RED HAT SUMMIT

BOSTON, MA
JUNE 23-26, 2015

RED HAT®
MOBILE APPLICATION
PLATFORM

Platform Architecture & Integration with OpenShift

Presenter:
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Senior Director Software Engineering

DATE: 2015-06-25
TIME: 3:40 - 4:40
VENUE: Room 302

#redhat #rhsummit

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Agenda

- What is the Red Hat Mobile Application Platform?

- Architecture of integrated OpenShift-based Mobile Application Platform

- What does staging to OpenShift 2.2 mean?

- What does staging to OpenShift 3.0 mean?

- Node.js Story

- What are the key advantages of this integrated approach?

- APPENDICES: other mobility talks, contact details, case studies

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Driving Digital Transformation

2010-13 CONSUMERIZATION	2013-16 MOBILE-FIRST	2016+ DIGITAL ENTERPRISE
▪ iOS Support ▪ Experiment Apps ▪ Point Solution ▪ Risk Management	▪ Multi-Device ▪ Targeted Apps ▪ Platform ▪ Business Enablement	▪ Wearables ▪ Internet of Things ▪ Architecture ▪ Business Transformation

Device-centric   App-centric   Information-centric

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The new world of Enterprise Mobility

- Open Technologies

- Flexible Development

- REST APIs

- JavaScript & Node.js

Mobile Backend-as-a-Service
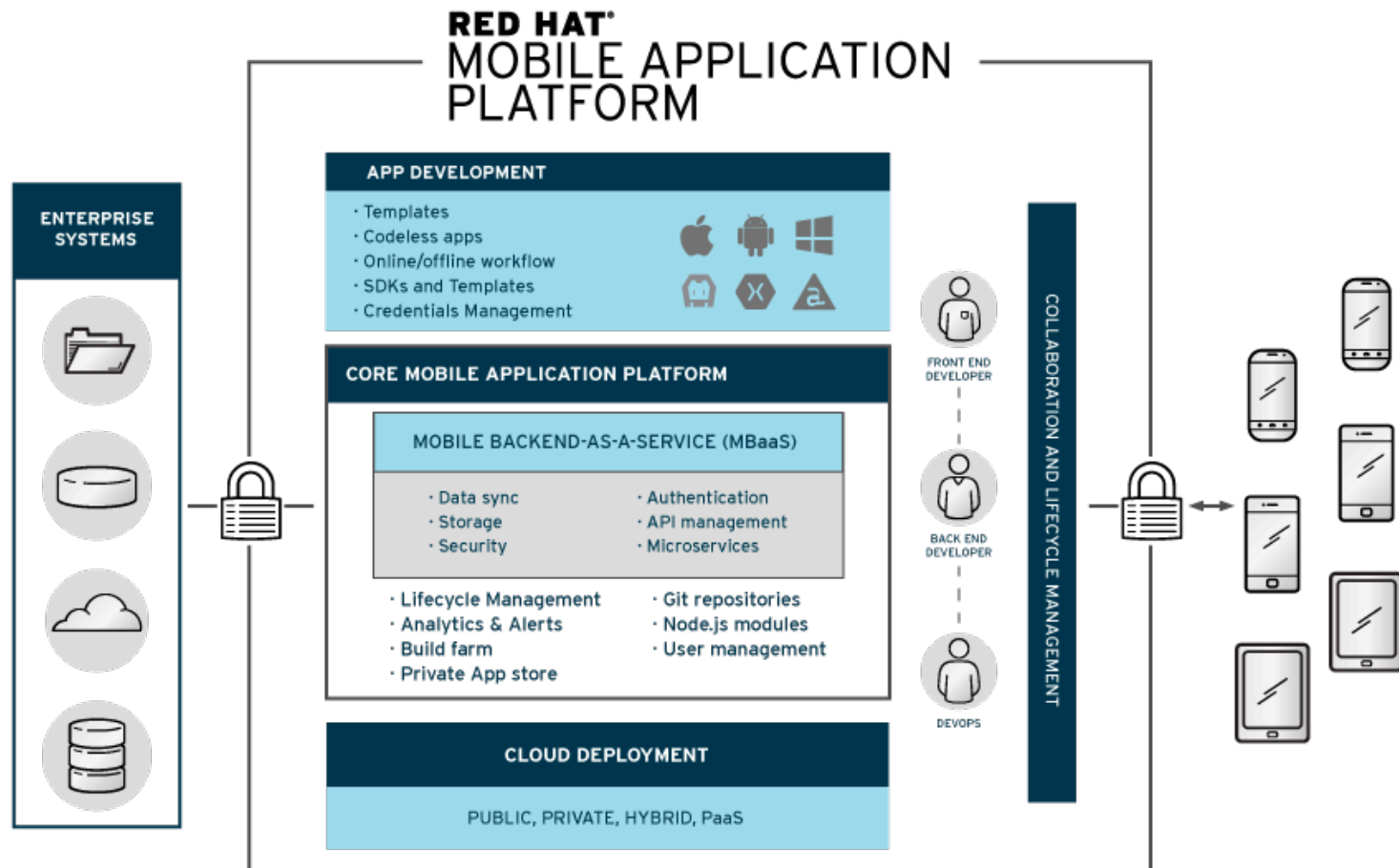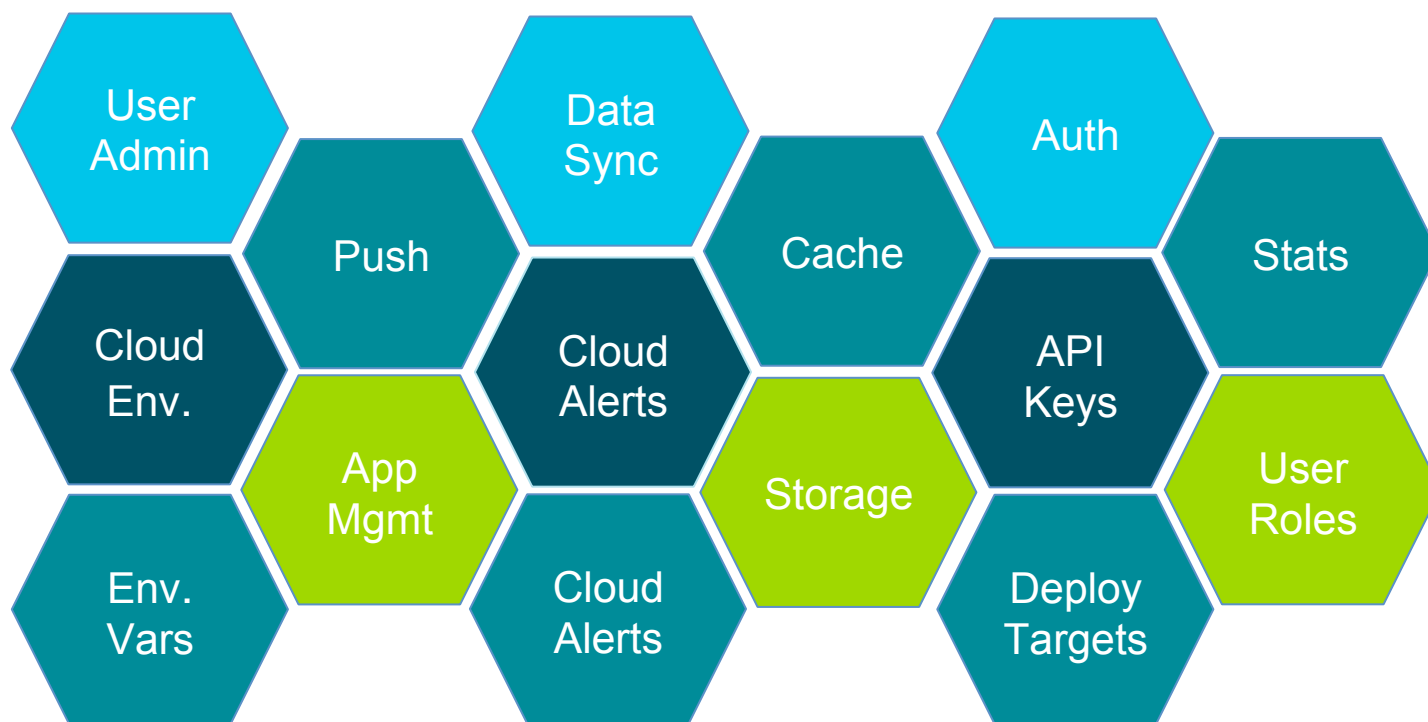
Continuous Dev & Deploy

