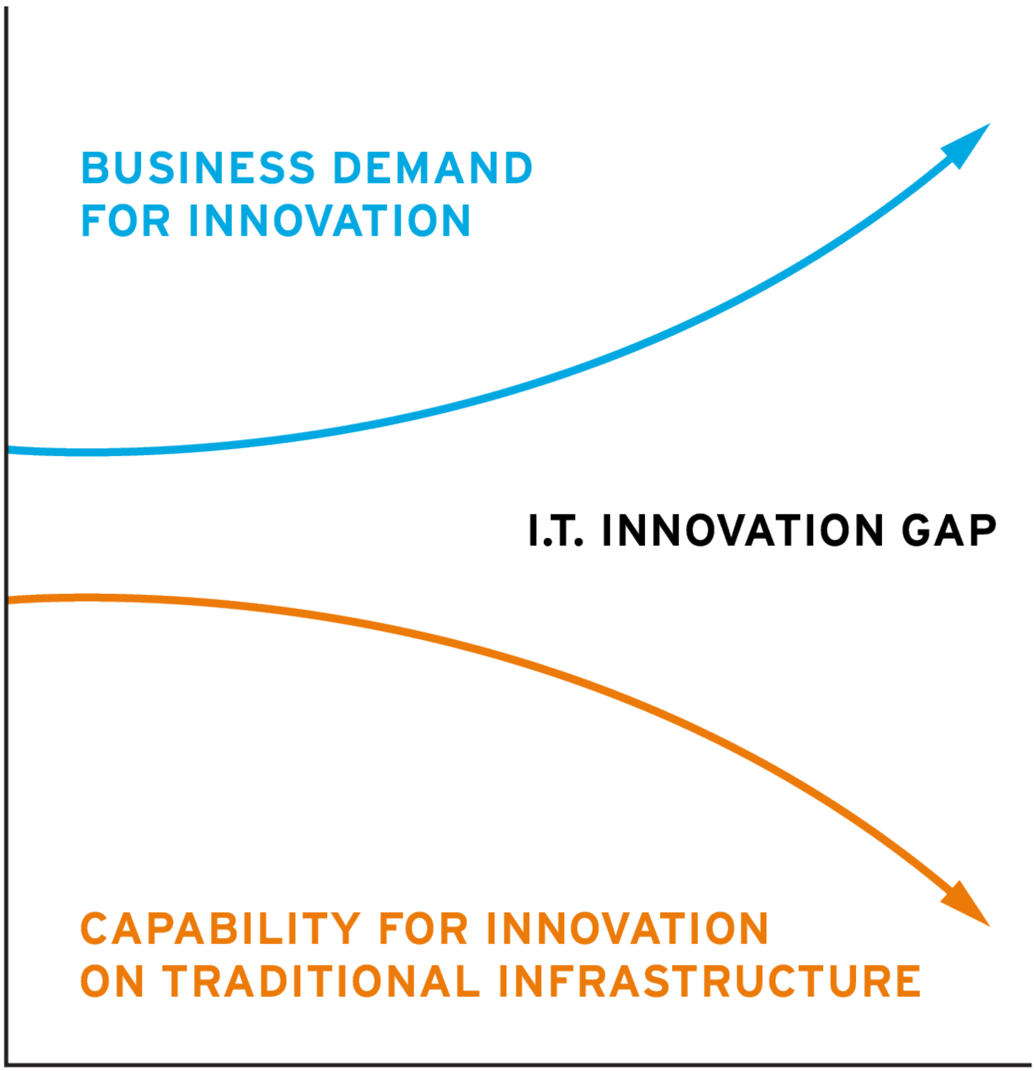
INTRODUCTION TO OPENSHIFT

Martin Sauvé
Architecte de solutions
8 décembre 2014

BUSINESS DEMANDS DRIVE I.T. TRANSFORMATION



- Business wants agility, lower cost, new capabilities
- IT struggling with existing legacy infrastructure architecture and cost model
- Cloud providers are using next-generation IT built on open source technologies
- IT needs to adopt cloud architectures and technologies to close innovation gap

I.T. TRANSFORMATION FOR EVERYONE

BUSINESS CHALLENGES

- Provide ubiquitous access to data and services
- Achieve better quality of service
- Rapid innovation and faster time to market

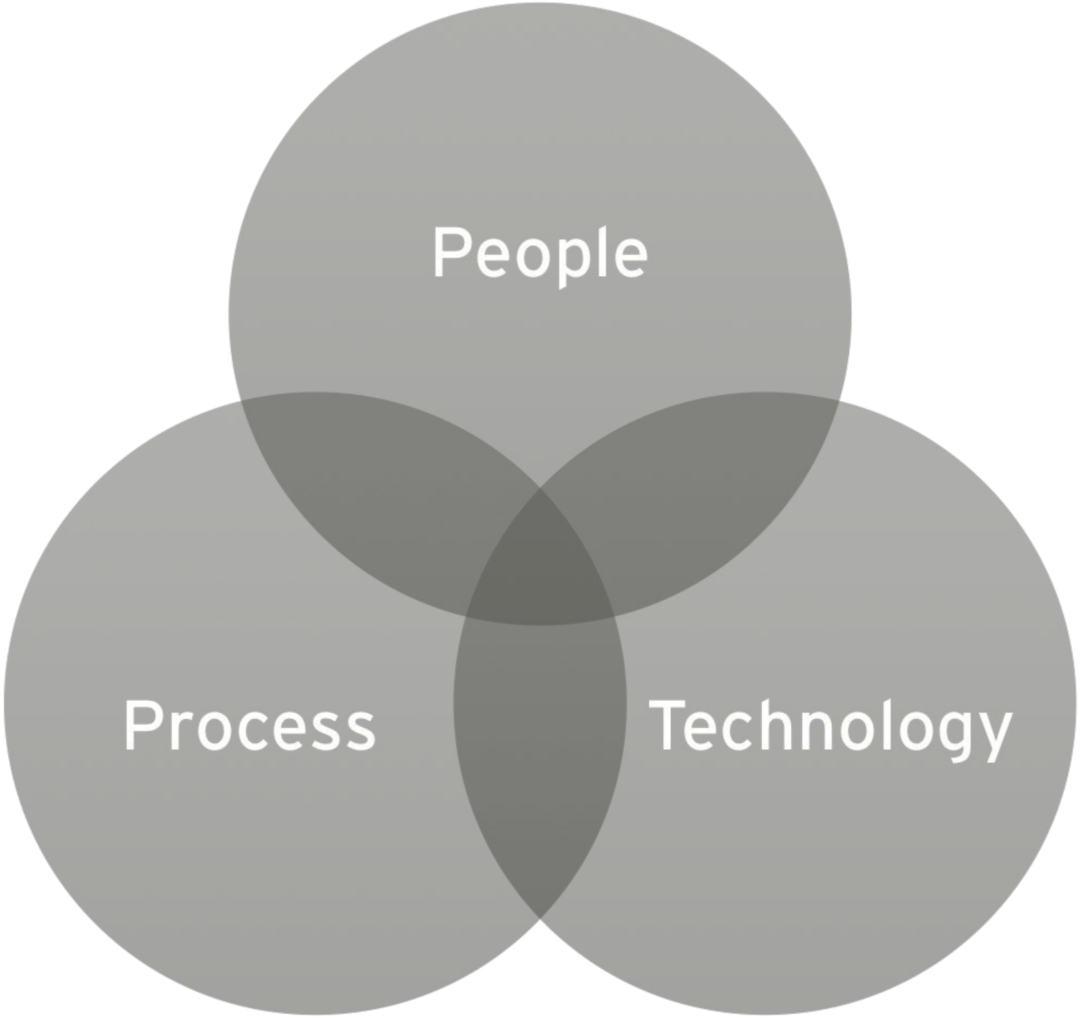
DEVELOPER CHALLENGES

- Reduce time to provision and develop, improve productivity
- Test new features and update applications faster
- Improve availability of platforms and resources

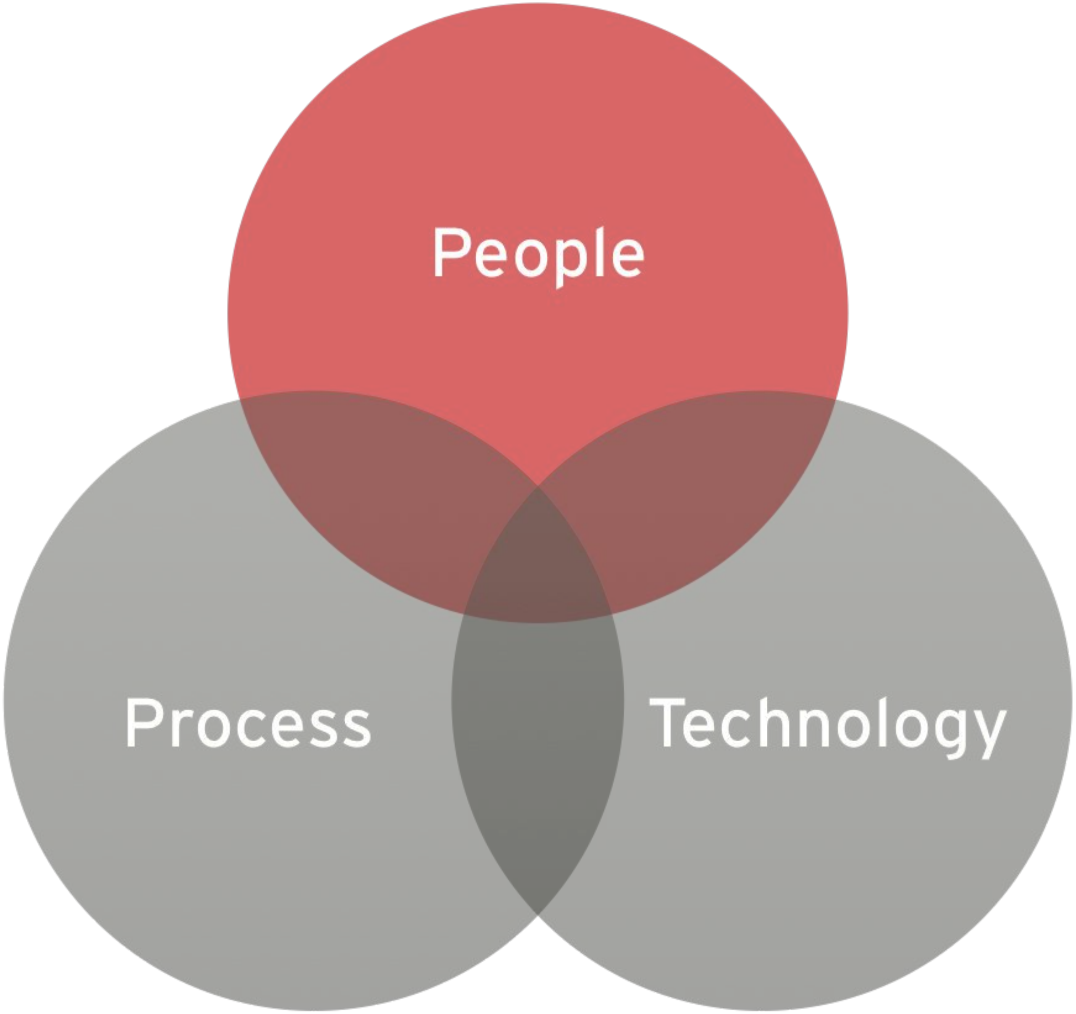
I.T. OPERATIONS CHALLENGES

- Increase operation efficiency
- Maximize resource utilization
- Reliable, secure, compliant

