

# The Containers and Cloud-Native Roadshow Developer Track

A hands-on experience for developers





Hosts: Vincent, Wim-Jan, Niels



## Software driven innovation explosion

The IDC predicts that from 2018 to 2023,  
500 million new logical apps will be created,  
equal to the number built over the past 40 years.

Customers and business now expect...

ON-DEMAND  
SERVICE

DELIGHTFUL  
INTERACTIONS

ACCESS FROM  
ANYWHERE

PERSONALIZED  
EXPERIENCE

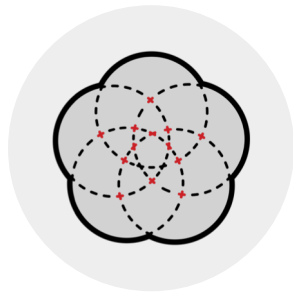
Creating value depends on your ability  
to develop and deliver  
high quality applications faster



# How do you drive innovation to meet these expectations while keeping the lights on?



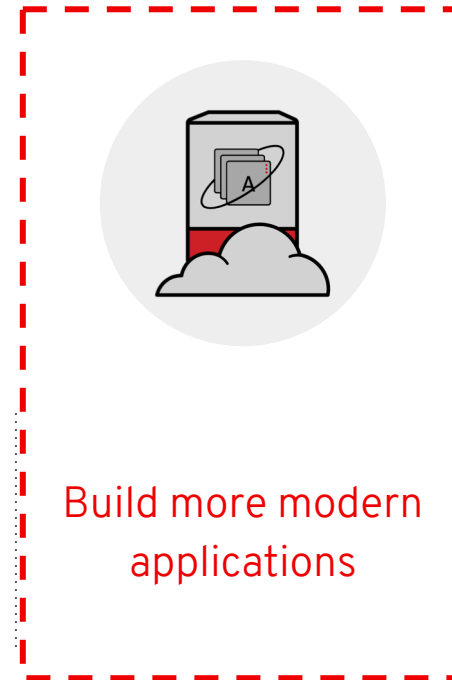
Optimize the IT you have



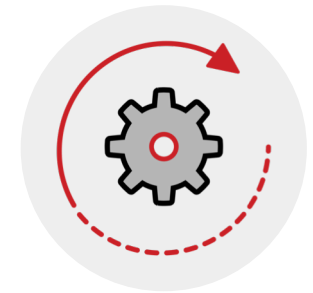
Integrate apps, data, & processes



Add & manage cloud infrastructure



Build more modern applications



Automate & manage IT

## Leveraging the cloud becomes a key strategy for success

# Creating value depends on your ability to deliver applications faster

Cloud-native applications



AI & machine learning



Analytics



Internet of Things



Innovation culture



Containers, Kubernetes, and hybrid cloud are key ingredients.  
OpenShift is the best platform to deliver container-based applications.

# RED HAT CLOUD-NATIVE DEV PLATFORM



Our vision is to simplify the creation of cloud-native services and serverless functions with a rich set of components and tools to match the **workloads** of modern cloud native apps.

