Integrating IBM Cloud Private (ICP) and IBM Cloud Automation Manager (CAM)

Delivering multi-cloud environment with containers and virtual machines

Stuart Cunliffe – IBM System Group Lab Services

@StuCunliffe

Agenda

- High-level IBM Cloud Private review
- Where does IBM Cloud Automation Manager fit?
- Installing IBM CAM
- Connecting to multiple cloud environments
- IBM CAM templates
  - Demo 1
- IBM CAM services
  - Demo 2
  - Demo 3

IBM Cloud Private - review

What is IBM Cloud Private

❑ IBM Cloud Private is a **private cloud platform** for developing and running containerized workloads **locally on premise.**

❑ IBM Cloud Private is an application platform for developing and managing on-premises, **containerized applications**.

❑ It is an integrated environment for managing containers that includes the **container orchestrator Kubernetes, a private image repository, a management console, and monitoring frameworks.**

❑ It includes a **graphical user interface** which provides a centralized location from where you can **deploy, manage, monitor, and scale your applications.**

Docker

- **Docker** performs **operating system level virtualization** also known as **containerization.**

- A **container image is a lightweight**, **stand-alone, executable package** of a piece of software that includes everything needed to run it: **code, runtime, system tools, system libraries, settings.**

- Docker **simplifies dependency matrix**, Docker will ensure they are cross environments through docker image.

- Docker is **ready for PaaS Cloud**, as it eliminates the traditional one environment at a time develop, deploy, update and migrate.

- Docker is available in two editions
  - **Community Edition (CE)**
  - **Enterprise Edition (EE**)

Kubernetes

- **Kubernetes is a portable, extensible open-source platform for managing containerized workloads and services.**

- It is a **container orchestrator**, which **runs and manages containers.**

- **Manages Application and not machines**

- Rich **ecosystem of plug-ins** for scheduling, storage and networking,

- It provides much of the **simplicity of Platform as a Service** (PaaS) with the **flexibility of Infrastructure as a Service** (IaaS), and **enables portability across infrastructure providers.**

- Some features like **intelligent scheduling, self healing, horizontal scaling, service discovery, automated rollouts and rollback and configuration management**

Kubernetes

❑ **Pods**

- It is **unit of execution** of Kubernetes.
- **Collection of containers** that can **share storage and network resources.**
- It **contains one or more application containers** which are relatively tightly coupled

❑ **Service**

- **Defined a set of pods and a means by which to access them**, such as single stable IP address and corresponding DNS name.

❑ **Helm Charts**

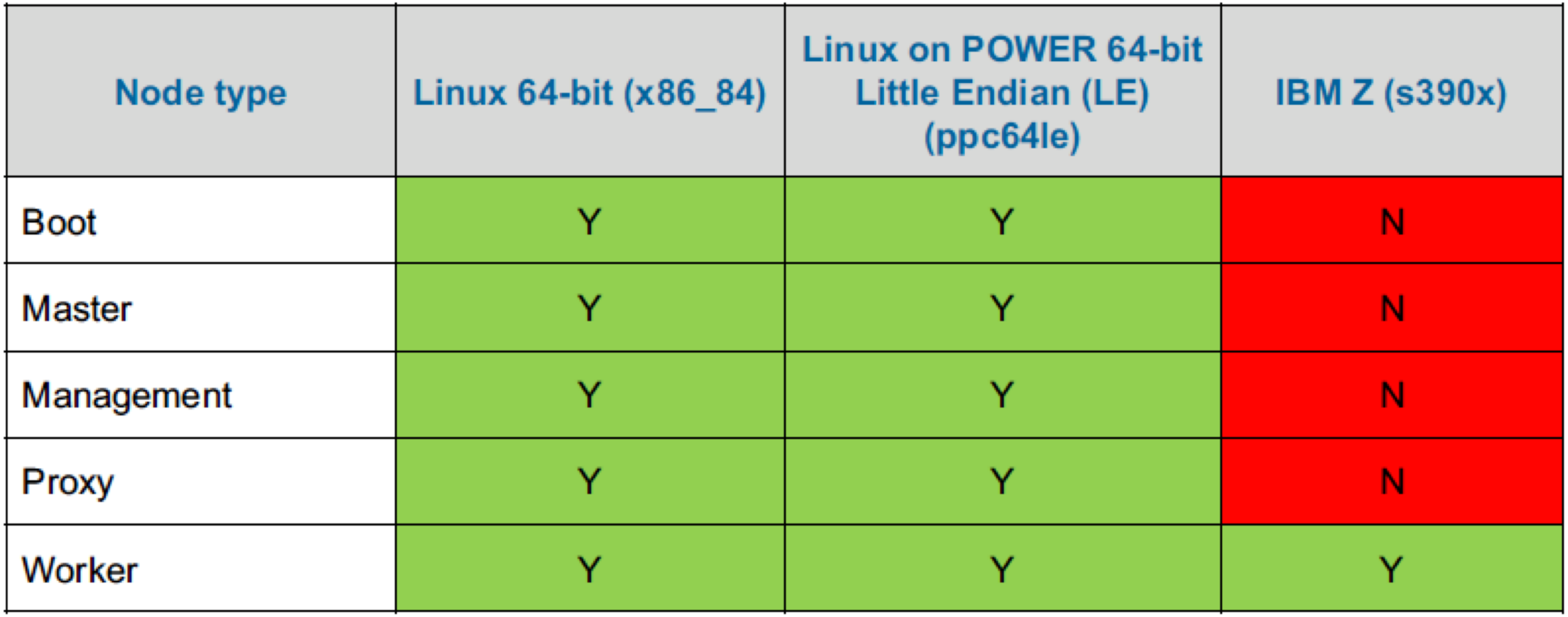
- **A chart is a collection of files that describe a related set of Kubernetes resources.** This can be simple deployments with single pods or complex full stack deployments.

