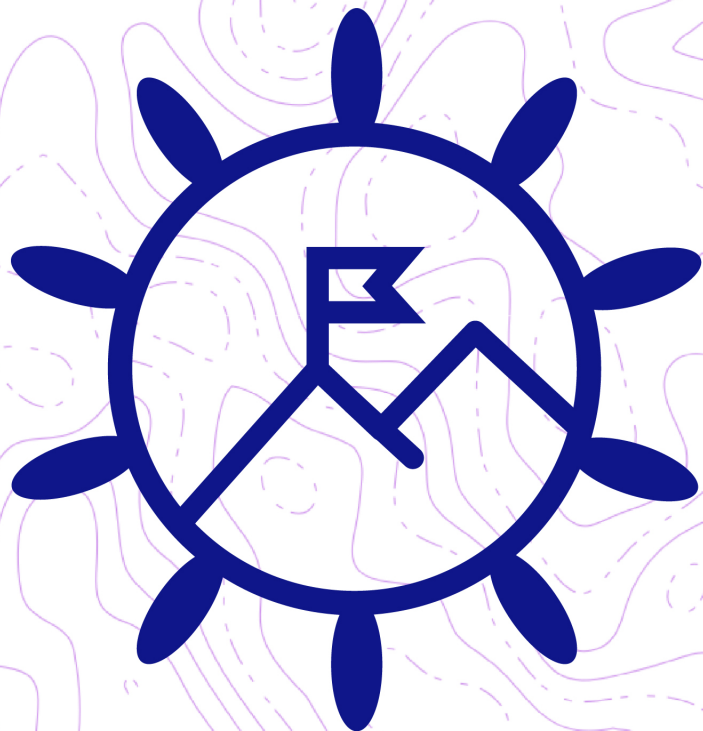
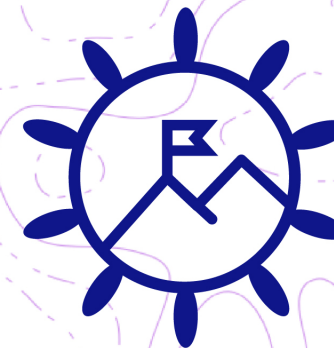




