to solve problems and improve efficiency.

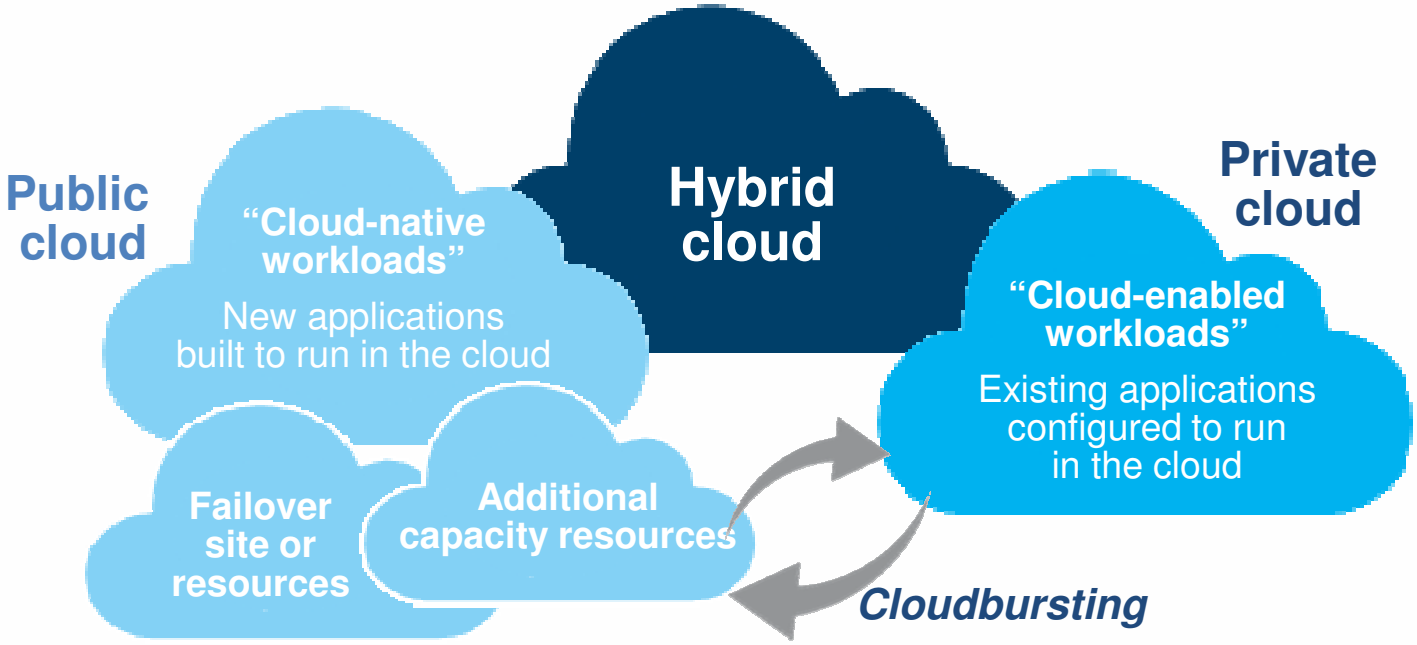
Private clouds are easing the way to hybrid computing, which is increasingly seen as the most practical approach to cloud



76% of business users, IT leaders and cloud vendors **expect hybrid clouds to be the core of their cloud strategy**, overtaking public and private clouds in the next five years

Source: North Bridge Venture Partners and GigaOM Research, "The Future of Cloud Computing: 3rd Annual Survey 2013," October 2013.

Hybrid clouds enable companies to effectively leverage cloud capabilities for both new and legacy workloads



Retain control of the IT environment and protect proprietary systems and data

Address rapidly escalating **scalability and processing demands** required by analytics and innovation

Maintain regulatory compliance and desired service levels

Organizations that are benefitting the most from cloud have deployed holistic, enterprise-wide cloud strategies

4X more likely to have deployed an **enterprise-wide cloud strategy**

136% more likely to use cloud to **reinvent customer relationships**

79% more likely to use cloud for **collaboration and expertise**

170% more likely to use cloud extensively for **analytics**

83% more likely to use **hybrid clouds**

The bottom line…

1.9X higher **revenue growth**

2.4X higher **gross profit**

Source: IBM, "Under cloud cover: How leaders are accelerating competitive differentiation," October 2013.

Holistic cloud strategies assure that cloud decisions are aligned with business needs across the enterprise

Focus on cloud's transformative business value

- Aim to **achieve business agility** more than cost reduction
- Factor in cloud's **multi-dimensional impact** on the business
  - Strategy and operating models
  - Technology integration
  - Organizational transformation
- Help **break down current silos** and integrate processes
- **Leverage analytic tools** to assess the existing environment
  - Determine the applications and business areas that offer the greatest cloud opportunity
  - Identify the best suited cloud technologies and delivery models
  - Determine requirements for a smooth deployment
- Provide a **robust, actionable roadmap** aligned to business goals
  - Prioritize cloud initiatives
  - Help simplify vendor and product selection.

With early challenges addressed, interest in private cloud—and adoption rates—are climbing