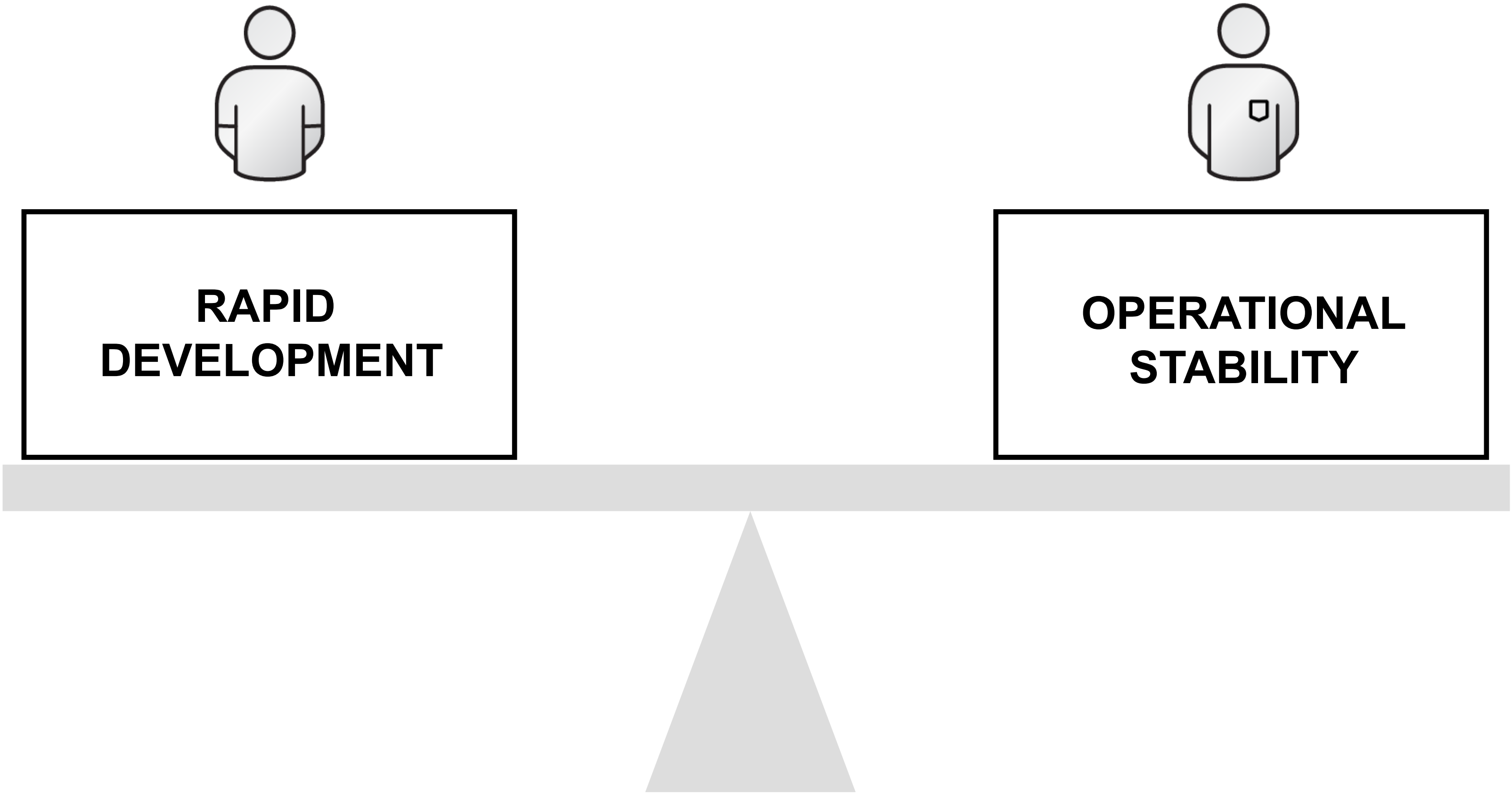
THREE PILLARS OF AN I.T. ORGANIZATION



THE PEOPLE



THE I.T. BALANCING ACT

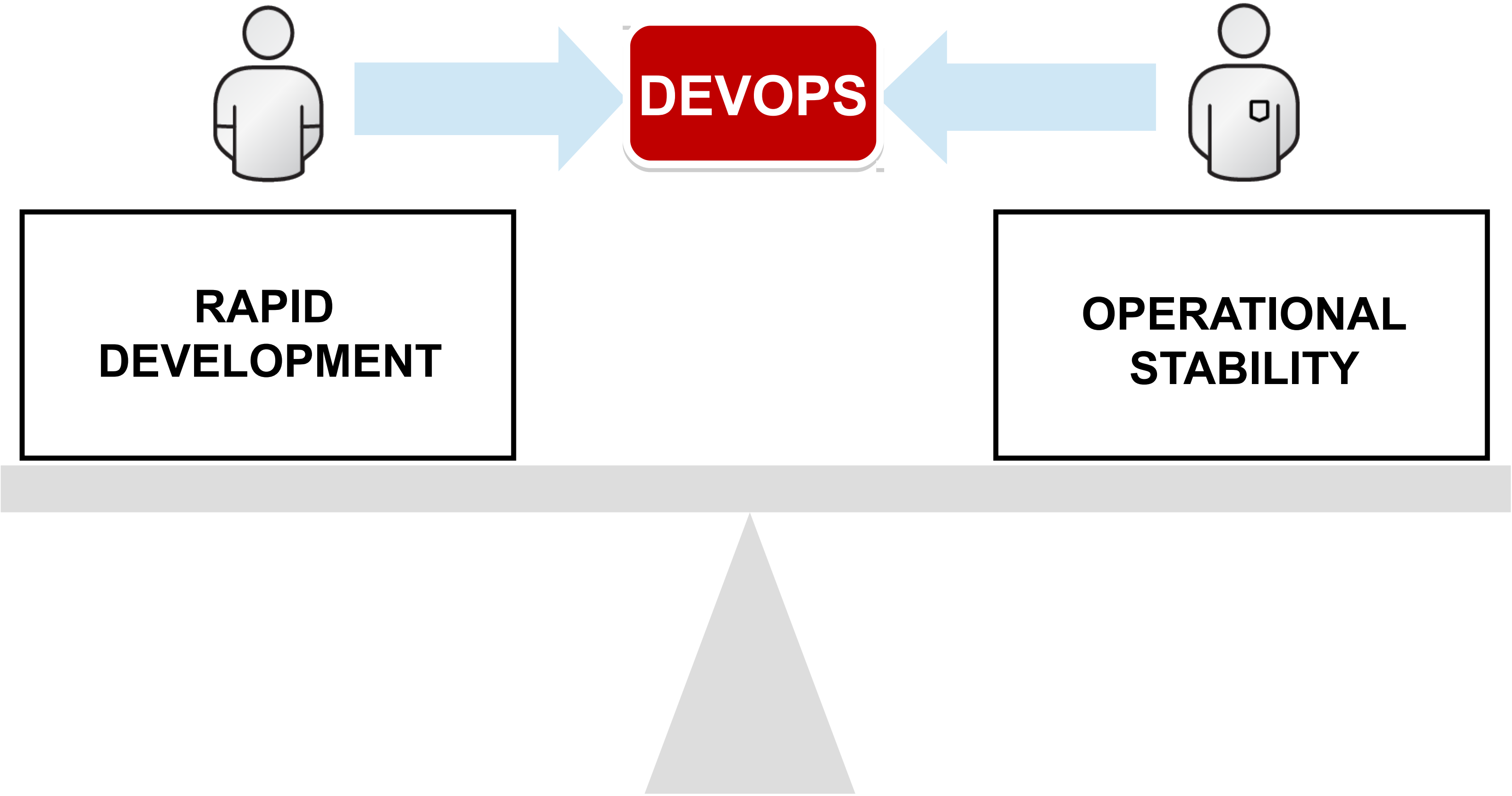


RAPID DEVELOPMENT

OPERATIONAL STABILITY

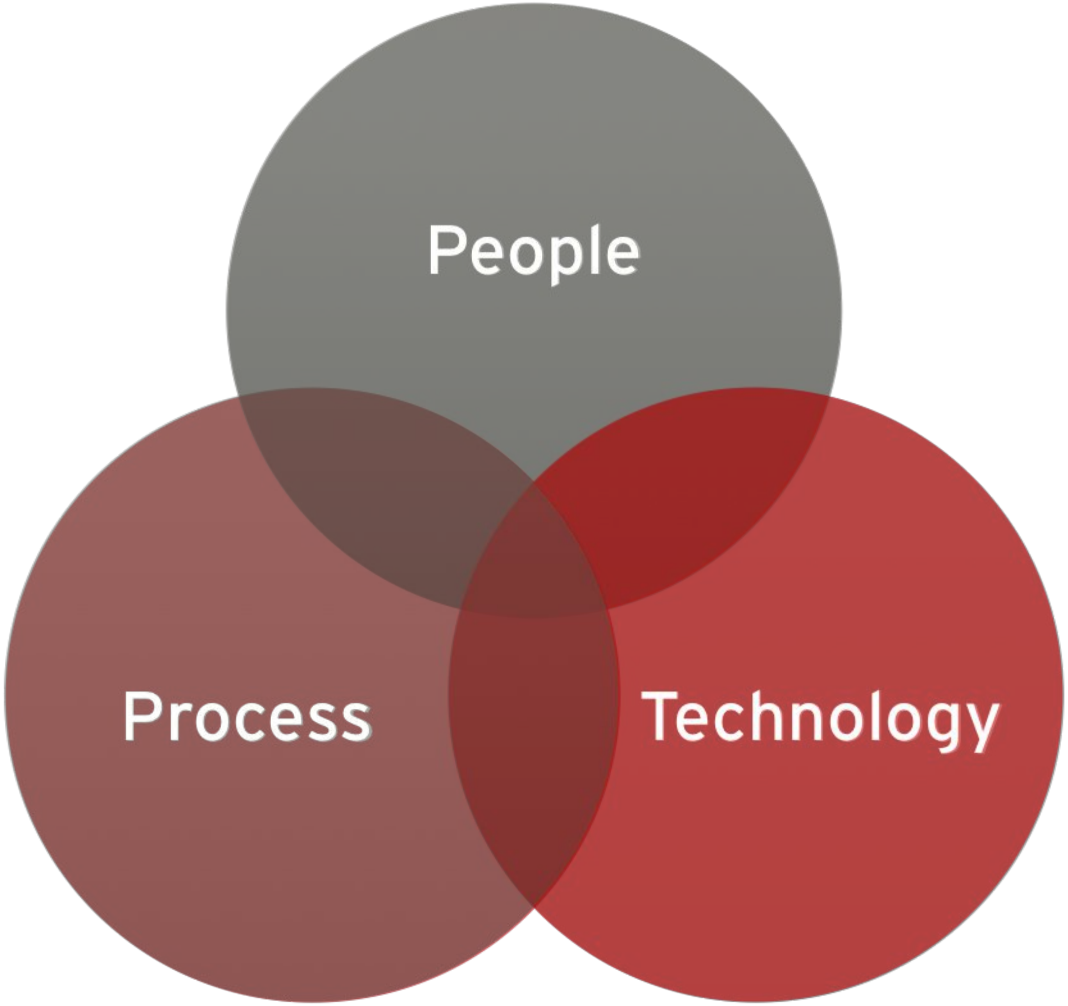
To meet the growing demands of the business, developers and I.T. operations must find balance...

BRINGING DEV AND OPS TOGETHER



A methodology to deliver software more efficiently by emphasizing on collaboration, communication and integration between development and I.T. operations.

THE PROCESS AND THE TECHNOLOGY



TYPICAL DEVELOPMENT LIFECYCLE

PHYSICAL

1. Have Idea
2. Get Budget
3. Submit Hardware Request
4. Wait...
5. Get Hardware
6. Rack and Stack Hardware
7. Install Operating System
8. Install Operating System Patches
9. Create User Accounts
10. Deploy Application Server
11. Deploy Framework/Tools
12. Code
13. Test
14. Buy and Configure Prod Servers
15. Push to Prod
16. Launch
17. Order More Servers to Meet Demand
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20. Etc.

VIRTUAL

1. Have Idea
2. Get Budget
3. Submit VM Request
4. Wait...
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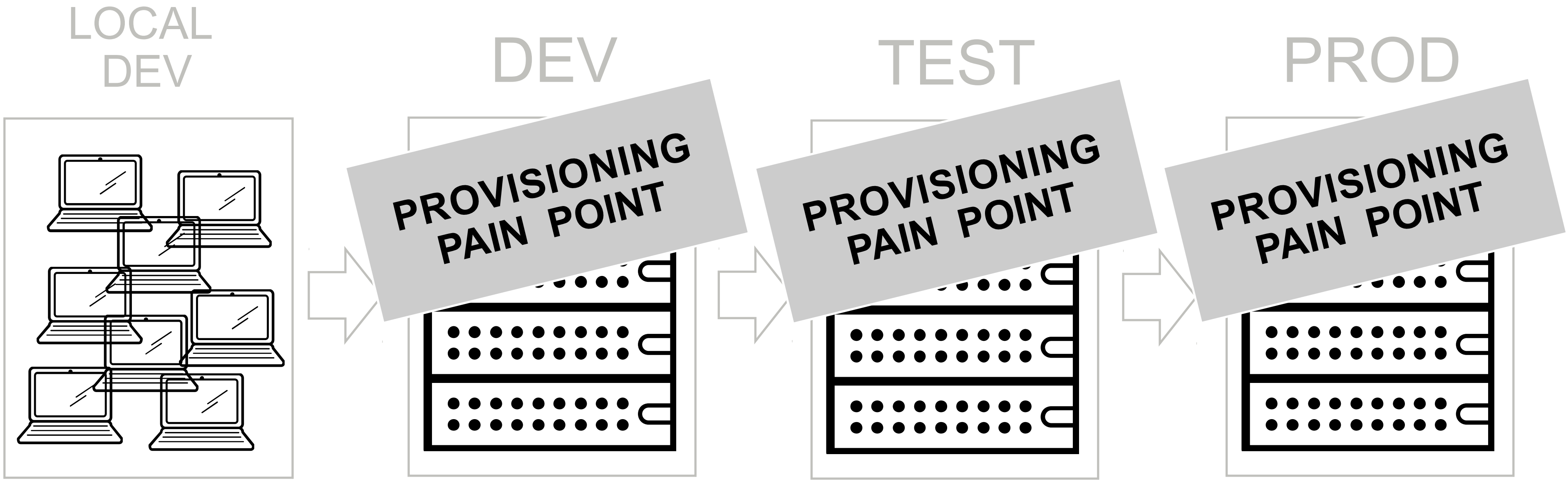
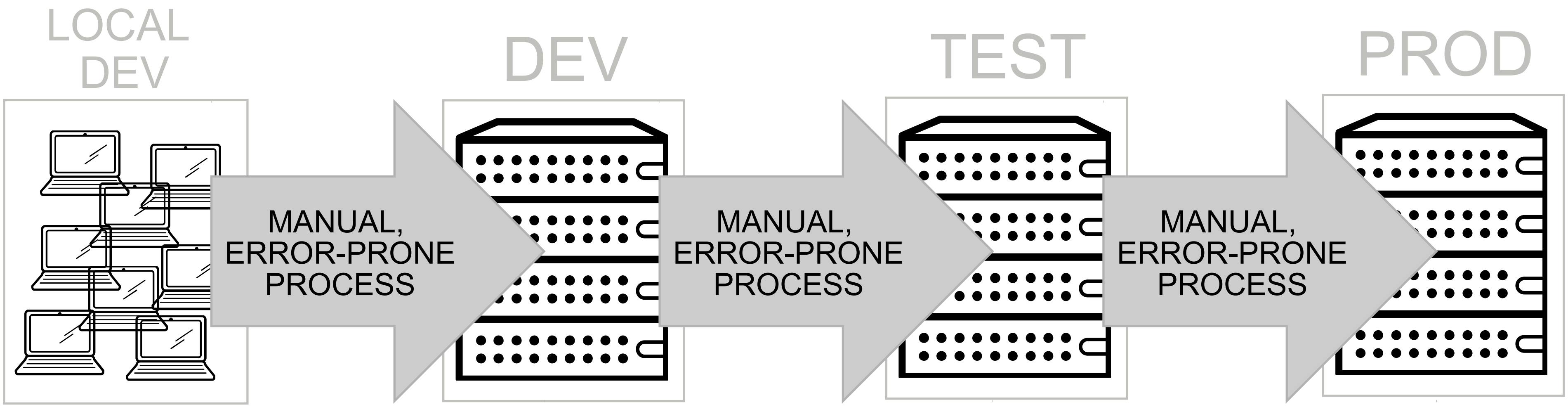
TYPICAL ENVIRONMENT PROVISIONING