Automate Kubernetes application operations with DevOps in mind



Cloud-native middleware applications services and service mesh



Tools and standard processes to increase developer productivity on Kubernetes



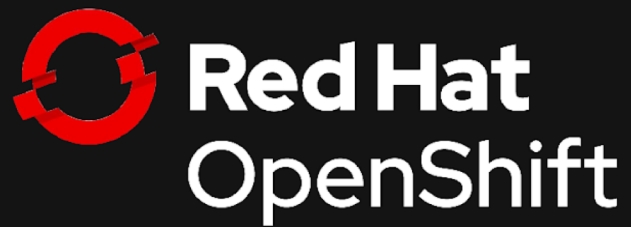
# OpenShift

Automate Kubernetes application operations with DevOps in mind





# Trusted enterprise Kubernetes

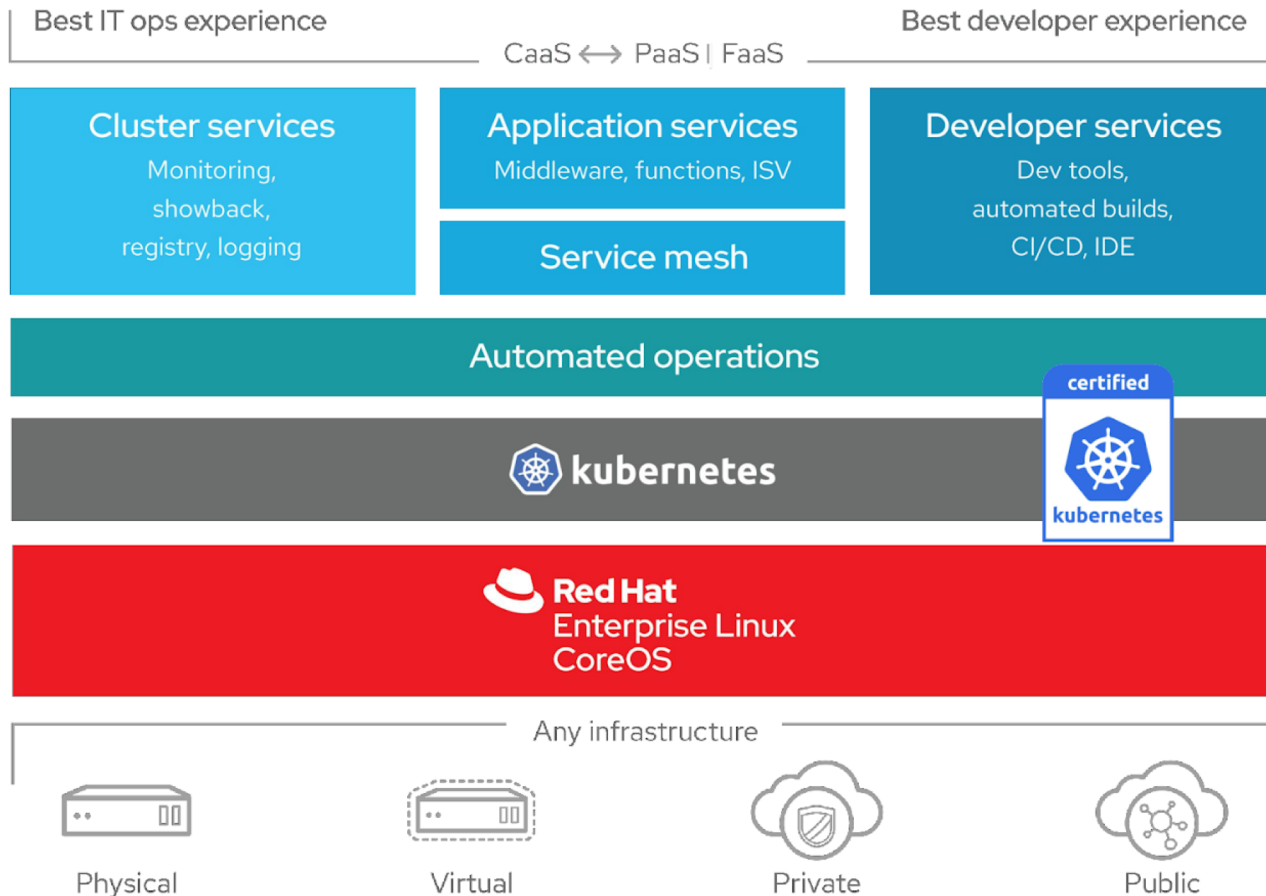


Trusted host, content,  
platform

Full-stack automated  
installation

Seamless updates

# OpenShift 4 - A smarter Kubernetes platform



**Automated, full-stack installation** from the container host to application services

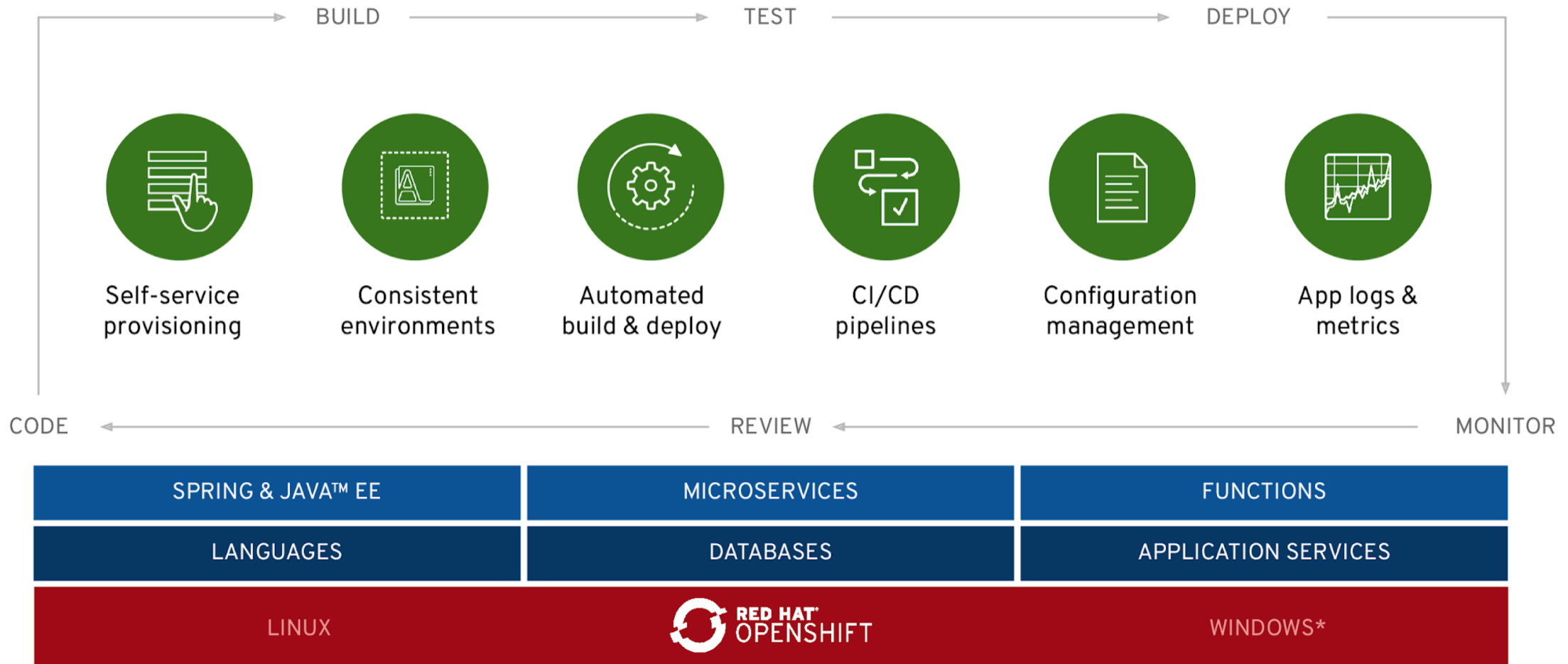
**Seamless Kubernetes deployment** to any cloud or on-premises environment

