

Prepare to Perform with Backstage Software Templates

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Agenda

1. Application complexity in a CNCF world
2. What is Backstage?
3. Backstage Software Templates (“Golden Paths”):
 - a. Inputs
 - b. Scaffolding
 - c. Outputs
4. Q & A

This shouldn't be too hard...

Let's build an app!

This shouldn't be too hard...

I'll just grab my editor and compiler...

...and Podman (ok,
probably Docker)
...and a container registry
...and a place to run
containers

...and CD to deploy it
...and a LOT of YAML
...and a place to store the
code (and the YAML)
...and don't forget to
shift security "left"



This shouldn't be too hard...

Just one more YAML?

Found this posted
at a tech
conference:



Developers are under pressure: And their productivity is slowing down.

Organizations are looking for a platform to reduce
toil and increase productivity.

39%

Increasing workload /
demand from other teams
lead to increased overhead.¹

76%

More than three-quarters
of organizations say the
**cognitive load is so high
that it is a source low
productivity.**¹

37%

Adapting to the
pressures of digital
transformation is third
biggest challenge.¹

35%

Learning skills to
adapt to new
technologies and
approaches¹

^[1] [Salesforce productivity survey](#)

Pillars of an Internal Development Platform (IDP)

Onboarding



Code Time



Build Time



Run Time



Internal Developer Platform (IDP)

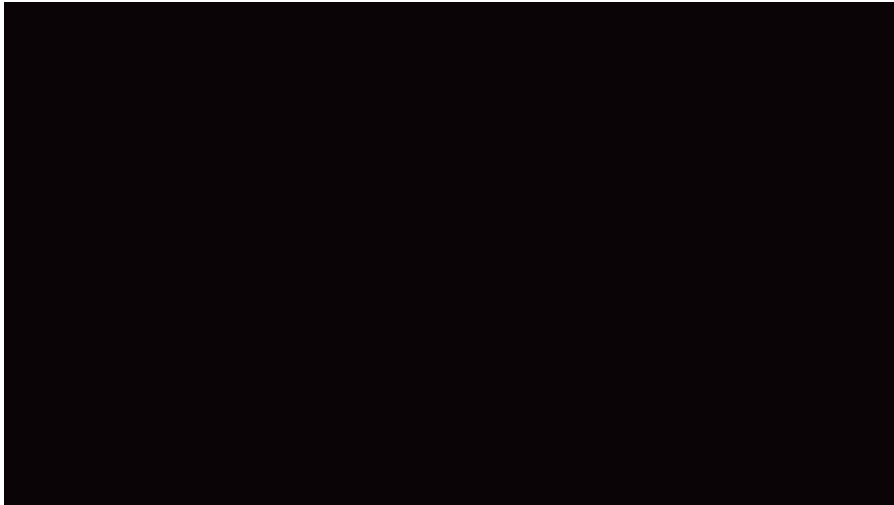
An Internal Developer Platform (IDP) is built by a platform team to build golden paths and enable developer self-service.

An IDP consists of many different techs and tools, glued together in a way that lowers cognitive load on developers without abstracting away context and underlying technologies.

Following best practices, platform teams treat their platform as a product and build it based on user research, maintain and continuously improve it.

What is Backstage?

An open platform for building developer portals



Allowing developers to focus on coding, rather than navigating to all the different tools

Lowering the cognitive load and unlocking productivity

Happy developers make happy code!

<http://backstage.io>



Adopters of Backstage



Backstage Core Features



	Centralized Software Catalog	Keep track of application ownership and metadata for all the software in your organization (services, websites, libraries, data pipelines, etc.)
	Plugins	Extend functionality and provide customization
	Software Templates (Golden Path Templates)	Quickly spin up new projects and standardize your tooling with your organization's best practices
	Tech Docs	Easily create, maintain, and find technical documentation using a "docs as code" approach
	Search	Find the right information across your entire Backstage ecosystem

Plugins Enhance Developer Portals



125+ community plugins,
some examples:

- ▶ SCM
- ▶ CI/CD
- ▶ Monitoring
- ▶ Issue tracking
- ▶ Code quality



Red Hat Developer Hub

an enterprise-grade, open developer platform for
building developer portals,
containing a supported and opinionated framework

developers.redhat.com/rhdh

Red Hat Developer Hub - Enterprise IDP based on Backstage



RHDH based on CNCF project
backstage.io

Backstage OSS community



- Secure build and distribution of Backstage by Red Hat
- 24x7 Enterprise support
- Simpler life cycle management via Helm Chart and Operator
- Dynamic Plugin architecture to allow easier extensibility with plugins
- Robust enterprise level RBAC for administration and user control
- Growing set of plugins for extensibility (15+ including ArgoCD, Tekton, Quay, Artifactory, Application Topology, Multi-cluster view, etc)
- Additional Certified Plugins from 3rd party ISVs
- Orchestration capabilities

developers.redhat.com/rhdh

Backstage Software Templates

<https://backstage.io/docs/features/software-templates/>

Q: What is a
"Golden Path"?

Golden Path: <undefined>

- a self-service workflow
- a means of reducing cognitive load for developers
 - without abstracting away context and underlying tools and technologies
- a way to get started with a new project while following existing best practices



Template Example 1

github.com/developer-hub-books/rhdh-book1-templates

Your recovery codes have not been saved in the past year. Make sure you still have them stored somewhere safe by viewing and downloading them again.

[View recovery codes](#)

rhdh-book1-templates Public

Edit Pins

Unwatch 3

Fork 25

Star 0

main 2 Branches 0 Tags

Go to file

Add file

Code

About

No description, website, or topics provided.

Readme

Activity

Custom properties

0 stars

3 watching

25 forks

Report repository

Releases

No releases published

[Create a new release](#)

hpgrahsl Merge pull request #2 from developer-hub-books/doc-update	37487f2 · 10 months ago	5 Commits
.github/workflows	templates snapshot for rhdh book	11 months ago
custom-component-patch	templates snapshot for rhdh book	11 months ago
custom-deployment-patch	templates snapshot for rhdh book	11 months ago
docs/images	add fork instructions	10 months ago
nestjs-with-postgres	templates snapshot for rhdh book	11 months ago
quarkus-with-angular	templates snapshot for rhdh book	11 months ago
README.md	add fork instructions	10 months ago



developer-hub-books / rhdh-book1-templates

Q Type / to search



<> Code Issues 1 Pull requests Actions Projects Wiki Security Insights Settings

main rhdh-book1-templates / quarkus-with-angular /

Go to file

Add file



hpgrahsl templates snapshot for rhdh book

15f82c3 · last year



History

Name

Last commit message

Last commit date



..



manifests

templates snapshot for rhdh book

last year



skeleton

templates snapshot for rhdh book

last year



template.yaml

templates snapshot for rhdh book

last year

Template Attributes

- Group, Version, Kind (OpenAPI spec)
- Metadata
- Spec
 - Parameters (paginated form inputs)
 - Steps (templating, registration, deployment)
 - Output (repos, catalog-info, yamls, links)

hpgrahsl templates snapshot for rhdh book

15f82c3 · 11 months ago History

Code Blame 167 lines (166 loc) · 6.37 KB

Raw Copy Download Edit

```
1 apiVersion: scaffolder.backstage.io/v1beta3
2 kind: Template
3 metadata:
4   name: quarkus-with-angular
5   title: Quarkus Service with hosted Angular Frontend
6   description: Creates a Quarkus service hosting an Angular frontend
7   tags:
8     - java
9     - quarkus
10    - quinoa
11    - angular
12    - book
13 spec:
14   owner: rhdh-idp-book-authors
15   type: service
16
17   parameters:
18     - title: Provide information about the GitLab location
```

