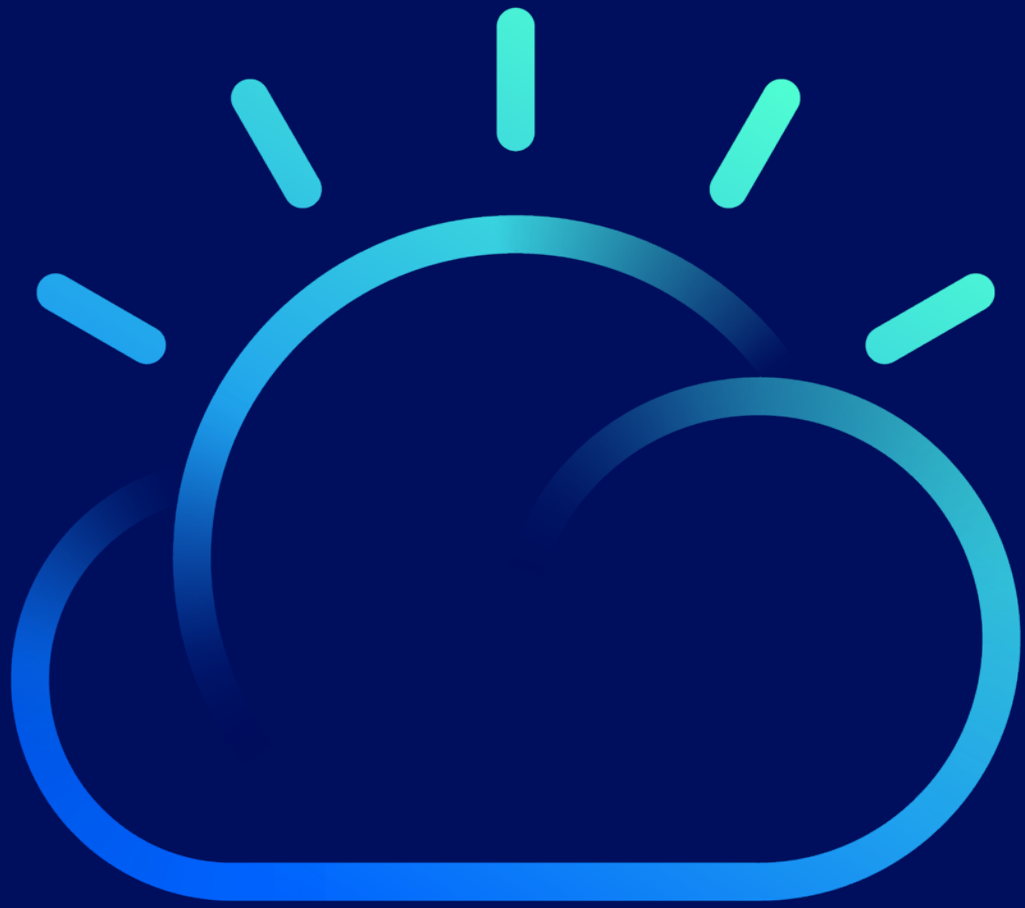
IBM Cloud Automation Manager Bootcamp



Installation Scenarios

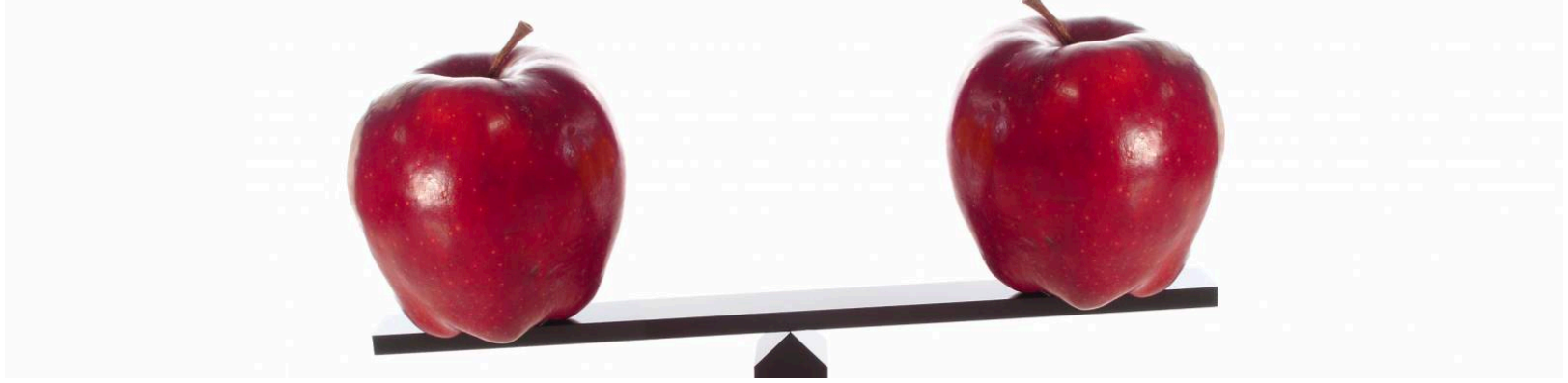
IBM Cloud

Agenda

- CAM vs CAM CE
- Online vs Offline Installations
- Hardware specs and software reqs
- Networking
- Advanced installation scenarios

CAM CE vs Enterprise

Why do I need CAM Enterprise?



Comparing CAM CE and CAM EE

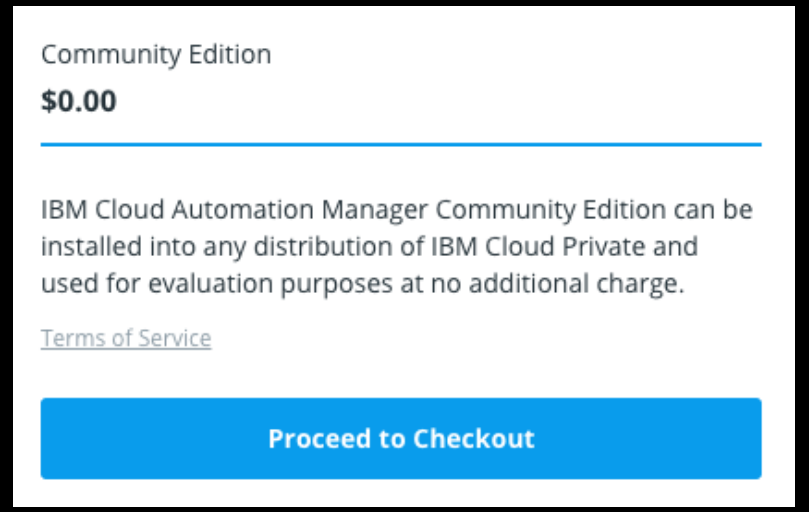
Enterprise Edition	Community Edition
Licensing Fee	Free
IBM Supported	Limited IBM support through community channels
Service composer	n\a
Content runtime and the ability to deploy IBM middleware	n\a

CAM Installation Media

CAM CE – Requires you to purchase a $0.00 license to allow it to be downloaded from Docker hub

CAM EE – Requires purchase from IBM and download of application from Passport Advantage or Fix Central

https://www-01.ibm.com/support/docview.wss?uid=swg2C7000020



March 2019	IBM Cloud Private 3.1.2.0 for Linux (64-bit) Cloud Automation Manager	3.1.1	"1Q19 Intel Offline"	3.1.2.0-x86_64	CNXD9EN	icp-cam-x86_64-3.1.2.0.tar.gz

Online and Offline Install

No Internet no problem…. Sort of…

Which components of CAM are pulled from the internet?

- CAM Templates
- Chef cookbooks
- **Online Install** will pull these files automatically
- **Offline will not** pull the files and will require manual load of the content.
- Clone the repos and manually copy the content to CAM.

https://github.com/IBM-CAMHub-Open/IBM-CAMHub-Open/tree/master/bin/cloneGitRepositories

cloneRepositories.sh

This script can be used to simplify the download of Terraform templates and Chef cookbooks which are available for use with IBM Cloud Automation Manager.