**Autoscaling** of cloud resources

**One-click updates** for platform, services, and applications



# OpenShift enables developer productivity





# Building next-gen applications




## OpenShift Service Mesh


- Integrated Service Mesh for enhanced security and network segmentation of microservices applications. Combines Istio, Kiali (UI), and Jaeger (Tracing) projects.





## OpenShift Serverless

- Integrated serverless, enabling scale-to-zero FaaS services and event sources - built on the Knative framework.
- Support for Azure Functions
- Integrated with Camel-k for rich set of initial event sources: HTTP, Kafka, AMQP

**OPENSSHIFT SERVERLESS**   Microsoft Azure

**OPENSSHIFT SERVICE MESH**   

 **Red Hat**  
**OpenShift 4**

# Why customers choose Red Hat OpenShift



Trusted enterprise  
Kubernetes



Cloud-like experience  
everywhere



Empowering  
developers to  
innovate

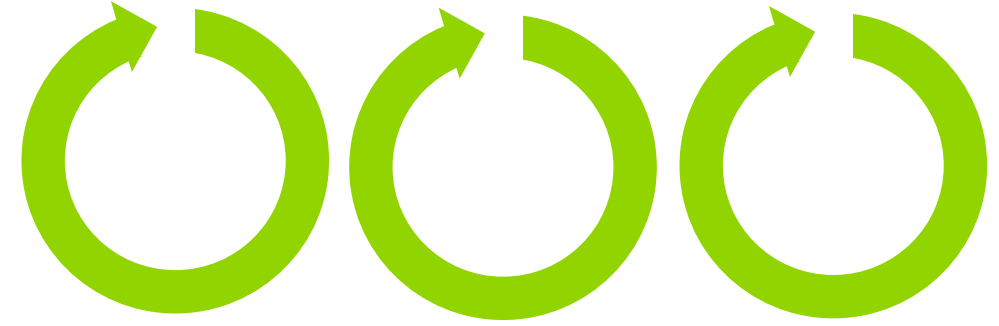
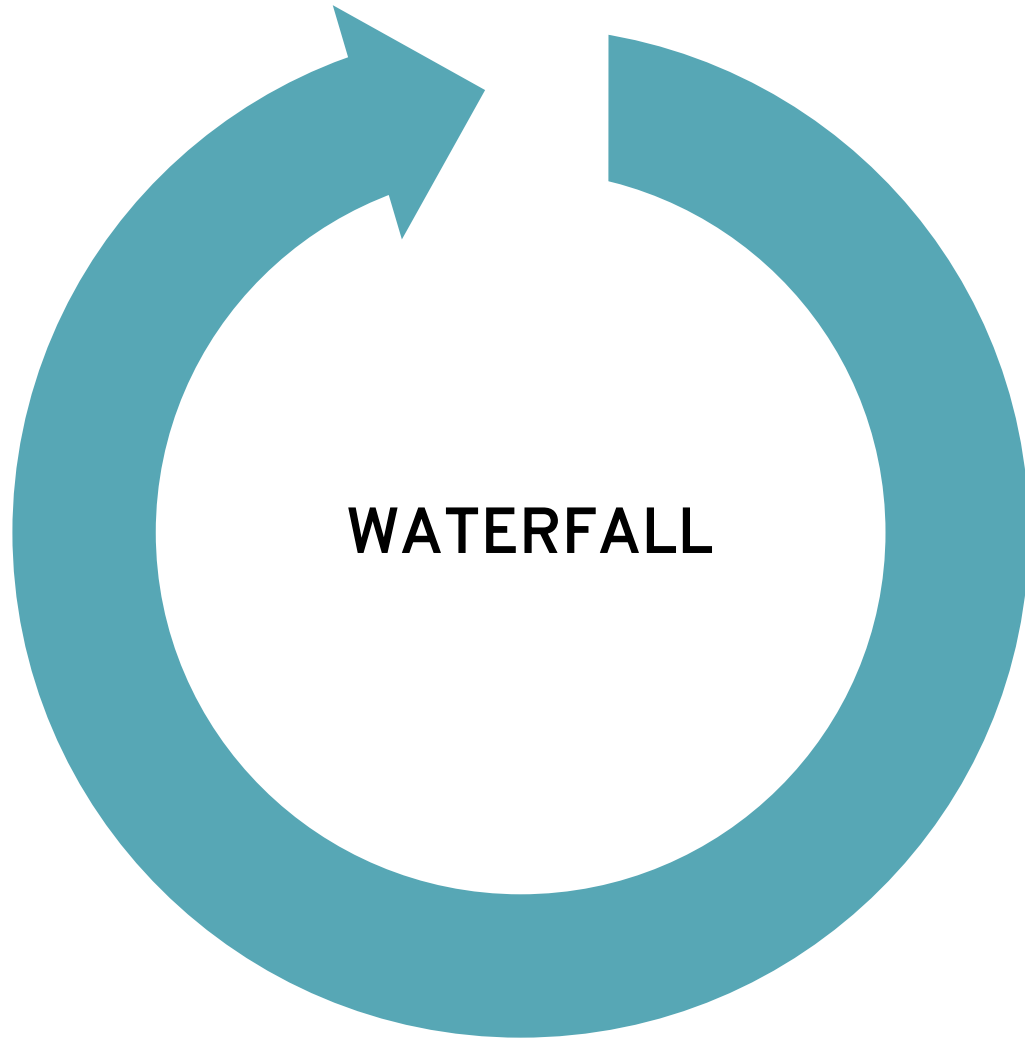