ICP – Node Classes

- **ICP has five classes of nodes**
  - **Boot Node**
    - Aka bootstrap node
    - Used for **running installation, configuration**, node scaling and cluster updates.
    - You can use a single node for both master and boot.
  - **Master Node**
    - Provides **management services and controls the worker nodes** in the cluster.
    - Host processes that are responsible for resource allocation, state maintenance, scheduling and monitoring.
  - **Worker Node**
    - Provides a **containerized environment for running tasks**.
    - More worker nodes can be added to improve performance and efficiency.
  - **Proxy Node**
    - Transmits **external request to the service** created inside your cluster.
    - Multiple proxy nodes can be deployed in a high availability environment.
  - **Management Node (Optional Node)**
    - Only hosts management services like **monitoring, metering and logging**.
    - Can prevent the master node from becoming overloaded.

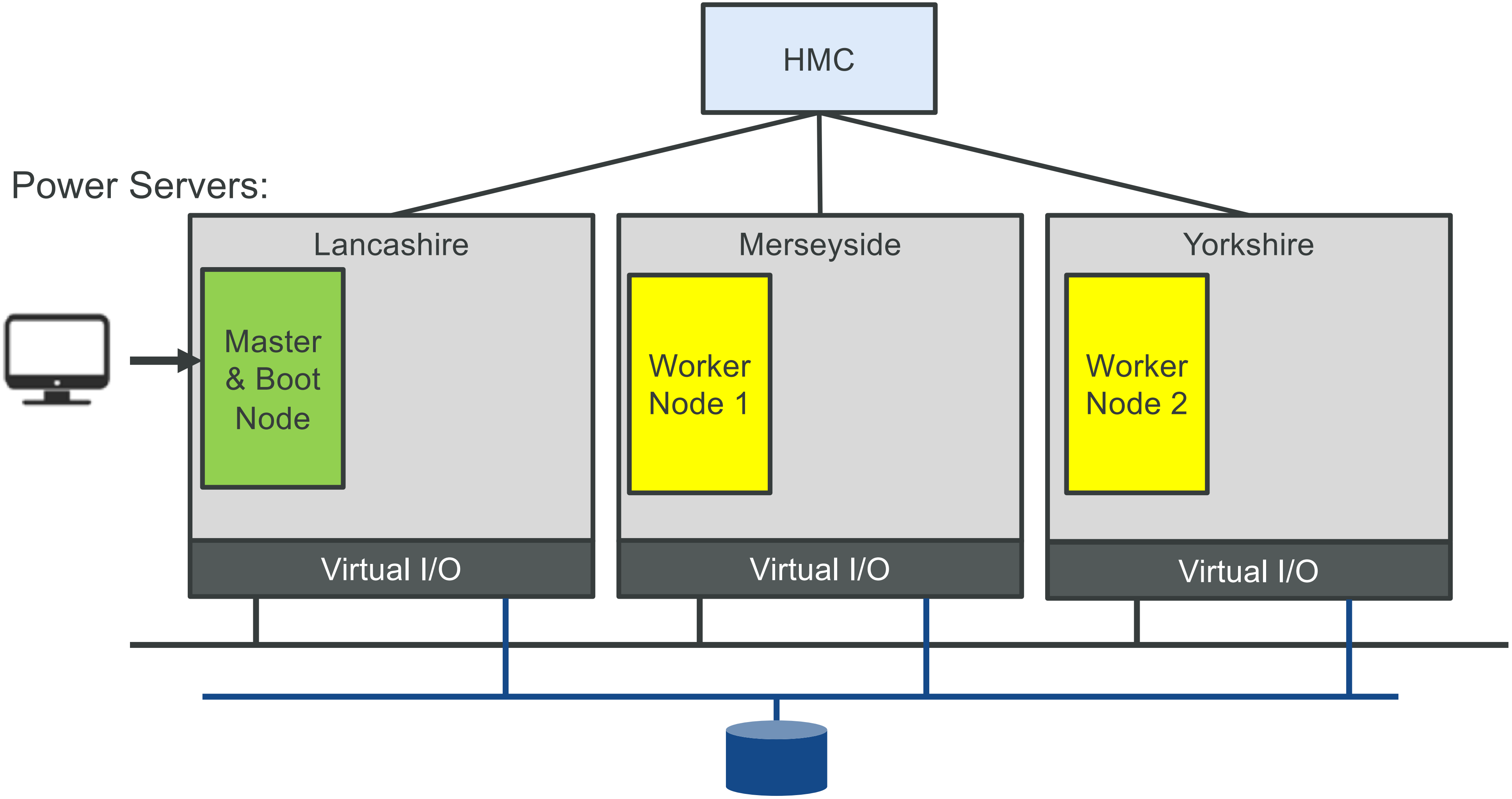
ICP – Node Classes

- ❑ **ICP supported platform by node type**



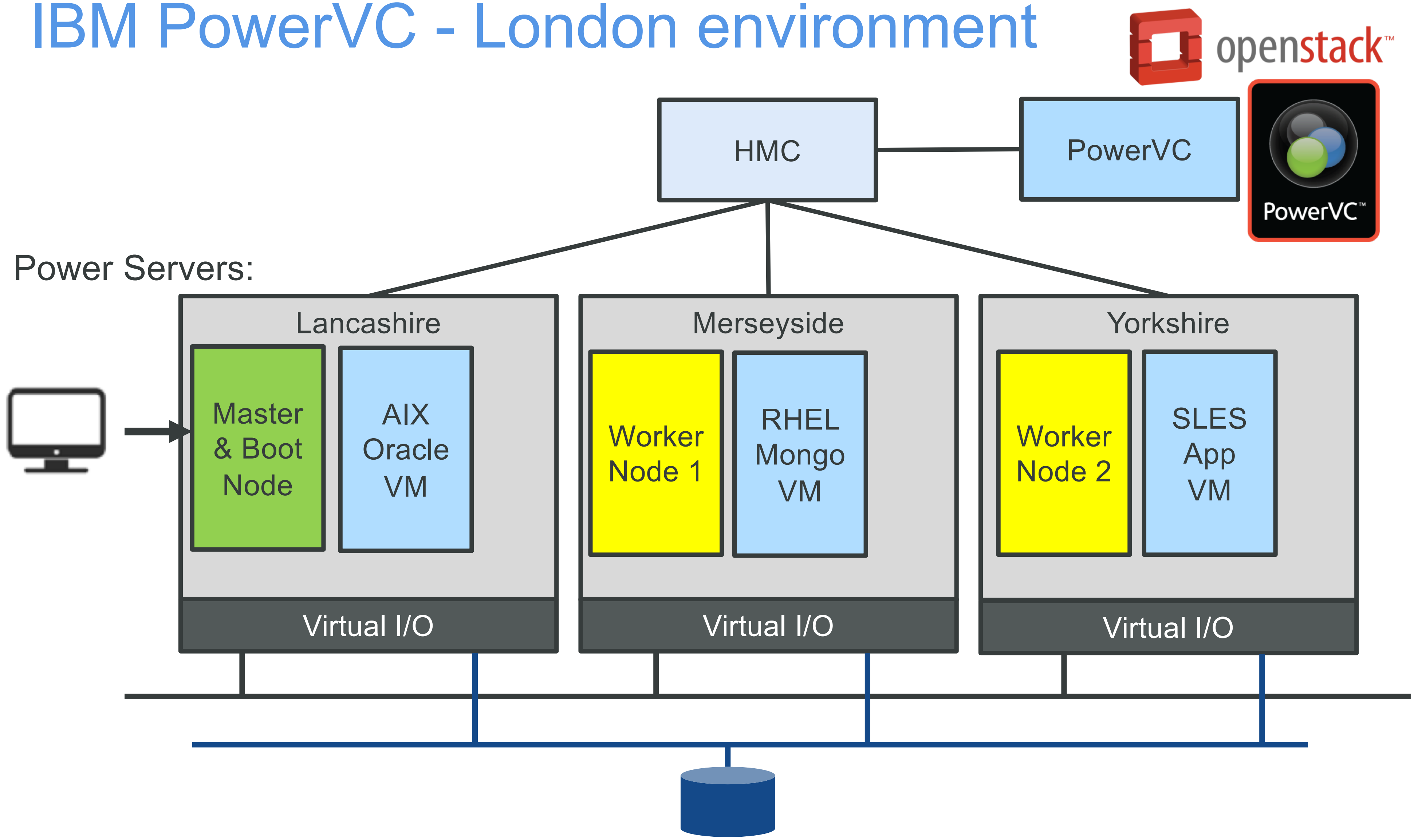
Node type	Linux 64-bit (x86_84)	Linux on POWER 64-bit Little Endian (LE) (ppc64le)	IBM Z (s390x)
Boot	Y	Y	N
Master	Y	Y	N
Management	Y	Y	N
Proxy	Y	Y	N
Worker	Y	Y	Y