HELM SUMMIT

More Charts, More Problems, Lets talk Bringing Sanity



HELM
SUMMIT



Shikha Srivastava, IBM
@shikhasthoughts



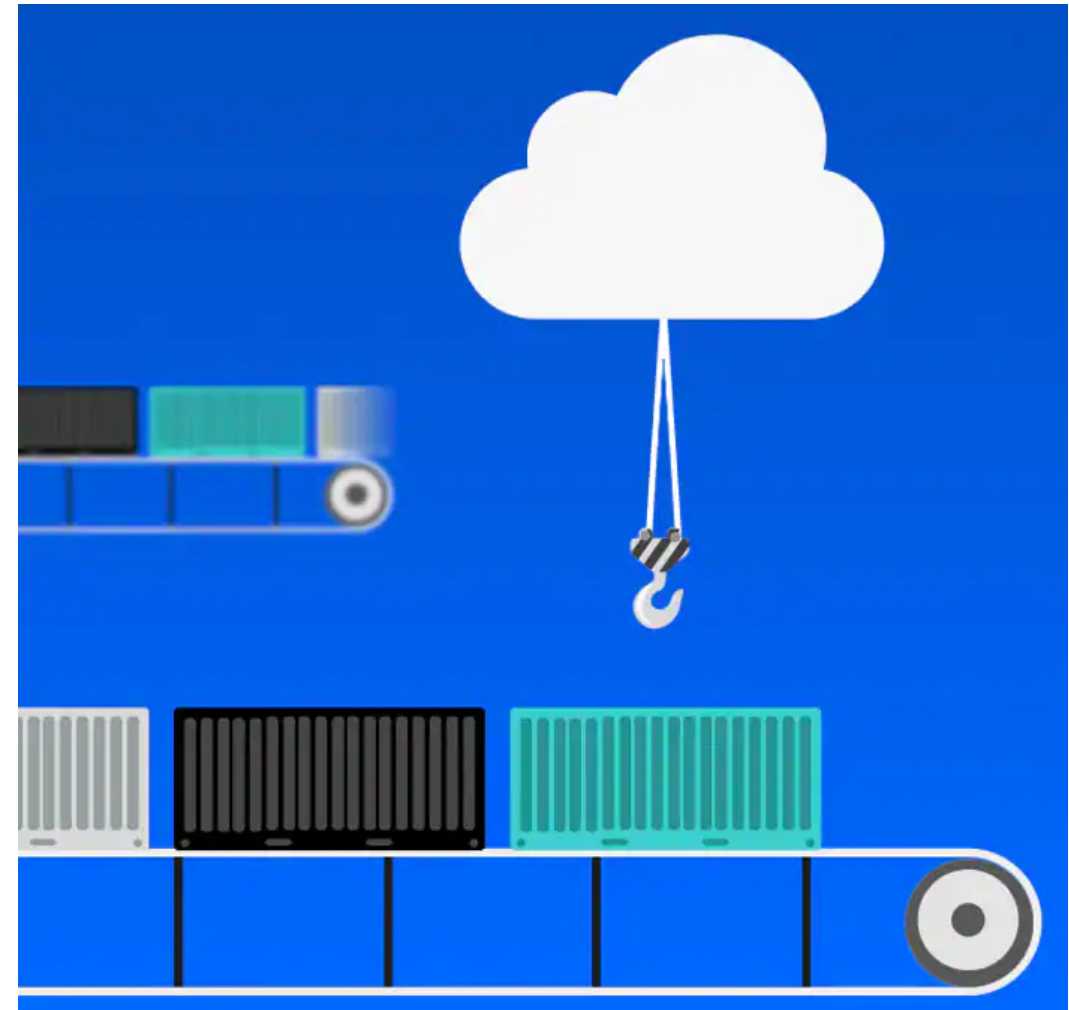
Kirti Apte, IBM
@kir_tweet

Container adoption is growing



Organizations are adopting containers to improve developer productivity, efficiency in DevOps, and application portability

- Lightweight packaging that includes the software and all its dependencies
- Easily portable across on-premises and public cloud environments
- More efficient use of infrastructure than traditional VM deployments



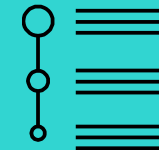
Lets talk of a solution



Enterprise Content Catalog
Open Source and IBM Middleware, DevOps,
Data, Analytics, and AI Software



Core Operational Services
Logging, Monitoring, Metering, Security, Alerting



kubernetes

**Kubernetes Container
Orchestration Platform**



docker

Choice of
infrastructure:



IBM Z

vmware®



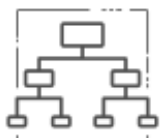
- Rich catalog of IBM and open source software containers
- Built-in management and security for simplified operations
- Runtimes and Orchestration capabilities for automated deployment with enterprise grade configurations
- Tools and expertise to help clients modernize with confidence
- Your choice of infrastructure

Standardization



- Helm helps manage Kubernetes applications
- Helm Charts helps define, install, and upgrade even the most complex Kubernetes application.

Why Teams ❤️ Helm



Manage Complexity

Charts describe even the most complex apps; provide repeatable application installation, and serve as a single point of authority.



Easy Updates

Take the pain out of updates with in-place upgrades and custom hooks.



Simple Sharing

Charts are easy to version, share, and host on public or private servers.



Rollbacks

Use `helm rollback` to roll back to an older version of a release with ease.