Open source innovation

# Red Hat Middleware

Capabilities to support cloud-native application environments





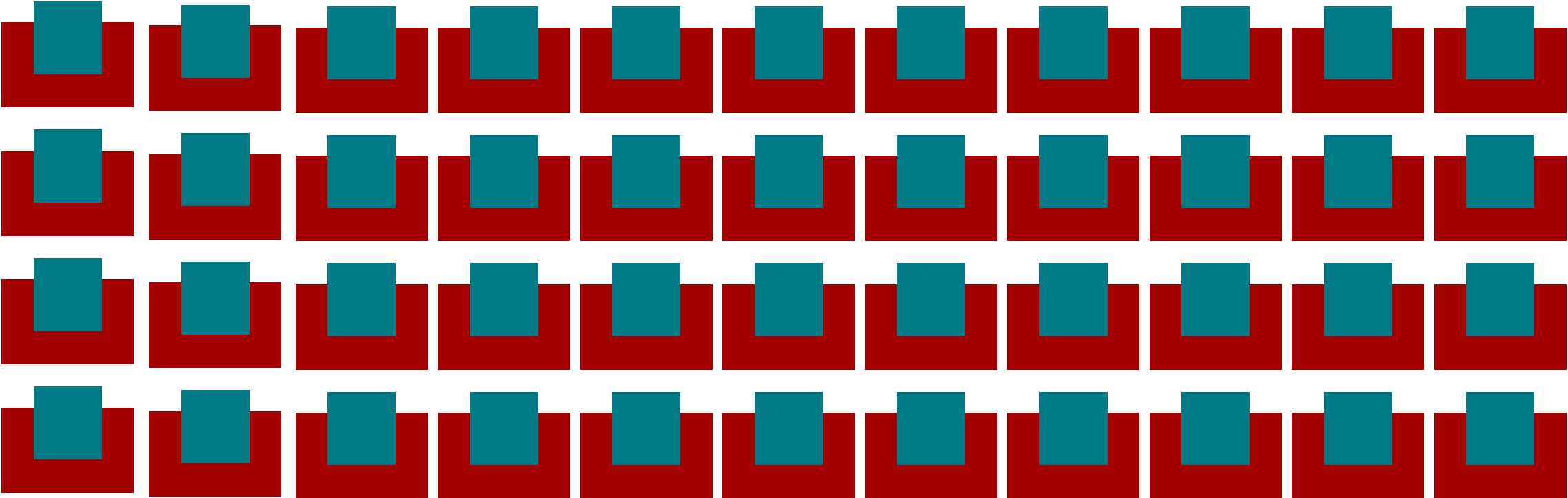
**AGILE,  
INCREMENTAL,  
ITERATIVE**

# KEY TO INCREMENTAL: THE CONTAINER

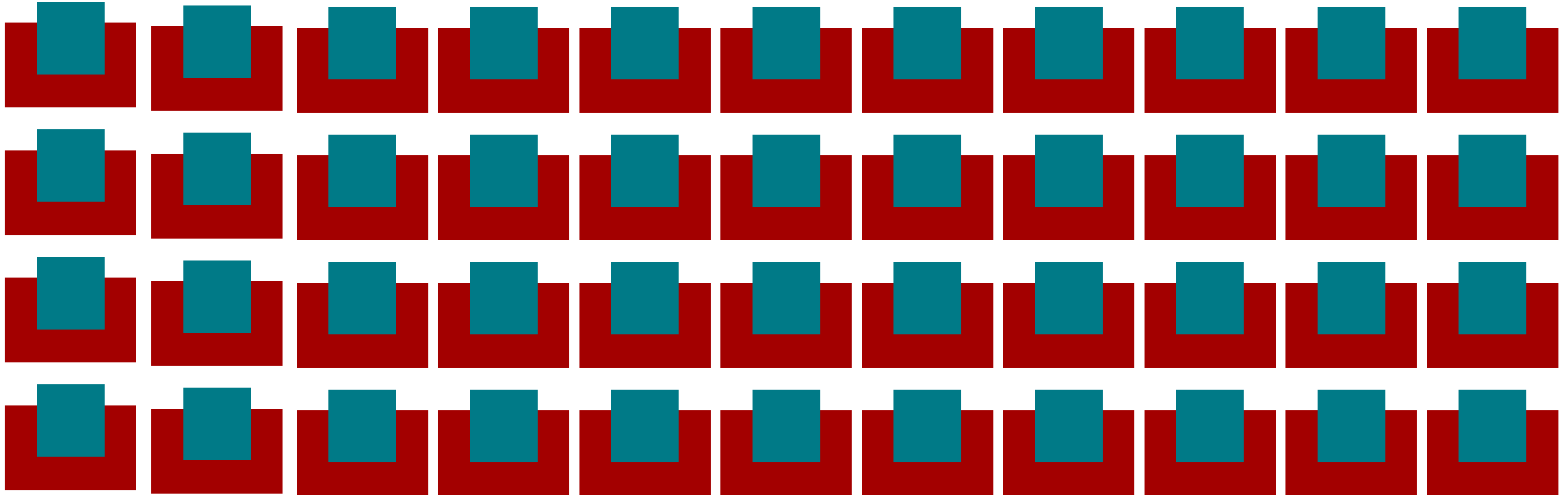




# DOING CONTAINERS AT SCALE IS HARD

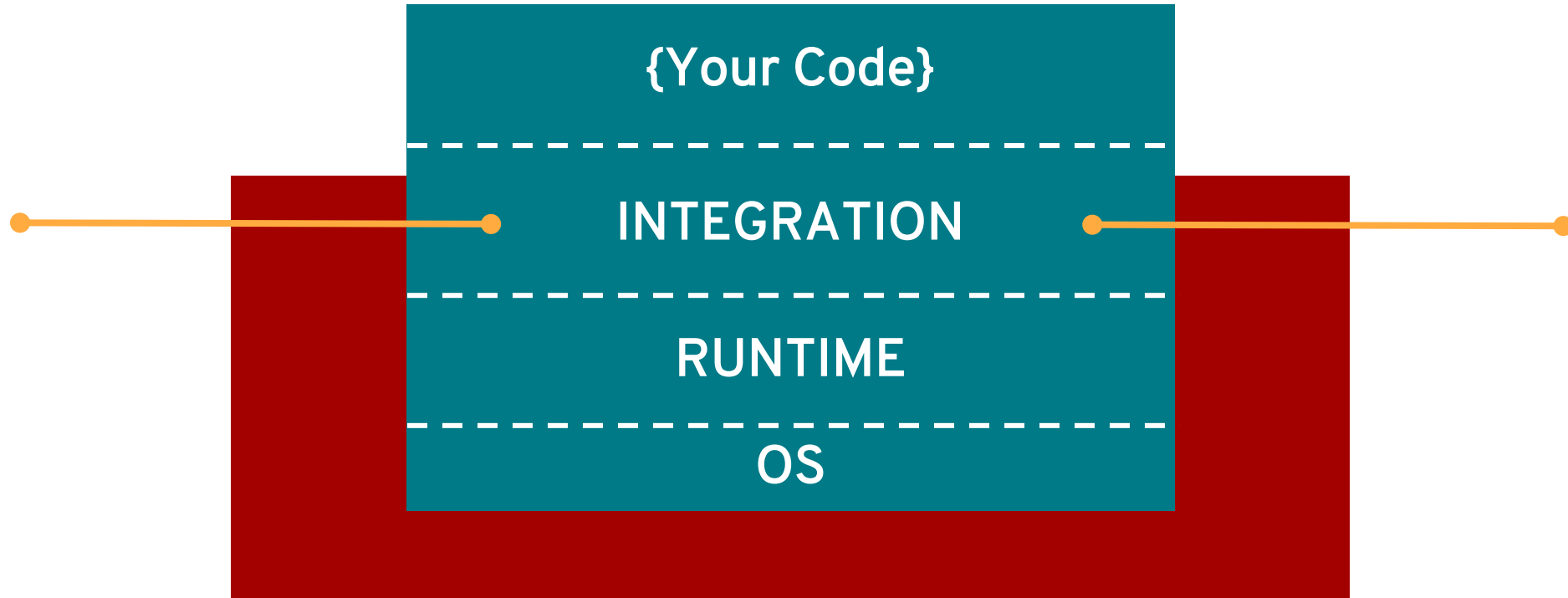


# WHAT THE CONTAINER IS ON MATTERS



PLATFORM

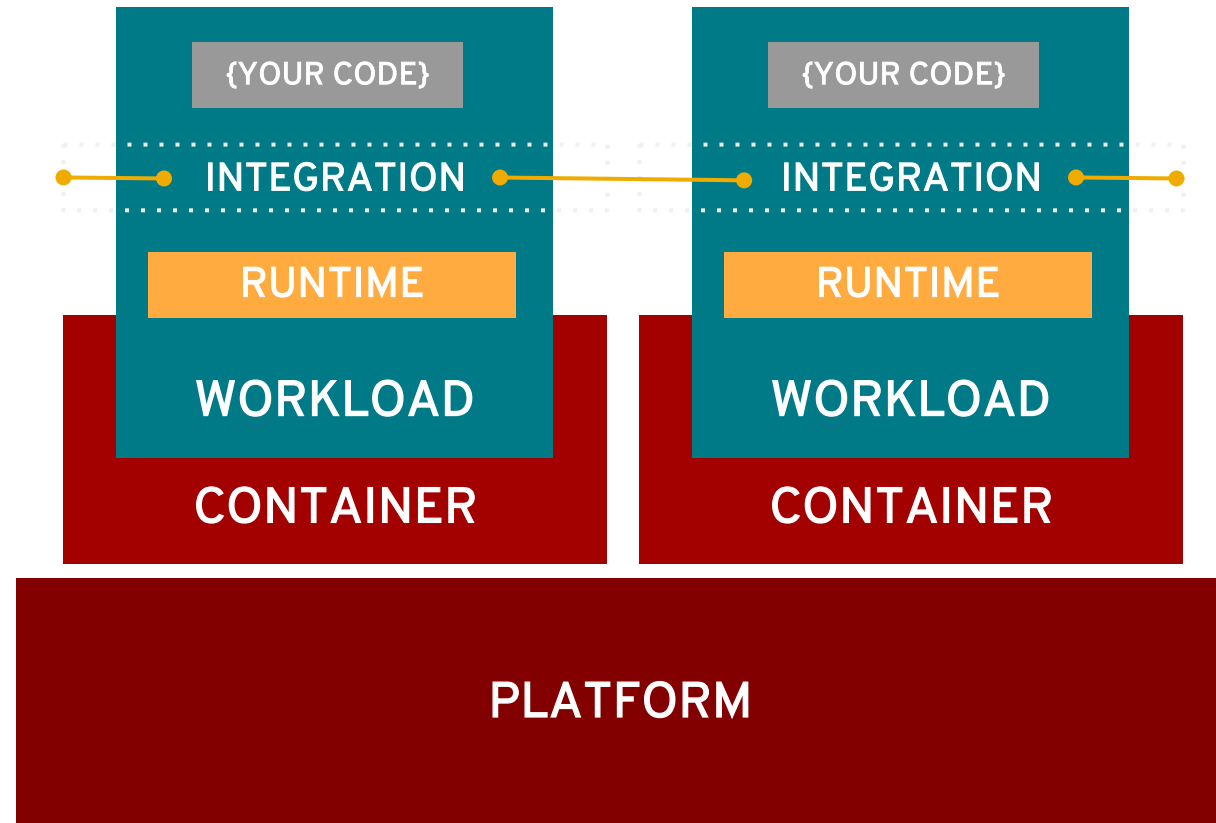