ICP – London environment

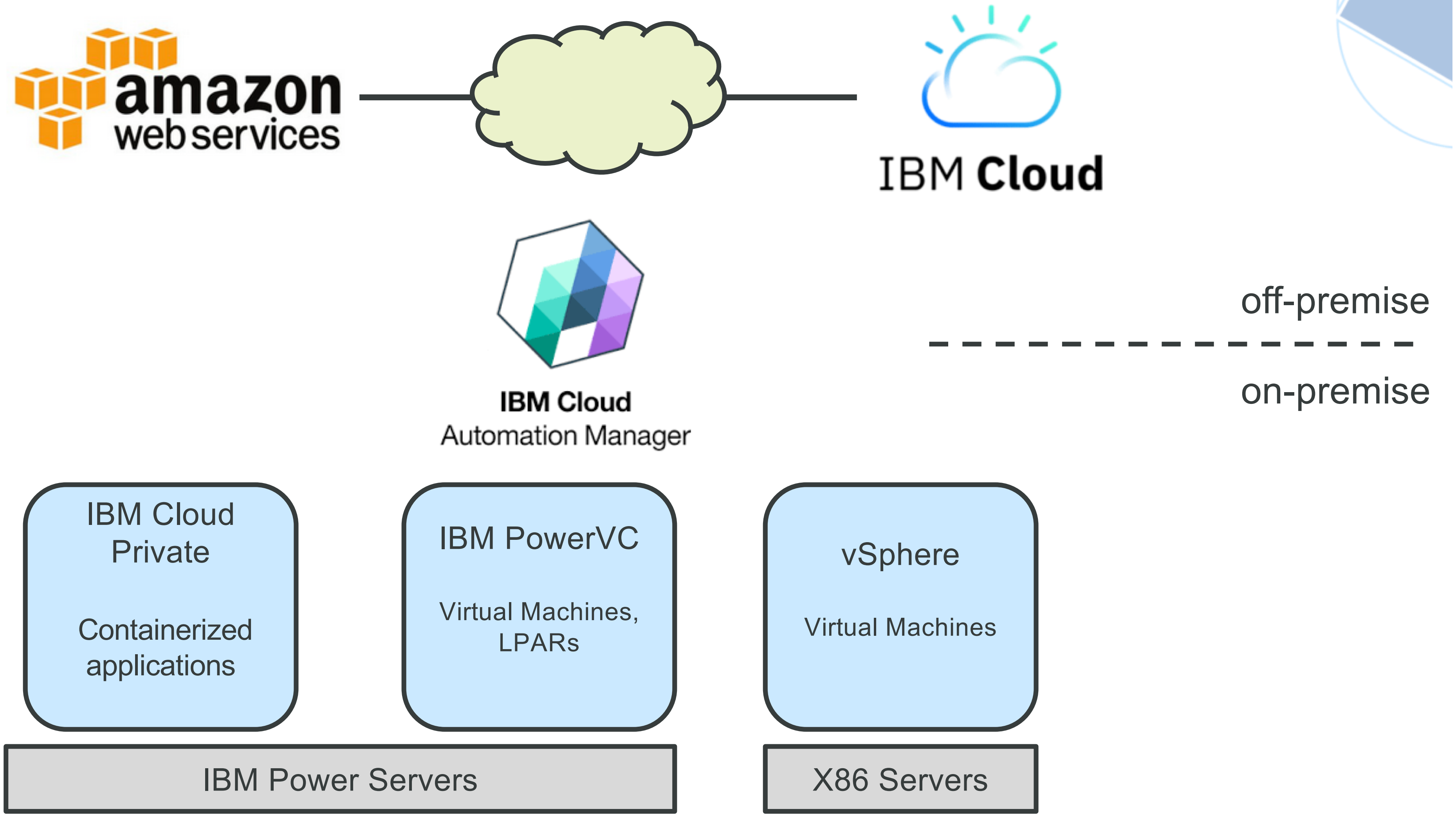


IBM Cloud Automation Manager

IBM PowerVC - London environment



Multi-cloud environment



IBM Cloud Private

Containerized applications

IBM PowerVC

Virtual Machines, LPARs

vSphere

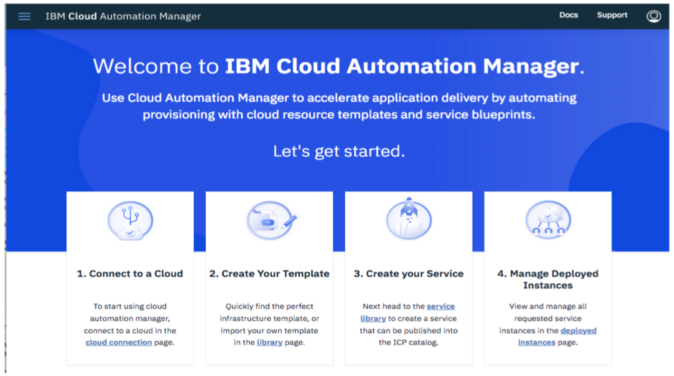
Virtual Machines

IBM Power Servers

X86 Servers

CAM Overview

What is CAM ?



Welcome to **IBM Cloud Automation Manager**.

Use Cloud Automation Manager to accelerate application delivery by automating provisioning with cloud resource templates and service blueprints.

Let's get started.

1. Connect to a Cloud

