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# ACCELERATION APPROACHES FOR APPLICATION DELIVERY

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# RED HAT



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- 90% of Fortune 500 rely on Red Hat
- 7,000 associates
- 80 Global Locations in 30 countries
- \$1.8 Billion Revenue

# LIFE AS A RED HAT CONSULTANT

Life as a consultant provides the opportunities to visit organizations large and small

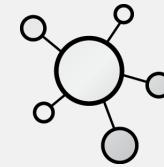


# TRENDS

Organizations want to produce software faster to meet customer and market demands

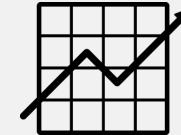
## End User Expectations

- Immediate access to data and services
- System reliability



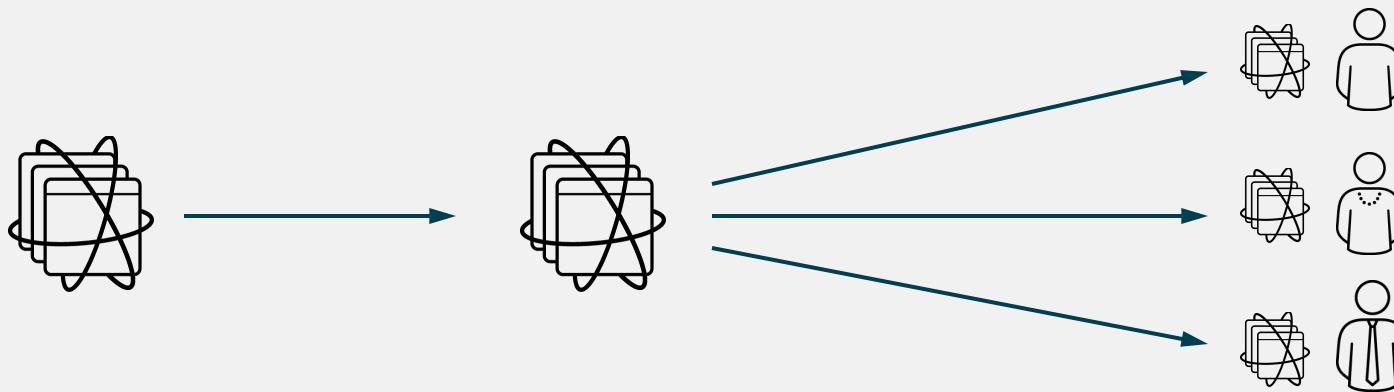
## Businesses

- New opportunities and markets
- Small time frames to release new products



# APPLICATION DELIVERY IS KEY

Delivering software frequently helps stay ahead of competition and meet market expectations



# DEVOPS PRACTICES

DevOps practices has helped improve business process and organizational culture

Continuous Integration

Automation

Agile

Adapt

Scrum

Infrastructure as Code

Culture

Continuous Deployment

# THE JOURNEY NEVER ENDS

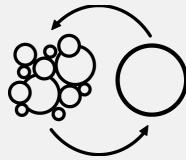
Every organization embracing the DevOps movement is at a different point in their journey





# A PRACTICAL JOURNEY INTO ACCELERATING APPLICATION DELIVERY

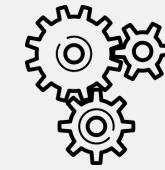
# MY SPECIALTIES



Enterprise Integration



Cloud Technologies



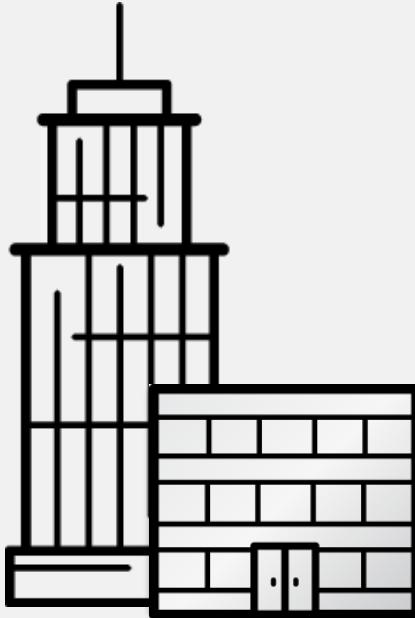
Automation

# OUT OF MANY, ONE

A single engagement can deliver lessons far after the implementation is complete

- Project overview
- Challenges and limitations that drove changes
- Technologies introduced
- Solutions to existing challenges
- Patterns to model for the future

# CUSTOMER OVERVIEW



- Fortune 500 company
- Highly competitive industry
- Large number of developers
- Transitioned to managed services in the past, but moving back to business driven IT

# ENGAGEMENT GOALS

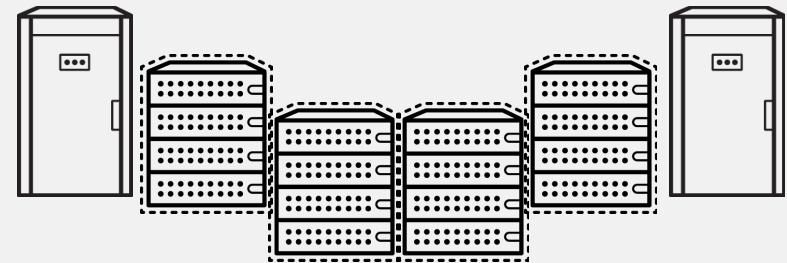
- Reduce the overall time to deliver products to market
- Increase developer productivity and potential
- Create an application platform that can scale to meet customer demands
- Standardize development stacks
- Achieve true continuous delivery
- Deliver Immediate results