# What's IN the Container Matters



# WHAT'S BETWEEN THE CONTAINERS MATTERS

Integrate data, processes and policies across microservices, applications and systems

- Integrate more data sources
- Create, expose and manage APIs
- Reuse integration patterns
- Control and monetize APIs
- Extract and transform data

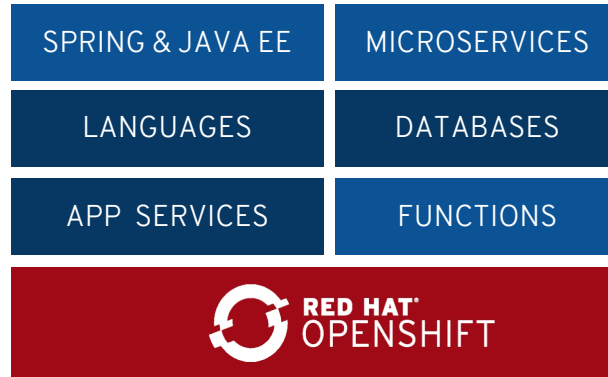


# MIDDLEWARE ON OPENSIFT

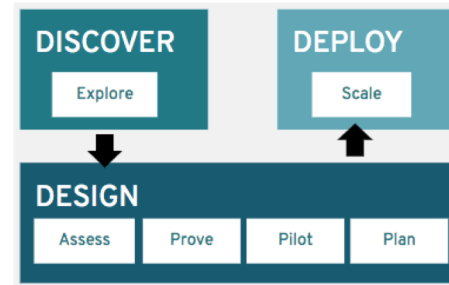
Why is **Red Hat** the best choice for cloud-native applications?



Standardize on a set of best-of-breed open source runtimes and frameworks



Simplify development thru native integration with OpenShift and Kubernetes Services



Support modernization initiatives at any speed with lift and shift, replatform and refactor



Match application requirements to polyglot runtime/framework (“right tool for the right job”)