To start using cloud automation manager, connect to a cloud in the cloud connection page.

2. Create Your Template

Quickly find the perfect infrastructure template, or import your own template in the library page.

3. Create your Service

Next head to the service library to create a service that can be published into the ICP catalog.

4. Manage Deployed Instances

View and manage all requested service instances in the deployed instances page.

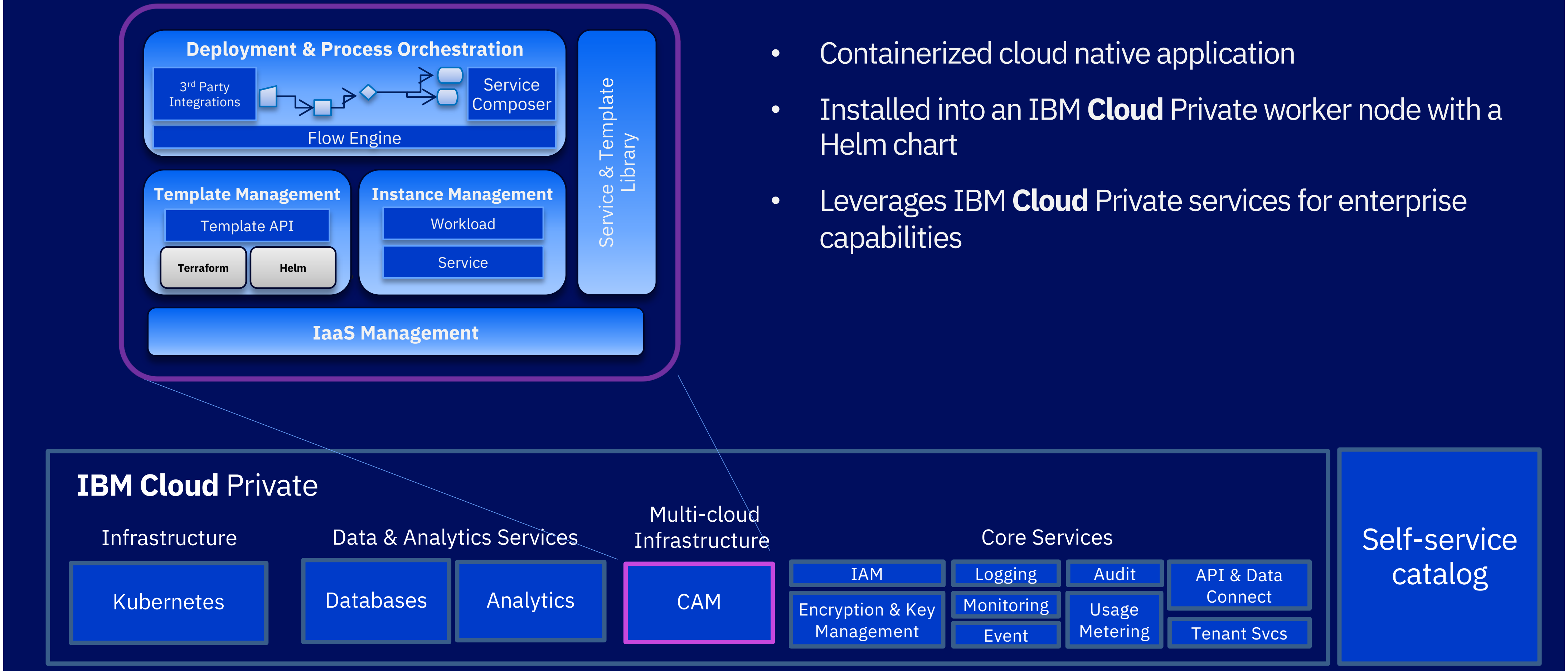
Marketing

IBM® Cloud Automation Manager is a multi-cloud, self-service management platform running on IBM Cloud Private that empowers developers and administrators to meet business demands.