# CURRENT ENVIRONMENT

Organization held back from truly being able to deliver solutions effectively

- Applications deployed on numerous physical and virtual machines
- Monolithic applications supported by legacy systems
- Continuous Integration environment established to expedite the application stability and developer productivity
- Infrastructure management tools in place to aid in environment provisioning



# CHALLENGE AND CONSEQUENCE: ENVIRONMENT PROVISIONING

Environment management directly affects the ability to deliver applications

- Challenge:
  - Developers, ops and project managers require environments for their applications
  - Complex request, approval and provisioning process which takes weeks to fulfill
  - Once approved, build out can take time depending on the request
- Consequence:
  - Lost developer productivity
  - Longer testing cycles
  - Total time to react to a application bug or security vulnerability

# CHALLENGE AND CONSEQUENCE: SECURITY

In today's industry, security is front and center

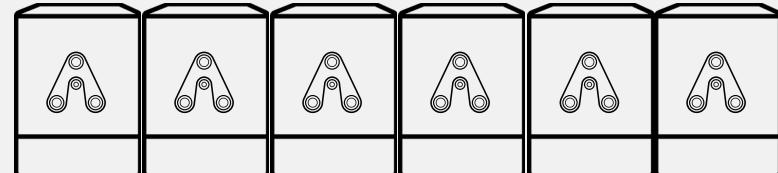
- Challenge:
  - Large number of servers to monitor and maintain
  - Patch management
  - Zero day vulnerabilities
  - Security breaches
- Consequences:
  - Time and effort required to mitigate issues across many environments and system types



# CHALLENGE AND CONSEQUENCE: APPLICATION DENSITY

Environments are created to support applications regardless of the complexity

- Challenge:
  - Physical and virtual machines provisioned regardless of the application size
- Consequence:
  - Lost computing power due to server overutilization
  - Teams cannot request additional environments for their applications due to limited resources



# CHALLENGE AND CONSEQUENCE: RUNTIME CONFIGURATION

Even with the use of Infrastructure Management tools in place, teams were struggling to maintain server runtime and application configurations

- Challenge:
  - Maintain configurations for both platform and applications
  - Coordination between ops and development teams when updates are made and changes are required
- Consequence:
  - Ops teams spent more time supporting application deployment than environment health
  - Delivery of applications slowed as teams struggled to keep runtime and application configurations in sync

# TECHNOLOGY TOOLKIT

After evaluating the operating environment, consult the technology toolkit to resolve challenges and to achieve overarching goals



# A MOVE TO THE CLOUD

The buzz of cloud technologies and its opportunities makes it a desirable platform to build and transform an organization