TYPICAL DEPLOYMENT PIPELINE



LOCAL DEV

DEV

TEST

PROD

MANUAL, ERROR-PRONE PROCESS

MANUAL, ERROR-PRONE PROCESS

MANUAL, ERROR-PRONE PROCESS

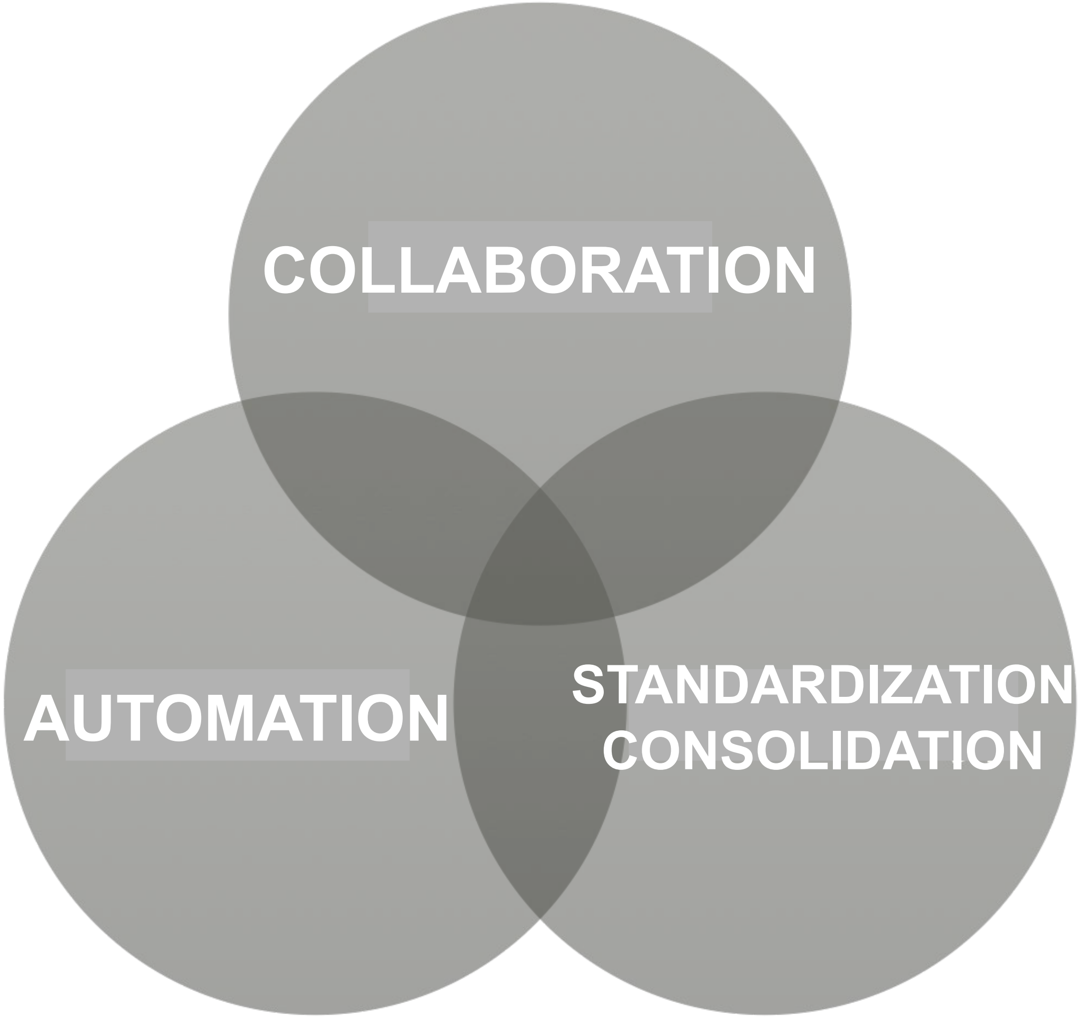
WHAT IF...

We could **automate** environment provisioning?

We could **standardize** technology stacks and platforms?

We could **consolidate** our resources and pool usage?

REALIZING I.T. EFFICIENCY

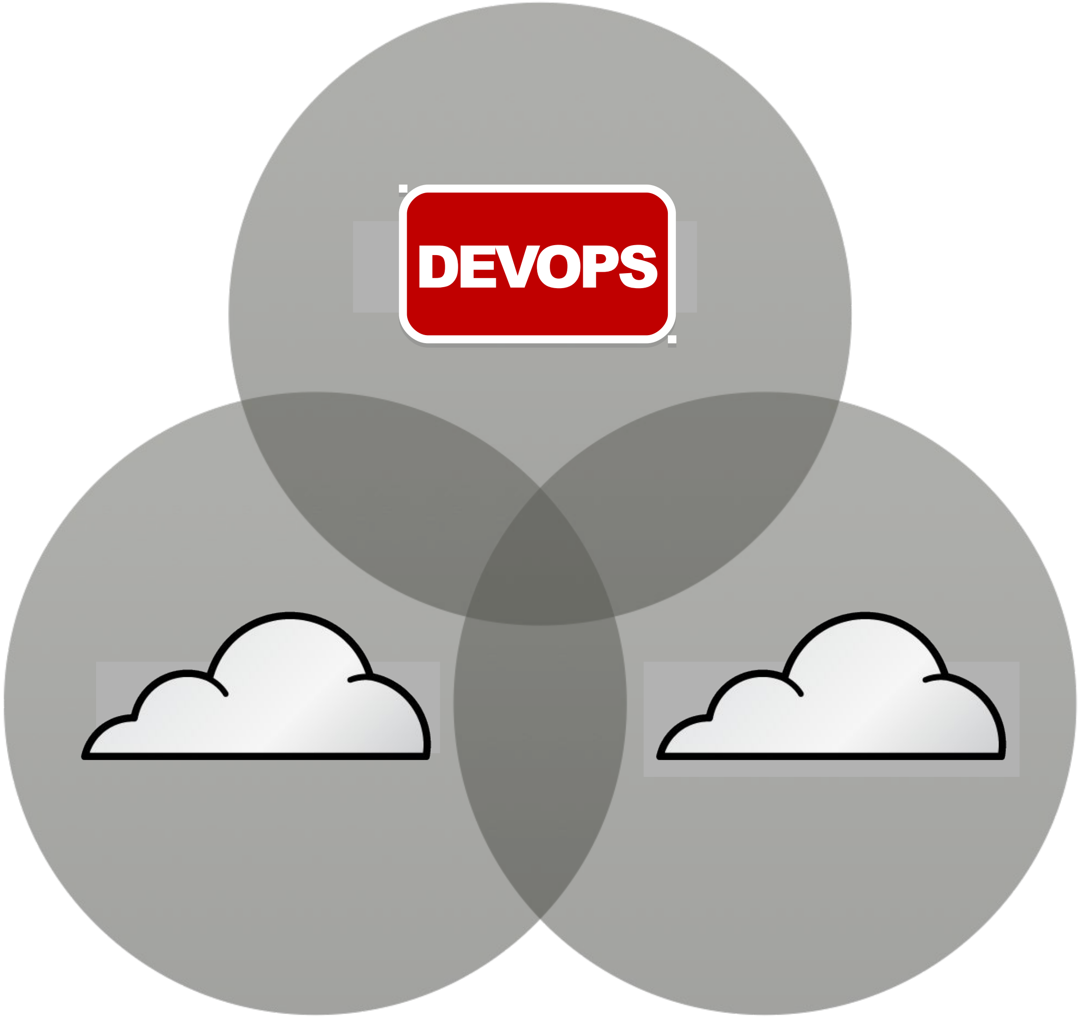


COLLABORATION

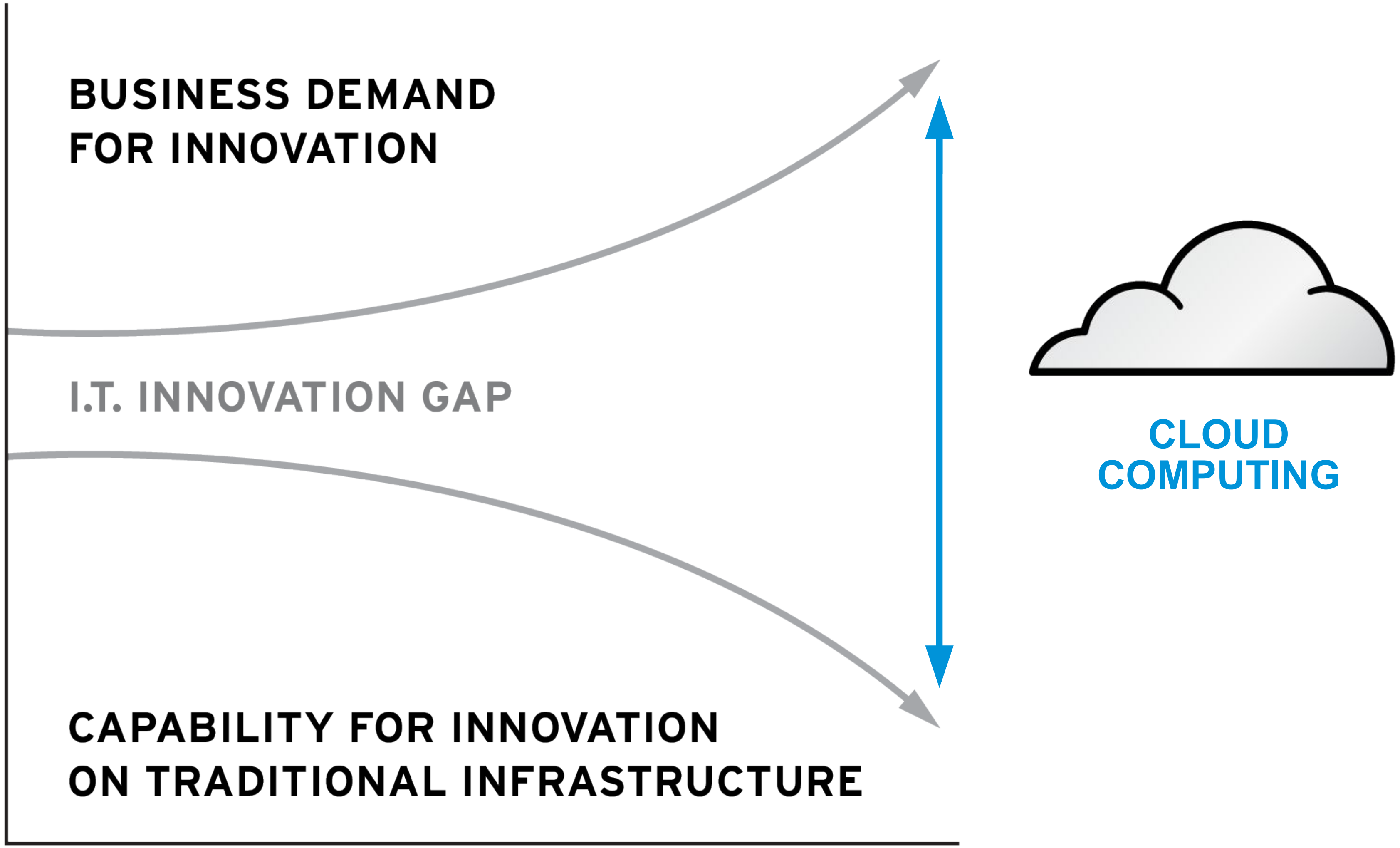
AUTOMATION

STANDARDIZATION
CONSOLIDATION

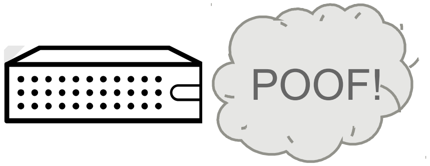
APPLYING THE METHODOLOGIES

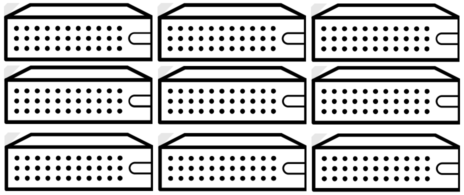


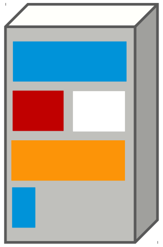
CLOUD CLOSES THE INNOVATION GAP


BUSINESS DEMAND FOR INNOVATION
I.T. INNOVATION GAP
CAPABILITY FOR INNOVATION ON TRADITIONAL INFRASTRUCTURE
CLOUD COMPUTING

CLOUD SERVERS ARE...







EPHEMERAL **ANONYMOUS** **MULTI-TENANT**

CLOUD COMPUTING CHARACTERISTICS

SELF-SERVICE PROVISIONING

RAPID ELASTICITY

RESOURCE POOLING

NETWORK ACCESS

MEASURED SERVICE

CLOUD SERVICE MODELS

APPLICATION

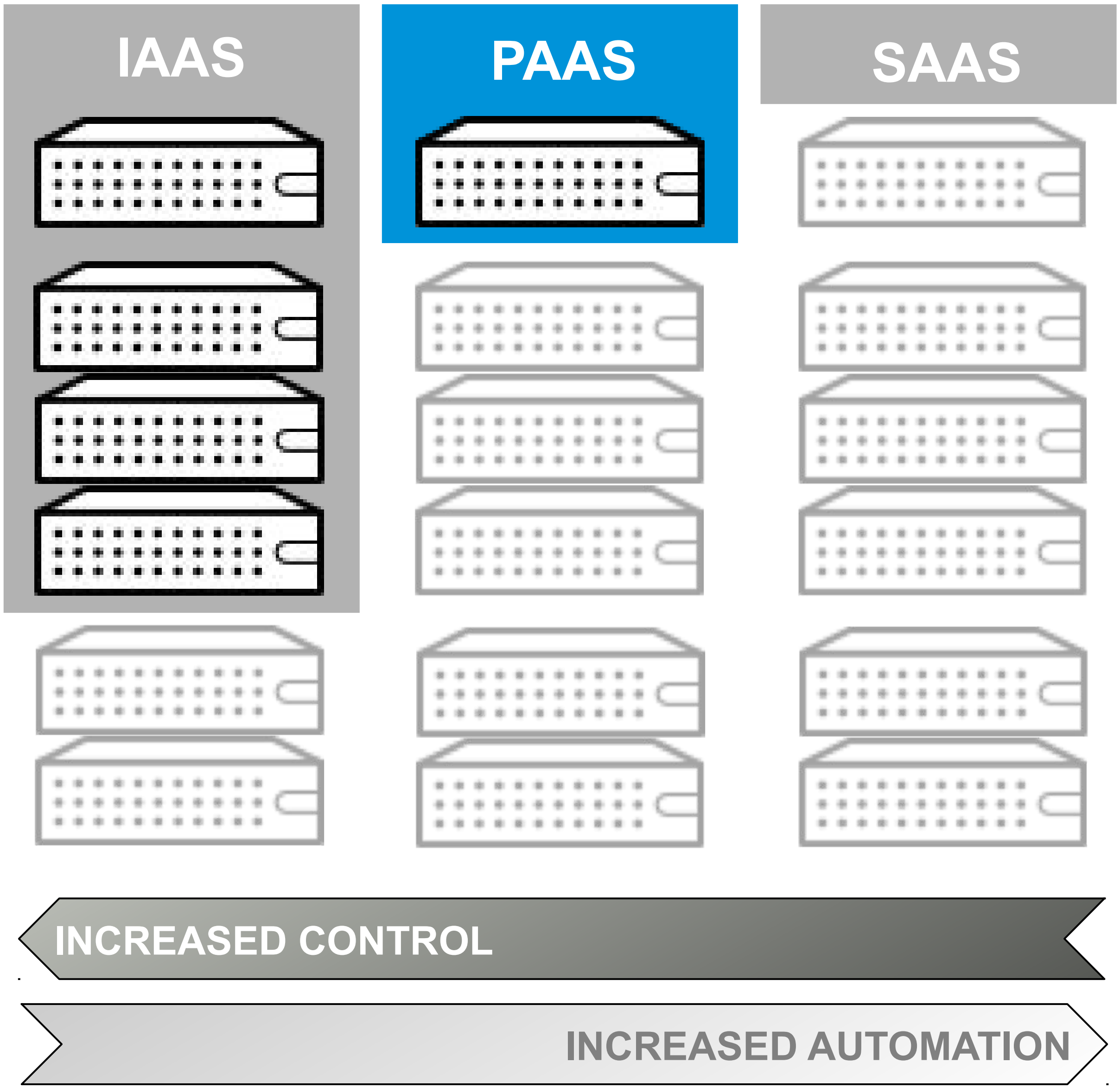
DEVELOPER TOOLING
(Source Control, Build Tools, CI)