Technical

A container based application running on ICP that can be configured to orchestrate VM/Service deployments into one or more clouds (private and/or public).

Cloud Automation Manager in IBM **Cloud** Private

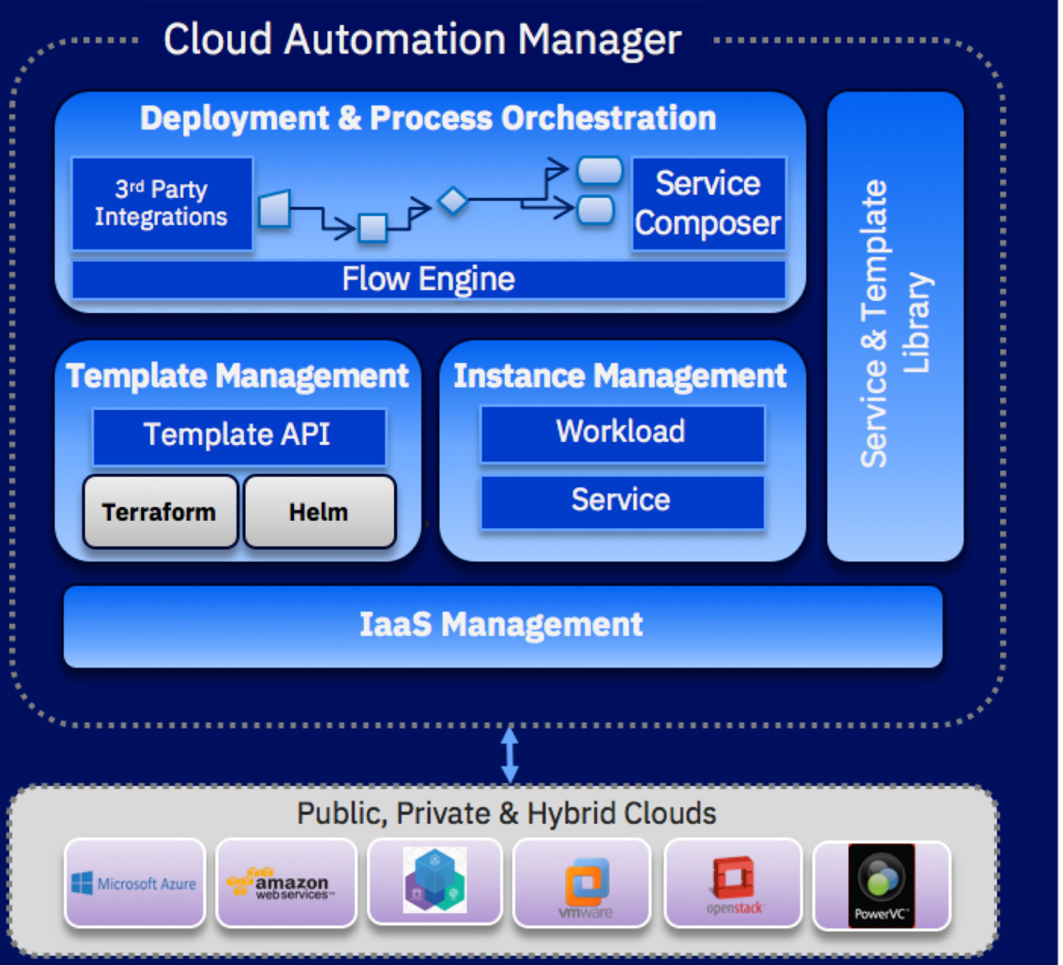


- Containerized cloud native application
- Installed into an IBM **Cloud** Private worker node with a Helm chart
- Leverages IBM **Cloud** Private services for enterprise capabilities

IBM Cloud Automation Manager

Full stack automation and service orchestration

- ***Automated provisioning –*** *Automated provisioning of infrastructure and applications with workflow orchestration*
- ***Self-service -*** Self-service access to cloud infrastructure and application services
- ***Manage and govern –*** *Manage and govern workloads across multiple and hybrid clouds*
- ***Built with open technology*** *to avoid vendor lock-in*