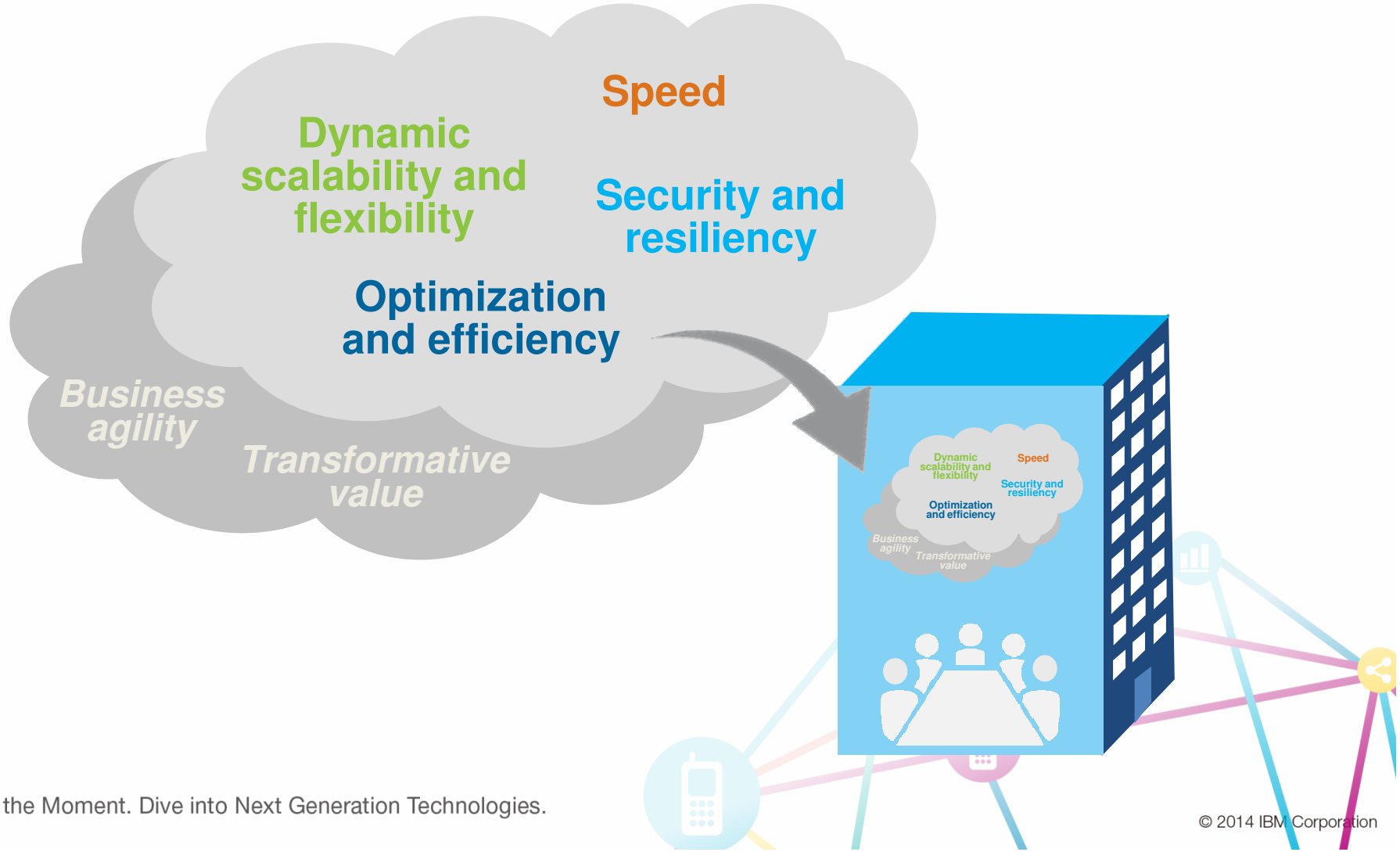
Early years

- Apprehension about high cost and complexity of private cloud
- Slow private cloud deployment, requiring months or years
- Delayed development and deployment for new applications
  - Manual resource provisioning
- Management complexity of the virtualized infrastructure
- Inability to fully capitalize on potential benefits.

Today

- Abundance of turnkey products and solutions for private cloud
  - Faster, less costly deployment in days or weeks
- Faster application development and deployment
  - Automated provisioning
- Open cloud standards and architectures
  - Ability to leverage existing infrastructure investment
  - Near seamless interoperability and management.

Organizations are turning to private clouds to capture the same agility internally that they've achieved with public clouds externally



Use these core differentiators to extend the business value of your private cloud

Speed

- Automation enables the deployment of **fully functional private clouds in weeks or less**
- **Platform as a service (PaaS) private clouds** automate middleware provisioning and increase workload automation
- **Self-service capabilities** are being ramped up with greater automation and catalog options.

Dynamic scalability and flexibility

- **Open standards and architectures** enable private clouds with desired infrastructure components and legacy systems.
- **Modular services** align private clouds to business and financial needs.
- **Customization** enables standard offerings to be modified to fit enterprise requirements.

Optimization and efficiency

Organizations that realize better private cloud performance and efficiency outcomes:

- Have the option to **leverage existing data center resources**
- **Automate private cloud management**
- **Select the right applications** for private cloud.

Security and resiliency

The ideal platform offers **proactive security monitoring** and **end-to-end coverage** for the cloud infrastructure, applications and data, plus:

- **Business continuity** capabilities, like managed backup and rapid failover
- **Governance** oversight with a view of threat levels and regulatory **compliance.**

In the globally connected world, competitive advantage depends on the speed of service delivery, provisioning and new development

Speed

New private cloud technologies are accelerating critical IT functions

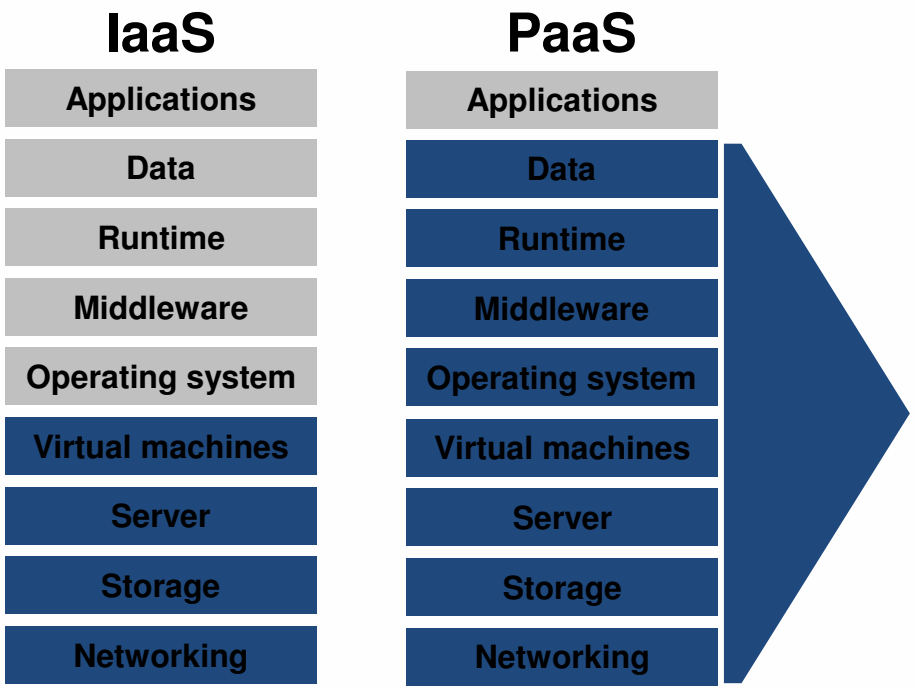
- Automating the deployment of **fully functional private clouds in weeks or less**
- Extending automation with **platform as a service (PaaS) private clouds**
  - Automating middleware provisioning
  - Increasing workload automation
- Ramping up users' **self-service capabilities**
  - Expanding catalog options through standardization and automation.