Elastic

Automation

Self Service

Utility  
Pricing

Flexibility



# CLOUD SERVICE MODELS



IaaS

Infrastructure as a Service



PaaS

Platform as a Service



SaaS

Software as a Service

# CLOUD SERVICE MODELS AND THE GOLDILOCKS PRINCIPLE

IaaS

PaaS

SaaS

Application

Developer Tooling

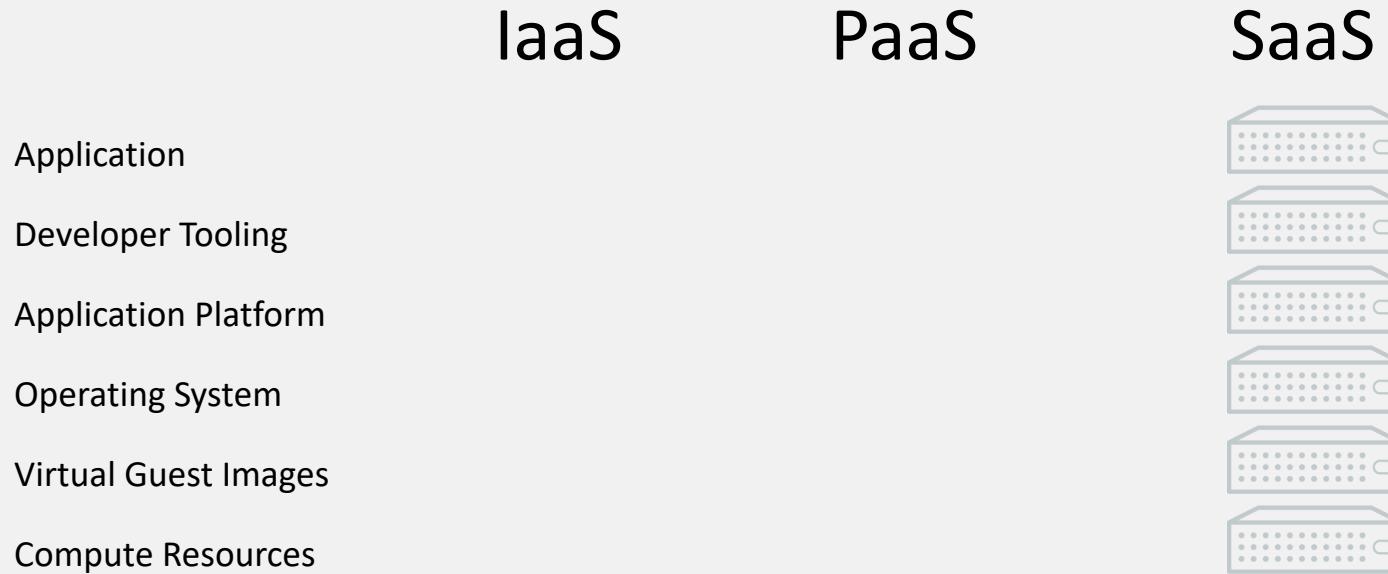
Application Platform

Operating System

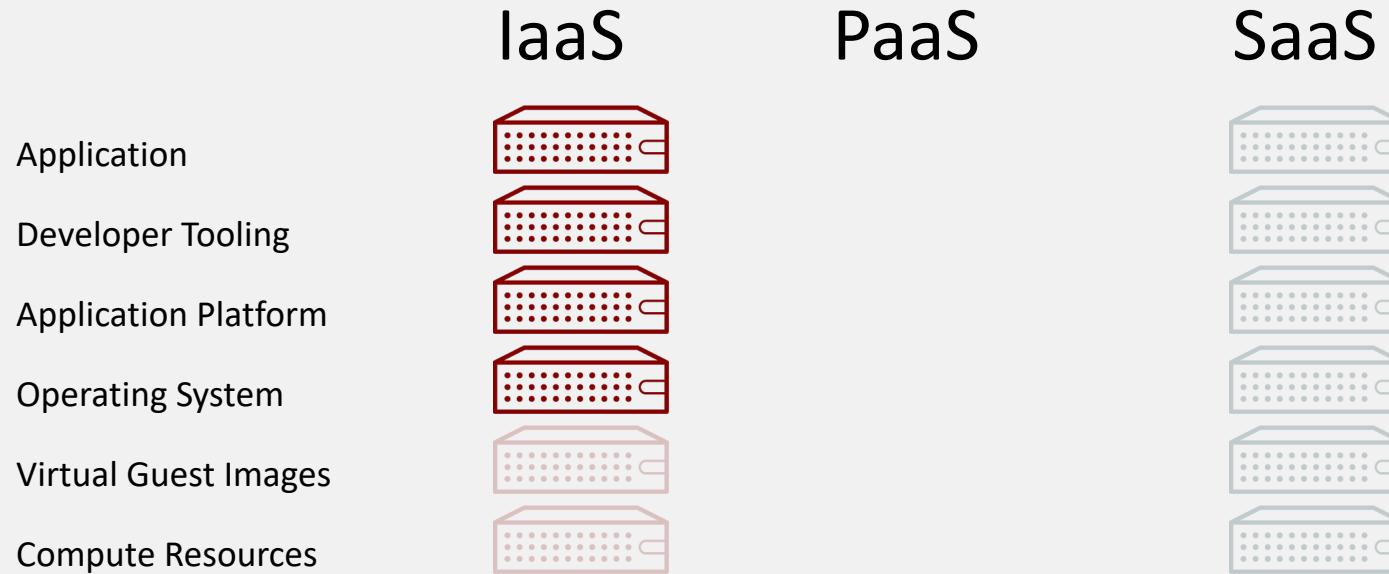
Virtual Guest Images

Compute Resources

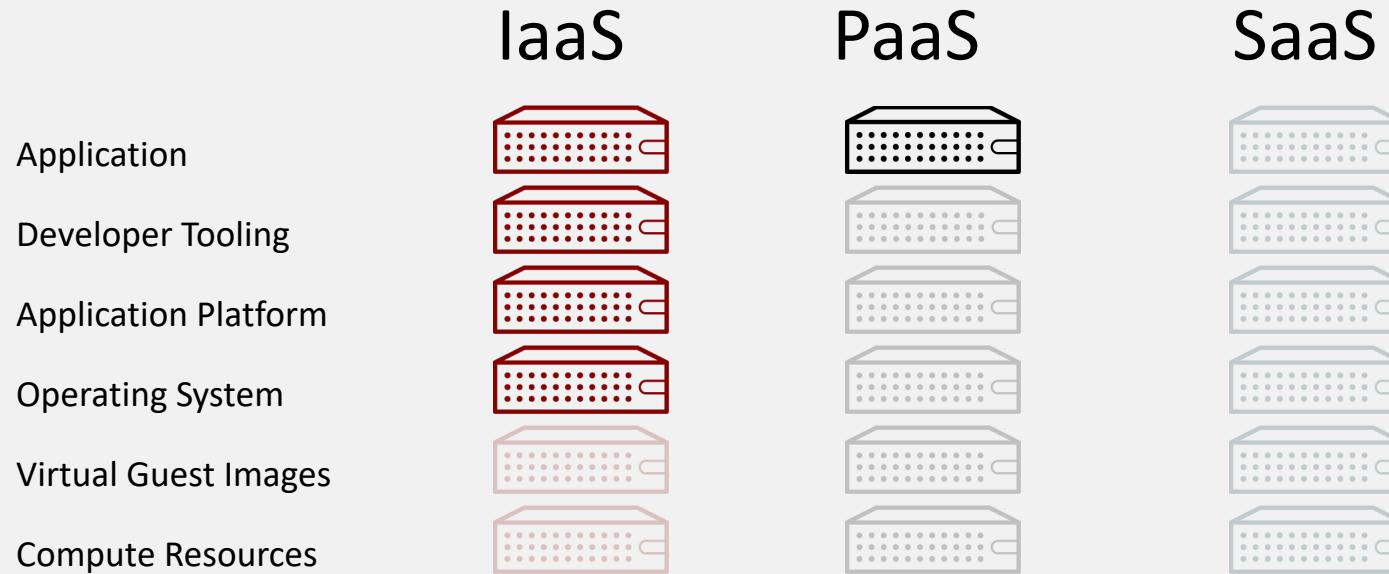
# CLOUD SERVICE MODELS AND THE GOLDILOCKS PRINCIPLE



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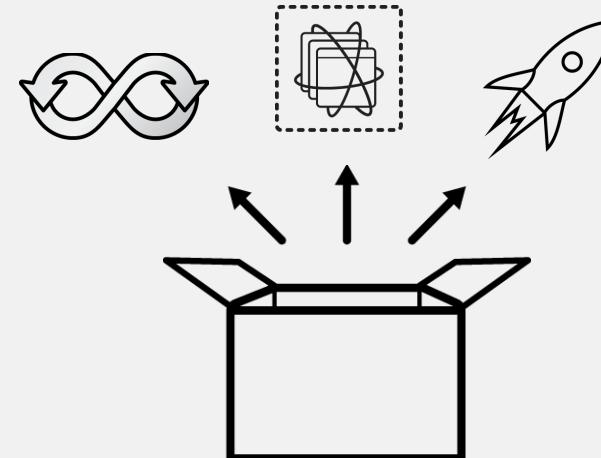