Software Templates

Create new software components using standard templates in your organization

[Register Existing Component](#)[? Support](#)

Available Templates

Q Search X

Personal

★ Starred 0

My Org

All 5

Categories

Tags

Templates

Service



NestJS Service with backing
PostgreSQL database

Creates a NestJS Service together with a
PostgreSQL database

nodejs nestjs database
postgresql book

rhdh-idp-book-authors

Choose

App-Patch



Quarkus Application Patch Template

This is an example template to patch existing
Quarkus components

template quarkus patch book

rhdh-idp-book-authors

Choose

Service



Quarkus Service with ArgoCD and a
Tekton Pipeline

Create a simple microservice using Quarkus
with ArgoCD and a Tekton Pipeline

recommended java quarkus
maven

rhdh

Choose

Service



Quarkus Service with hosted Angular
Frontend

Creates a Quarkus service hosting an Angular
frontend

java quarkus quinoa angular
book

rhdh-idp-book-authors

Choose

Gitops-Patch



Staged Deployment Patch Template

This is an example template to patch existing
component manifests to a staged...

template deployment patch
book

rhdh-idp-book-authors

Choose



main ▾

rhdh-book1-templates / quarkus-with-angular / template.yaml

Code

Blame

167 lines (166 loc) · 6.37 KB

```
13 spec:
14   owner: rhdh-idp-book-authors
15   type: service
16
17   parameters:
18     - title: Provide information about the GitLab location
19       required:
20         - gitlabGroup
21       properties:
22         gitlabGroup:
23           title: Repo Owner
24           type: string
25           description: GitLab Organization
26           default: development
27           enum:
28             - development
29       description:
30         title: Description
31         type: string
32         description: Help others understand what this component is for
33         default: Creates a Quarkus service hosting an Angular frontend
```

Software Templates

Create new software components using standard templates in your organization



Quarkus Service with hosted Angular Frontend

Creates a Quarkus service hosting an Angular frontend

1

2

3

4

Provide information about the GitLab location

Provide information about the new component

Provide Build Information

Review

Repo Owner *

development



GitLab Organization

Description

Creates a Quarkus service hosting an Angular frontend

Help others understand what this component is for

Back

Next

Code

Blame

167 lines (166 loc) · 6.37 KB

Raw



```
34     - title: Provide information about the new component
35       required:
36         - cluster_id
37         - namespace
38         - application_id
39         - owner
40       properties:
41         cluster_id:
42           title: Cluster Id
43           type: string
44           description: Id of the cluster
45           default: <XXX_XXX_XXX>
46         namespace:
47           title: Namespace
48           type: string
49           description: Namespace
50         application_id:
51           title: Application Id
52           type: string
53           description: Id of the application
54         owner:
55           title: Owner
56           type: string
57           description: Owner of the component
58           ui:field: EntityPicker
59           ui:options:
60             catalogFilter:
61             kind: [User]
```

Quarkus Service with hosted Angular Frontend

Creates a Quarkus service hosting an Angular frontend



Provide information about the GitLab location

Provide information about the new component

Provide Build Information

Review

Namespace *

demo1

Namespace

Application Id *

poi-map

Id of the application

Owner *

user:default/user1

Owner of the component

Back

Next



master ▾

[backstage-workshop](#) / [scaffolder-templates](#) / [poi-map](#) / [template.yaml](#)

↑ Top

Code

Blame

Raw



```
51     - title: Provide Build Information
52       required:
53         - image_host
54         - image_tag
55       properties:
56         image_host:
57           title: Image Host
58           type: string
59           description: Host for storing image (defaults to openshift internal)
60           default: image-registry.openshift-image-registry.svc:5000
61         image_tag:
62           title: Image Tag
63           default: latest
64           type: string
65           description: Image tag to use for storing in the internal registry
```

Quarkus Service with hosted Angular Frontend

Creates a Quarkus service hosting an Angular frontend



Provide information about the GitLab location

Provide information about the new component

Provide Build Information

Review

Image Host *

image-registry.openshift-image-registry.svc:5000

Host for storing image (defaults to openshift internal)

Image Tag *

latest

Image tag to use for storing in the internal registry

Back

Review

Quarkus Service with hosted Angular Frontend

Creates a Quarkus service hosting an Angular frontend



Provide information about the GitLab location

Provide information about the new component

Provide Build Information

Review

Gitlab Group	development
Description	Creates a Quarkus service hosting an Angular frontend
Application Id	poi-map
Namespace	demo1
Owner	user:default/user1
Image Host	image-registry.openshift-image-registry.svc:5000
Image Tag	latest

Back

Create

Template step actions:

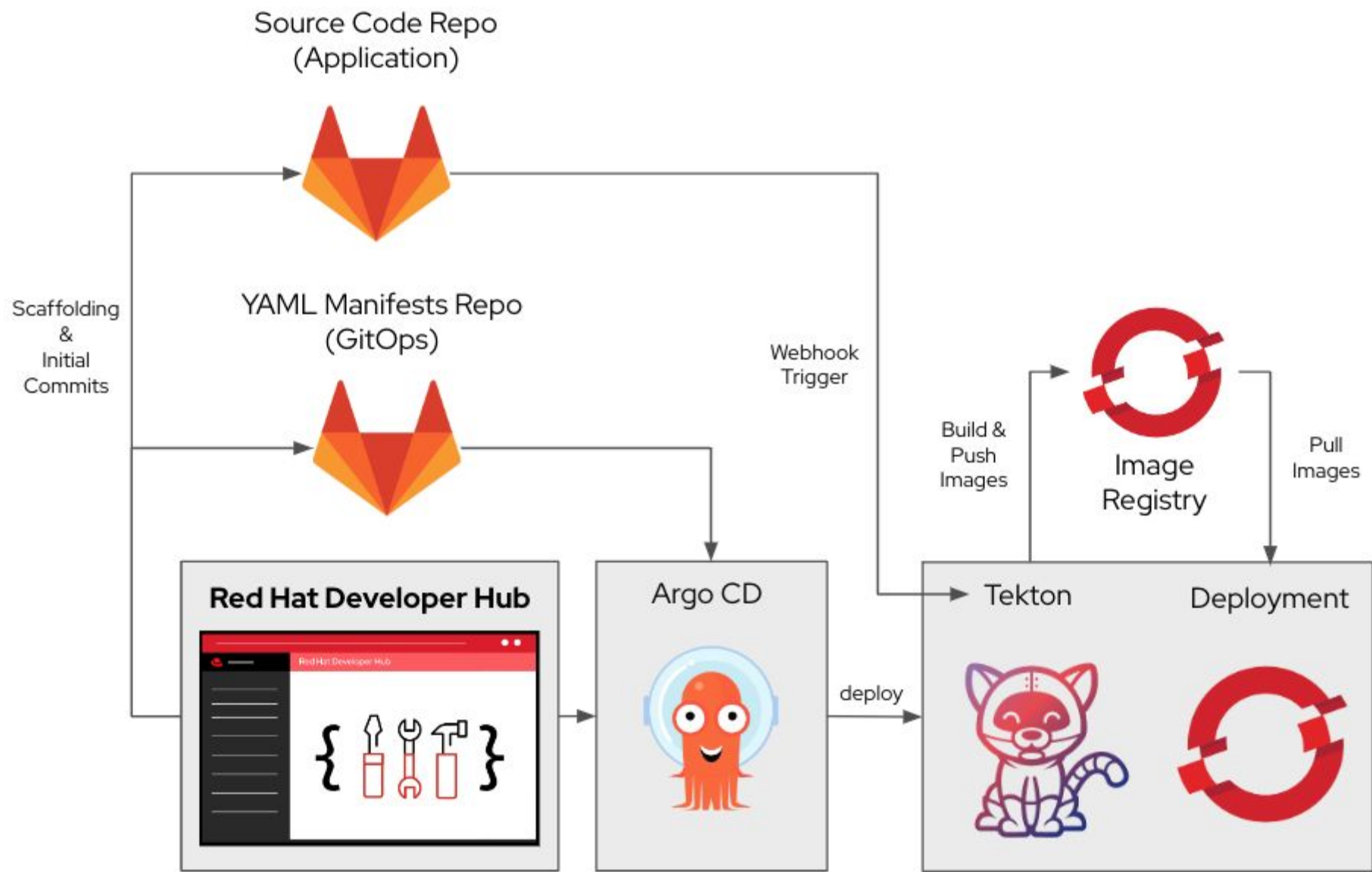
1. fetch:template
2. publish:gitlab
3. fetch:template
4. publish:gitlab
5. catalog:register
6. catalog:register
7. argocd:create-resources

```
77 steps:
78   - id: templateSource
79     name: Generating the source code component
80     action: fetch:template
81     input:
82       url: ./skeleton
83       targetPath: ./source
84       values:
85         git_host: gitlab-gitlab${{parameters.cluster_id}}
86         gitlabGroup: ${{parameters.gitlabGroup}}
87         repoName: ${{parameters.namespace}}-${{parameters.application_id}}
88         owner: ${{parameters.owner}}
89         cluster_id: ${{parameters.cluster_id}}
90         namespace: ${{parameters.namespace}}
91         component_id: ${{parameters.namespace}}-${{parameters.application_id}}
92         description: ${{parameters.description}}
93   - id: publishSource
94     name: Publishing to Source Code Repository
95     action: publish:gitlab
96     input:
97       sourcePath: ./source
98       description: ${{parameters.description}}
99       repoUrl: gitlab-gitlab${{parameters.cluster_id}}?owner=${{parameters.gitlabGroup}}&repo=${{parameters.namespace}}-${{parameters.applic
100       defaultBranch: main
101       protectDefaultBranch: false
102       repoVisibility: public
```

```
98     description: ${parameters.description}}
99     repoUrl: gitlab-gitlab${parameters.cluster_id}?owner=${parameters.gitlabGroup}&repo=${parameters.namespace}-${parameters.ap
100     defaultBranch: main
101     protectDefaultBranch: false
102     repoVisibility: public
103 - id: templateGitops
104   name: Generating the deployment resources and artefacts
105   action: fetch:template
106   input:
107     url: ./manifests
108     copyWithoutTemplating: []
109     values:
110       git_host: gitlab-gitlab${parameters.cluster_id}
111       component_id: ${parameters.namespace}-${parameters.application_id}
112       description: ${parameters.description}
113       destination: https://gitlab-gitlab${parameters.cluster_id}/${parameters.gitlabGroup}/${parameters.namespace}-${parameters.ap
114       source_repository: https://gitlab-gitlab${parameters.cluster_id}/${parameters.gitlabGroup}/${parameters.namespace}-${parameters
115       repository_name: ${parameters.namespace}-${parameters.application_id}
116       git_owner: ${parameters.gitlabGroup}
117       cluster: ${parameters.cluster_id}
118       namespace: ${parameters.namespace}
119       image_host: ${parameters.image_host}
120       image_name: ${parameters.namespace}/${parameters.application_id}
121       image_tag: ${parameters.image_tag}
122       application_id: ${parameters.application_id}
123     targetPath: ./tenant-gitops
124 - id: publishGitops
125   name: Publishing to Deployment Resource Repository
126   action: publish:gitlab
127   input:
128     repoUrl: gitlab-gitlab${parameters.cluster_id}?owner=${parameters.gitlabGroup}&repo=${parameters.namespace}-${parameters.appl
```

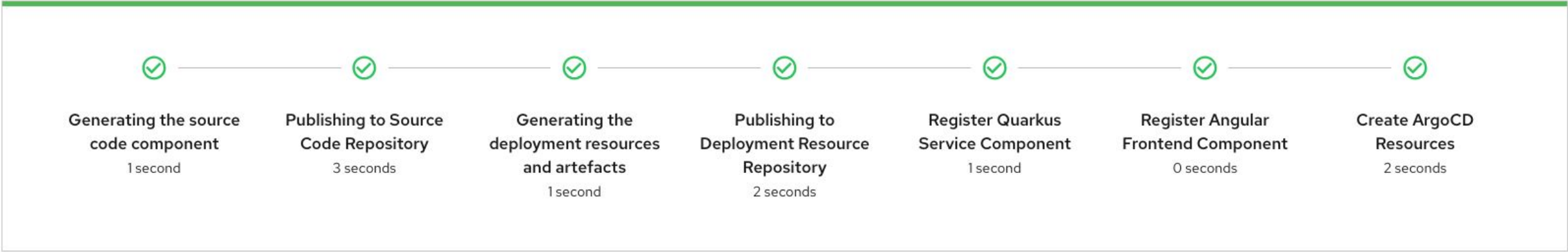
```
120     image_name: ${parameters.namespace}/${parameters.application_id}}
121     image_tag: ${parameters.image_tag}}
122     application_id: ${parameters.application_id}}
123     targetPath: ./tenant-gitops
124 - id: publishGitops
125   name: Publishing to Deployment Resource Repository
126   action: publish:gitlab
127   input:
128     repoUrl: gitlab-gitlab${parameters.cluster_id}?owner=${parameters.gitlabGroup}&repo=${parameters.namespace}-${parameters.application_id}}
129     title: gitops resources for ${parameters.namespace}-${parameters.application_id}}
130     description: gitops resources for ${parameters.namespace}-${parameters.application_id}}
131     sourcePath: ./tenant-gitops
132     defaultBranch: main
133     protectDefaultBranch: false
134     repoVisibility: public
135 - id: registerSource1
136   name: Register Quarkus Service Component
137   action: catalog:register
138   input:
139     repoContentsUrl: ${steps.publishSource.output.repoContentsUrl}}
140     catalogInfoPath: /catalog-info.yaml
141 - id: registerSource2
142   name: Register Angular Frontend Component
143   action: catalog:register
144   input:
145     repoContentsUrl: ${steps.publishSource.output.repoContentsUrl}}
146     catalogInfoPath: /src/main/angular/catalog-info.yaml
147 - id: createArgoResources
148   name: Create ArgoCD Resources
149   action: argocd:create-resources
150   input:
```

```
140     catalogInfoPath: /catalog-info.yaml
141   - id: registerSource2
142     name: Register Angular Frontend Component
143     action: catalog:register
144     input:
145       repoContentsUrl: ${steps.publishSource.output.repoContentsUrl}
146       catalogInfoPath: /src/main/angular/catalog-info.yaml
147   - id: createArgoResources
148     name: Create ArgoCD Resources
149     action: argocd:create-resources
150     input:
151       appName: ${parameters.namespace}-${parameters.application_id}-bootstrap
152       argoInstance: main
153       namespace: janus-argocd
154       repoUrl: https://gitlab-gitlab${parameters.cluster_id}/${parameters.gitlabGroup}/${parameters.namespace}-${parameters.application_id}
155       path: 'argocd/'
156   output:
157     links:
158       - title: Source Code Repository
159         url: ${steps.publishSource.output.remoteUrl}
160       - title: Pipeline status
161         url: https://console-openshift-console${parameters.cluster_id}/dev-pipelines/ns/${parameters.namespace}/
162       - title: Open Quarkus Service Component
163         icon: catalog
164         entityRef: ${steps.registerSource1.output.entityRef}
165       - title: Open Angular Frontend Component
166         icon: catalog
167         entityRef: ${steps.registerSource2.output.entityRef}
```