APPLICATION PLATFORM
(App Server, Middleware, Languages, Frameworks)

OPERATING SYSTEM

VIRTUAL GUEST IMAGES

COMPUTE RESOURCES
(CPU, RAM, Network, Disk)



Provided and Controlled by the Cloud Consumer

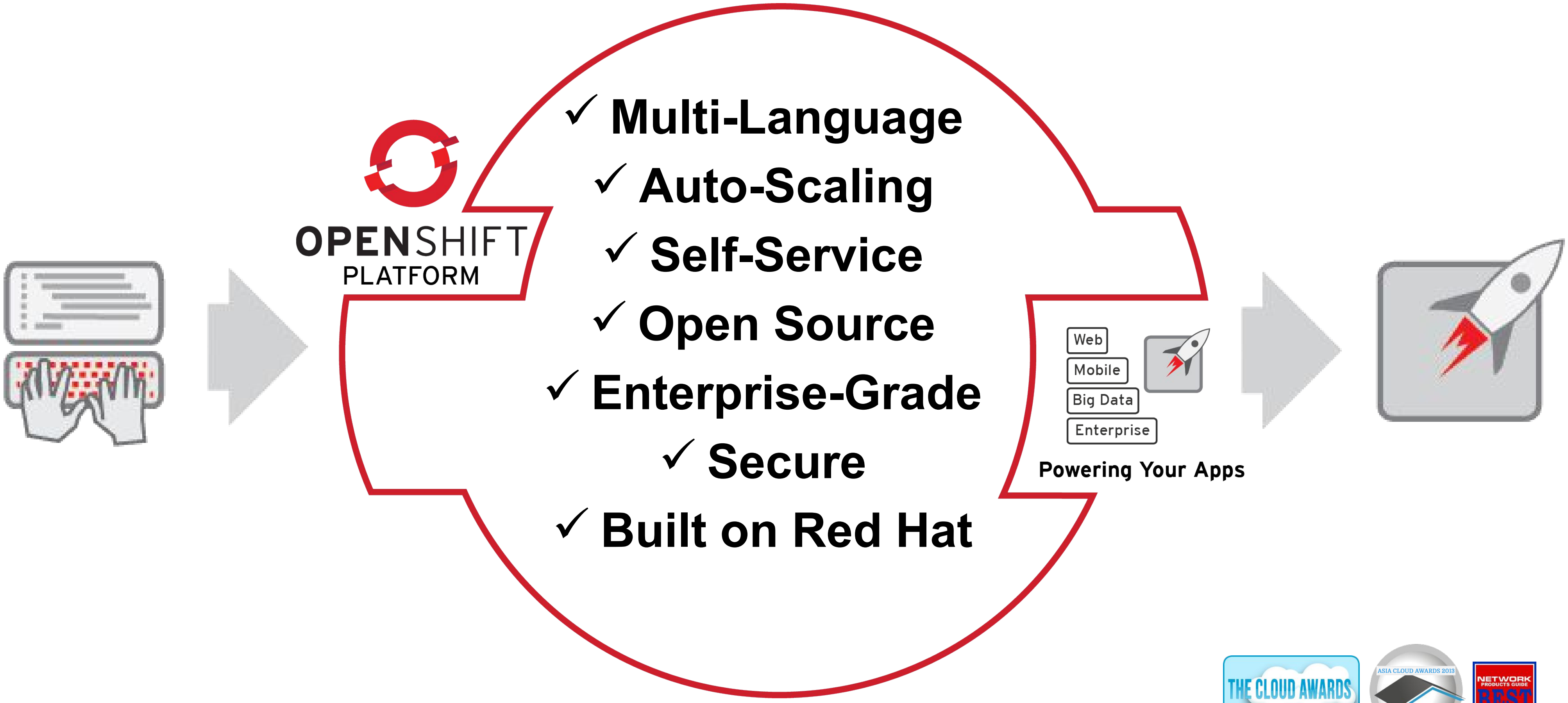
Automated and Managed by the Cloud Provider

IMPLEMENTING A PAAS

Gartner

> “The use of Platform-as-a-Service technologies will enable IT organizations to become more agile and more responsive to the business needs. —GARTNER

OPENSHIFT IS PAAS BY RED HAT



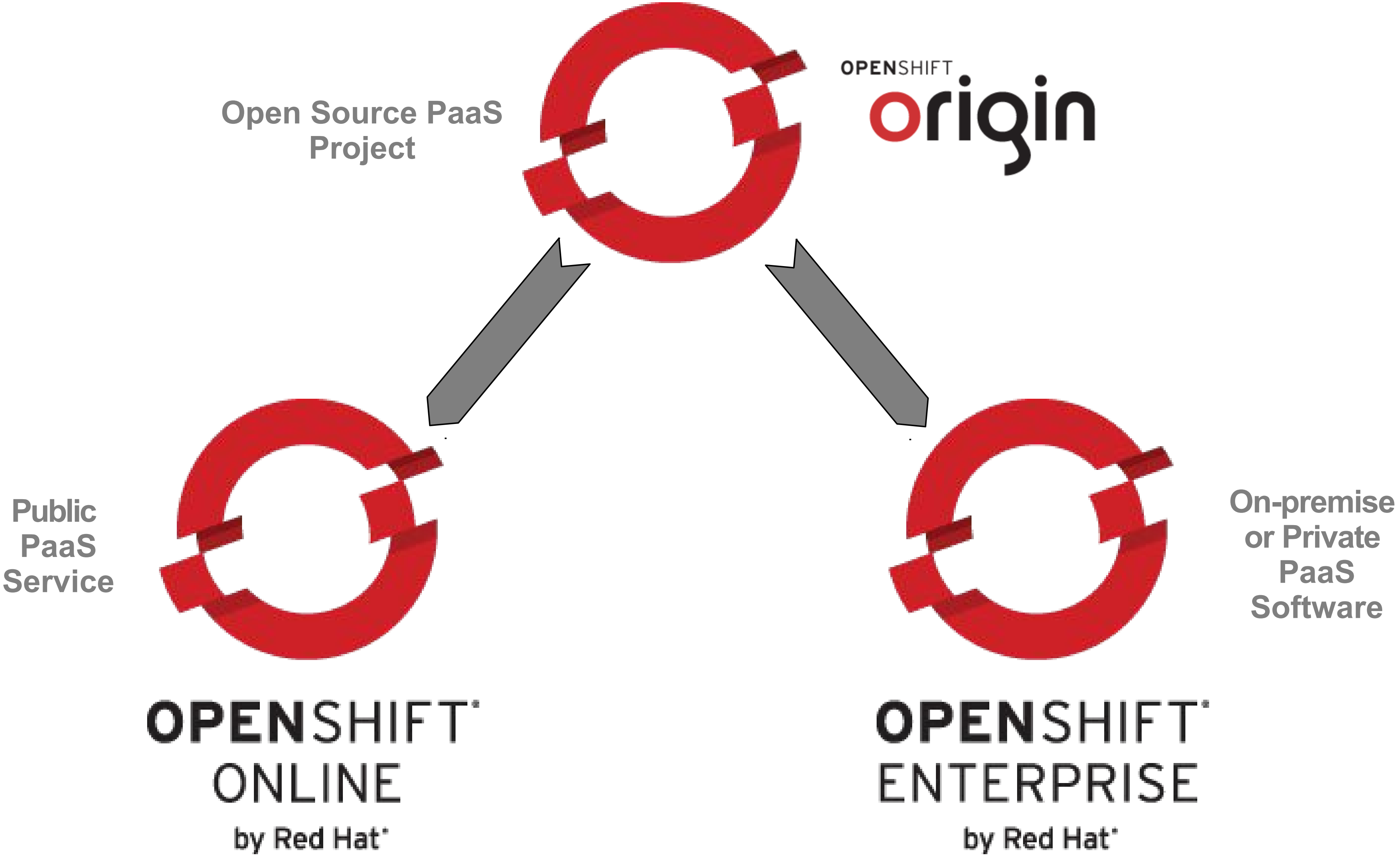
- ✓ Multi-Language
- ✓ Auto-Scaling
- ✓ Self-Service
- ✓ Open Source
- ✓ Enterprise-Grade
- ✓ Secure
- ✓ Built on Red Hat

THE CLOUD AWARDS WINNER 2012-13

ASIA CLOUD AWARDS 2013 Best PLATFORM AS A SERVICE

NETWORK PRODUCTS GUIDE BEST 2013 GOLD

RED HAT'S PAAS STRATEGY



Open Source PaaS Project

OPENSHIFT origin

Public PaaS Service

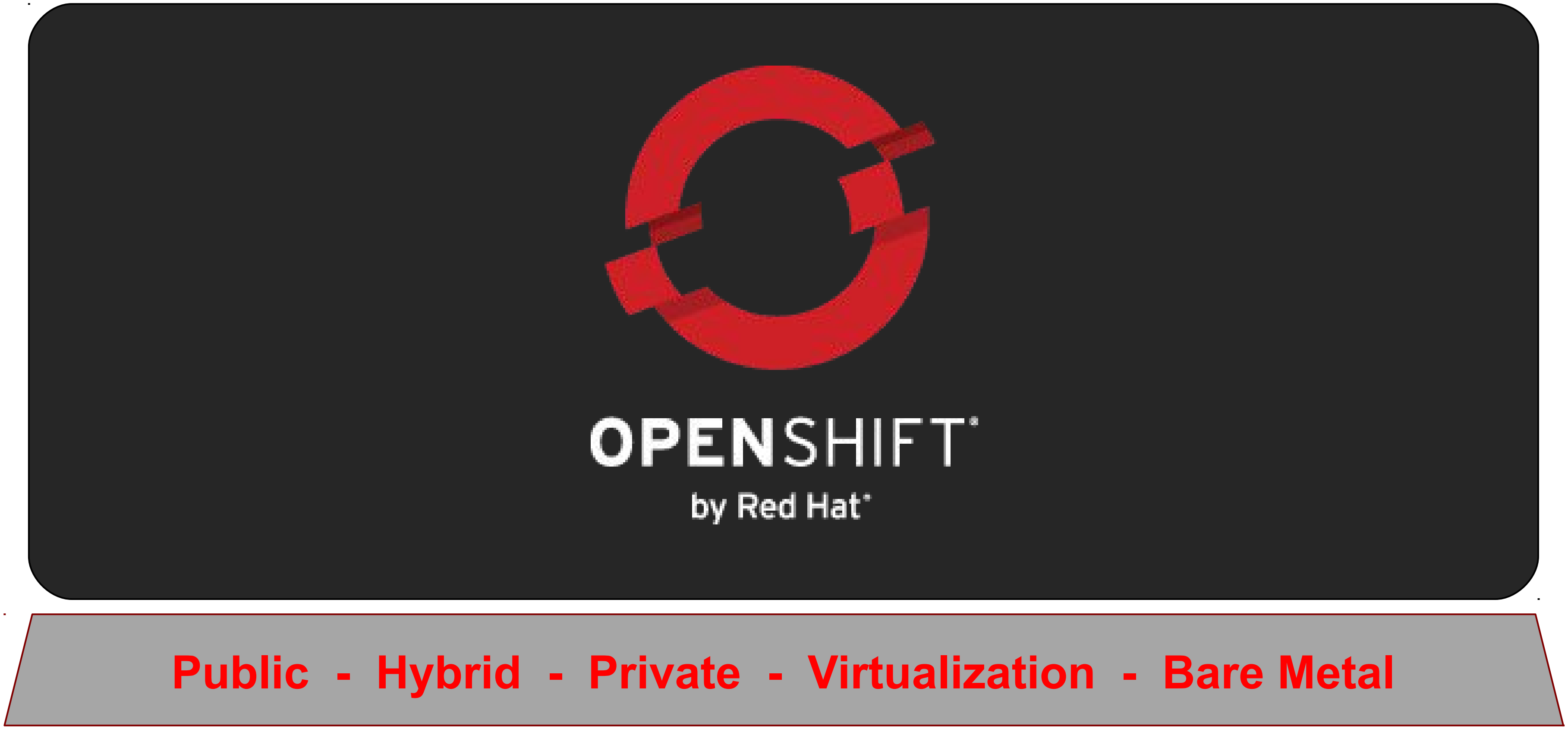
OPENSHIFT ONLINE by Red Hat

On-premise or Private PaaS Software

OPENSHIFT ENTERPRISE by Red Hat

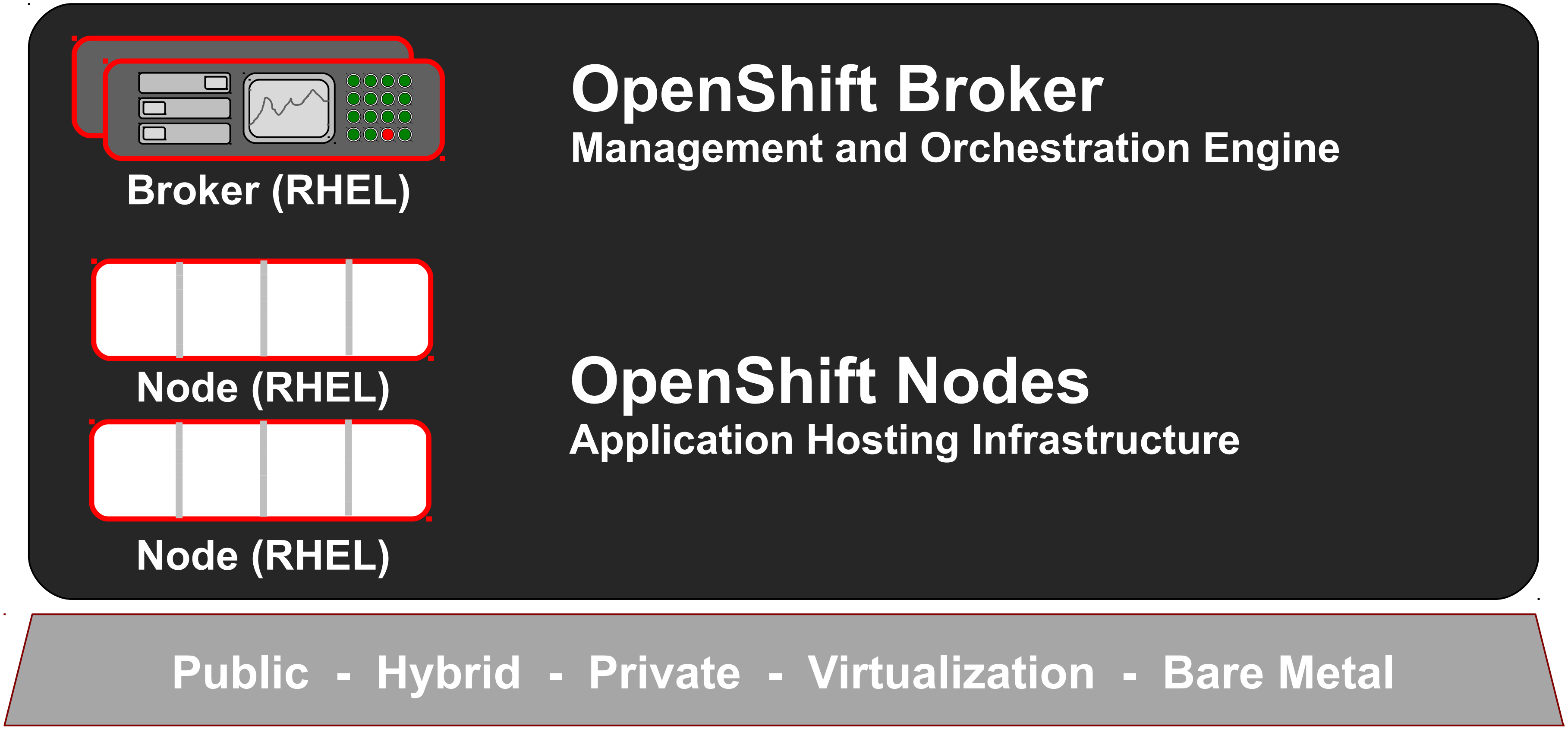
OpenShift DEMO

OPENSHIFT PAAS ON YOUR CHOICE OF CLOUD OR INFRASTRUCTURE...