Ecosystem – more than 100+ charts

Dec 19, 2018

Data & Analytics

IBM Cloud Private for Data

IBM Data Science Experience



Automation

IBM Digital Business Automation for Multicloud

IBM Operational Decision Manager

IBM FileNet Content Manager

Integration

IBM App Connect Enterprise

IBM Integration Bus



Blockchain



IBM Blockchain Platform for IBM Cloud Private

Commerce



IBM WebSphere Commerce for ICP, IBM Order Management Software

IoT



IBM IoT MessageSight

AI



IBM Watson Speech to Text: Customer Care Assistant

Assistant Discovery Extension Compare & Comply

IBM Voice Gateway

H2O.ai



Watson Explorer

Application Runtimes & Frameworks



IBM WebSphere Liberty

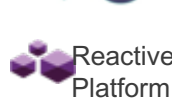


Open Liberty



IBM WebSphere AppServer

OpenJDK with OpenJ9



Caching



Application Modernization



IBM Transformation Advisor



IBM WebSphere VM Quickstarter

Mobile



IBM Mobile Foundation

Serverless



APACHE OpenWhisk™

Multicloud Management



IBM Multicloud Manager



IBM Cloud Cost and Asset Management



IBM Cloud Automation Manager

Cloud Native Computing Foundation (CNCF) Landscape

App Definition and Development



Database



IBM Data Server Manager

Continuous Integration & Delivery



Jenkins



UrbanCode Deploy

Streaming & Messaging



IBM MQ Advanced



IBM Event Streams (Apache Kafka based)

Orchestration & Management



Service Proxy

API Gateway



IBM API Connect



IBM DataPower Gateway

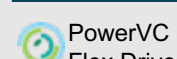
Service Mesh



Runtime



Cloud Native Storage



Cloud Native Networking



Provision



IBM Spectrum Symphony Advanced



IBM Cloud Automation Manager

Container Registry



IBM Cloud Registry

Security and Compliance



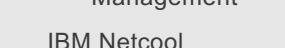
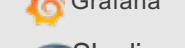
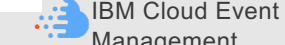
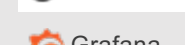
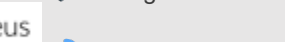
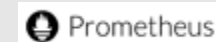
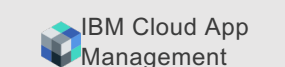
Key Management

Observability & Analysis

Logging



Monitoring



Infra

IBM z Systems



Includes IBM, [Partner](#) and open source software
Includes Kubernetes software & integration partners
CNCF: <https://landscape.cncf.io/format=landscape>

Lets bring in sanity



- Organization of the charts
- Install/ upgrade experience
- Operational experience
- CI/CD pipeline
- Governance