Run of quarkus-with-angular

Task b675a2b4-0c70-471b-8841-2b353ca2f948










[🔗 Source Code Repository](#)

[🔗 Pipeline status](#)

[📖 Open Quarkus Service Component](#)


[📖 Open Angular Frontend Component](#)






Project


D demo1-poi-map


 Pinned


Issues 0


Merge requests 0


 Manage


 Plan


 Code


 Build


 Secure


 Deploy

 Operate

 Monitor

 Analyze

 Settings

 Help

development / demo1-poi-map


D



demo1-poi-map













 main  demo1-poi-map /  

History Find file Edit **Code**

  Star 0  Fork 0 

 **initial commit**
Scaffolder authored 1 minute ago



 6c76ae1e 

Name	Last commit	Last update
 .mvn/wrapper	initial commit	1 minute ago
 docs	initial commit	1 minute ago
 src/main	initial commit	1 minute ago
 .devfile-vscode.yaml	initial commit	1 minute ago
 .dockerignore	initial commit	1 minute ago
 .gitignore	initial commit	1 minute ago
 .gitlab-ci.yml	initial commit	1 minute ago
 Dockerfile	initial commit	1 minute ago
 README.md	initial commit	1 minute ago
 catalog-info.yaml	initial commit	1 minute ago
 mkdocs.yaml	initial commit	1 minute ago
 mvnw	initial commit	1 minute ago

Project information



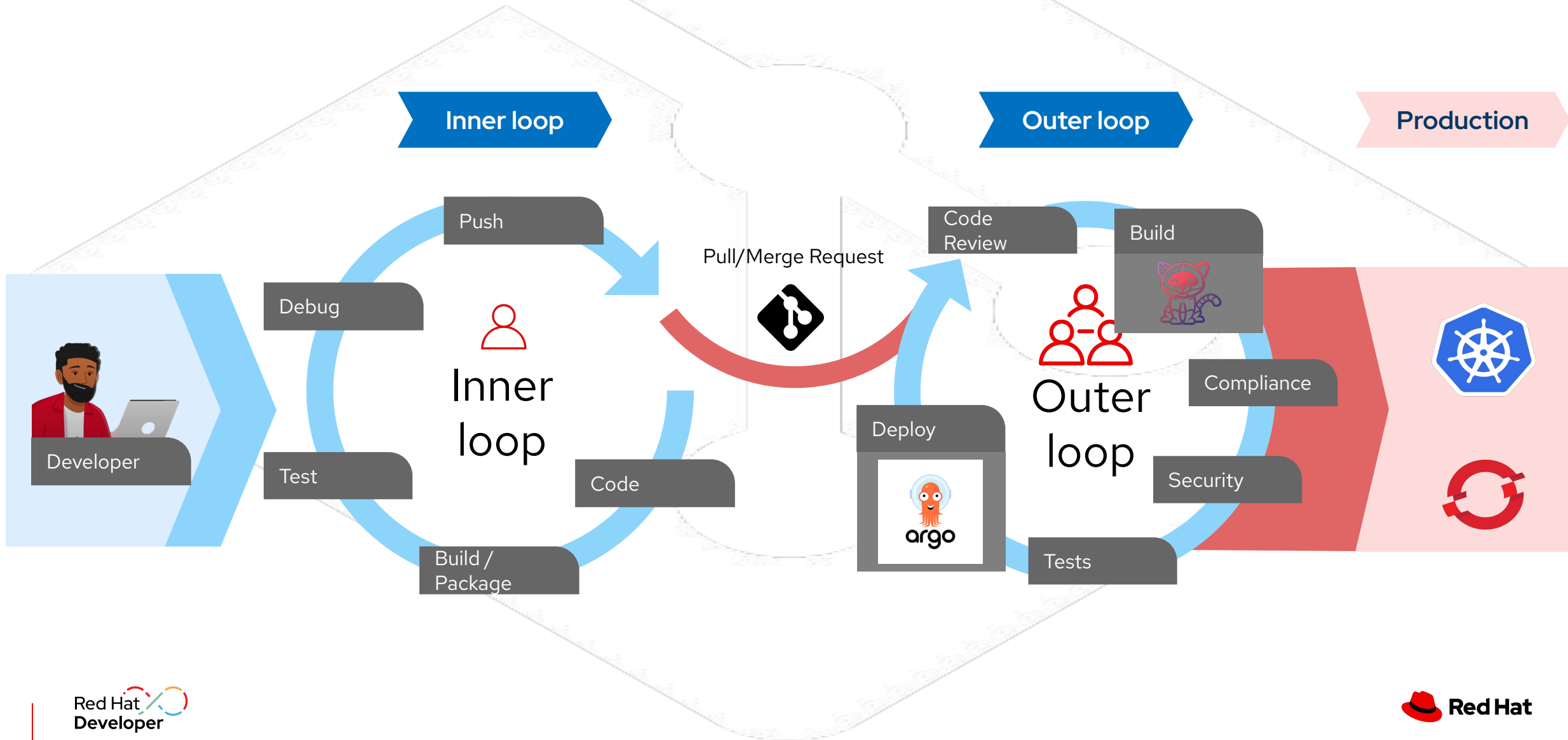
 1 Commit
 1 Branch
 0 Tags
 323 KiB Project Storage

 README
 CI/CD configuration
[+ Add LICENSE](#)
[+ Add CHANGELOG](#)
[+ Add CONTRIBUTING](#)
Auto DevOps enabled
[+ Add Kubernetes cluster](#)
[+ Add Wiki](#)
[+ Configure Integrations](#)