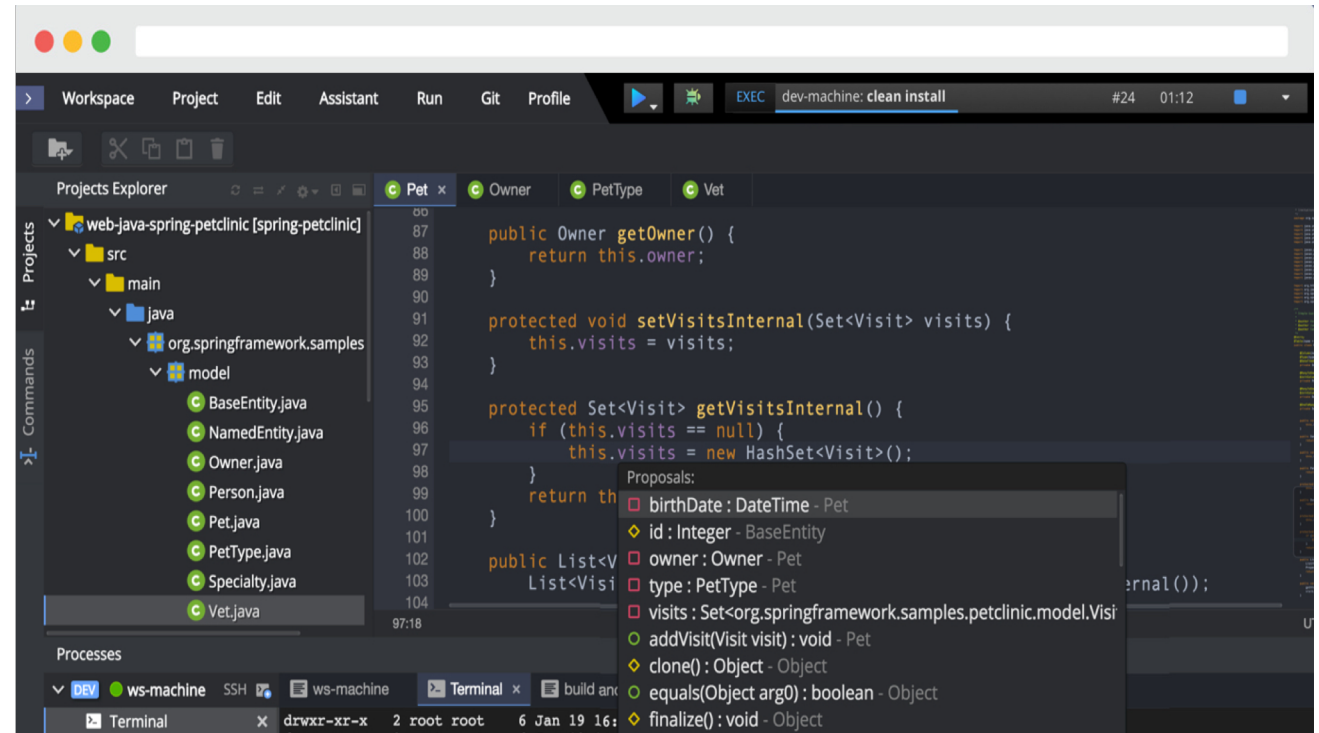
# Red Hat Developer Tools

Tools and standard processes to increase developer productivity on Kubernetes

# Red Hat CodeReady Workspaces



- Browser-based web IDE and dev environment in Kube pods
- Red Hat supported Eclipse Che
- Bundled with OCP/OSD SKU
- Available on OCP and OSD
- Enabled via an operator
- Stacks based on Red Hat Linux and Middleware
- Replaces VDI



# OpenShift Pipelines CI/CD Platform



Provides a next-gen Kubernetes CI/CD pipeline that works for containers (including serverless).

Based on the Tekton project (which was spun out of the Knative Pipelines project) started by Google, Red Hat and others.

The screenshot displays the OpenShift Pipelines console interface. At the top, the 'RED HAT OPENS SHIFT' logo is visible. The main area shows a table of pipeline runs. The selected run, 'aa-build-3', is in a 'Running' state and started '10 mins ago'. Below the table, a pipeline graph shows the following steps: 'Input info', 'build-name (30s)', 'Test-st... (6s)', 'Code a... (13s)', 'Security... (20s)', 'Image b... (0s)', and 'DeployTo... (0s)'. The 'build-name' step is currently active. Below the graph, a terminal window shows the following output:

```
Downloading six-1.11.0-py2.py3-none-any.whl
Building wheels for collected packages: tornado, configparser
Running setup.py bdist_wheel for tornado: started
Running setup.py bdist_wheel for tornado: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/0c/21/02/8cdc6a381450df92b449ea7c57be653dd7aa80ba42c716212c
Running setup.py bdist_wheel for configparser: started
Running setup.py bdist_wheel for configparser: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/1c/bd/b4/277af3f6c40645661b4cd1c21df26aca0f2e1e9714a1d4cd8
Successfully built tornado configparser
Installing collected packages: six, singledispatch, certifi, backports-abc, tornado, enum34, configparser, mccabe, pyflakes, pycodestyle, flake8
Found existing installation: six 1.8.0
Uninstalling six-1.8.0:
  Successfully uninstalled six-1.8.0
Successfully installed backports-abc-0.5 certifi-2017.11.5 configparser-3.5.0 enum34-1.1.6 flake8-3.5.0 mccabe-0.6.1 pycodestyle-2.3.1 pyflakes-1.6.0
singledispatch-3.4.0.3 six-1.11.0 tornado-4.5.3
$ python -c 'print("Hello, world")'
Hello, world
Job succeeded
```

Use It To: Create a Kubernetes-native CI/CD pipeline in OpenShift.