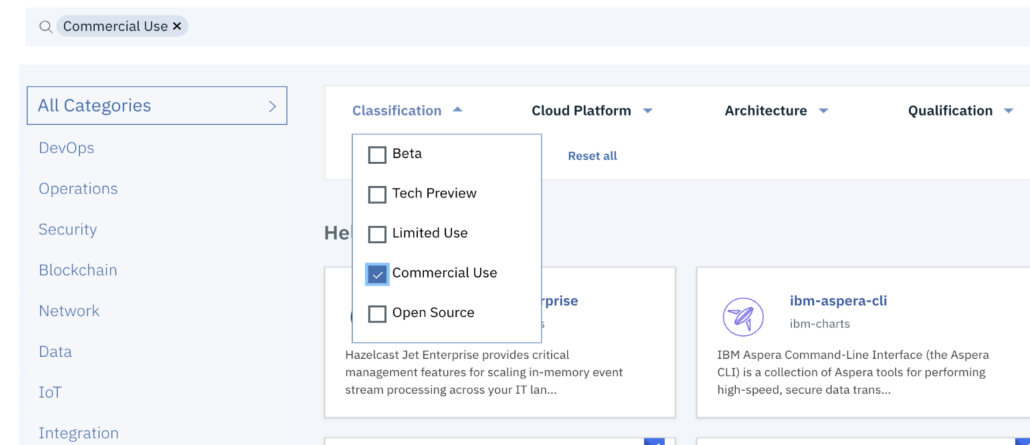
Organization



- With growing number of charts, quick search, discovery and filtering of the charts is critical
- Effective ways to organize charts
 - By Categories
 - By Helm Repositories
 - By supported architecture (amd64, power, z)
 - By Charts maturity level (Beta, Tech preview, Limited Use, Commercial)
- Enforce chart naming convention in the organization

```
name: ace-dashboard-dev
version: 2.0.0
description: App Connect Enterprise dashboard
keywords:
  - Limited
  - amd64
  - ICP
  - ICPRHOC
  - ACE
  - Integration
  - IIB
  - WMB
  - MQSI
  - Websphere
  - Message
  - Broker
  - Bus
icon: https://raw.githubusercontent.com/ot4i/ace-docker/master/app_connect_dashboard/icon.png
tillerVersion: ">=2.9.1"
kubeVersion: ">=1.11.0"
```

Catalog



install/ upgrade experience



- Challenges
 - How do I manage metadata for my chart parameters?
 - Is my helm release safe to upgrade?
- Solution
 - Optional Values metadata specification to describe values metadata
 - Optional Release notes specification to describe breaking changes, fixes, prerequisites, version history etc

Parameters

To install this chart, no configuration is needed. If further customization is desired, view All parameters.



All parameters

Other required, optional, and read-only parameters to view and edit.

Resource Name Override

Enter value

Number of replicas *

1

Image

Stored instance of a container that holds a set of software needed to run an application.

Liberty image repository *

openliberty/open-liberty

Image tag *

javaee8-ubi-min

Image pull policy *

Image pull secret

RELEASE NOTES

ibm-open-liberty

CURRENT VERSION: **1.10.0**



What's new...

Latest: Chart Version 1.10.0

1. Open Liberty Docker images based on Universal Base Images (UBI) are now publicly available from [Docker hub](#) and the chart uses it as the default image.
2. Integration with Application Navigator
3. Defined the most restrictive SecurityContextConstraints
4. Updated Grafana and Kibana dashboards
5. Updated `kubeVersion` of chart to `>=1.9.0` to support various cloud environments. Ensure patch for [CVE-2018-1002105](#) is installed in your Kubernetes environment.

Close

Operational Experience



- Helm charts can be integrated to Cloud Provider Operational services such as monitoring , metering, logging etc
- Helpful to manage deployed workload metering usage, monitoring and logging data
- This can be done through Helm chart annotations

```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    annotations:
5      prometheus.io/scrape: 'true'
6    labels:
7      app: {{ template "fullname" . }}
8      name: {{ template "fullname" . }}-metrics
9  spec:
10   ports:
11     - name: {{ .Values.service.name }}-metrics
12       targetPort: 9157
13       port: 9157
14       protocol: TCP
15   selector:
16     app: {{ template "fullname" . }}
17   type: ClusterIP
```