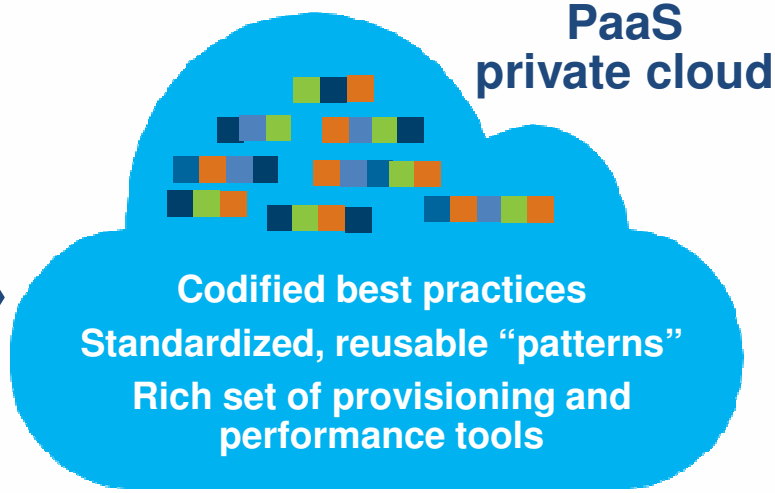
Automated deployment capabilities produce fully functional private clouds in days or weeks

Standardized private cloud builds

- Eliminate the need to build from scratch
- Drastically simplify the deployment process for IT
  - Automated scripts for software, operating system and middleware installation
  - Faster disaster recovery and server deployment
- Facilitate compliance with enterprise security and operational policies
  - For server, storage and network provisioning and configuration
  - For the installation of management systems
- Enable organizations to start small
  - Easy to scale incrementally as needs change
  - Better alignment to operational and economic needs.

PaaS models extend automation, speeding middleware provisioning and fueling a wave of innovation and development





Manual provisioning / management

Automated provisioning / management

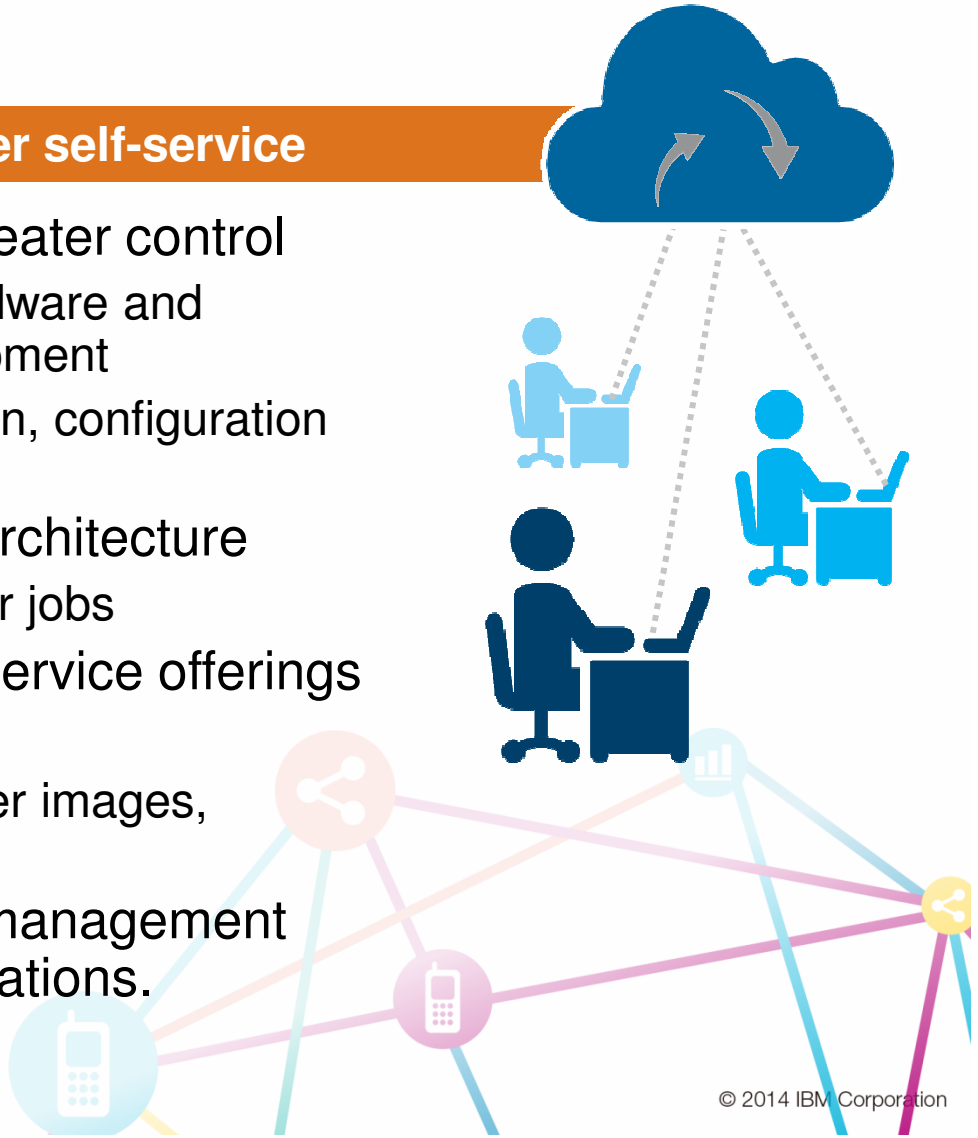
Complex tasks are replaced by **simple downloads**

The time required for upgrades, patches, and new image provisioning is reduced from **weeks to minutes**

Online self-service catalogs empower users to get things done without involving IT

Private cloud technologies expand user self-service

- Give developers and other users greater control
  - Simplifies selection of desired hardware and middleware for application development
  - Eliminates worries about installation, configuration and integration
- Hide the complexities of the cloud architecture
  - Makes it easier for users to do their jobs
- Help reinforce the use of standard service offerings
  - Drives down ad hoc requests
  - Allows companies to maintain fewer images, configurations and versions
- Simplifies and accelerates system management while reducing the total cost of operations.



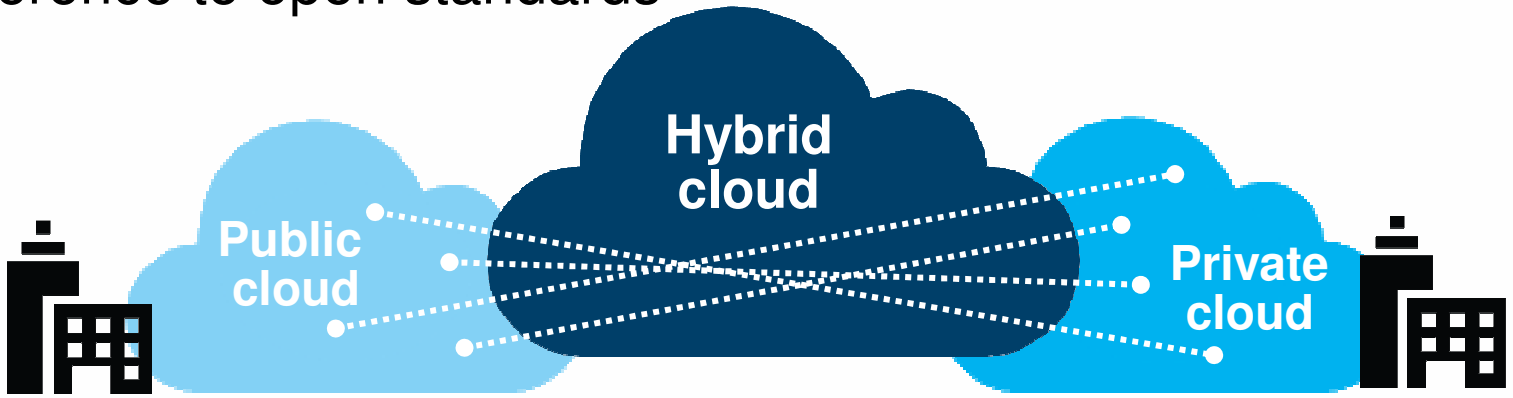
A constantly changing business landscape demands an infrastructure that can respond dynamically