Usage :

```
cd IBM-CAMHub-Open/bin/cloneGitRepositories/ ./cloneRepositories.sh
```

Output :

IBM-CAMHub-Open_advanced_content_runtime.tar

- tar file containing Content Runtime Terraform templates
- For an offline environment, this tar simplifies download for import into Gitlab or GHE
- is a script to load Content Runtime templates only in the case where GitLab or GHE are not available

IBM-CAMHub-Open.tar

- tar file containing Chef cookbooks
- Used for importing cookbooks during an offline Content Runtime provision
- Place in /var of the virtual machine being used for the offline Content Runtime

IBM-CAMHub-Open_templates.tar

- tar file containing Terraform templates
- Simplifies download for import into Gitlab, GHE or manual load into IBM Cloud Automation Manager

Specs and Reqs

Things you should know before you install.

Hardware specifications

The minimum hardware requirements of Cloud Automation Manager is tabulated as follows:

Cloud Automation Manager size	**Nodes**	**vCPU**	**Memory (GB)**	**Notes**
Single node deployment	1	12	>30	
Single node deployment without metering	1	12	>20	
High availability configuration	3	4 per node	16 GB per node	
High concurrent deployment requirements (above 10)	3	6 per node	20 GB per node	2vCPU 4 GB memory for every additional 10 concurrent deployments.
Large number of deployed instances	3	5 per node	16 GB per node	1vCPU for every 15K deployments managed

Persistent Storage Requirements

Persistent storage requirement	Size (GB)	Notes
cam-mongo-pv	20 GB	20GB for up to 10k deployments. Add 10 GB for each additional 10k deployments.
cam-logs-pv	10 GB	Static
cam-terraform-pv	15 GB	Usage can grow or shrink
cam-bpd-appdata-pv	20 GB	The size grows based on the number of templates in local repository

Supported Platforms

- Runs on ICP (and ICP on OCP) so will run on platforms supported by ICP.
- Cloud Automation Manager performs 'manage-to' operations directly on the hypervisor and does not have any restriction on the operating system level requirement.
- To know more about minimum system requirements for setting up and running the middleware Content Runtime within a virtual machine, see System requirements.