# CLOUD SERVICE MODELS AND THE GOLDILOCKS PRINCIPLE



# WHY CHOOSE PAAS?

Solutions available right out of the box

- Prepackaged solution that delivers immediate benefits
- Predefined component, processes and API's
- Interoperability with existing systems
- Higher level of abstraction
- Made for DevOps

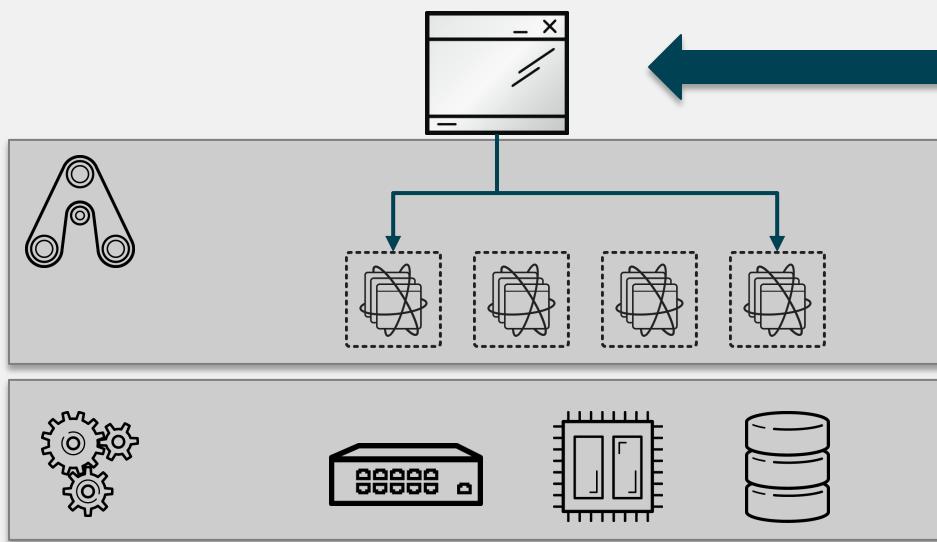


# PLATFORM AS A SERVICE

Applications

Orchestration of  
dependent  
services and  
technology

Infrastructure



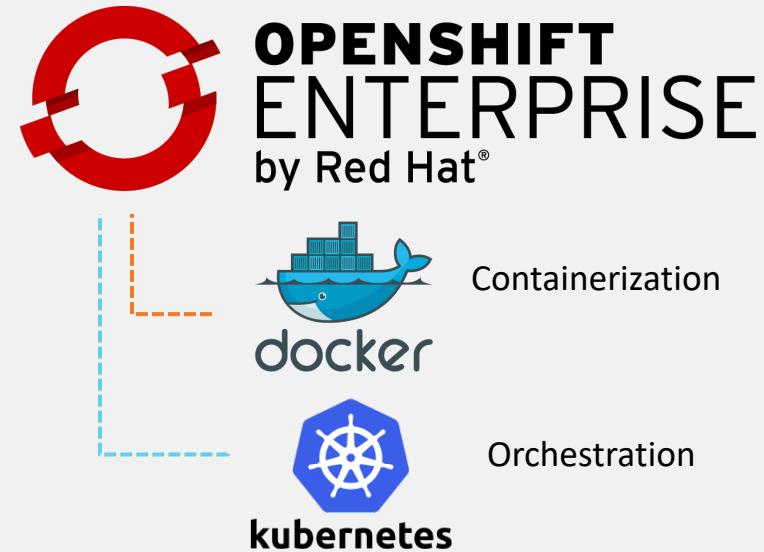
Developers access  
an ecosystem of  
supporting services  
and tools