Collaboration

Agility

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MOBILE APPLICATION PLATFORM

ENTERPRISE SYSTEMS

APP DEVELOPMENT
- Templates
- Codeless apps
- Online/offline workflow
- SDKs and Templates
- Credentials Management

CORE MOBILE APPLICATION PLATFORM

MOBILE BACKEND-AS-A-SERVICE (MBaaS)
- Data sync
- Storage
- Security
- Authentication
- API management
- Microservices

- Lifecycle Management
- Analytics & Alerts
- Build farm
- Private App store
- Git repositories
- Node.js modules
- User management

CLOUD DEPLOYMENT

PUBLIC, PRIVATE, HYBRID, PaaS

FRONT END DEVELOPER

BACK END DEVELOPER

DEVOPS

COLLABORATION AND LIFECYCLE MANAGEMENT

5

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Mobile Backend-as-a-Service – MBaaS APIs

User Admin

Push

Data Sync

Cache

Auth

Stats

Cloud Env.

Cloud Alerts

API Keys

App Mgmt

Storage

User Roles

Env. Vars

Cloud Alerts

Deploy Targets

MBaaS offers a series of server-side APIs that can be shared among mobile apps instead of being custom developed for each.

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OpenShift 3.0

- Previous version of platform used our own PaaS (DynoFarm)
  - Node.js server-side code, Redis caching in Linux Containers (LXCs)
  - Resilient MongoDB data store, provided a persistence layer for JSON data (and an overlay filestore)