Dynamic scalability and flexibility

Private clouds are increasing responsiveness while enabling organizations to leverage their legacy investments

- **Open standards and reference architectures** enable companies to select desired infrastructure components and services for their private cloud.
- **Modular services** make it easy to implement exactly the private cloud size and services desired and make adjustments as needed.
- **Optional customization** enables companies to modify standard offerings to enterprise requirements.

Portability in a hybrid cloud environment depends on adherence to open standards



Open cloud standards

- Allow application workloads to **flow seamlessly** between cloud models
- Increase the **long-term viability of cloud investments**
  - Avoidance of proprietary software or vendor lock-in
  - More sustainable cloud applications.

Open cloud architectures

- **Simplify cloud deployment and management**
  - Greater infrastructure and middleware flexibility
- **Encourage collaborative innovation** and speed new development
  - Thousands of extensible application programming interfaces (APIs)
  - **Applications delivered in days** instead of weeks and months.

Private clouds that are built on a modular framework allow organizations to start small and expand easily as needs change

Infrastructure capacity modules

- Server
- Storage
- Network

Platform modules

- Middleware
- Operating systems
- Database software
- Basic monitoring and management software

Service modules

- Capacity performance and management
- Software patch management
- Security management
- Security compliance
- Data protection
- Automation
- Management reporting
- Workload balancing
- Analytics

The ability to customize vendor-provided tools and services is a common priority in private cloud adoption

Extensive service libraries

- Provide a broad array of services for selection
  - Enabling organizations to deploy desired platform and applications services
- Reduce the need to customize vendor tools and services
  - Saving considerable time and money
- Allow customized services to be added so they are available for future projects.

IDC's 2012 CloudTrack Survey found the "lack of customization opportunities" to be the leading concern inhibiting private cloud adoption.

Source: IDC, "Enterprise cloud public and private end-user adoption signals continued shifts in IT spending," IDC #237171, Volume: 1, October 2012.

Rising IT infrastructure and management costs have become a major concern for most organizations

Optimization and efficiency

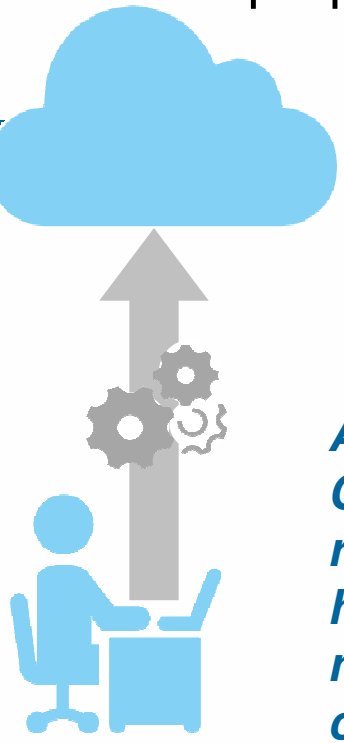
Private clouds can dramatically improve infrastructure performance and efficiency, and several key factors can enhance the outcome

- Having the option to **leverage existing data center resources**
- **Automating management** of the private cloud infrastructure
- **Selecting the right applications** for private cloud.

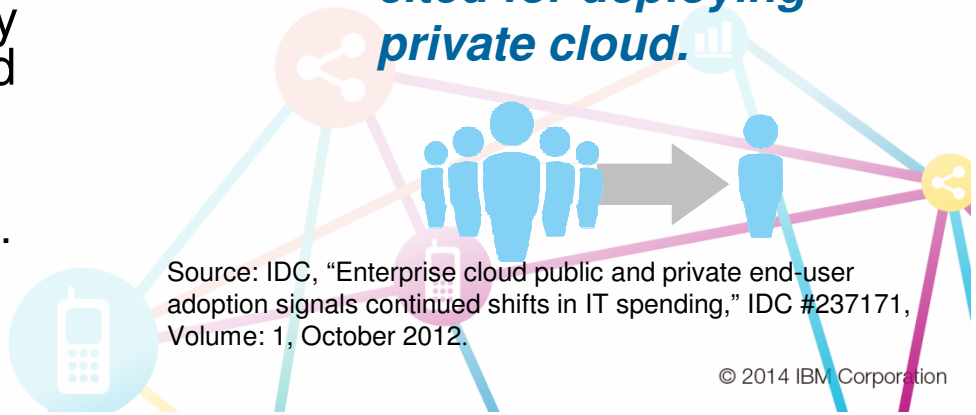
Automation is eliminating much of the manual labor and labor-intensive management tools that can drive up operating costs

Automated private cloud management

- Streamlines IT support and monitoring
  - Self-service dashboard
  - Management services catalog
    - Server reboots, operating system reloads, load balancing
    - System failover and recovery
- Automatically triggers corrective actions
- Facilitates the use of analytics
- Simplifies infrastructure-wide visibility and control over cloud and non-cloud environments
  - Single point of control
  - Easier transition to hybrid computing.



According to IDC's 2012 CloudTrack Survey, reducing IT staff headcount was the number-one reason cited for deploying private cloud.



Source: IDC, "Enterprise cloud public and private end-user adoption signals continued shifts in IT spending," IDC #237171, Volume: 1, October 2012.

IBM's own results migrating key IT workloads to private cloud illustrate the potential opportunity across the enterprise

Social software cloud

50M **web conferencing minutes monthly,**
dramatically increasing workplace **collaboration**, **productivity** and **innovation**

Analytics cloud

$300M
estimated **value of insights** from the top 20 projects alone (out of 300)

Storage cloud

50%
lower cost-per-byte of data stored

Development and test cloud

5 **days to as little as** **1** **hour**
to **provision** and configure servers

Source: IBM, "Success in the Cloud: Why workload matters," July 2013.

Private cloud platforms are distinguished by their ability to manage security and recover quickly in the event of an outage

Security and resiliency

- Proactive security monitoring with end-to-end coverage for the private cloud infrastructure, applications and data
  - Identity and access management
  - Intrusion detection
  - Incident management
- Vulnerability assessments
- Business continuity and resiliency capabilities
  - Managed backup protection
  - Rapid failover
  - Content management to facilitate data archival and retrieval
- Governance oversight with a detailed view of security and threat levels
- Compliance with corporate policies and industry and federal regulations.