Platform as a Service provides standardization and life-cycle automation

# OPENSHIFT AS THE PLATFORM AS A SERVICE

Instance of OpenShift was deployed into the environment for teams to begin to leverage

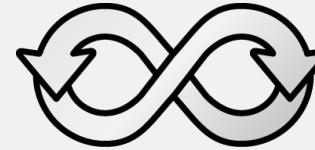
- Self service
- Standardized container runtime and orchestration
- Multi-language support
- Optimized for Continuous Integration and Continuous Delivery



# OPENSHIFT ENABLED DEVOPS

OpenShift became the catalyst for improving efficiency within the organization

- Rapid prototyping
- Automated testing of features
- Transparency
- Enables rapid feedback loop



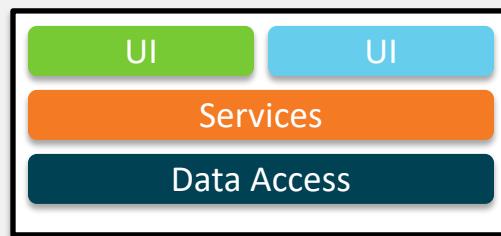


# SOLVING EXISTING CHALLENGES

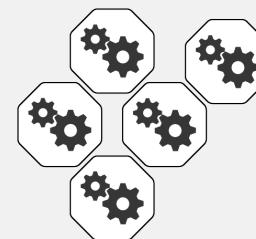
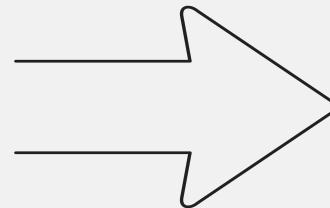
# APPLICATION OPTIMIZATION

The necessity to innovate faster leads to architectural changes

- Applications designed or redesigned to favor microservices architecture
- Decouples dependencies
- Leads to faster testing and deployment cycles
- Favored for cloud based deployments



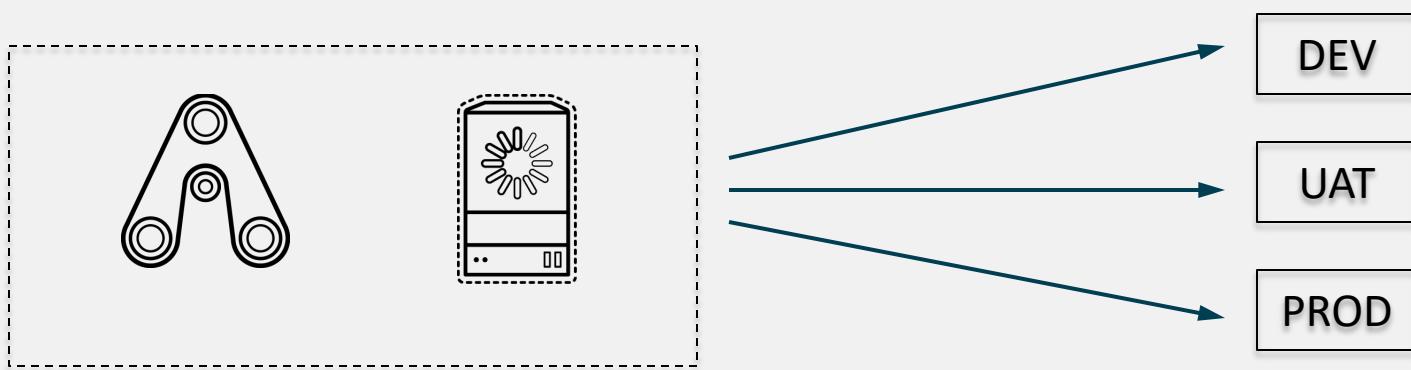
Monolithic Application



Microservices Application

# DELIVERY VIA CONTAINERS

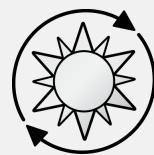
Containers enable both application and runtime to be packaged into a single unit



# CONTAINERS SPEED UP APPLICATION DELIVERY

Containers drastically reduced the time for provisioning environments for an application

2 Weeks



Physical  
Machine

6 Hours



Virtual  
Machine

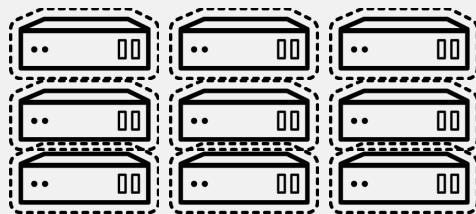
10 Seconds



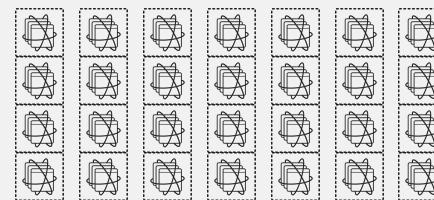
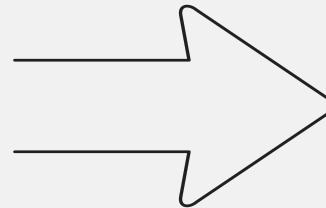
Container  
Instance

# DENSITY OF CONTAINERS

Multiple containers can coexist on a single physical or virtual host reducing the overall resources on a single machine and freeing up available computing power in the environment