- New version of platform is based on OpenShift 3
  - New best-of-breed PaaS for Node.js, caching and for JSON storage, in Linux Containers, orchestrated by Kubernetes
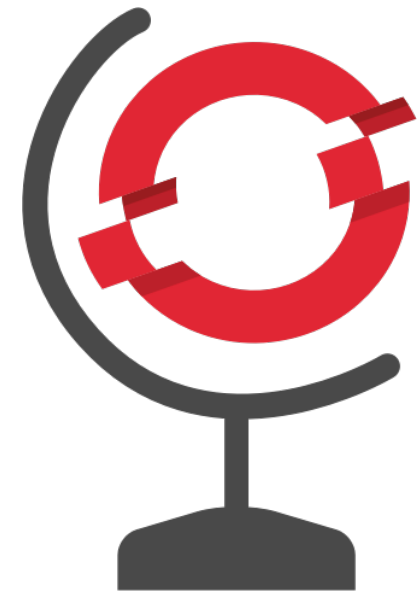
Mobile is an excellent use case for OpenShift as it is ideally suited to lightweight server-side integration using Node.js
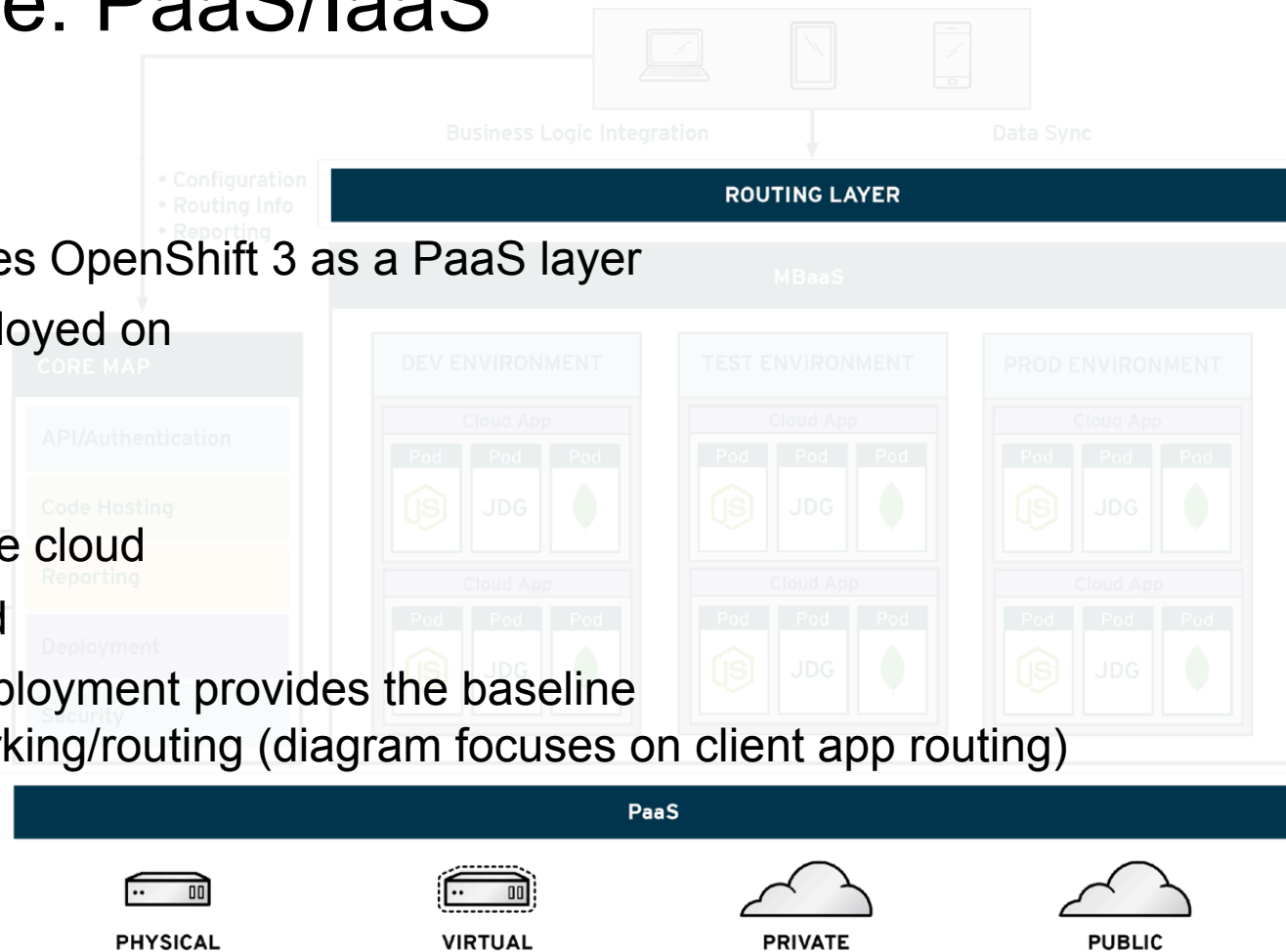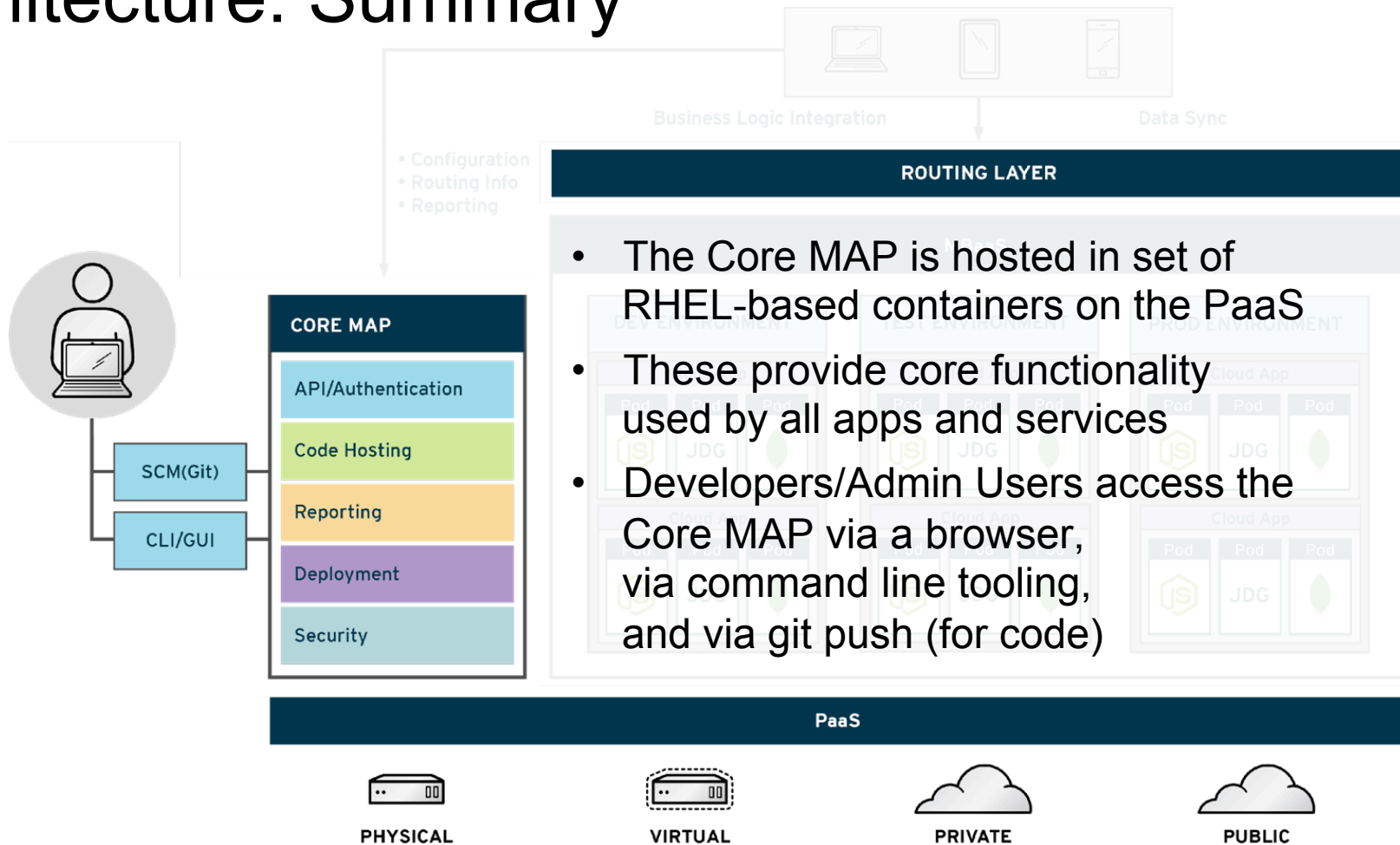
Architecture: Summary
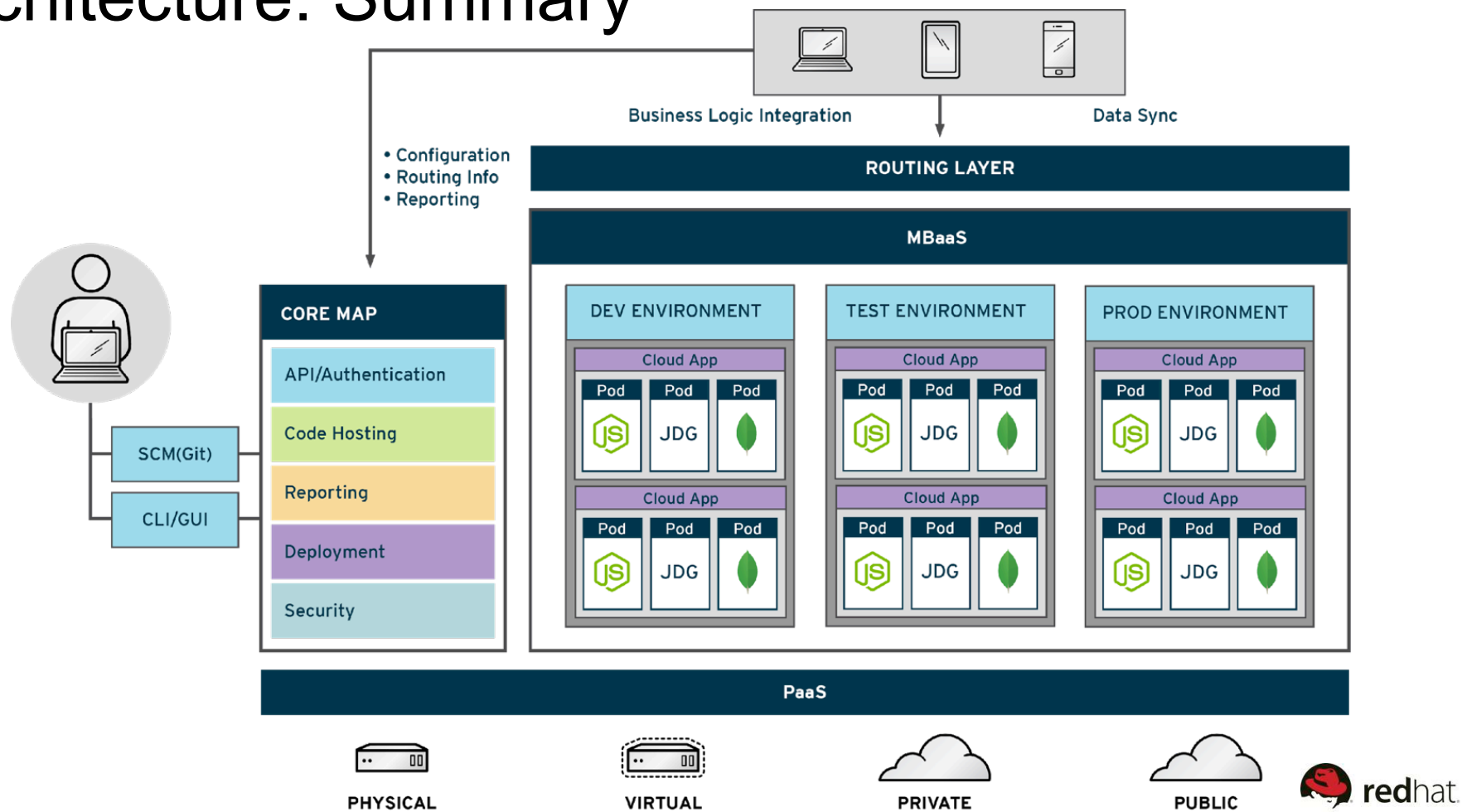
Architecture: PaaS/IaaS