IBM has extensive real-world experience to help you realize the value of cloud

5,000
private cloud engagements alone

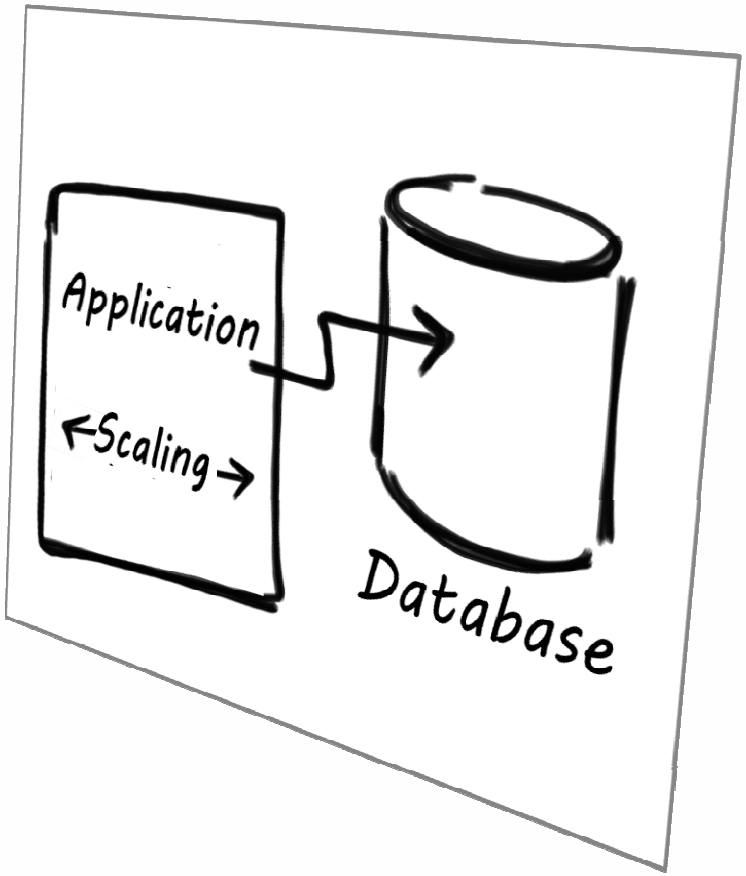
80% of Fortune 100 companies
are using IBM cloud capabilities

1M+
managed virtual machines

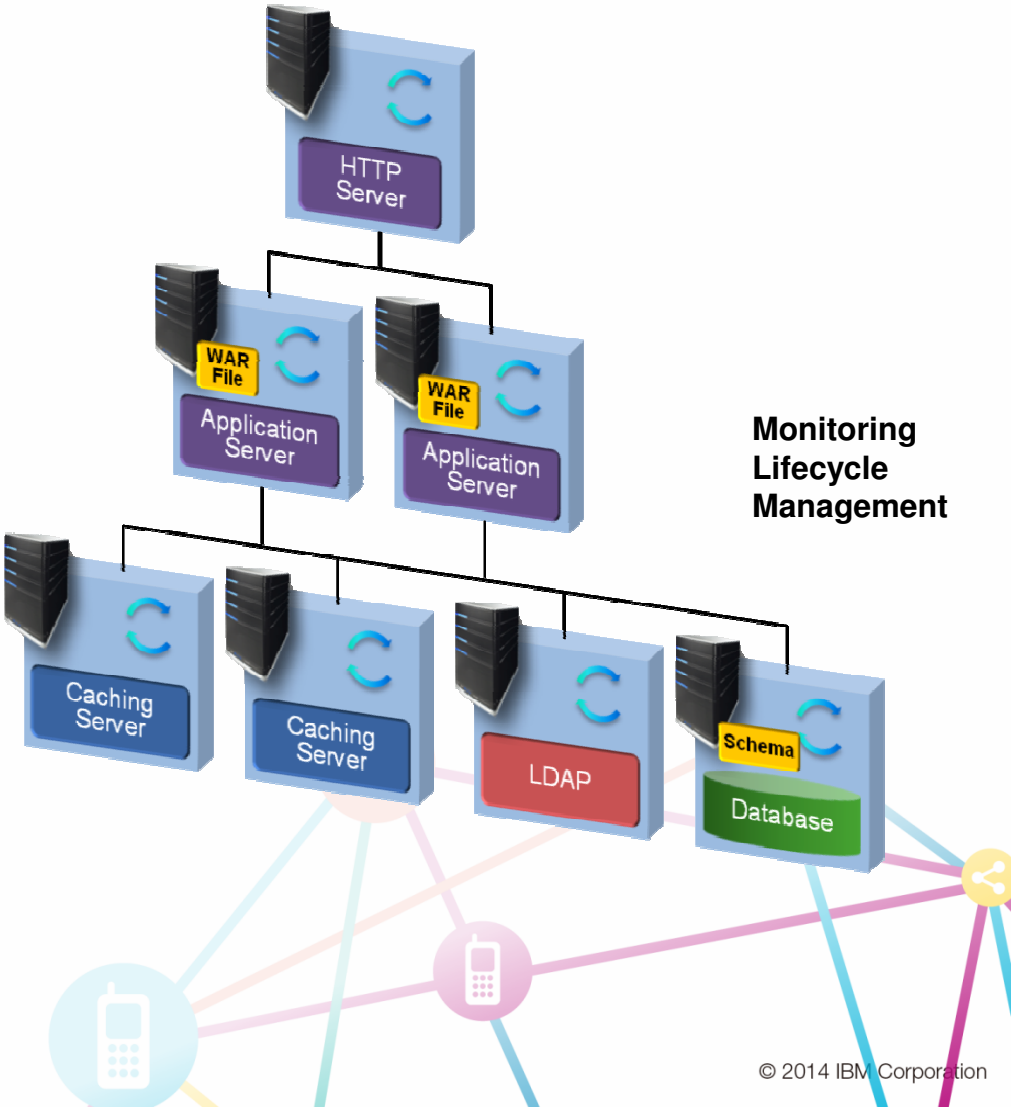
End-to-end cloud expertise
using time-tested tools, methodologies and best practices

Flexible solutions, rapid deployment
enabling you to choose the infrastructure, platform, location, ownership and responsibility levels that work for your business