Cloud Automation Manager

Deployment & Process Orchestration

3rd Party Integrations

Service Composer

Flow Engine

Template Management

Template API

Terraform

Helm

Instance Management

Workload

Service

Service & Template Library

IaaS Management

Public, Private & Hybrid Clouds

CAM Overview

Key Features

- Simple installation via a provided ICP Helm Chart

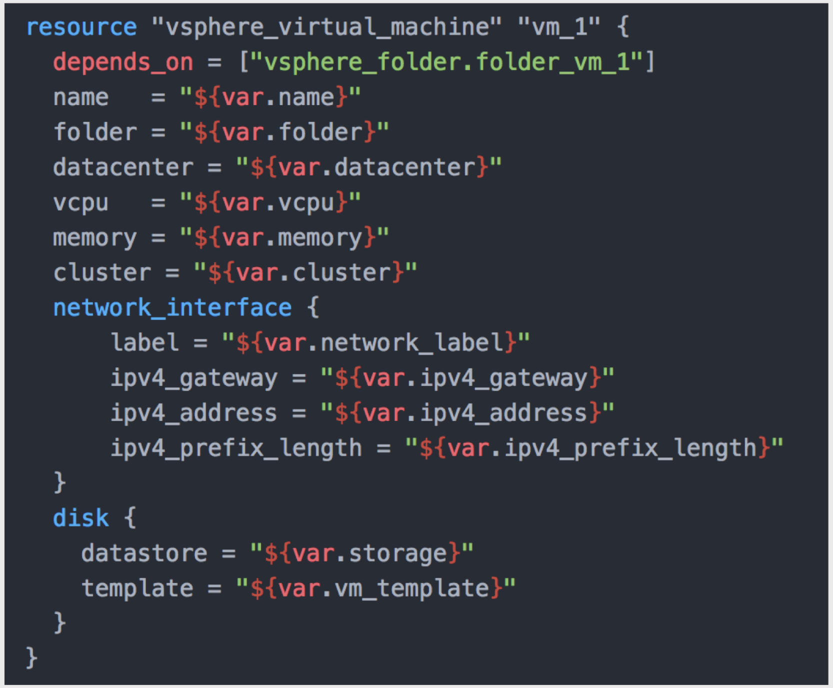
- Connects to multiple types of clouds via it's embedded use of Terraform
  - OpenStack (PowerVC), Google, AWS, Azure .. and many more

- Allows customization of templates, inputs, and outputs
  - VMs, APIs, application content, emails
  - Internal or Github/Gitlab repositories

- Build a "Service" workflow that orchestrates consumption of multiple clouds and templates
  - ex. deploy Websphere VM in IBM Cloud and a MongoDB in PowerVC in one step

- Allow publishing of "Service" to the ICP Catalog for deployment within ICP GUI
  - service can also be used by other consumers such as ServiceNow

Why Terraform



```
resource "vsphere_virtual_machine" "vm_1" {
  depends_on = ["vsphere_folder.folder_vm_1"]
  name   = "${var.name}"
  folder = "${var.folder}"
  datacenter = "${var.datacenter}"
  vcpu   = "${var.vcpu}"
  memory = "${var.memory}"
  cluster = "${var.cluster}"
  network_interface {
      label = "${var.network_label}"
      ipv4_gateway = "${var.ipv4_gateway}"
      ipv4_address = "${var.ipv4_address}"
      ipv4_prefix_length = "${var.ipv4_prefix_length}"
  }
  disk {
    datastore = "${var.storage}"
    template = "${var.vm_template}"
  }
}
```

Declarative Cloud Automation

Common approach in all clouds

- *All clouds and all application architectures*

Open source

- *10,000+ GitHub stars; 1,153 contributors*
- *Supported by major cloud vendors*

Large & growing ecosystem

- *Terraform Module Registry*
- *Many OEM providers and provisioners*

Enterprise hardened by IBM

- *Secrets management*
- *Role based provisioning*
- *Team development*

Terraform Content

Now Available on CAMHub as open source https://ibm.biz/BdZfLs

Open Source Library

MEAN stack – VMware, IBM Cloud, Azure, AWS
LAMP stack – VMware, IBM Cloud, Azure, AWS
Node.js – VMware, IBM Cloud
Strongloop – VMware, IBM Cloud
MariaDB - VMware
MongoDB – VMware, IBM Cloud
MongoDB Strongloop 3 tier – VMware, IBM Cloud
Virtual Servers with SSH key – IBM Cloud, AWS
Apache HTTP Server - VMware, IBM Cloud, AWS
Apache Tomcat – VMware, IBM Cloud, AWS

+Community Templates (Terraform Module Registry)

Enterprise Library

IBM DB2 EE (v10.5 & v11.1)
IBM MQ (v8 & v9)
IBM WebSphere Application Server ND (v8.5.5, v9.0)
IBM WebSphere Liberty (v17)
IBM HTTP Server (v8.5.5, v9)
Oracle DB Enterprise (v12c)
Oracle MySQL (v5.7)

All deployable to VMware, IBM Cloud, AWS

Automation content available with IBM Cloud Private purchase. Product licenses must be purchased separately or BYOL. See pricing and packaging for more information.