- The platform uses OpenShift 3 as a PaaS layer
- This can be deployed on
    - Bare metal
    - Raw VMs
    - Local private cloud
    - Public cloud
- The physical deployment provides the baseline incoming networking/routing (diagram focuses on client app routing)


9

Architecture: Summary

- The Core MAP is hosted in set of RHEL-based containers on the PaaS
- These provide core functionality used by all apps and services
- Developers/Admin Users access the Core MAP via a browser, via command line tooling, and via git push (for code)

ROUTING LAYER

CORE MAP

API/Authentication

Code Hosting

Reporting

Deployment

Security

SCM(Git)

CLI/GUI

- Configuration
- Routing Info
- Reporting

Business Logic Integration

Data Sync

PaaS

PHYSICAL

VIRTUAL

PRIVATE
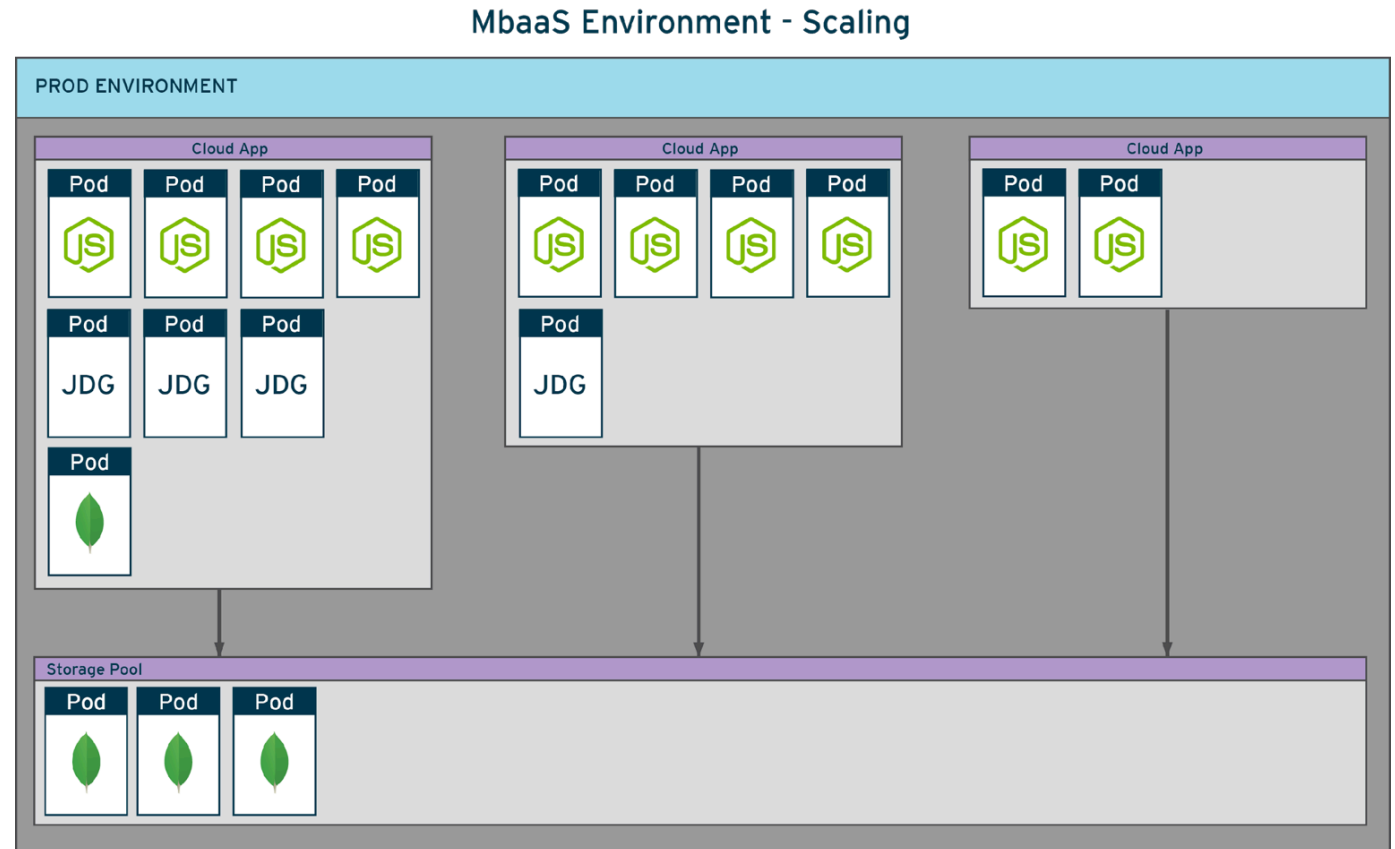
PUBLIC

Architecture: MBaaS

- The Mobile Backend-as-a-Service provides a set of "environments" to match the lifecycle, e.g. dev, test and prod