Created on
March 03, 2025

```
1  apiVersion: backstage.io/v1alpha1
2  kind: Component
3  metadata:
4    name: demo1-poi-map-service
5    description: 'The Quarkus service for demo1-poi-map (Creates a Quarkus service hosting an Angular frontend)'
6    annotations:
7      argocd/app-name: demo1-poi-map-dev
8      backstage.io/kubernetes-id: demo1-poi-map
9      backstage.io/kubernetes-namespace: demo1
10     backstage.io/techdocs-ref: dir:.
11     gitlab.com/project-slug: development/demo1-poi-map
12     janus-idp.io/tekton : demo1-poi-map
13   labels:
14     backstage.io/kubernetes-id: demo1-poi-map
15   tags:
16     - java
17     - quarkus
18     - maven
19     - book
20     - example
21   links:
22     - url: https://console-openshift-console.apps.cluster-t6d2k.t6d2k.sandbox2741.opentlc.com/dev-pipelines/ns/demo1/
23       title: Pipelines
24       icon: web
25     - url: https://console-openshift-console.apps.cluster-t6d2k.t6d2k.sandbox2741.opentlc.com/k8s/ns/demo1/deployments/demo1-poi-map
26       title: Deployment
27       icon: web
28     - url: https://devspaces.apps.cluster-t6d2k.t6d2k.sandbox2741.opentlc.com/#https://gitlab-gitlab.apps.cluster-t6d2k.t6d2k.sandbox2741.opentlc.
29       title: OpenShift Dev Spaces
```

Continuous Developer Flow



My Org Catalog

[Create](#)
[? Support](#)

Kind

Component

Type

all

Personal

Owned 2

Starred 0

My Org

All 2

Owner

Lifecycle

Owned components (2)

 Search

Name	System	Owner	Type	Lifecycle	Description	Tags	Created At	Actions
demo1-poi-map-frontend	idp-system-demo1	user:user1	service	production	The Angular...	typescript angular book example		View Edit Star
demo1-poi-map-service	idp-system-demo1	user:user1	service	production	The Quarkus...	java quarkus maven book example		View Edit Star

< >

demo1-poi-map-service ☆

- Overview
- Topology
- Issues
- Pull/Merge Requests
- CI
- CD
- Kubernetes
- Api
- Dependencies
- Docs

Links

-  [Pipelines](#)
-  [Deployment](#)
-  [OpenShift Dev Spaces](#)

About



View
Source



View
TechDocs



Description

The Quarkus service for demo1-poi-map (Creates a Quarkus service hosting an Angular frontend)

Owner

 user:user1

System

 idp-system-demo1

Type

service


Lifecycle

production

Tags

- java
- quarkus
- maven
- book
- example

Deployment summary

ArgoCD App	Namespace	Instance	Server	Revision	Last deployed	Sync stat
demo1-poi-map-dev	demo1	main	https://kubernetes.default.svc	68a6544	2/03/2025, 18:38:04	 Sync

5 rows < < 1-1 of 1 > >

Merge requests statistics

Avg Time Until Merge	Never
Merged To Total Ratio	0%
	20

demo1-poi-map-service ☆

Owner

user:user1

Lifecycle

production

[Overview](#)[Topology](#)[Issues](#)[Pull/Merge Requests](#)[CI](#)[CD](#)[Kubernetes](#)[Api](#)[Dependencies](#)[Docs](#)

Cluster

dev-cluster-infra ▼

Display options ▼



idp-book-example



Cluster

dev-cluster-infra

Status

All



Pipeline Runs

Search

	NAME	VULNERABILITIES	STATUS	TASK STATUS	STARTED	DURATION	ACTIONS
<div></div>	<div>PLR</div> demo1-poi-map-pipeline-run-ljsrg	-	<div>Failed</div>	<div></div>	3/2/2025, 6:38:22 PM	4 minutes 6 seconds	<div></div> <div></div> <div></div>
<div><div><div><div>git-clone</div><div>1/1</div></div><div><div>package</div><div>2/2</div></div><div><div>build-and-push</div><div>0/2</div></div><div><div>resync</div></div></div></div> <div><div></div><div></div><div></div><div></div></div>							
<div>5 rows1-1 of 1</div>							

Gitlab Pipelines: demo1-poi-map

Filter

Pipeline_ID	Status	Branch	Web URL	Created At	Duration
-------------	--------	--------	---------	------------	----------

Deployment lifecycle

Review deployed components/systems in the namespace using ArgoCD plugin

demo1-poi-map-dev [🔗](#)



Synced



Progressing

Instance

default

Server

https://kubernetes.default.svc (in-cluster)

Namespace



demo1

Commit



68a6544

initial commit

Resources

4 resources deployed

Error Reporting

cluster	namespace	kind	name	messages
dev-cluster-infra	demo1	Deployment	demo1-poi-map	Deployment does not have minimum availability.
dev-cluster-infra	demo1	Pod	demo1-poi-map-5fc9965f-fpblx	Back-off pulling image "image-registry.openshift-image-registry.svc:5000/demo1/poi-map:latest"

5 rows

<<

<

1-2 of 2

>

>>

Your Clusters

dev-cluster-infra

Cluster

✔

4 pods

!

1 pods with errors

^

demo1-poi-map-pipeline-run-ljsrg

PipelineRun

demo1-poi-map-pipeline-run-ljsrg-build-and-push

TaskRun

demo1-poi-map-service ☆




Owner
user:user1

Lifecycle
production



- Overview
- Topology
- Issues
- Pull/Merge Requests
- CI
- CD
- Kubernetes
- Api
- Dependencies
- Docs

Provided APIs

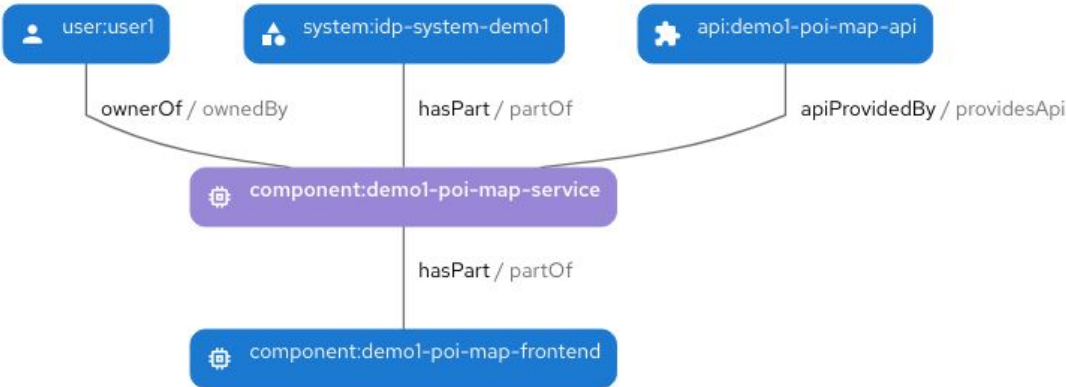
Name	System	Owner	Type	Lifecycle	Descr
 demo1-poi-map-api	 idp-system-demo1	 user:user1	OpenAPI	production	API sui expose

Consumed APIs

Name	System	Owner	Type	Lifecycle	Descriptio
This component does not consume any APIs. Learn how to change this.					

demo1-poi-map-service ☆

Relations



Depends on components

Name	Owner	Type	Lifecycle	Description
No component is a dependency of this component				
Learn how to change this.				

Depends on resources

Name	Owner	Type	Lifecycle	Description
No resource is a dependency of this component				
Learn how to change this.				

Has subcomponents

Name	Owner	Type	Lifecycle	Description
------	-------	------	-----------	-------------


demo1-poi-map-docs

[Overview](#)

demo1-poi-map Component Documentation



TODO: write your component's documentation here...

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COMMUNITY

DEVELOPER TOOLS

Podman Desktop

CI/CD TOOLS

ArgoCD

SonarQube (Coming Soon)

Quay.io

OPENSIFT CLUSTERS

Your Starred Entities

Click the star beside an entity name to add it to this list!