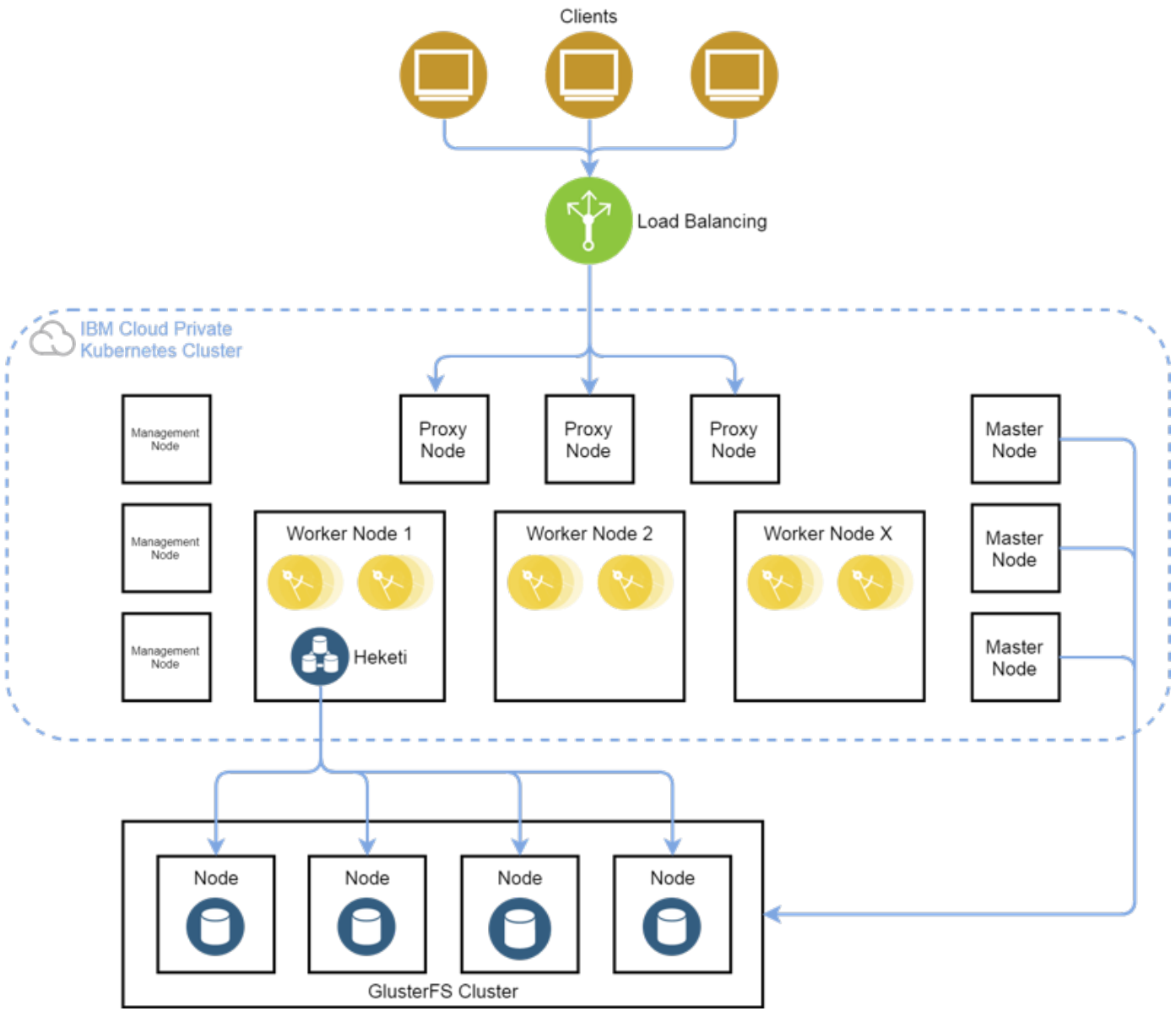
Installation packages

- **x86** - icp-cam-x86_64-3.1.2.0.tar.gz
- **ppc64le** - icp-cam-ppc-3.1.2.0.tar.gz
- **s390x** - icp-cam-z-3.1.2.0.tar.gz

Other Requirements

- Internet connectivity is required for deployments to public cloud providers like IBM Cloud, Amazon EC2, and Microsoft Azure.
- The minimum browser support list for Cloud Automation Manager are as follows:
  - Firefox 52
  - Chrome 57
  - Safari 10.1
  - Edge 16
- Additional resources and configuration may be required based on the desired use of automation content available with Cloud Automation Manager. To understand the automation content available for use, see About Cloud Automation Manager Content.
- Elevated privileges are required. For more information, see Prerequisites

Component Overlay



Cloud Automation Manager will consume worker node resources on IBM Cloud Private, depending on the size of the Cloud Automation Manager deployment.

Pods

```
NAME                                      READY   STATUS    RESTARTS   AGE   IP              NODE         NOMINATED NODE
cam-bpd-cds-7d57888b78-7dr4p              1/1     Running   0          39d   10.1.171.109    10.10.1.5    <none>
cam-bpd-mariadb-86f4c7b459-d7x87          1/1     Running   7          39d   10.1.171.107    10.10.1.5    <none>
cam-bpd-mds-59977c449c-hn8j2              1/1     Running   0          39d   10.1.171.115    10.10.1.5    <none>
cam-bpd-ui-6ccdc648db-ztpzf               1/1     Running   36         39d   10.1.171.119    10.10.1.5    <none>
cam-broker-6d7445c57c-zfv4h               1/1     Running   0          39d   10.1.171.118    10.10.1.5    <none>
cam-iaas-fcf7cd9b6-99fn5                  1/1     Running   0          39d   10.1.171.120    10.10.1.5    <none>
cam-mongo-7bcd4cd484-zw5kd                1/1     Running   0          39d   10.1.171.121    10.10.1.5    <none>
cam-orchestration-6947d59587-cnjkj        1/1     Running   1          39d   10.1.171.108    10.10.1.5    <none>
cam-portal-ui-57646b7d64-9r56c            1/1     Running   0          39d   10.1.171.125    10.10.1.5    <none>
cam-provider-helm-84fc8ff967-2ht6d        1/1     Running   0          39d   10.1.171.123    10.10.1.5    <none>
cam-provider-terraform-6c6987ddf8-nkd46   1/1     Running   1          39d   10.1.171.111    10.10.1.5    <none>
cam-proxy-5d9db45988-schc5                1/1     Running   0          39d   10.1.171.124    10.10.1.5    <none>
cam-service-composer-api-756cc5579f-z8krx 1/1     Running   0          39d   10.1.171.116    10.10.1.5    <none>
cam-service-composer-ui-845f8457b8-l2bzl  1/1     Running   0          39d   10.1.171.113    10.10.1.5    <none>
cam-tenant-api-5b77f474f9-58r6p           1/1     Running   0          39d   10.1.171.112    10.10.1.5    <none>
cam-ui-basic-6cc55c879b-mwq8d             1/1     Running   0          39d   10.1.171.122    10.10.1.5    <none>
cam-ui-connections-76c8cb4964-29bl9       1/1     Running   0          39d   10.1.171.114    10.10.1.5    <none>
cam-ui-instances-76678679f6-8rrxh         1/1     Running   0          39d   10.1.171.110    10.10.1.5    <none>
cam-ui-templates-55fd6996c9-k6khg         1/1     Running   0          39d   10.1.171.117    10.10.1.5    <none>
```