- Each server-side "Cloud App" is made up of Node.js code, caching, and MongoDB JSON DB storage
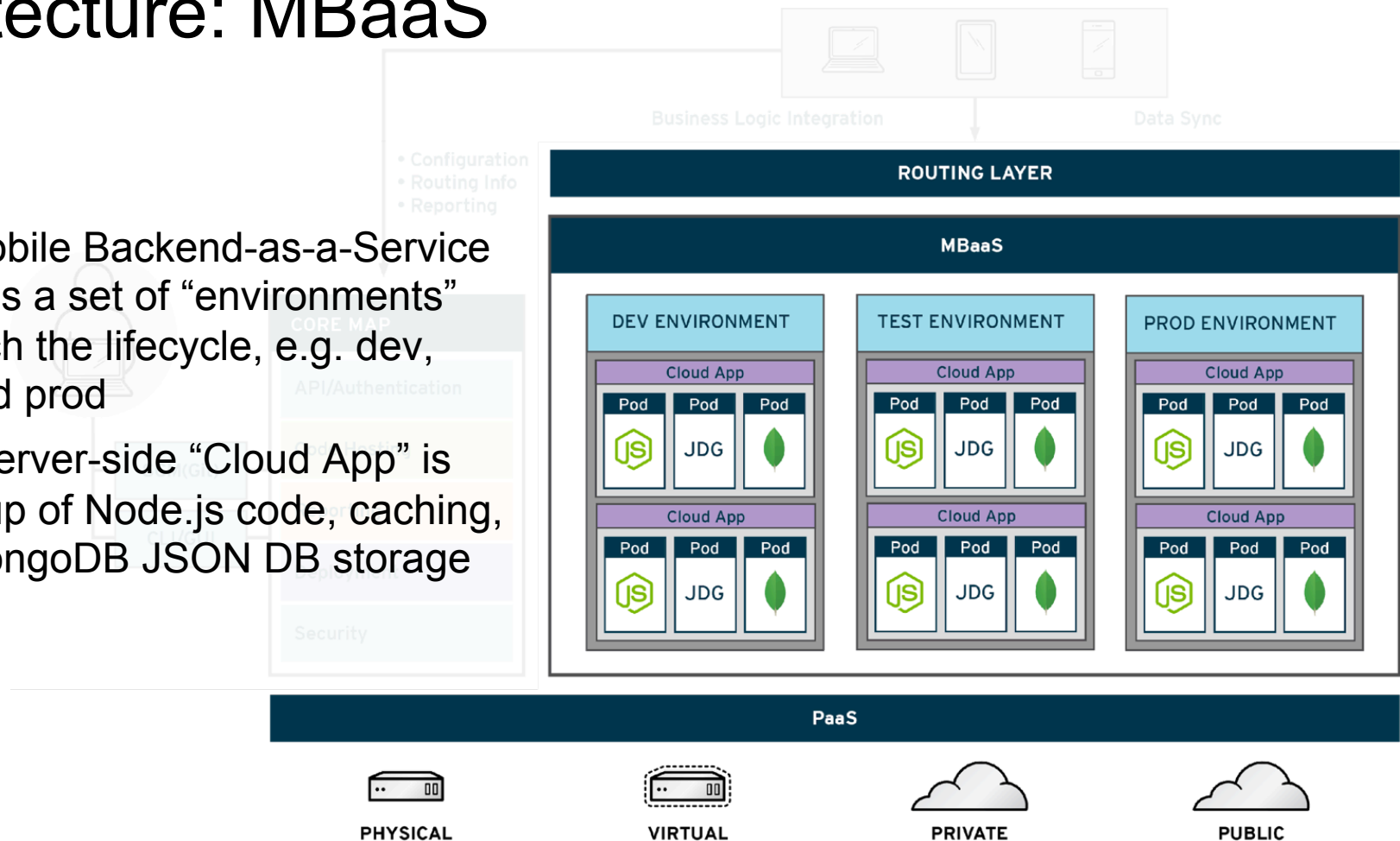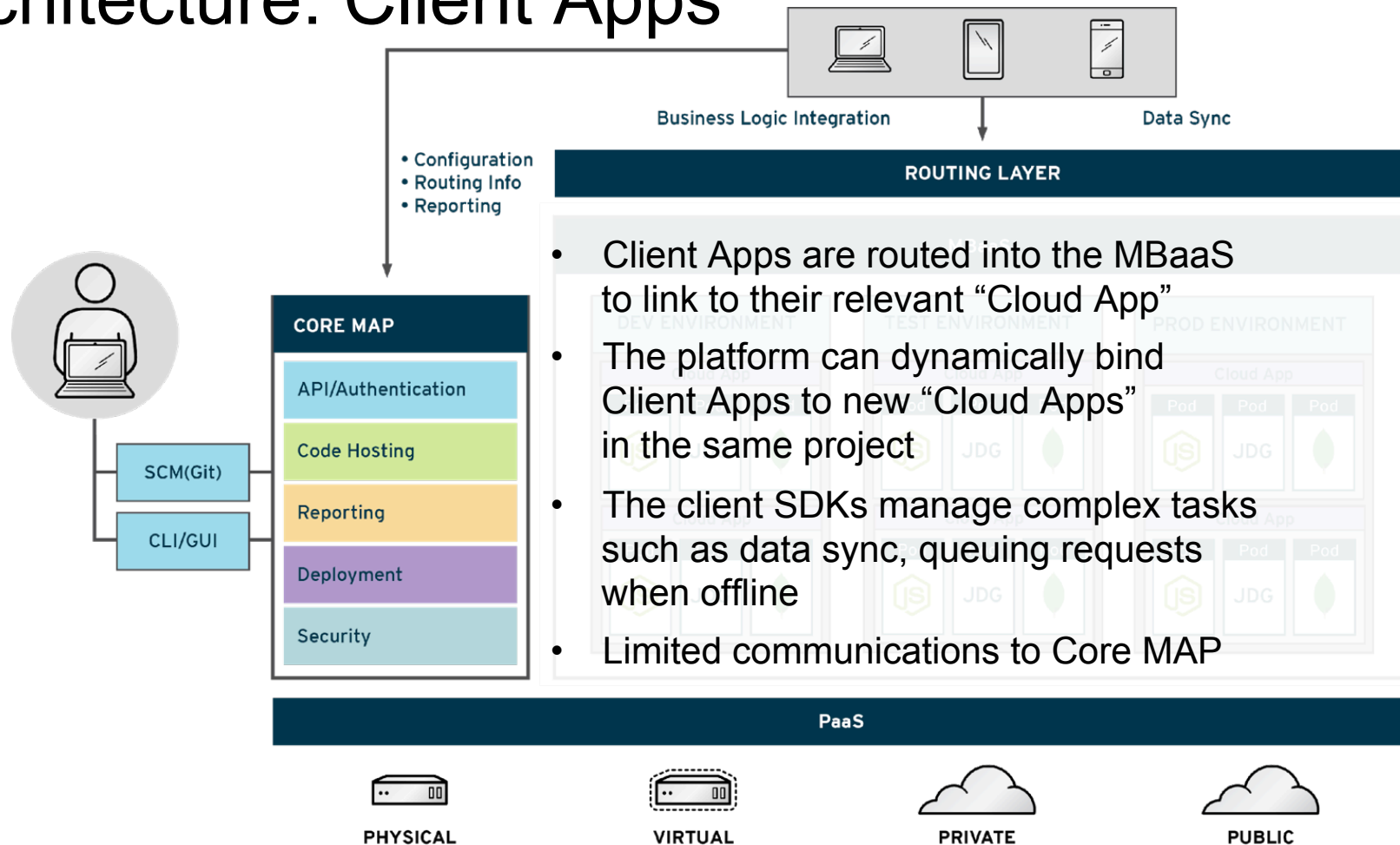
Architecture: MBaaS Drill Down

- Within a Cloud, App Pods can be scaled horizontally.