Integrated CI/CD pipeline

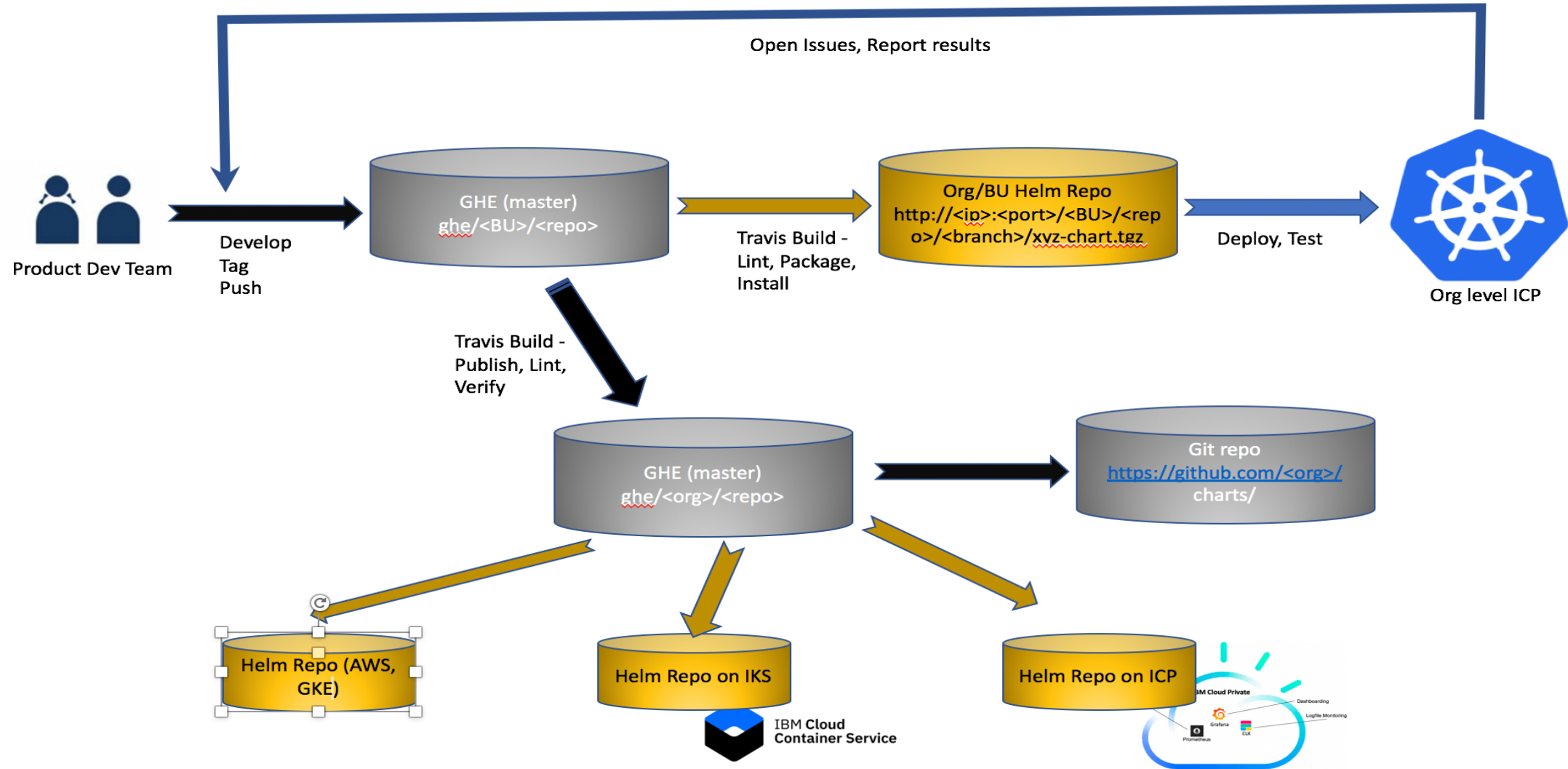


Chart Linting



- Content verification (cv) linter in addition to basic helm linter
- CV linter purpose
 - Find potential threat in application code
 - guide the developer to meet defined standards, guidance, security and compliance
- Linter rules defined by Linter release

```
charts$ cd helm-chart-websphere-liberty/  
helm-chart-websphere-liberty$ cv lint  
  
Lint version: v1.1.5  
==> linting results for chart stable/ibm-websphere-liberty with test-01 test
```

Lint Test Summary

Chart	Test	Status	Error(s)	Warning(s)	Info(s)	Review(s)	Ignored	Reduced
stable/ibm-websphere-liberty	test-01	PASSED	0	12	1	2	12	1
stable/ibm-websphere-liberty	test-02	PASSED	0	13	1	3	12	1
stable/ibm-websphere-liberty	test-03	PASSED	0	13	1	3	12	1
stable/ibm-websphere-liberty	test-04	PASSED	0	12	1	2	12	1
stable/ibm-websphere-liberty	test-05	PASSED	0	14	1	4	12	1
stable/ibm-websphere-liberty	test-06	PASSED	0	15	1	3	12	1
stable/ibm-websphere-liberty	test-07	PASSED	0	15	1	3	12	1
stable/ibm-websphere-liberty	default	PASSED	0	13	1	3	12	1
Total 8 chart test(s) with		0 FAILED	0	107	8	23	96	8