Public - Hybrid - Private - Virtualization - Bare Metal

AN OPENSHIFT BROKER MANAGES MULTIPLE OPENSHIFT NODES



OpenShift Broker

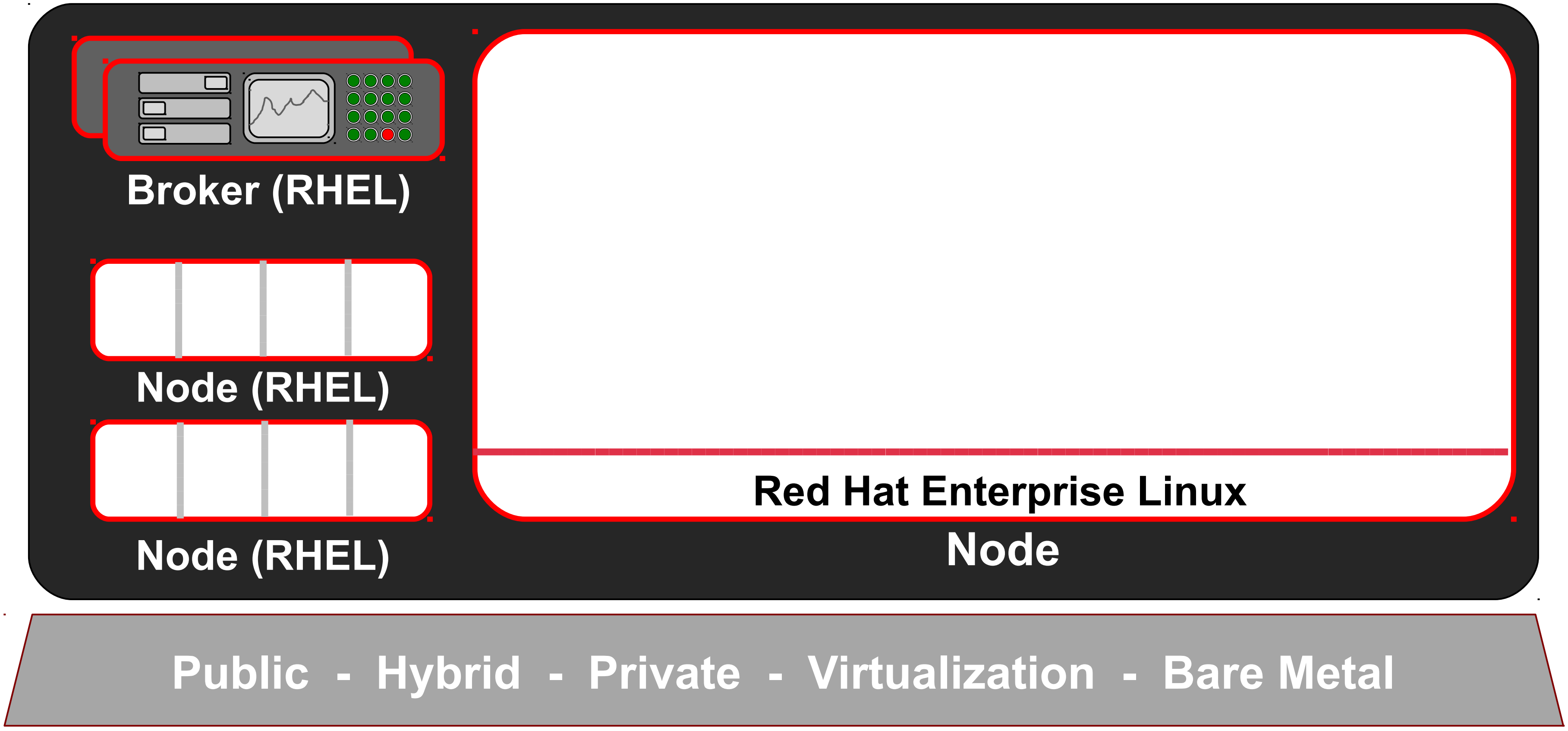
Management and Orchestration Engine

OpenShift Nodes

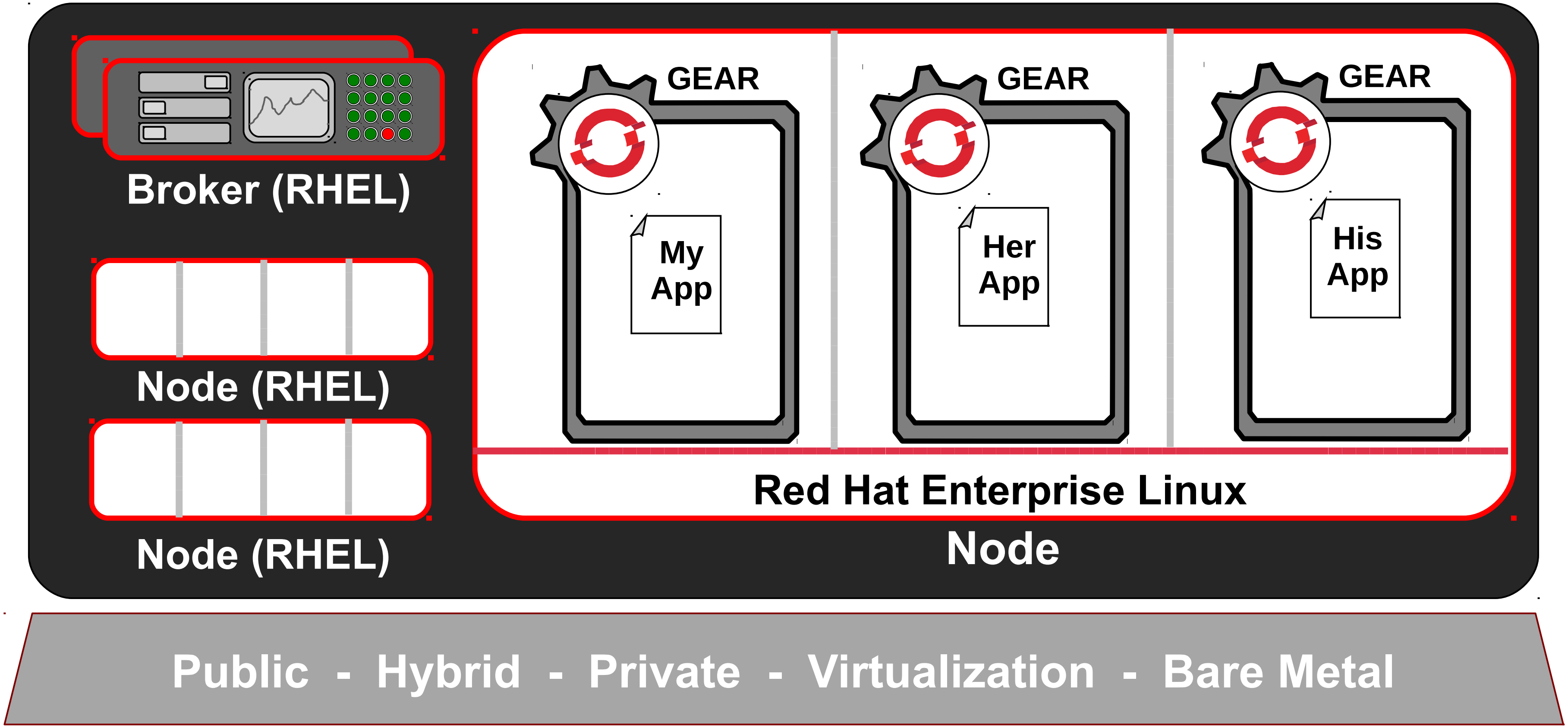
Application Hosting Infrastructure

Public - Hybrid - Private - Virtualization - Bare Metal

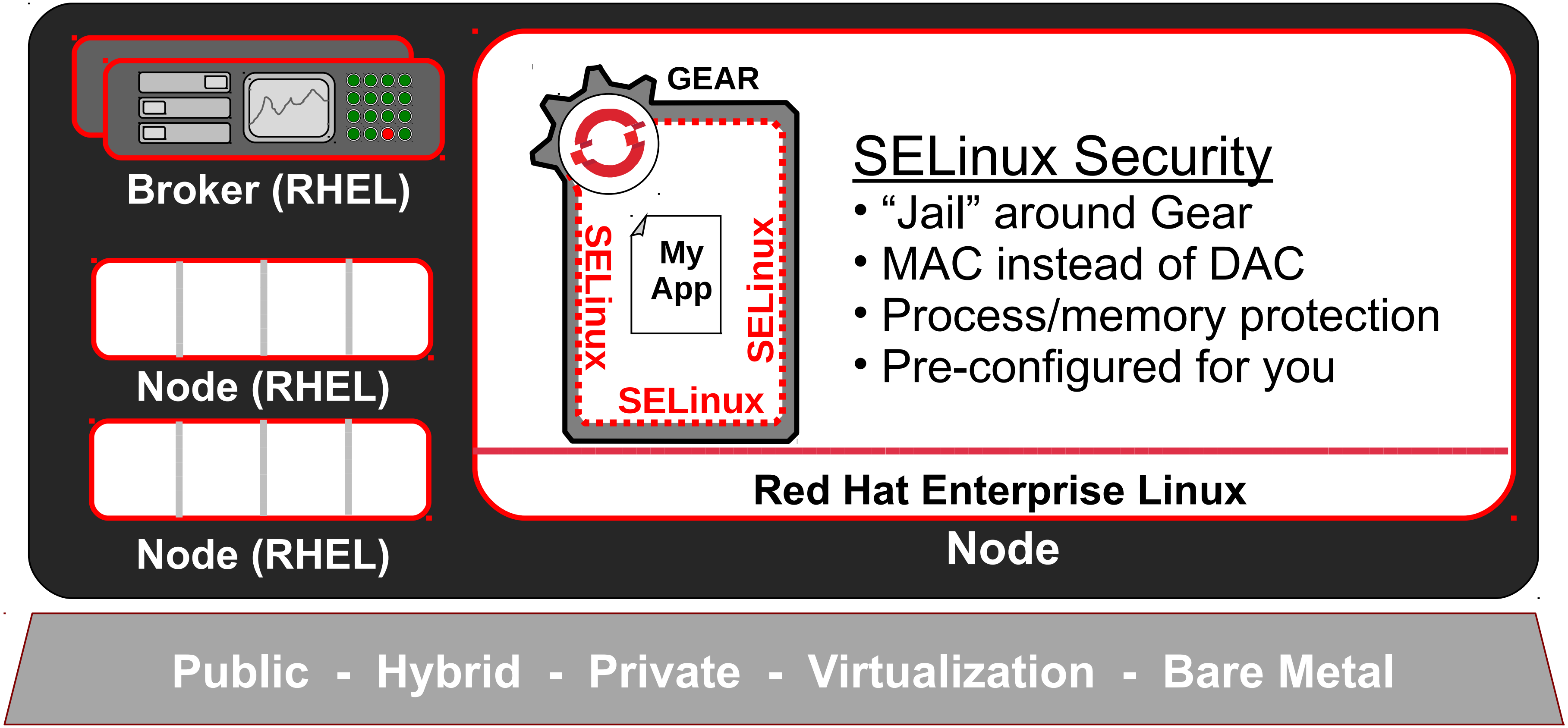
A NODE IS AN INSTANCE OF RHEL



OPENSHIFT USER APPLICATIONS RUNS IN CONTAINERS CALLED GEARS



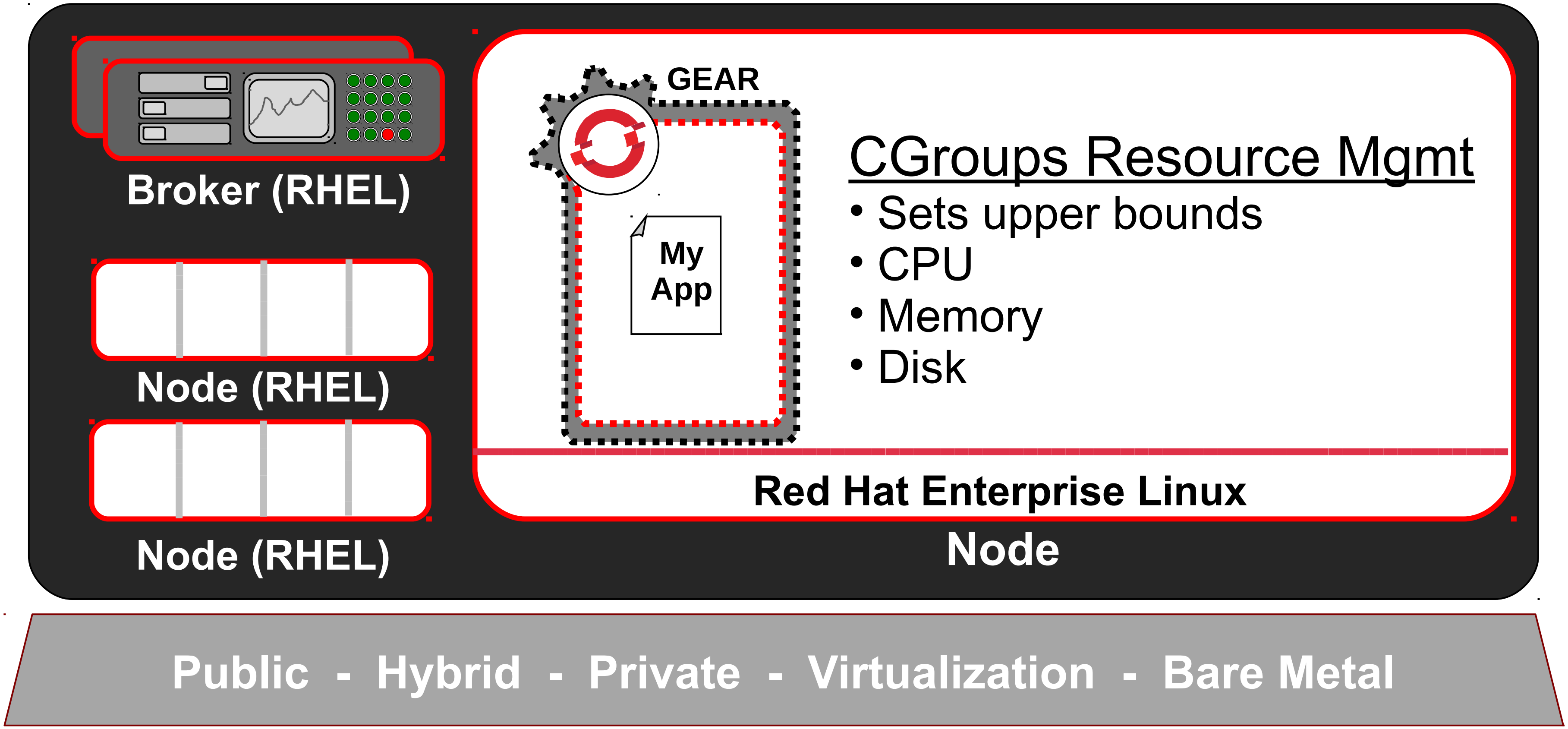
GEARS USE SELINUX FOR PRE-CONFIGURED, NSA-GRADE SECURITY



SELinux Security

- "Jail" around Gear
- MAC instead of DAC
- Process/memory protection
- Pre-configured for you