10 Virtual Machines



100 Containers

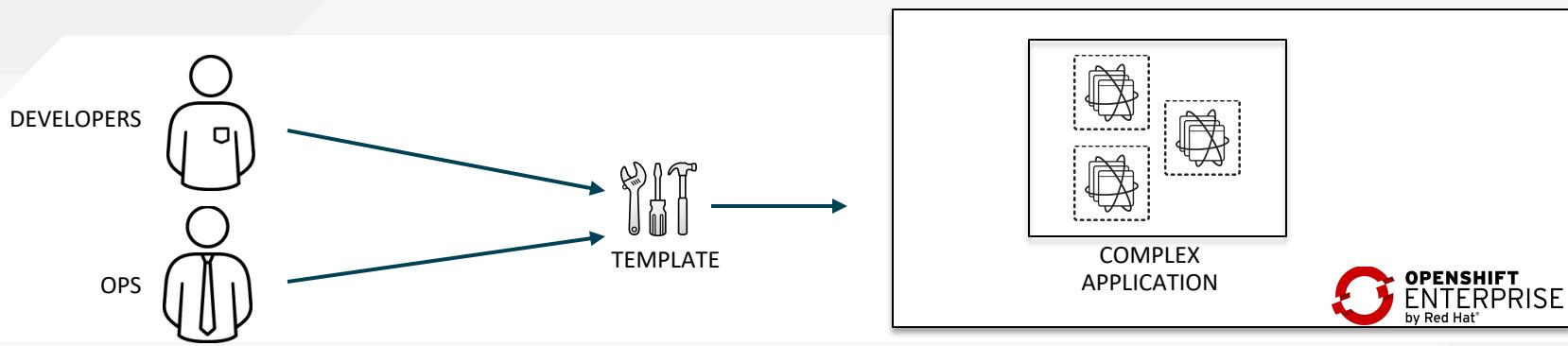
# SIMPLIFY DEPLOYMENT OPTIONS

Ops define the types of applications that can be deployed on the platform

- Platform define the standardized applications and runtimes
- Reduces the number of available platforms to manage
- Relieves responsibilities from individual development teams
- Enabled faster development