Search

Empowering engineering to deliver business value faster.

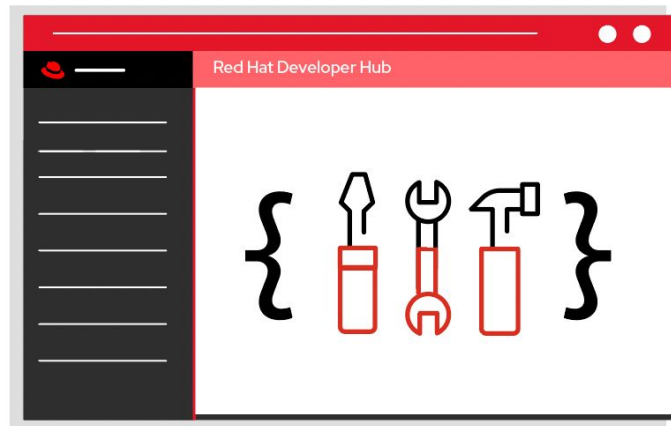
Single pane of glass
to increase
engineering
productivity.

Self-service with
guardrails for
cloud-native
development.

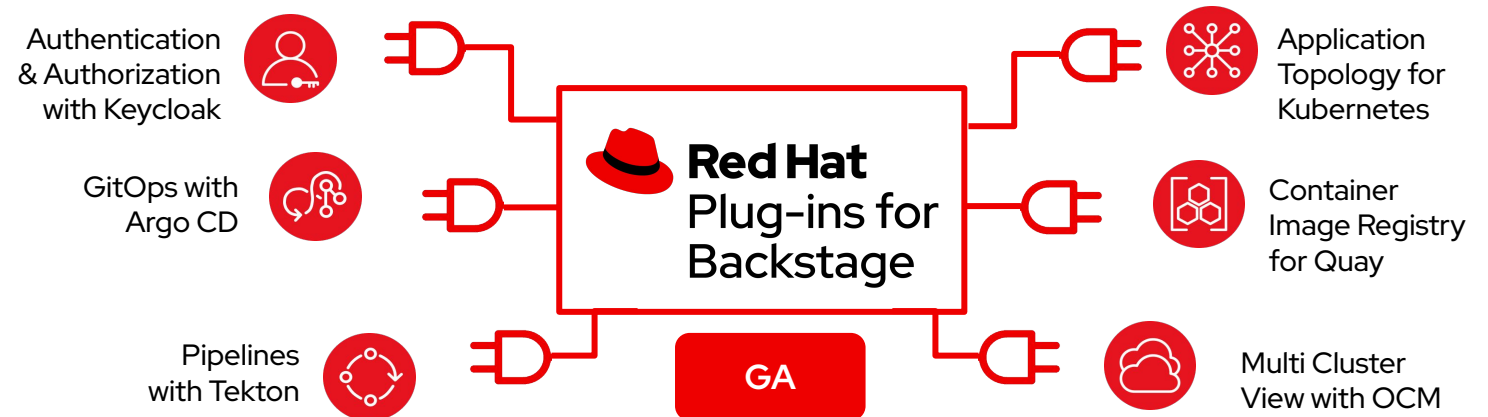
Best practices
with GitOps
and
automation.

Real-time view of
application and
infrastructure
health and security.

Red Hat Developer Hub



Dev Preview



Red Hat Developer Hub



Includes **supported**
plugin bundle



Authentication and
Authorization with Keycloak



GitOps with
Argo CD



Pipelines with
Tekton



Application Topology
for Kubernetes



Container Image
Registry for Quay



Multi Cluster View with
Open Cluster Manager (OCM)

Integrates with industry standards and technologies
through a broad ecosystem of community plugins.



GitLab



git



Jenkins

sonarqube



argo



MANY
MORE

Based on Backstage, an open source
platform for building developer portals.



Backstage

Red Hat Developer Hub - **supported when deployed on**

Customer-managed Red Hat OpenShift



Red Hat
OpenShift
Platform Plus



Red Hat
OpenShift
Container Platform



Red Hat
OpenShift
Kubernetes Engine

Managed Red Hat OpenShift services



Managed Kubernetes Services



EKS
Amazon
Elastic Kubernetes Service



AKS
Azure
Kubernetes Service



GKE
Google
Kubernetes Engine



Template Example 2

Further down the path

<https://github.com/developer-hub-books/rhdh-book1-templates>

<https://github.com/developer-hub-books/rhdh-book1-templates/blob/main/custom-component-patch/template.yaml>

Software Templates

Create new software components using standard templates in your organization

[Register Existing Component](#)[? Support](#)

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All 5

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Templates

Service

NestJS Service with backing PostgreSQL database



Creates a NestJS Service together with a PostgreSQL database

nodejs nestjs database
postgresql book

rhdh-idp-book-authors

Choose

Gitops-Patch

Staged Deployment Patch Template



This is an example template to patch existing component manifests to a staged...

template deployment patch
book

rhdh-idp-book-authors

Choose

App-Patch

Quarkus Application Patch Template



This is an example template to patch existing Quarkus components

template quarkus patch book

rhdh-idp-book-authors

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Service

Quarkus Service with ArgoCD and a Tekton Pipeline



Create a simple microservice using Quarkus with ArgoCD and a Tekton Pipeline

recommended java quarkus
maven

rhdh

Choose

Service

Quarkus Service with hosted Angular Frontend



Creates a Quarkus service hosting an Angular frontend

java quarkus quinoa angular
book

rhdh-idp-book-authors

Choose

Quarkus Application Patch Template

This is an example template to patch existing Quarkus components

1

Provide information about the component

2

Provide information about the patch

3

Review

GitLab repo owner *

development

the group/owner of the existing GitLab repo

GitLab repo names

the names of the existing GitLab repos to apply the patch on

repo name *

demo1-poi-map



GitLab Branch

templated-app-patch

the name of the source branch for the merge request

Back

Next

Software Templates



Create new software components using standard templates in your organization

Quarkus Application Patch Template

This is an example template to patch existing Quarkus components



Provide information about the component



Provide information about the patch



Review

Path to pom.xml file *

./pom.xml

specify the relative path to the pom.xml file of the component

Quarkus version *

3.6.7

specify the desired version of Quarkus

Path to container file *

./Dockerfile

specify the relative path to the container file of the component

container base image *

ubi8/openjdk-17:1.18

specify the desired container base image

Back

Review

Software Templates

Create new software components using standard templates in your organization



Quarkus Application Patch Template

This is an example template to patch existing Quarkus components



Provide information about the component

Gitlab Group

Gitlab Repos

Gitlab Branch

Pom Path

Quarkus Version

Container File Path

Base Image



Provide information about the patch

development

demo1-poi-map

templated-app-patch

./pom.xml

3.6.7

./Dockerfile

ubi8/openjdk-17:1.18



Review

Back

Create

Template step actions:

1. `fetch:plain`
2. `roadiehq:utils:fs:replace`
3. `publish:gitlab:merge-request`
4. `debug:log`

```
76  steps:
77    - id: fetch-repo
78      name: Fetch repo(s)
79      each: ${{ parameters.gitlabRepos }}
80      action: fetch:plain
81      input:
82        url: https://gitlab-gitlab${{ parameters.clusterId }}/${{ parameters.gitlabGroup }}/${{ each.value }}
83        targetPath: ./${{ each.value }}
```

```
84 - id: patch-content
85   name: Patch repo(s)
86   each: ${{ parameters.gitlabRepos }}
87   action: roadiehq:utils:fs:replace
88   input:
89     files:
90       - file: ./${{ each.value }}/${{ parameters.pomPath }}
91         find: '3.4.2'
92         replaceWith: ${{ parameters.quarkusVersion }}
93       - file: ./${{ each.value }}/${{ parameters.containerFilePath }}
94         find: 'ubi8/openjdk-17:1.16'
95         replaceWith: ${{ parameters.baseImage }}
96       - file: ./${{ each.value }}/${{ parameters.pomPath }}
97         # NOTE:
98         # The following find & replace is an obvious hack and only shown here for demo purposes :)
99         # Ideally, there'd be more robust actions that would at least allow to find and replace by means of regex.
100        # Or better yet, actions that provide proper XML parsing options similar to other available
101        # functionalities to manipulate JSON or YAML file respectively.
102        find: "<dependency>\n      <groupId>io.quarkus</groupId>\n      <artifactId>quarkus-arc</artifactId>\n    </dependency>"
103        replaceWith: |
104          <dependency>
105            <groupId>io.quarkus</groupId>
106            <artifactId>quarkus-arc</artifactId>
107          </dependency>
108          <dependency>
109            <groupId>io.quarkus</groupId>
110            <artifactId>quarkus-smallrye-health</artifactId>
111          </dependency>
```

```
112 - id: open-mr
113   name: Open merge request(s)
114   each: ${{ parameters.gitlabRepos }}
115   action: publish:gitlab:merge-request
116   input:
117     repoUrl: gitlab-gitlab${{ parameters.clusterId }}?repo=${{ each.value }}&owner=${{ parameters.gitlabGroup }}
118     title: custom patches for quarkus component
119     description: custom patches for quarkus component
120     branchName: ${{ parameters.gitlabBranch }}
121     sourcePath: ./${{ each.value }}
122     commitAction: update
123 - id: log-mr
124   name: Links to merge request(s)
125   action: debug:log
126   input:
127     message: "find opened merge request(s) here"
128     extra: ${{ steps['open-mr'].output.mergeRequestUrl }}
```

Run of quarkus-app-patch

Task 7e9ba408-44db-42dd-b53c-910f10ca3dbe



Fetch repo(s)

1 second



Patch repo(s)

0 seconds



Open merge request(s)

3 seconds



Links to merge request(s)

0 seconds


demo1-poi-map-service ☆

- Overview
- Topology
- Issues
- Pull/Merge Requests
- CI
- CD
- Kubernetes
- Api
- Dependencies
- Docs

Gitlab Merge Request Status: demo1-poi-map

Filter

×

ID	Title	Creator	State	Created At	Duration
1	 custom patches for quarkus component	root	opened	a few seconds ago	1s

custom patches for quarkus component

Edit Code ⋮

Open Administrator requested to merge `templated-app-patch` into `main` just now

Overview 0 Commits 1 Pipelines 0 **Changes 2** Add a to do

Compare `main` and `latest version`

2 files +10 -5 ⬆ ⬆ ⬆

Files 2

Search (e.g. *.vue) (⌘P)

- Dockerfile +1 -1
- pom.xml +9 -4

Dockerfile		+1 -1	Viewed	
↑	@@ -77,7 +77,7 @@			
77	77	#	accessed directly. (example: "foo.example.com,bar.example.com")	
78	78	#		
79	79	###		
80	-	FROM	registry.access.redhat.com/ubi8/openjdk-17:1.16	
	80	+	FROM	registry.access.redhat.com/ubi8/openjdk-17:1.18
81	81			
82	82	ENV	LANGUAGE='en_US:en'	
83	83			
↓				

pom.xml		+9 -4	Viewed	
↑	@@ -12,7 +12,7 @@			
12	12	<project.reporting.outputEncoding>	UTF-8</project.reporting.outputEncoding>	
13	13	<quarkus.platform.artifact-id>	quarkus-bom</quarkus.platform.artifact-id>	
14	14	<quarkus.platform.group-id>	io.quarkus.platform</quarkus.platform.group-id>	
15	-	<quarkus.platform.version>	3.4.2</quarkus.platform.version>	
	15	+	<quarkus.platform.version>	3.6.7</quarkus.platform.version>
16	16	<quarkus.ext.quinoa.version>	2.1.0</quarkus.ext.quinoa.version>	
17	17	<skipITs>	true</skipITs>	
18	18	<surefire-plugin.version>	3.1.2</surefire-plugin.version>	






Trusted Application Pipeline

Template output example

Cluster dev-cluster-infra ▾ Status All ▾

Pipeline Runs

 Search

	NAME	VULNERABILITIES	STATUS	TASK STATUS	STARTED	DURATION	ACTIONS
▼	PLR 5f7fa6b1-24c2-4b5e-8a13-920763ad8e83	-	🔄 Running	<div><div></div><div></div><div></div></div>	8/7/2024, 8:14:48 AM	44 seconds	  



5 rows ▾ 1-1 of 1 < >

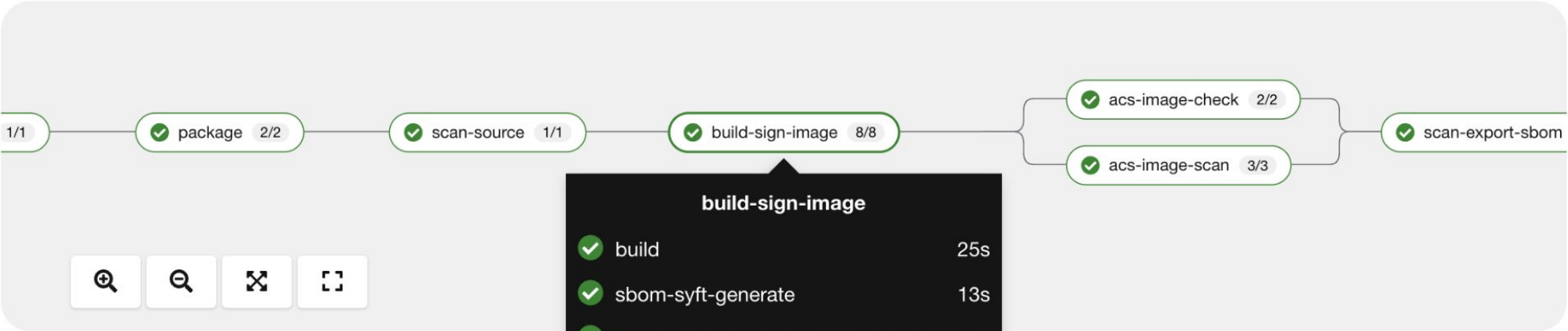
Pipeline Runs

🔍

Search

✕

NAME	VULNERABILITIES	STATUS	TASK STATUS	STARTED	DURATION	ACTIONS
<div>▼</div> <div><div>PLR</div>78029ad8-abd7-47fb-af3f-69ebf49dee77</div>	<div>🛡️</div> <div><div>🔴 3</div><div>🟡 30</div><div>🟢 100</div><div>🔵 81</div></div>	<div>✅</div> Succeeded	<div></div>	27/03/2024, 04:03:36	6 minutes 46 seconds	<div>👁️🔗</div> <div>📄</div>



build-sign-image

✅ build25s

✅ sbom-syft-generate13s

✅ analyse-dependencies...less than a sec

✅ merge-syft-sbomsless than a sec

✅ merge-cachi2-sbom1s

✅ create-purl-sbomless than a sec

✅ inject-sbom-and-push13s

✅ upload-sbom1s

Quay repository: [quayadmin/secured-app](#)