GEARS USE LINUX CGROUPS FOR RESOURCE MANAGEMENT

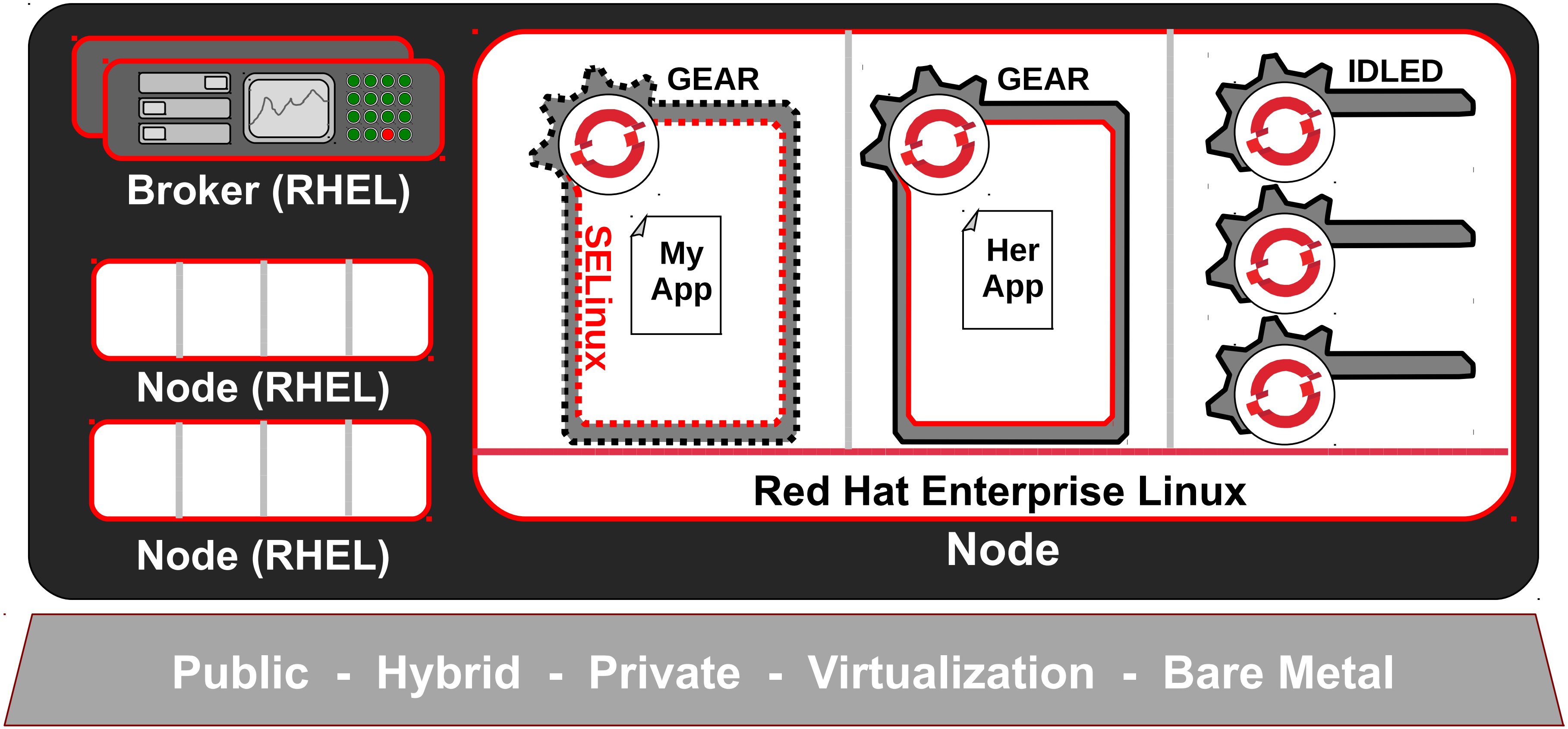


CGroups Resource Mgmt

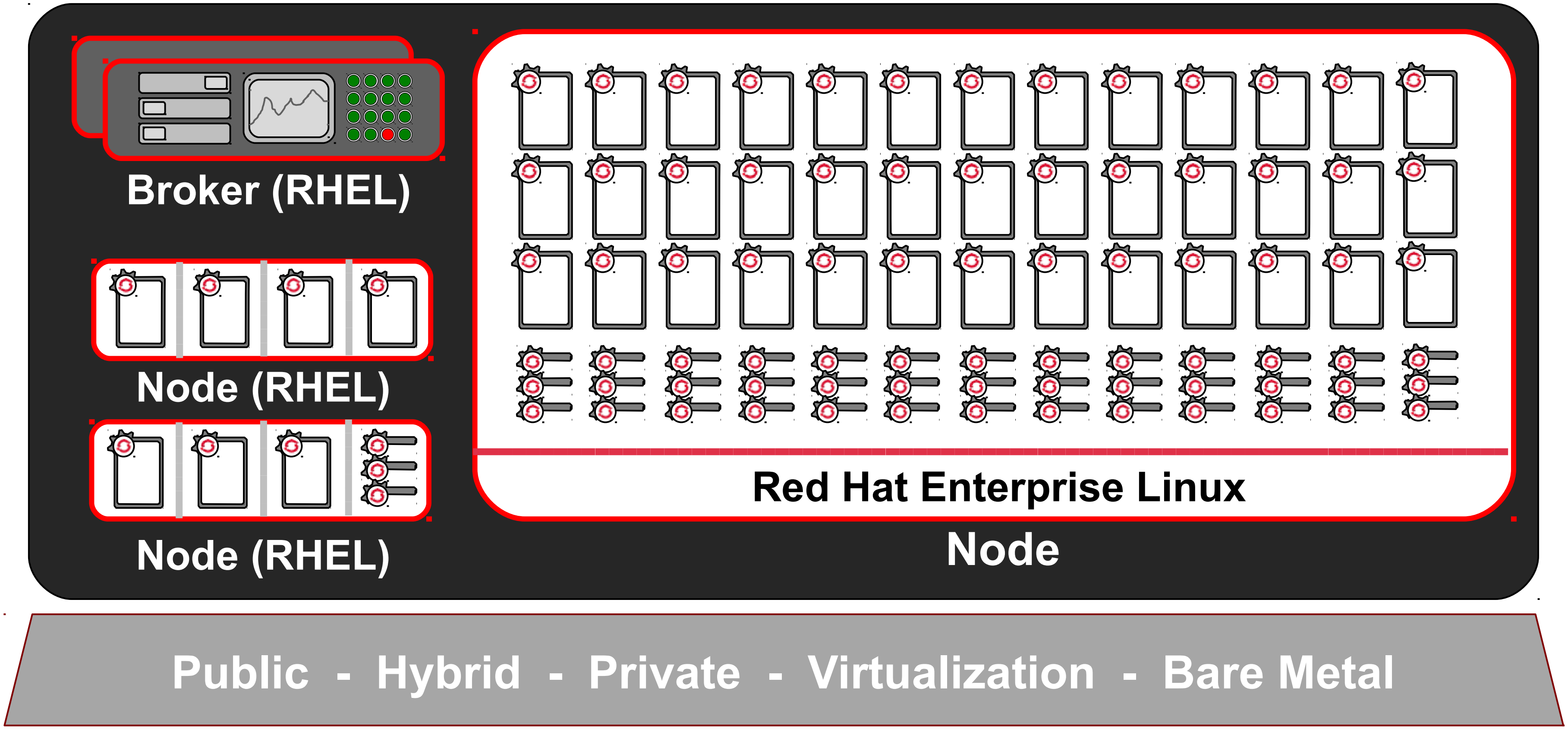
- Sets upper bounds
- CPU
- Memory
- Disk

OPENSHIFT
by Red Hat

IDLE GEARS CAN BE "DE-HYDRATED" BY THE OPENSHIFT BROKER



OPENSHIFT MULTI-TENANCY PROVIDES DENSITY, EFFICIENCY, AND SECURITY



STREAMLINING DEVELOPMENT WITH OPENSHIFT

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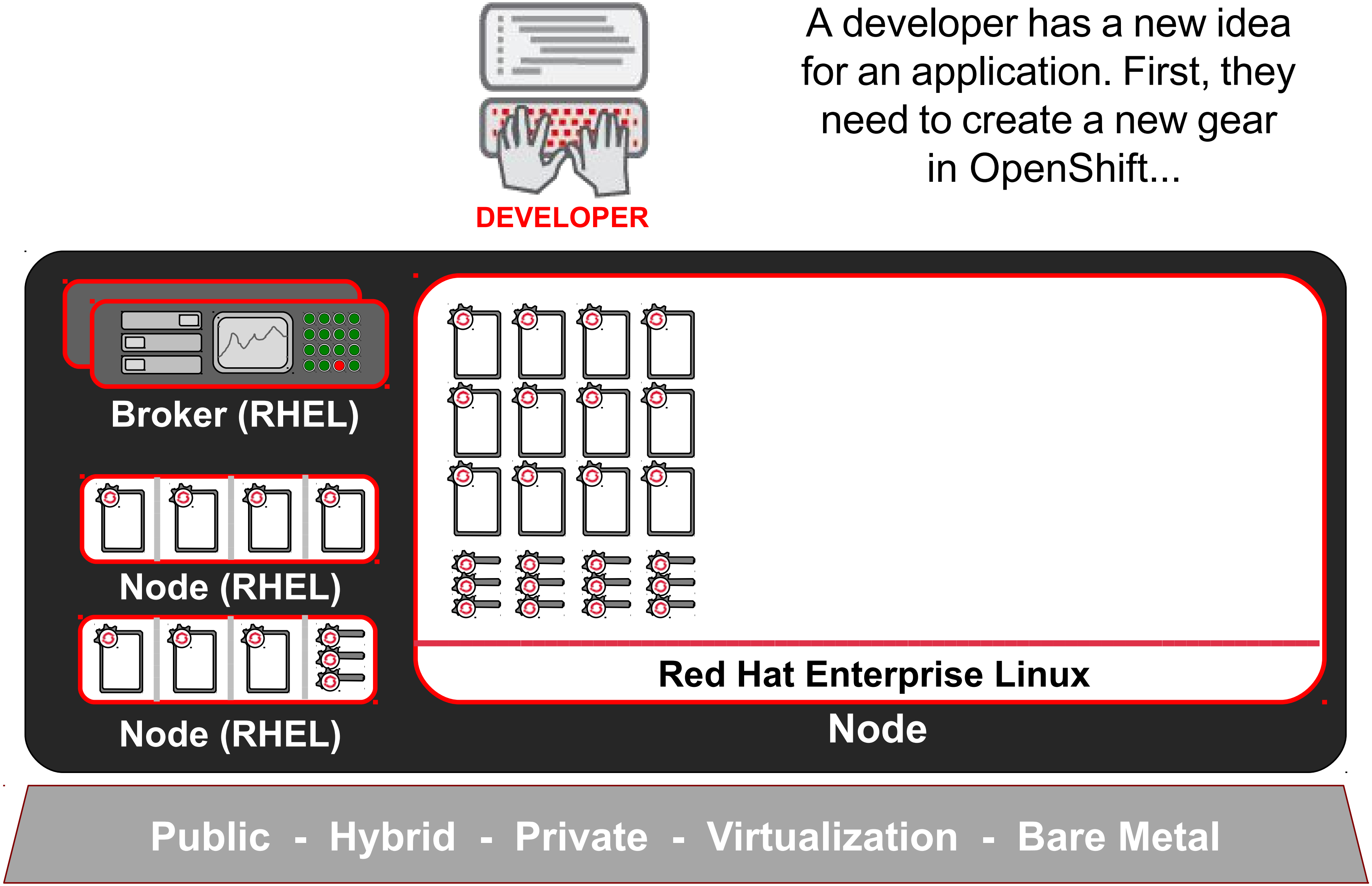
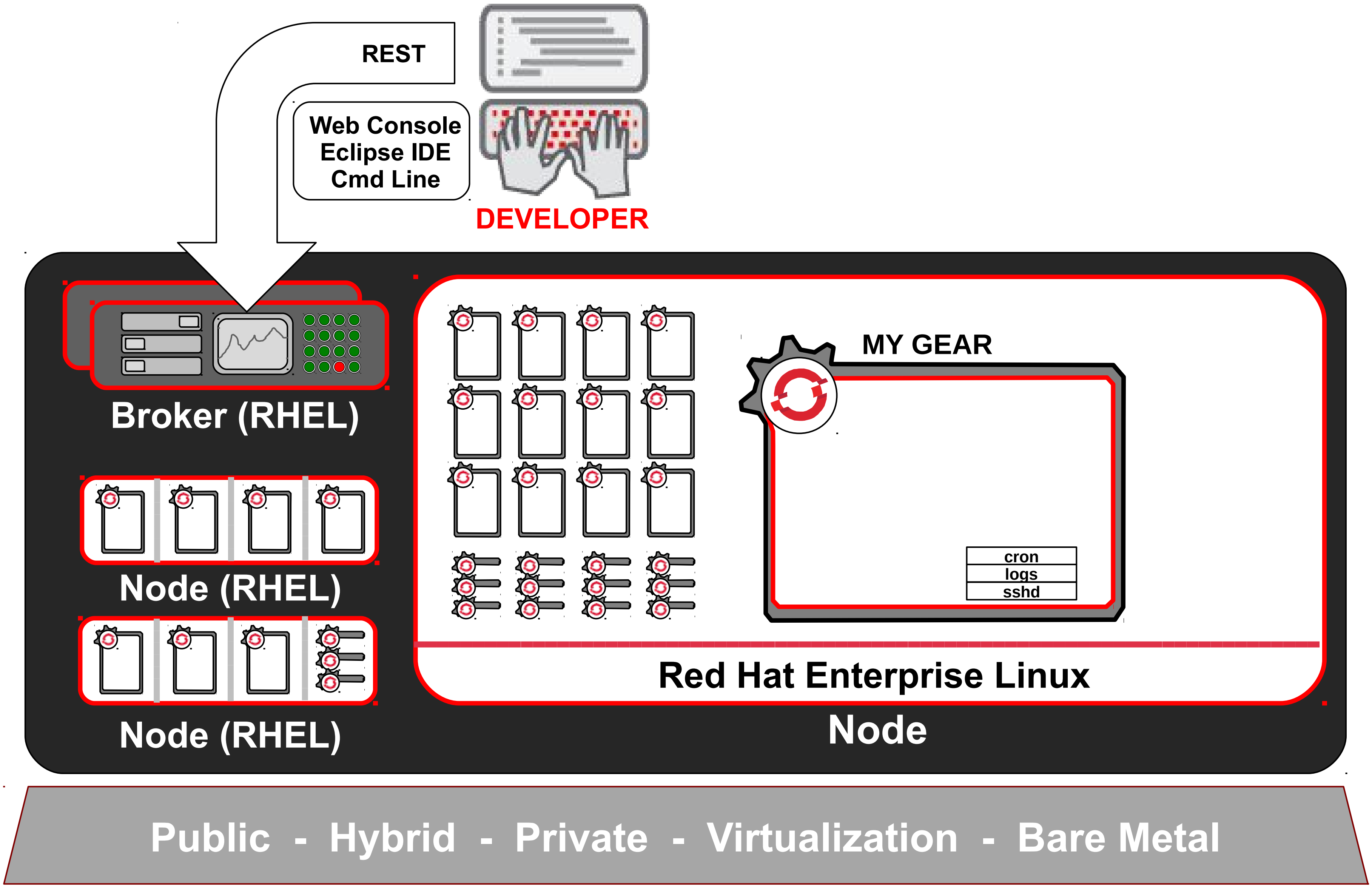
DEVELOPER WORKFLOW