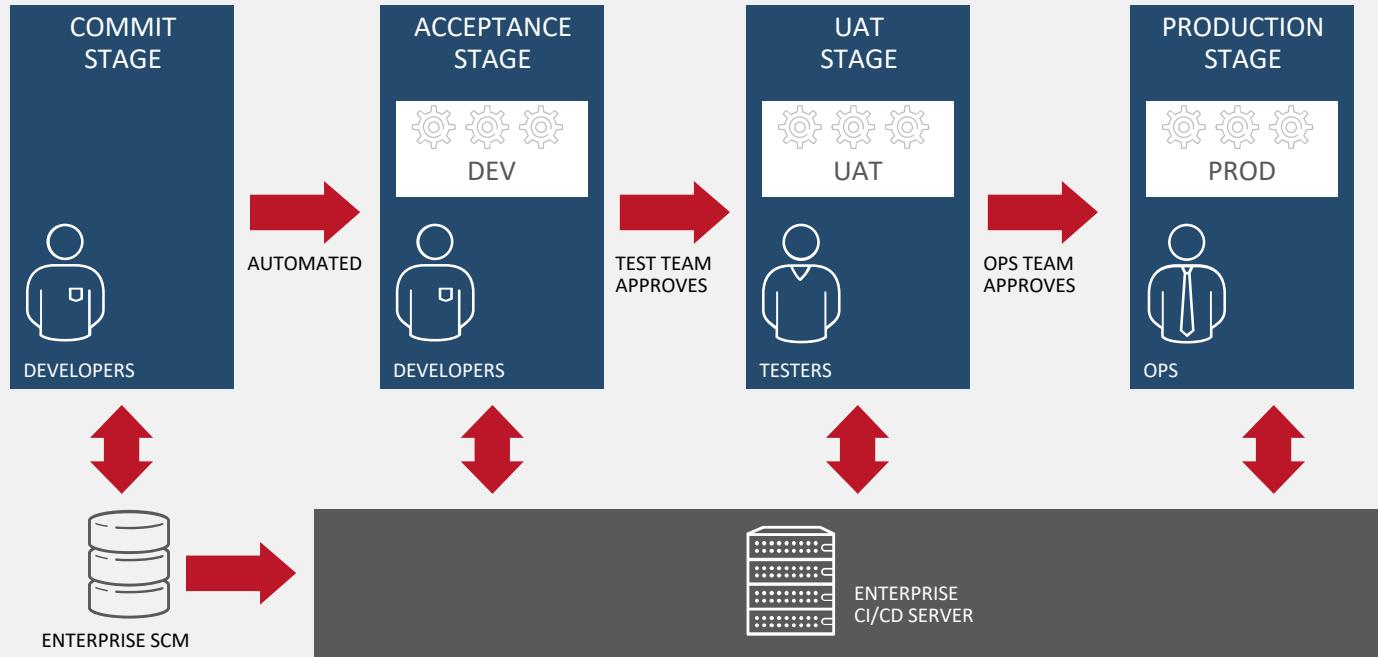


# TEMPLATED ENVIRONMENTS



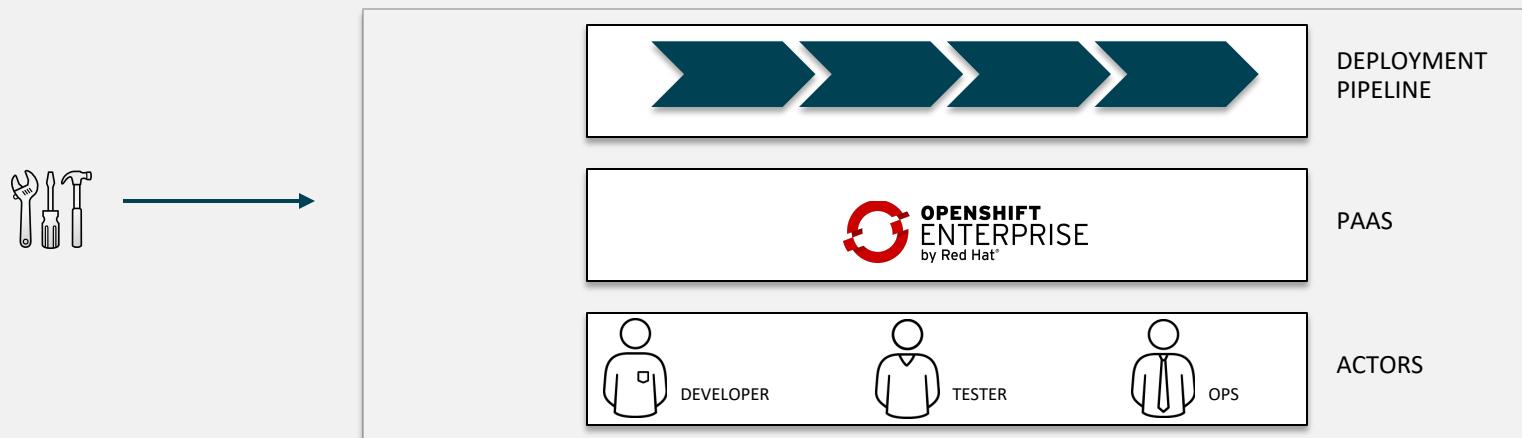
Developers and Ops teams work together to define base templates to enable single button provisioning of complex applications

# DEPLOYMENT PIPELINES



# SCRIPTED WORKFLOW TEMPLATE

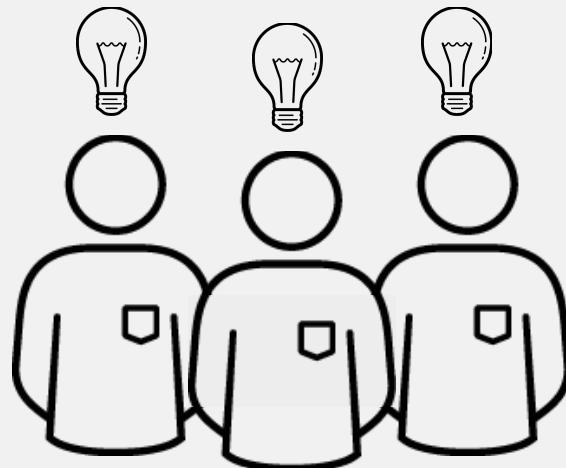
Applications used a common workflow to describe the steps necessary to take an application from development right through production





# TECHNOLOGY AS A CATALYST

# ENABLING DEVELOPERS



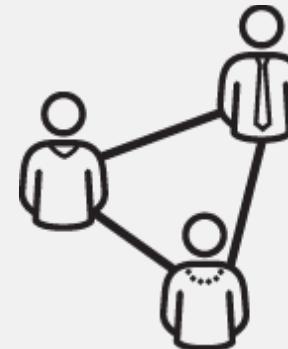
Developers have a platform for them to utilize by expressing their creativity that ultimately pays dividends

- Explore new technologies
- Improving current applications and processes
- Build community of developers

# ORGANIZATION COHESION

Technology has the ability to bring together an organization to achieve a common goal

- Embrace the capabilities of a technology
- Use technology as an enabler to drive change
- Favor small tactical wins for policy implementation



The background features a minimalist abstract design. It consists of several large, overlapping geometric shapes in shades of red and grey. On the left, there's a large red parallelogram with a fine white grid pattern. Above it is a smaller grey parallelogram. To the right, there are several red rectangular blocks of varying sizes, some with diagonal hatching. The overall effect is clean and modern.

# ACCELERATING APPLICATION DELIVERY DEMO

# ACCELERATING APPLICATION DELIVERY DEMO

Demonstration of many of the concepts implemented during the engagement

- Lifecycle of a web application
- Scripted build and deployment pipeline using Jenkins
- OpenShift Integration with CI/CD Environment
- Push button deployments
- Notifications used to keep teams engaged