Chart	Version	Sub-Charts	Helm-Tests	cv-tests(lint)	cv-tests(install)	cv-tests(app)	values-metadata
stable/ibm-websphere-liberty	1.6.0	Yes (1)	Yes (1)	Yes (7)	Yes (7)	Yes (2)	Yes

Chart	Status	Errors	Warnings	Infos	Reviews	Ignored	Reduced
stable/ibm-websphere-liberty	PASSED	0	18	1	5	13	1
Total 1 chart(s) with		0 FAILED	0	18	1	5	13

Overall results

Governance



Chart Certification based on

- Security and Compliance
- Workload availability
- Lifecycle management
- Management and Operations
- Quality and support
- Assignment of L1, L2 and L3 certification levels for the chart based on checklist

	IBM Certified Containers for IBM Cloud Private	Uncertified Containers
Lifecycle Management		
Upgradability	✓	
Red Hat certified container with RHEL base OS image	✓	
Consumability	✓	
Enforce standards for version management	✓	
Management & Ops Integration		
Integrated to catalog and deployment experience	✓	
Integrated to Monitoring	✓	
Integrated to Metering	✓	
Integrated to Logging	✓	
Security & Compliance		
Privileges	✓	
Context	✓	
Image Vulnerability Scanning	✓	
GDPR Ready	✓	
Secure Access (TLS, Ingress, Certs)	✓	
Assurance that all components come from trusted source	✓	
Workload Availability		
Production deployment and config topologies	✓	
Production networking and storage configurations	✓	
Self Healing / Automatic Failover	✓	
Auto Scaling	✓	
Affinity / Anti-affinity	✓	
Multi Deployment & Namespace	✓	
Quality Assurance		
IBM Support	✓	✓
Cross-arch support testing on Intel, Power, Z, and OpenShift	✓	
Enforce use for only supported features in Kub & Helm	✓	
Performance test	✓	
Fullstack compatibility verification	✓	
Multiple config testing	✓	

Read the blog



More Charts, More Problems—Let's Bring Some Sanity

Cloud

5 September 2019 5 min read

By: Shikha Srivastava and Kirti Apte



Demo



IBM Cloud Pak for Multicloud Management

Create resource

Catalog



All Categories >

Classification ▾

Cloud Platform ▾

Architecture ▾

Qualification ▾

Repositories ▾

[Reset all](#)

DevOps

Operations

Security

Network

Data

IoT

Integration

Runtimes & Frameworks

Storage

Blockchain

Business Automation

Tools

Data Science & Analytics

AI & Watson

Other

Helm Charts



aqua-enforcer

ibm-community-charts

A Helm chart for the Aqua Enforcer



aqua-scanner

ibm-community-charts

A Helm chart for the aqua scanner cli component



aqua-server

ibm-community-charts

A Helm chart for the Aqua Console Components



artifactory-ha

ibm-community-charts

Universal Repository Manager supporting all major packaging



audit-logging

mgmt-charts

Audit logging storage and search management solution



auth-apikeys

mgmt-charts

ICP IAM Token Service



auth-idp

mgmt-charts

ICP Security Authentication Provider



auth-pap

mgmt-charts

ICP IAM Policy Administration



auth-pdp

mgmt-charts

ICP IAM Policy Decision



calico

mgmt-charts

A Helm chart for Calico



cis-controller

mgmt-charts

CIS Controller checks kubernetes clusters for CIS



cluster-api-provider-ocp

mgmt-charts

A Helm chart for Kubernetes



cluster-api-provider-ocp-prod

mgmt-charts

A Helm chart for Kubernetes



gitlab

ibm-community-charts

Web-based Git-repository manager with wiki and issue-



hazelcast-enterprise

ibm-community-charts

Hazelcast IMDG Enterprise is the most widely used in-



hazelcast-jet-enterprise

ibm-community-charts

Hazelcast Jet Enterprise provides critical management