A developer has a new idea for an application. First, they need to create a new gear in OpenShift...



GEAR CREATION (WEB, CLI, ECLIPSE)



REST

Web Console
Eclipse IDE
Cmd Line

DEVELOPER

Broker (RHEL)

Node (RHEL)

Node (RHEL)

MY GEAR

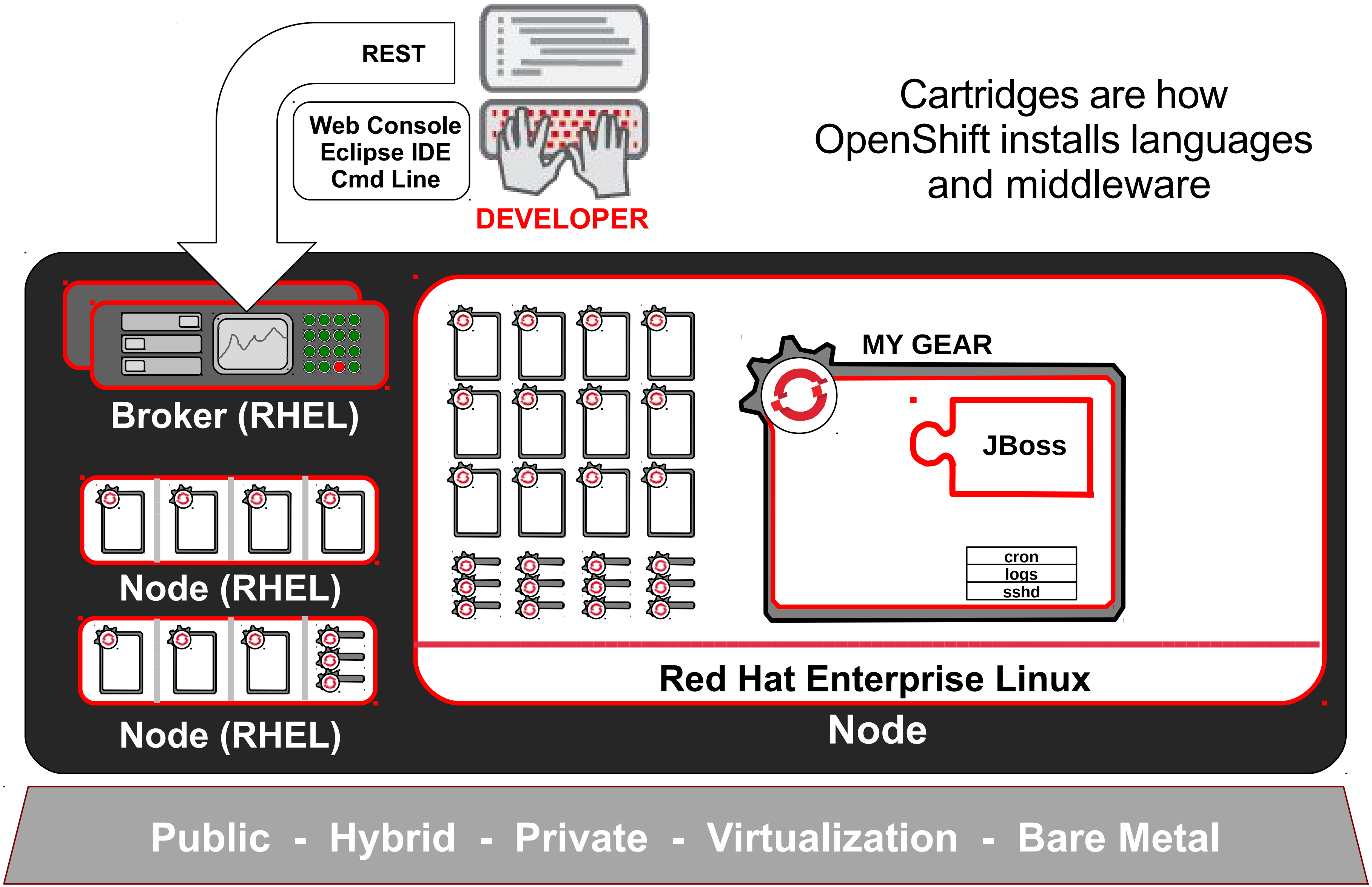
Red Hat Enterprise Linux

Node

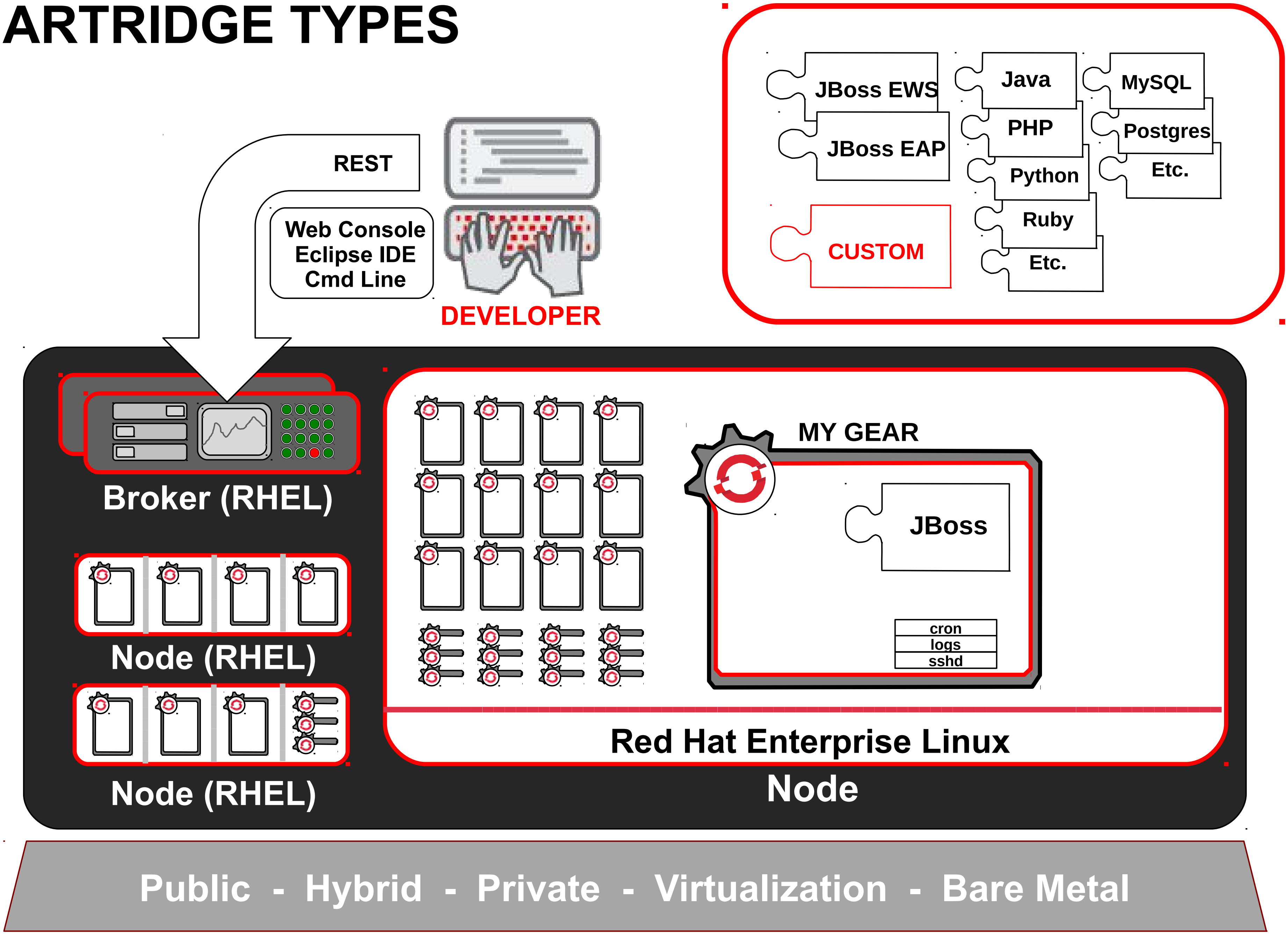
Public - Hybrid - Private - Virtualization - Bare Metal

OPENSHIFT AUTOMATES GEAR CONFIGURATION VIA CARTRIDGES

Cartridges are how
OpenShift installs languages
and middleware



CARTRIDGE TYPES



JBoss EWS
JBoss EAP
CUSTOM
Java
PHP
Python
Ruby
Etc.
MySQL
Postgres
Etc.

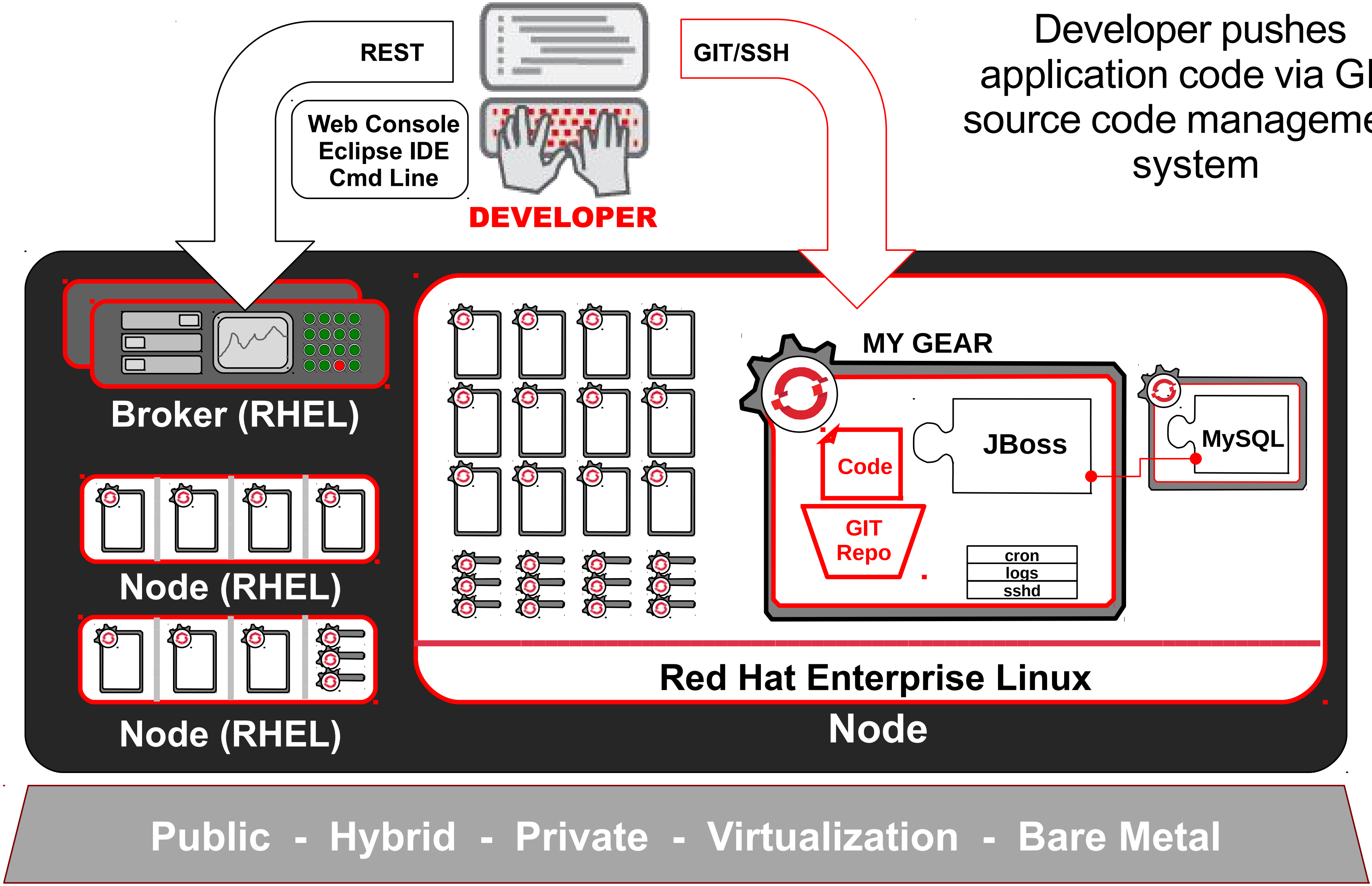
REST
Web Console
Eclipse IDE
Cmd Line
DEVELOPER