TEKTON





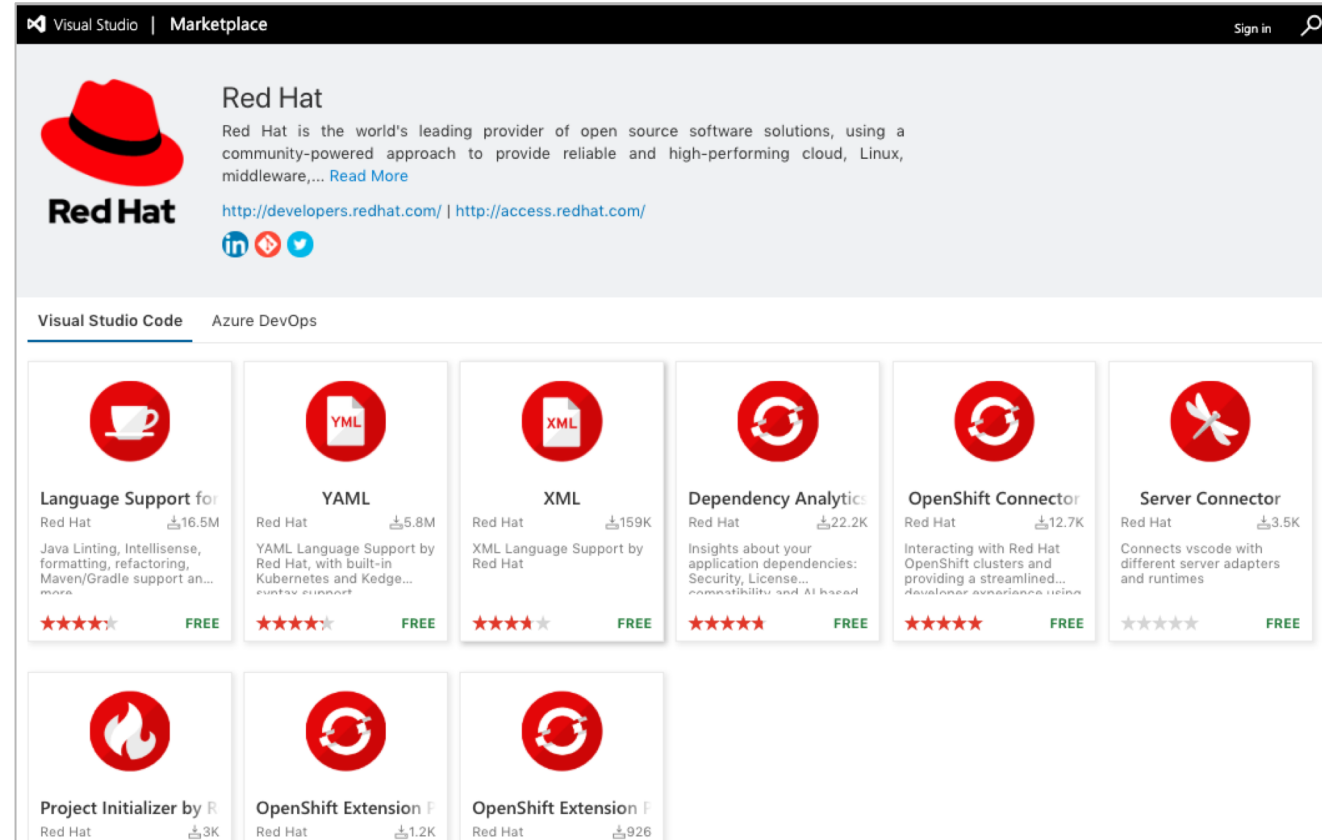
# Red Hat Plugins for Microsoft VS Code



Red Hat plugins for VSCode add IDE superpowers for **Java, Kubernetes** YAML and XML.

The **OpenShift** plugin allows developers to quickly connect and deploy to OpenShift instances locally or remotely.

**Dependency Analytics** adds license and CVE package alerts.



*Use It To: Get the most out of Red Hat's products in the VS Code IDE.*



# Source Code Dependency Analytics

The dependency analytics service provides security and license warnings for any dependency in a project. This helps developers to fix problems earlier in the cycle.

- Find CVEs in any package
- Discover license mismatches
- Supported for Java and Node

The screenshot shows the Red Hat Central interface for dependency analytics. The main window displays a stack report for a Maven project. The report is divided into four sections: Security Issues, Insights, Licenses, and Component Details. The Security Issues section shows 2 total issues found with a highest CVSS score of 7.5 / 10. The Insights section shows 2 total insights, including usage outliers and companion components. The Licenses section shows 3 unknown licenses and 0 restrictive licenses. The Component Details section shows 5 total components, 5 analyzed, and 0 unknown.

Section	Item	Value
Security Issues	Total issues found	2
	Highest CVSS Score	7.5 / 10
	No. of components with this CVSS Score: 1	1
Insights	Total Insights	2
	Usage Outliers	2
	Companion Components	0
	Other	0
Licenses	Stack Level	None
	License Conflicts	0
	Unknown Licenses	3
	Restrictive Licenses	0
	Other	0
Component Details	Total Components	5
	Analyzed Components	5
	Unknown Components	0
	Other	0

Use It To: Help developers find critical issues before they hit production.

# The Labs

## The Labs

### **1** OPTIMIZING EXISTING APPLICATIONS

Migrate an existing monolithic Java application from a legacy platform to Red Hat.

Modernize by incrementally refactoring to microservices architecture and modern Java platform

### **2** DEBUGGING, MONITORING AND CONTINUOUS DELIVERY

Debug, instrument and monitor a modern microservice application.

Deploy continuously using Pipelines

### **3** CONTROL CLOUD NATIVE APPS WITH SERVICE MESH

Gain a deep understanding of app behavior through service mesh instrumentation and visualization

### **4** ADVANCED CLOUD NATIVE WITH EVENT-DRIVEN SERVERLESS

Dynamically respond to events and scale applications using powerful Kubernetes constructs

# Thank you

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



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