Filter

×

Tag	Last Modified	Security Scan	Size	Expires	Manifest
sha256-4b423616428099dcad47cf33cdd912fd361a075aef37af327d860c15901bc5a7.att	Aug 7, 2024, 8:20 AM	Unsupported	65.8 kB	Never	sha256 19f654cadd50
sha256-4b423616428099dcad47cf33cdd912fd361a075aef37af327d860c15901bc5a7.sig	Aug 7, 2024, 8:19 AM	Unsupported	291 B	Never	sha256 b25b45c5acbb
sha256-4b423616428099dcad47cf33cdd912fd361a075aef37af327d860c15901bc5a7.sbom	Aug 7, 2024, 8:19 AM	Unsupported	1.5 MB	Never	sha256 2dae989efce5
latest	Aug 7, 2024, 8:19 AM	High: 53, Medium: 111, Low: 11	180 MB	Never	sha256 4b4236164280

Summary





ONLY one more YAML??

Summary

Backstage plugins help provide a real-time view of application & infrastructure health & security

Backstage helps answer two very important questions:

1. What do I have running?
2. How do I use it?

Summary

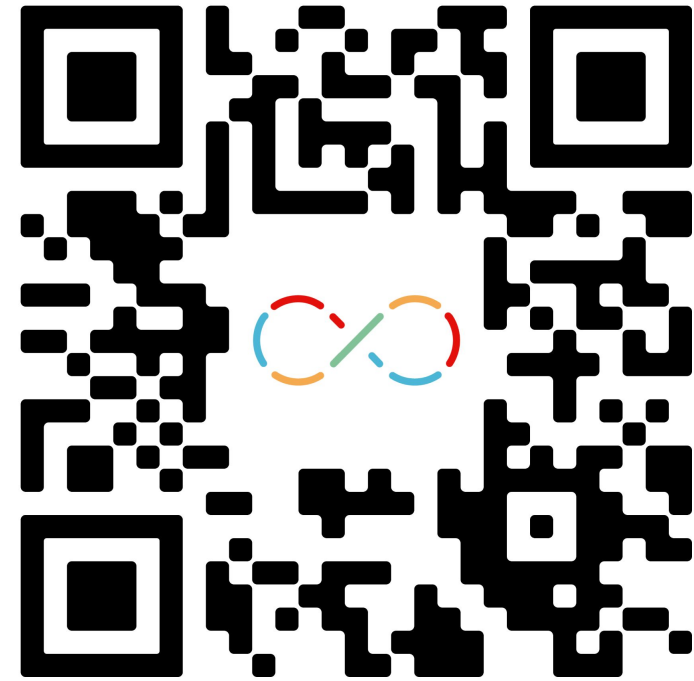
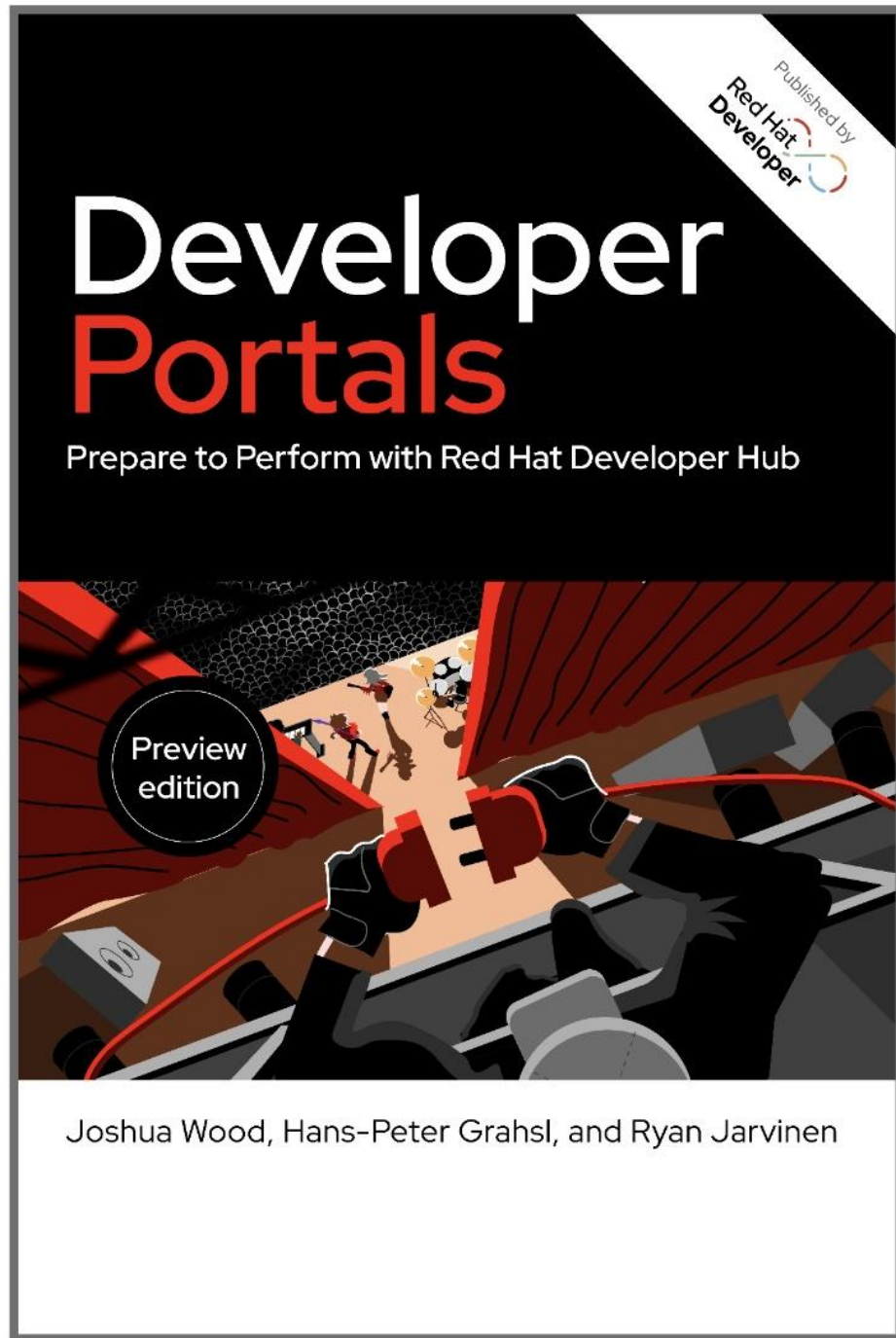
Backstage Software Templates provide:

- Best practices with GitOps & automation
- Self-service with guardrails for cloud-native development
- YAML for Platform Engineers to simplify SDLC for Developers



RHDH Template Library:

red.ht/software-templates



red.ht/backstage-book

developers.redhat.com/rhdh



Q&A



Thank You!

Ryan Jarvinen

ryanj@redhat.com