Broker (RHEL)
Node (RHEL)
Node (RHEL)

MY GEAR
JBoss
cron
logs
sshd
Red Hat Enterprise Linux
Node

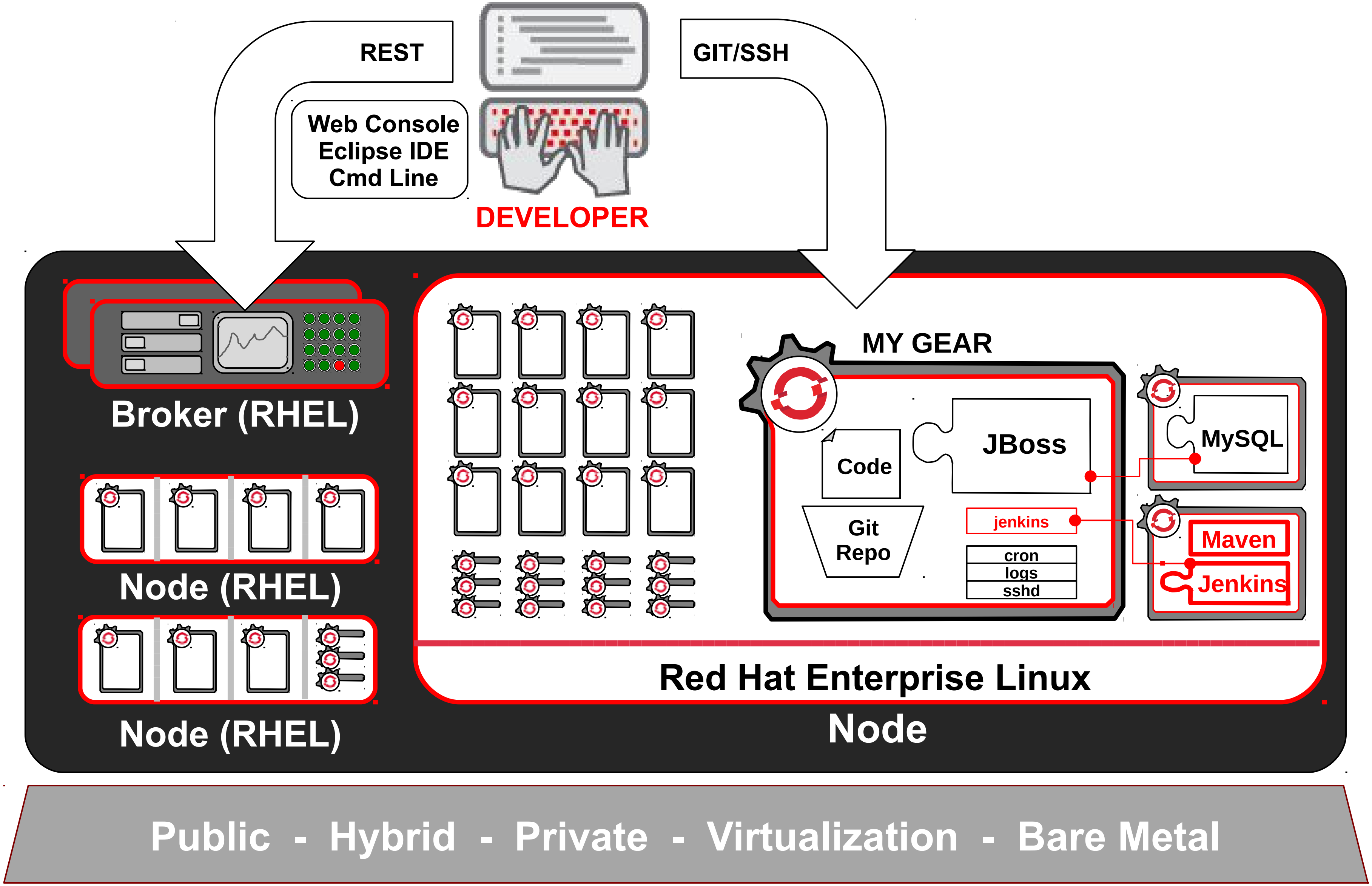
Public - Hybrid - Private - Virtualization - Bare Metal

NOW, CODE AND PUSH

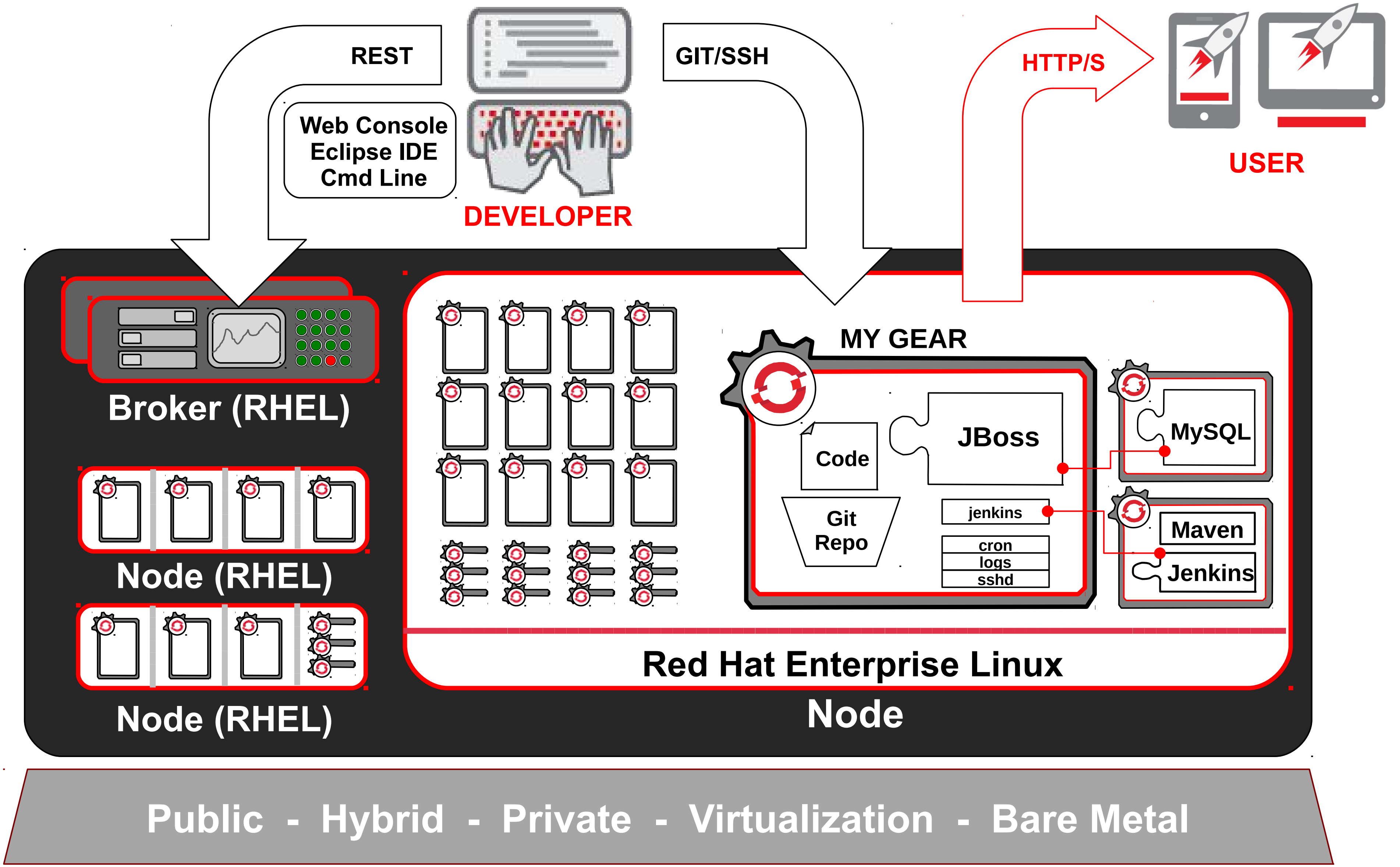


Developer pushes application code via GIT source code management system

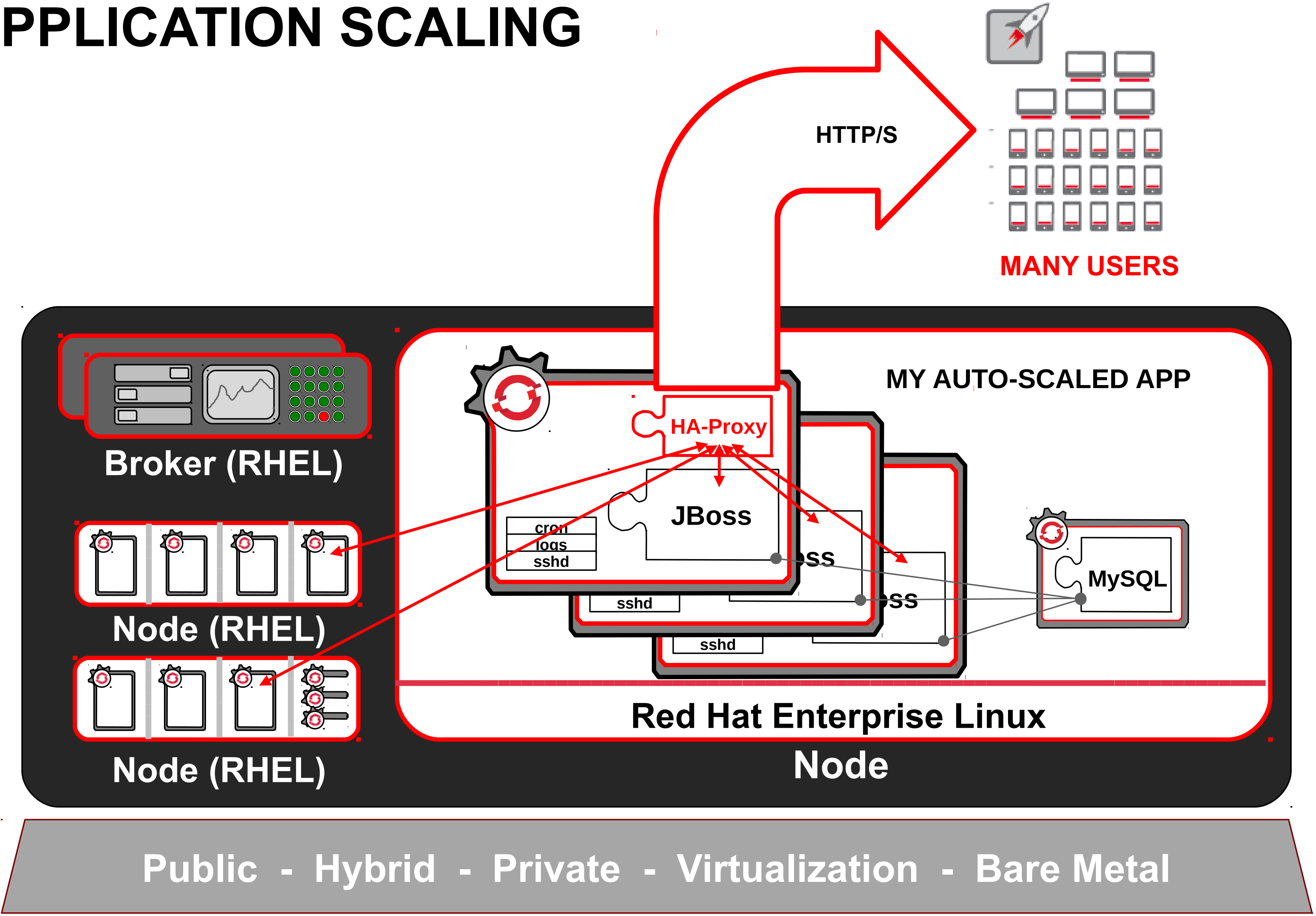
OPENSHIFT CAN AUTOMATED BUILD AND TEST WITH MAVEN AND JENKINS FOR CI



HTTP(S) SERVED FROM GEARS



OPENSHIFT AUTOMATES APPLICATION SCALING



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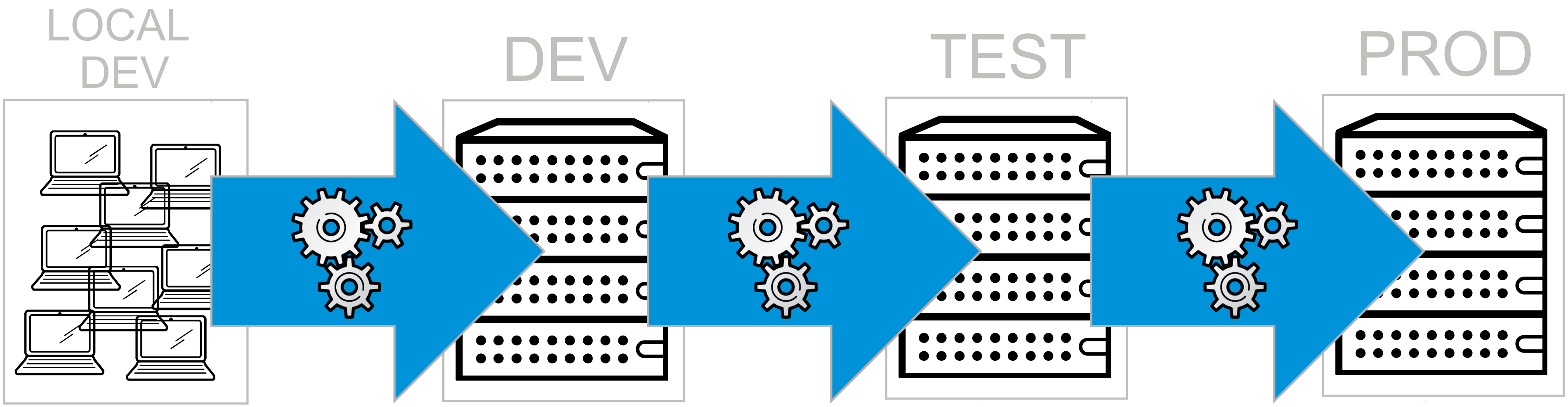
WITH PAAS

1. **Have Idea**
2. **Get Budget**
3. **Code**
4. **Test**
5. **Launch**
6. **Automatically Scale**

CRAFTWORK ↔ ASSEMBLY LINE

DEPLOYMENT PIPELINE WITH OPENSHIFT



PAYPAL ON OPENSHIFT ENTERPRISE

"Our motto is enable and get out of the way”

"With OpenShift we've built a push-button developer stack"

"In minutes we have you up and running in a fully connected container and you are developing"

THANK YOU.

Want to keep
In touch?

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on YouTube

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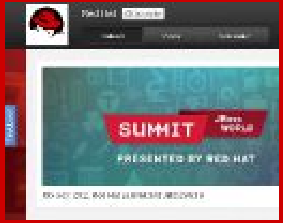

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