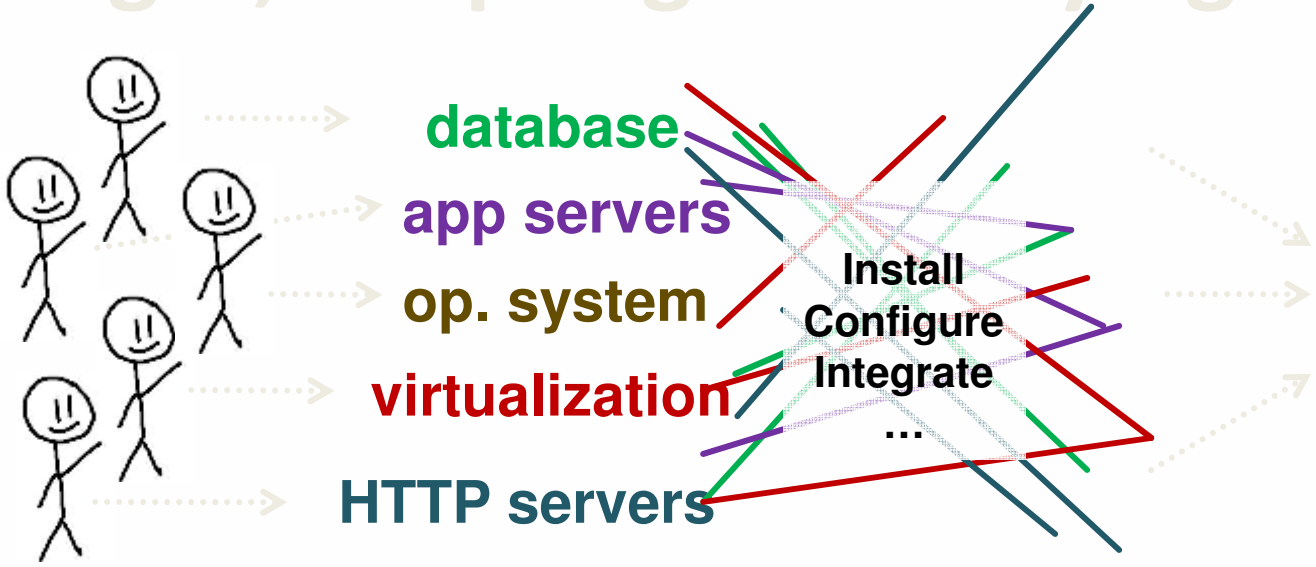
What the business wants…

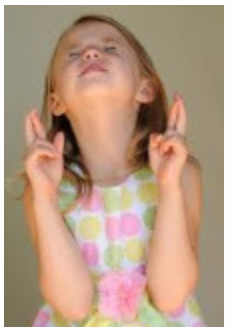


What's required…

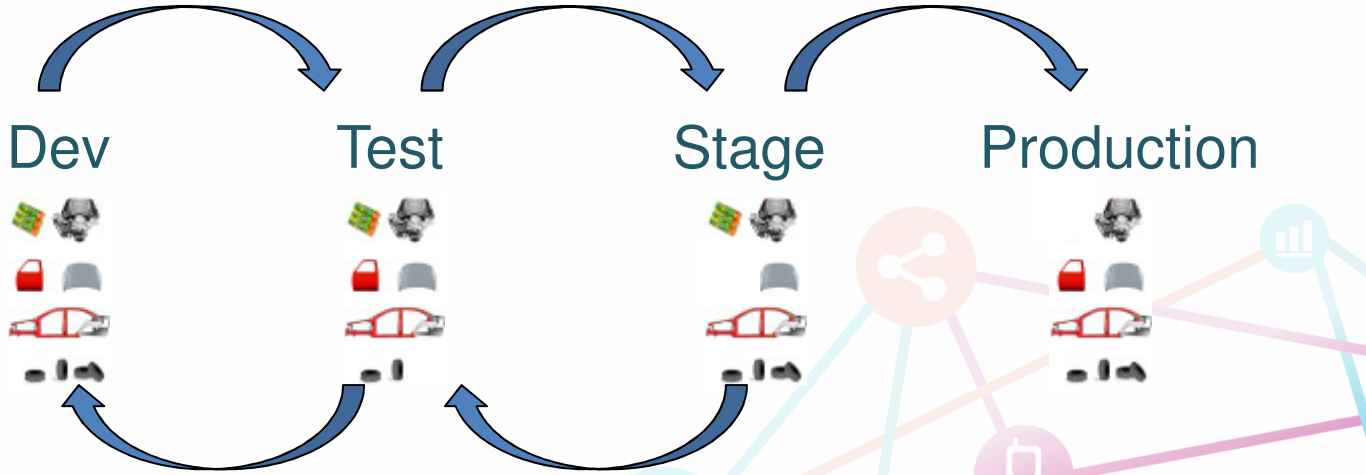


Images, Scripting and Praying





Deploy



Repeatable deployments

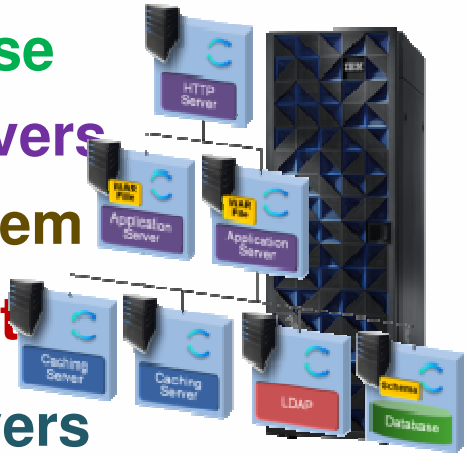
database

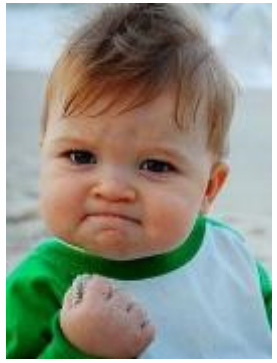
app servers

op. system

virtualizat

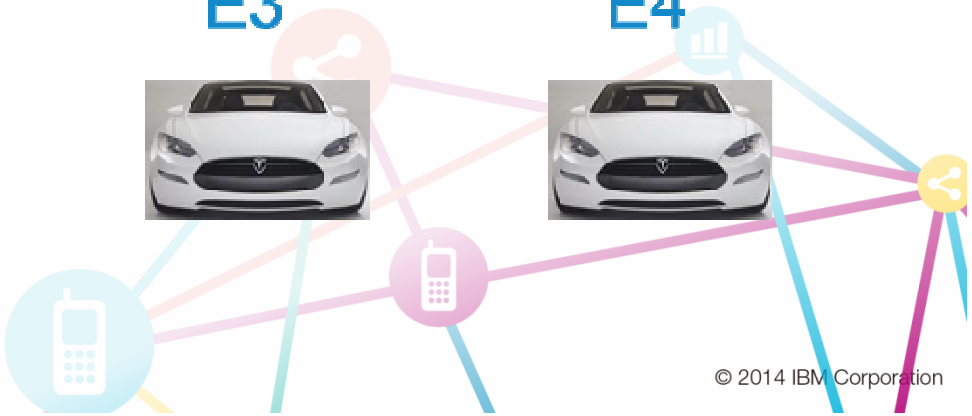
HTTP servers





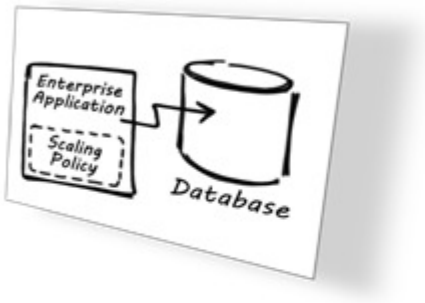
Deploy

Dev/E0 → Test/E1 → E3 → E4

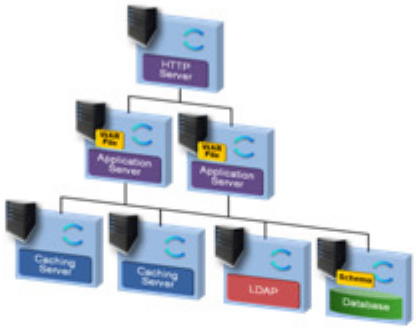


Driving built-in expertise with IBM's patterns of expertise

What the business wants…