Networking

Ingress
- Access to CAM and the CAM API are handled by the cam-proxy
- The CAM proxy is exposed from outside of Kubernetes as a NodePort

```
cam-proxy                    NodePort    10.0.28.13      <none>          30000:30000/TCP
```

Egress
- Is handled directly by the worker node that the CAM pod is running on

HTTP Proxy
- Can be configured during installation so CAM pods can pull content or access cloud providers

Content Runtime Server
- Can act as a point of presence on remote networks

Note: Understand your CIDR's (make sure they don't overlap)

Don't make your Cluster network 10.1.0.0/24 when you vCenter is 10.1.212.26

Installation Scenarios

Minimal Install

- Single replicas
- Local database

Highly Available

- High availability is provided natively in Kubernetes
- Increasing replicas of key component will provide additional resilience and will reduce pod restart times

External Databases

- External databases can be utilized for the MariaDB and MongoDB components
- Connection strings can be passed as parameters to the HELM chart at install time
- Reduces compute resource requirements in Kubernetes

Advanced Installation Scenarios

Custom terraform providers

- CAM provides a default set of terraform providers
- 3rd party\custom terraform providers can be specified at install time and they will be picked up by the cam-terraform pod at install time

Enabling\disabling BPM and ICO

- If you would like to call existing BPM Process Apps or an ICO offering from CAM you will need to specify this at install time