- Shared services can also be deployed that are used by more than one Cloud App.

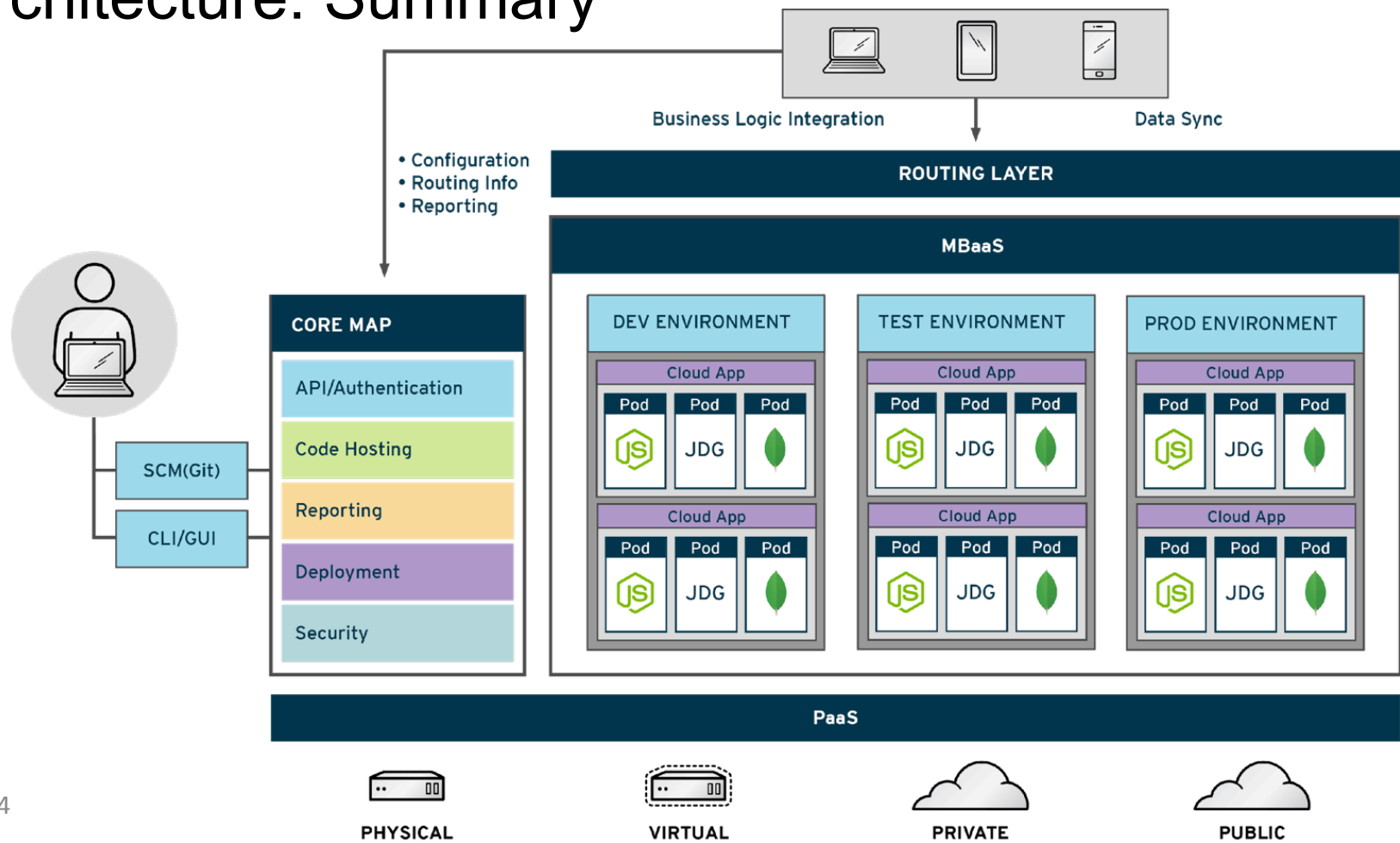- MBaaS Services are one example of this.

MbaaS Environment - Scaling

Architecture: Client Apps

Business Logic Integration

Data Sync

- Configuration
- Routing Info
- Reporting

ROUTING LAYER

CORE MAP

API/Authentication

Code Hosting

Reporting

Deployment

Security

SCM(Git)

CLI/GUI

- Client Apps are routed into the MBaaS to link to their relevant "Cloud App"
- The platform can dynamically bind Client Apps to new "Cloud Apps" in the same project
- The client SDKs manage complex tasks such as data sync, queuing requests when offline
- Limited communications to Core MAP

PaaS

PHYSICAL   **VIRTUAL**   **PRIVATE**   **PUBLIC**

Architecture: Summary

Business Logic Integration   Data Sync

- Configuration
- Routing Info
- Reporting

ROUTING LAYER

MBaaS

CORE MAP

| API/Authentication |
| Code Hosting |
| Reporting |
| Deployment |
| Security |

SCM(Git)

CLI/GUI

DEV ENVIRONMENT

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

TEST ENVIRONMENT

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

PROD ENVIRONMENT

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

Cloud App

| Pod | Pod | Pod |
| JS | JDG | |

PaaS

PHYSICAL   VIRTUAL   PRIVATE   PUBLIC

OpenShift 2.2 Staging

Available today for Trial Access
https://openshift.feedhenry.com

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OpenShift 2.2 Staging - Trial

- Creating a target MBaaS takes 10-15 mins on a standard free OpenShift account

- Once this is done you can stage any app to your own OpenShift account

- Then use a separately deployed OpenShift Enterprise target will lead to faster setup and deploy times

- Technologies used: Node.js, Redis (community cartridge), MongoDB

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Check out the developer trial of the Red Hat Mobile Application Platform powered by OpenShift at:

https://openshift.feedhenry.com.