What's required…



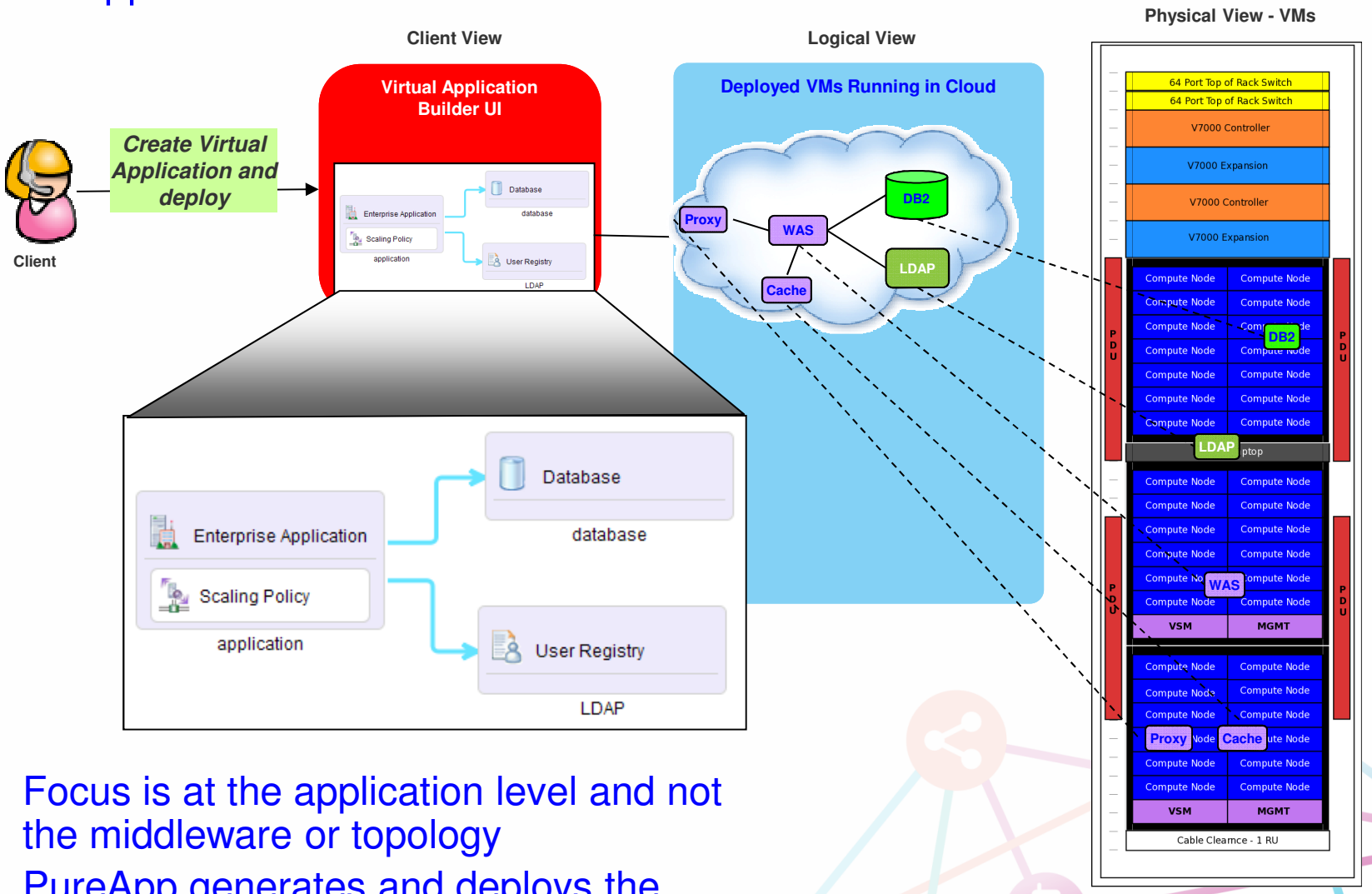
What a pattern automates…

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

Virtual Application Views



Focus is at the application level and not the middleware or topology

PureApp generates and deploys the topology needed to run the application

PureApplication System Gen 2 (W2500 / W2700)

"Mini" – Intel & Power
32, 64, 96, 128 cores

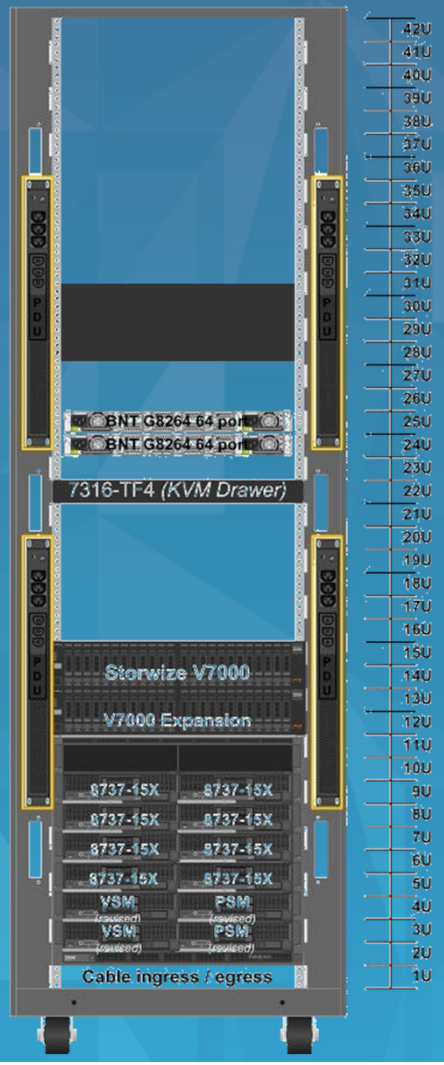
Top of Rack Switches
320 Gbps to DC

42U Rack

Storage:
- V7000
- 2.4 TB SDD
- 24 TB HDD

PDU:
- 4x30A 1ph

Compute:
- **Intel Ivy Bridge 2.6 GHz and**
- **Power 7+ 4.1 GHz**
- Memory: 16 GB / core