CAM installation secret

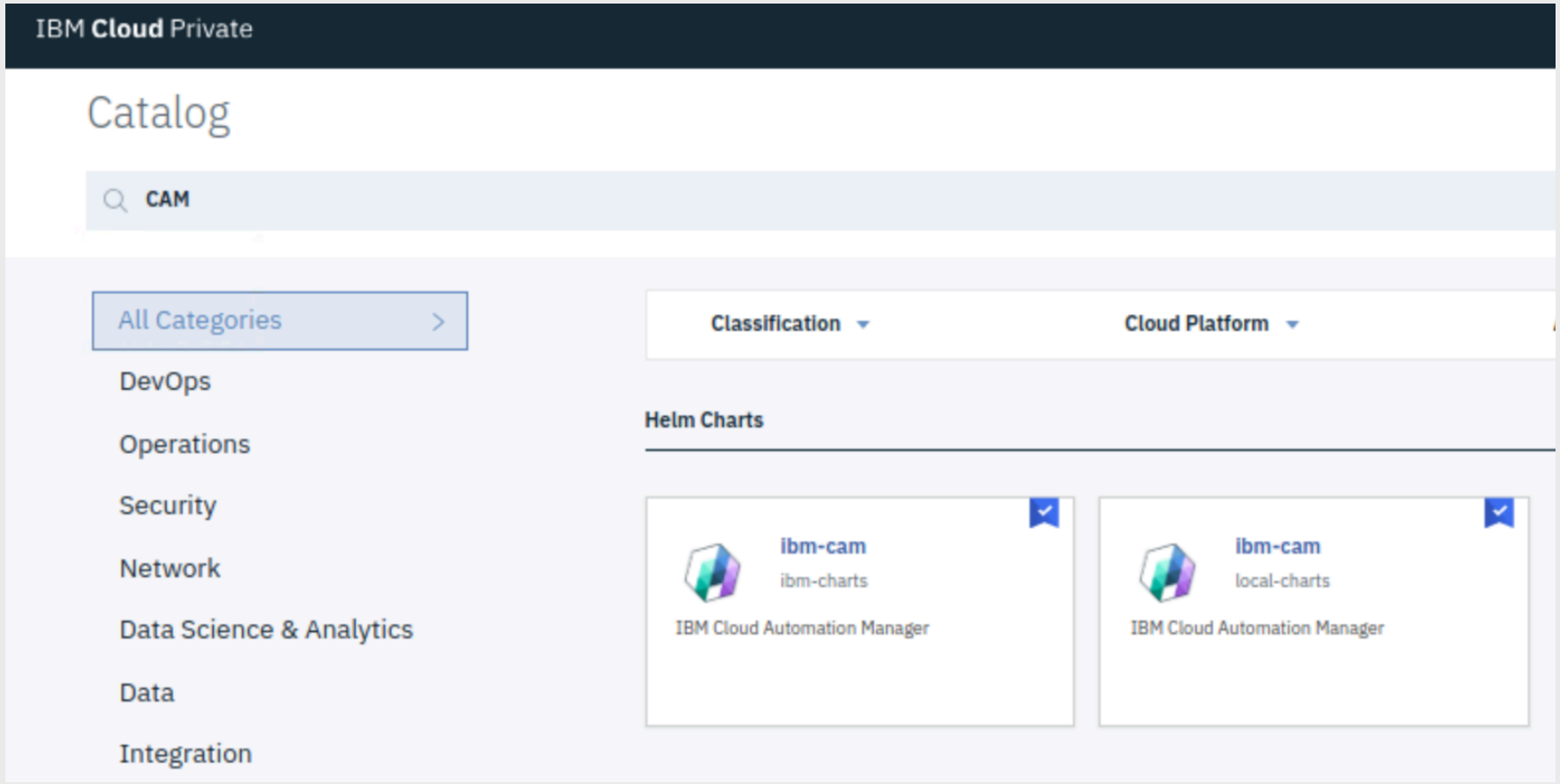
You can override the default secret values at the time of installation.

If you enter values during install time to override the default secrets, then Cloud Automation Manager makes use of the secret you provided.

```
###############################################################################
 # Licensed Materials - Property of IBM.
 # Copyright IBM Corporation 2017. All Rights Reserved.
 # U.S. Government Users Restricted Rights - Use, duplication or disclosure
 # restricted by GSA ADP Schedule Contract with IBM Corp.
 #
 # Contributors:
 #  IBM Corporation - initial API and implementation
 ###############################################################################
   apiVersion: v1
   kind: Secret
   metadata:
     name: cam-secure-values-secret
     namespace: services
     labels:
       app: cam
   data:
     httpProxy: aHR0cDovL3VzZXJuYW1lOnBhc3N3b3JkQHByb3h5X2hvc3Q6cHJveHlfcG9ydA==
     httpsProxy: aHR0cDovL3VzZXJuYW1lOnBhc3N3b3JkQHByb3h5X2hvc3Q6cHJveHlfcG9ydA==
     noProxy:
     mongoDbPassword: ZkZDWGI1WjlSNlg3TGhr
     mongoDbUrl: bW9uZ29kYjovL2NhbXVzZXI6ZkZDWGI1WjlSNlg3TGhrQGNhbS1tb25nbzoyNzAxNy9jY
     encryptionPassword: ZkZDWGI1WjlSNlg3TGhr
     mariaDbUsername: dWNkcGFkbWlu
     mariaDbPassword: YmNiMTllZTNkZWUw
```

HELM Charts

Can you tell the difference?



Other Considerations

- CRS and middleware (i.e. YUM repos etc.)
- Proxy and ConfigMap setup to define passwords and other config settings
- Backup and restore https://developer.ibm.com/cloudautomation/2018/05/08/backup-ha-dr/
- Upgrading
- Uninstalling