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OpenShift 3.0 Staging

- Demoed at Red Hat Summit this week

- OpenShift 3 is a completely new architecture for OpenShift, using Linux Containers and Kubernetes

- Similarly to OpenShift 2.2 the initial step is to setup a target MBaaS within the OpenShift deployment

- Initially the Red Hat Mobile Application Platform will be able to stage to OpenShift 3

- Then the Red Hat Mobile Application Platform will itself be hosted in Linux Containers managed by OpenShift 3

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MOBILE APPLICATION PLATFORM

OPENSHIFT

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Node.js

Use as the main backend for mobile services

AND/OR

Use as integration layer to existing enterprise services

AND/OR

Use a lightweight proxy to JBoss Java or other preferred dev stack

>150k publicly distributed modules

>1.5B downloads (May 2015)

Giving Developers ultimate Flexibility and Choice

Red Hat Node.js Story

- Red Hat supports full Gartner Bi-Modal IT Spectrum
  - Core IT -- infrastructure & middleware
  - Fast IT -- middleware
- For heavy-weight enterprise software development (Enterprise Java)
  - Red Hat JBoss EAP and associated suite of tools, including FUSE
- For polyglot PaaS
  - OpenShift by Red Hat (supports Node.js)
- For enterprise Mobility
  - Red Hat Mobile Application Platform (uses Node.js for server-side)
- For Node.js on the JVM
  - Nodyn

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Benefits of OpenShift 3 Architecture

It's Turtles all the way down

- Red Hat MAP – Application layer
- OpenShift by Red Hat – PaaS layer
- RHEL, RHEL Atomic – container OS, host VM OS
- Red Hat OpenStack – optional IaaS layer

All backed by Red Hat support, with response to security issues and other benefits.

Image credit: https://www.flickr.com/photos/wwarby/2499825928 (William Warby)

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Red Hat Container Vision

# Red Hat Open Source Vision

22

Use Case 1: Work Order Management

Complex work order management solutions for field service workers in the UK, rolling out to 10,000+ workers

Use of Video, photo, location & signature capture phone features, continue expanding the number of apps

Complex integration with legacy backend inventory and asset management systems

Ease of integration with backend systems
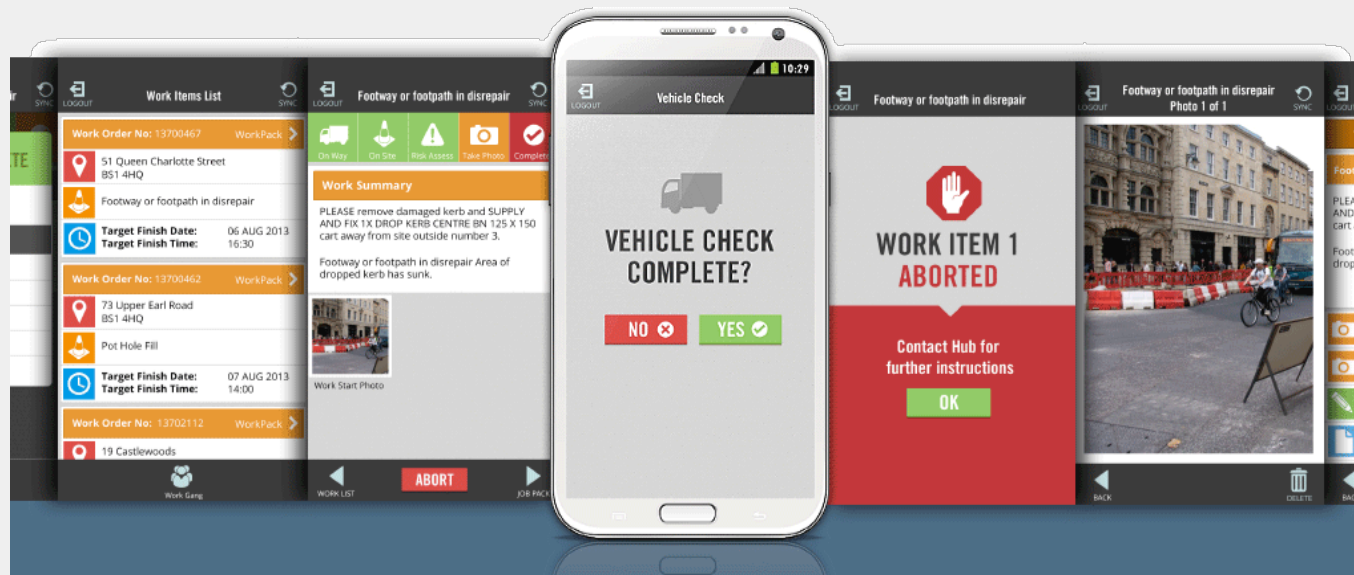
Customer Service

- **Customers able to access information regarding services performed on their installed base of elevators anywhere, anytime**
- **Secure login and authentication in the cloud to access, view & monitor to work order level**
- **Secure integration with TKE RSS and other social feeds**
- **On premise deployment**