"Enterprise" – Intel & Power
32, 64, 96, 128, 160, 192, 224, 320, 384 cores

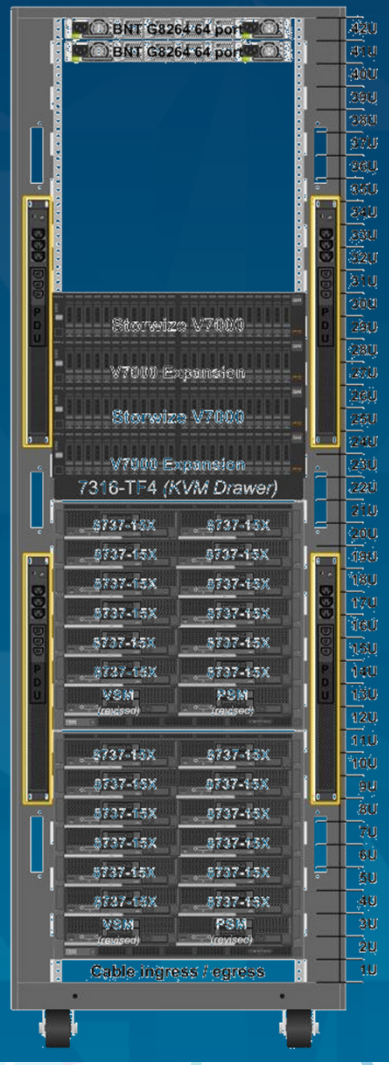
Top of Rack Switches
320 Gbps to DC

42U Rack

Storage:
- V7000
- 6.4 TB SDD
- 48 TB HDD

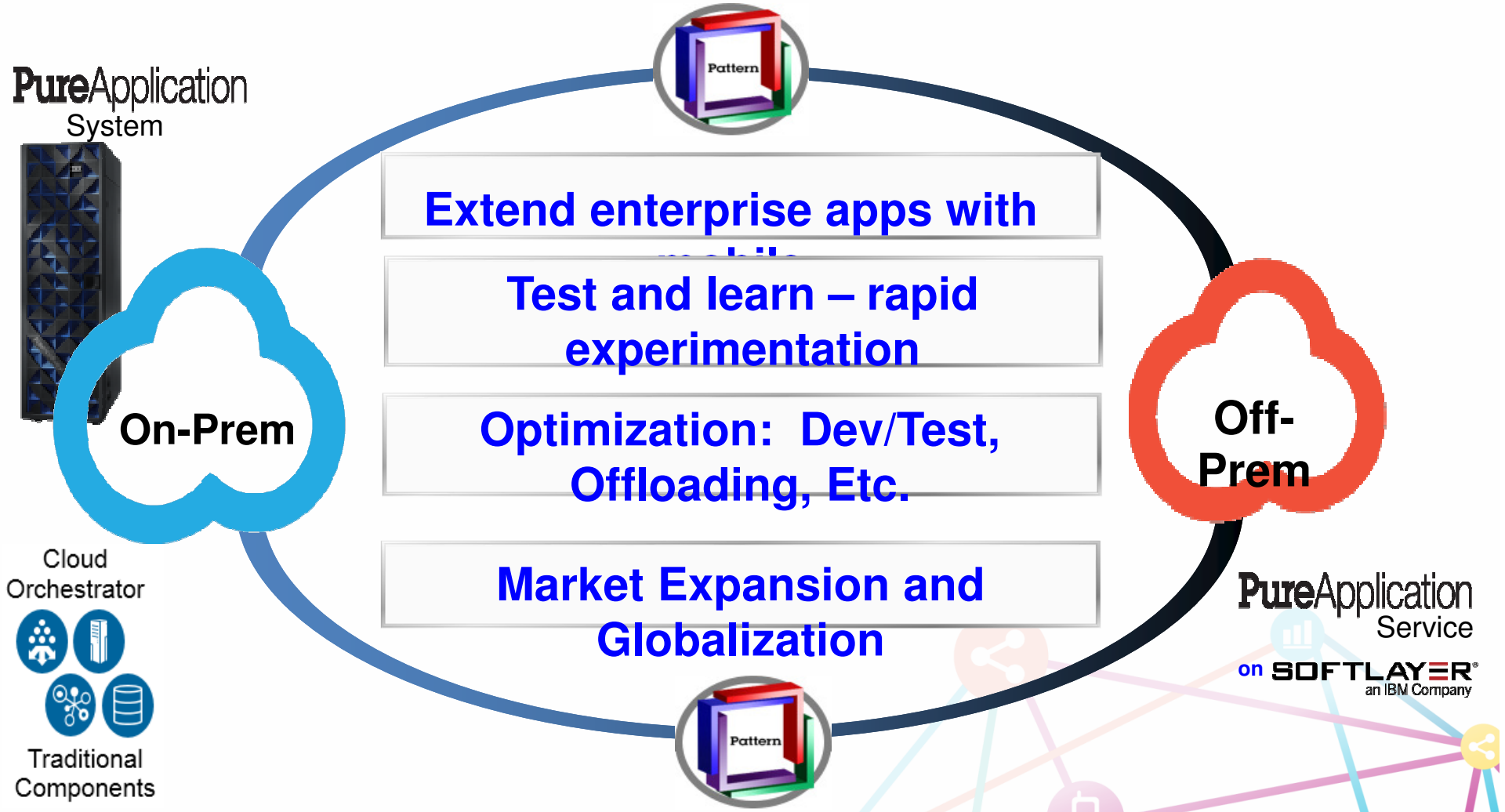
PDU:
- **4x60A 1ph or 4x60A 3ph**

Compute:
- **Intel Ivy Bridge 2.6 GHz and**
- **Power 7+ 4.1 GHz**
- **Memory 32 GB / core**



Blue Text = Differences from Generation 1

Patterns: Create Once – Deploy Anywhere



Today – seamlessly export / import with no change

Tomorrow – seamlessly manage

Getting started is simple

Your private cloud journey begins here

1 **Contact your IBM representative** to learn how IBM is helping companies succeed with private cloud.

2 Tell us about **your business and IT objectives**, and together we can determine the best approach to build your optimal private cloud.

3 **Conduct a workshop with IBM experts** to define the optimal private cloud solution to meet your business and IT goals.

IBM SolutionsConnect 2015

Seize the Moment. Dive into Next Generation Technologies.

Thank You