# TOOLS FOR ACCELERATING APPLICATION DELIVERY



Jenkins



Nexus



Slack



**OPENSHIFT  
ENTERPRISE**  
by Red Hat®

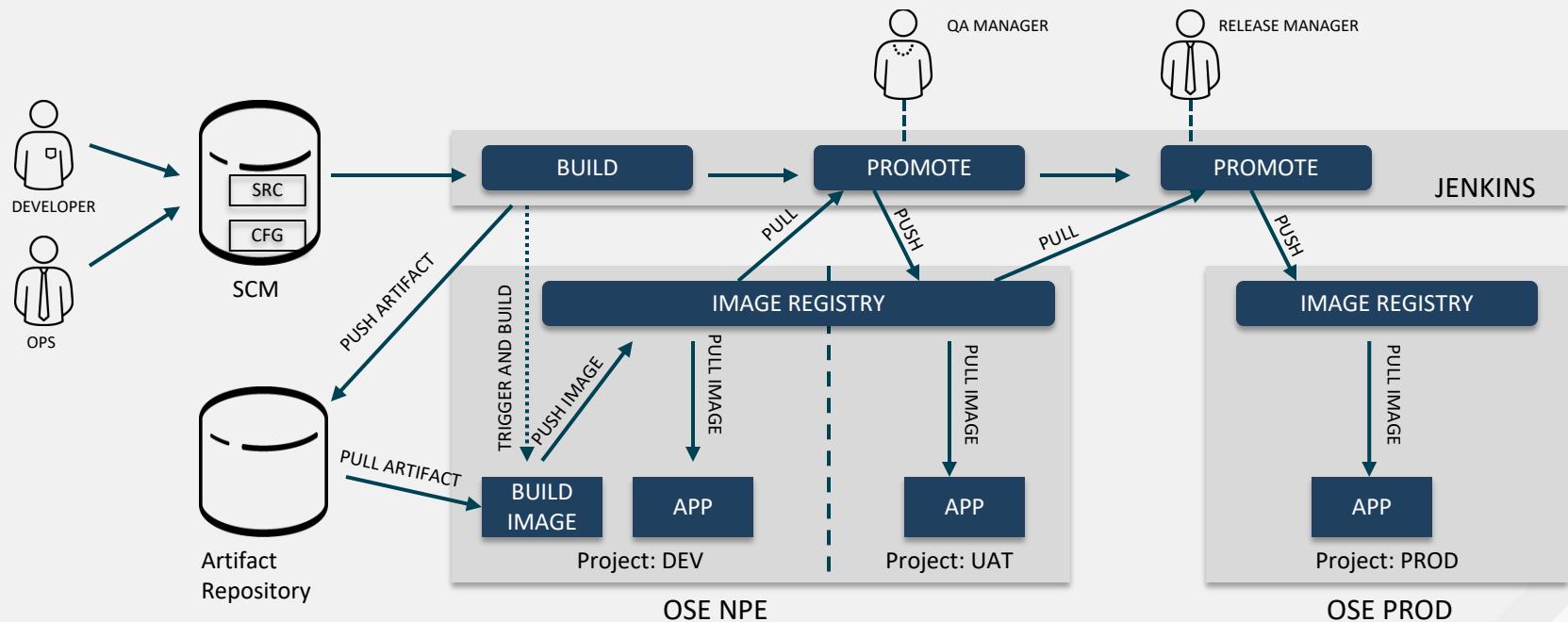


Docker



Kubernetes

# ACCELERATING APPLICATION DELIVERY DEMO



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# ACCELERATING APPLICATION DELIVERY DEMO

# TOP FIVE TAKEAWAYS

- Embrace the strengths of containerization technology
- Only build your Docker container once
- Model the build and deployment process into a reusable template
- Contemplate your cloud strategy
- Leverage tools that provide solutions for multiple groups in the organization



# HERE'S WHAT I'M LOOKING FOR HELP WITH...

A comprehensive list of open source tools or plugins for application delivery

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<http://www.redhat.com/en/services/training>

<http://www.redhat.com/en/technologies/cloud-computing/openshift>

## ACCELERATE DEVOPS WITH RED HAT CONSULTING

DATASHEET

### RED HAT® CONSULTING CAN HELP YOUR ORGANIZATION:

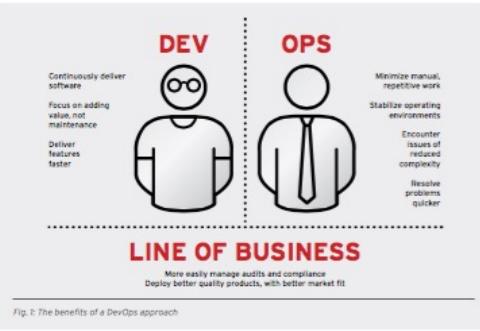
- Take the first step toward aligning cross-functional teams that can deploy services as quickly as business demands change.
- Reduce time to market.
- Continuously deliver software while increasing quality.

### TECHNOLOGY ALONE CAN'T MEET MARKET DEMANDS

For IT organizations, there has never been greater pressure to deliver meaningful services to the business and customers. As lines of business change or add requirements, developers must be able to release new features and functionality quickly. And IT operations must be able to support products and services in production. Too often, rigid technology and inefficient processes stand in the way.

New tools, technologies, and frameworks have evolved recently to help manage rapid shifts in the technology landscape, but they're only as good as how well they interact with one another and the underlying processes that exist within the organization.

DevOps is the practice of streamlining the development process through better collaboration, standardization, and automation. It considers the application, its infrastructure, and the teams behind it not as separate entities, but closely aligned. The organizations that can best balance their developers' rapid release needs with operations' ability to deliver stability and security will have the most competitive advantage.



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