+Bring your own (Self written, IBM Cloud Schematics, ...)

Supported when deployed through CAM with current S&S

CAM installation

CAM Installation

CAM 3.1.2 Planning and Requirements

IBM Cloud Private 3.1.0 or above installed and running

- IBM Cloud Private is certified on KVM, ESX, Nutanix Acropolis, and IBM PowerVM hypervisors

CAM 3.1.2 Helm Chart and Docker Images

- CAM Helm Chart deploys to worker nodes which can be x86 or ppc64le (IBM Z is not supported)
- Community Edition available from via ibm-charts helm repository and docker hub
- Enterprise Edition available from Passport Advantage

CAM Installation

CAM 3.1.2 Planning and Requirements

ICP Persistent Storage

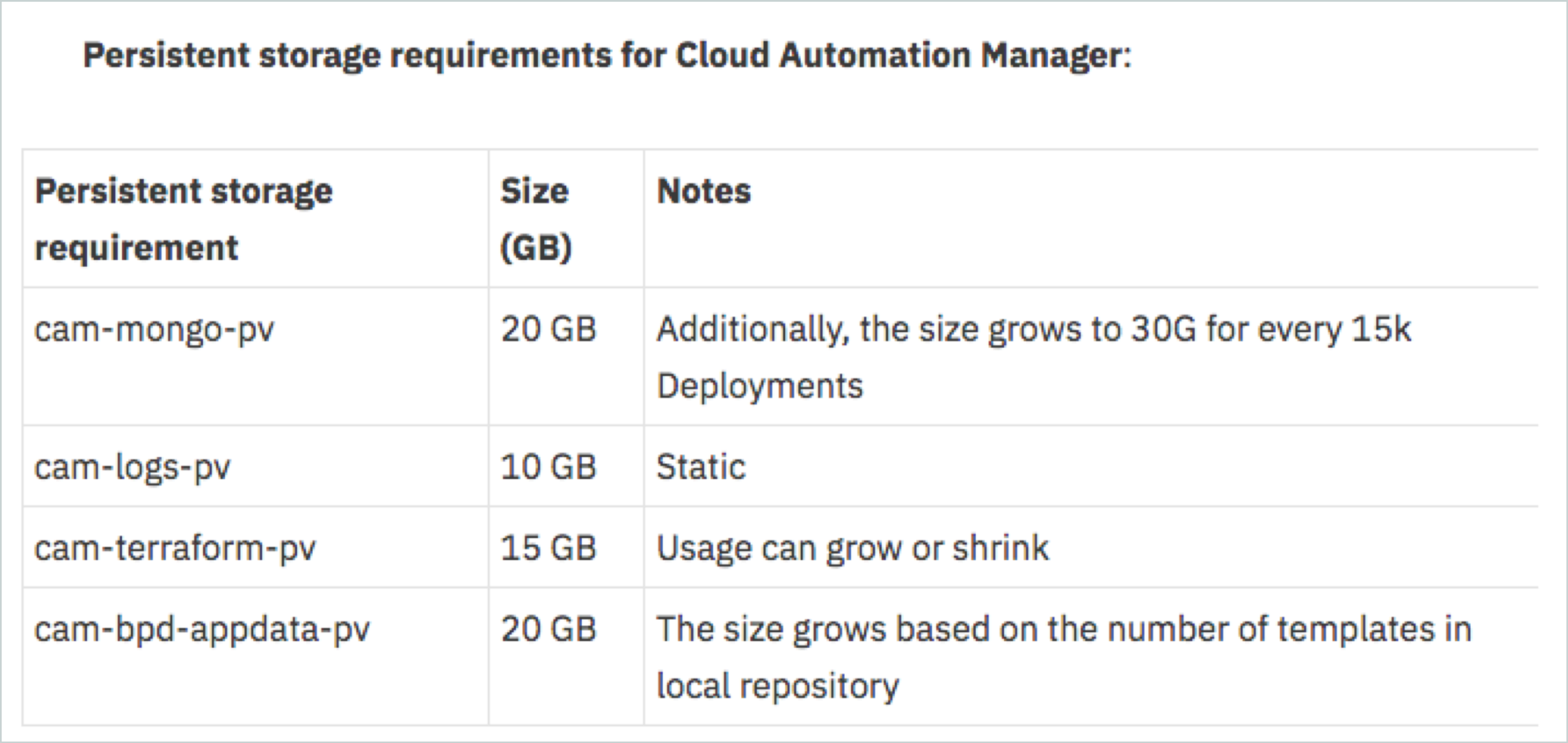
- Requires setup of 4 ICP Persistent Volumes

ICP Storage class can be

- ESS (Spectrum Connect)
- NFS
- GlusterFS
- PowerVC Flex Volume Driver

CAM Installation

CAM 3.1.2 Planning and Requirements



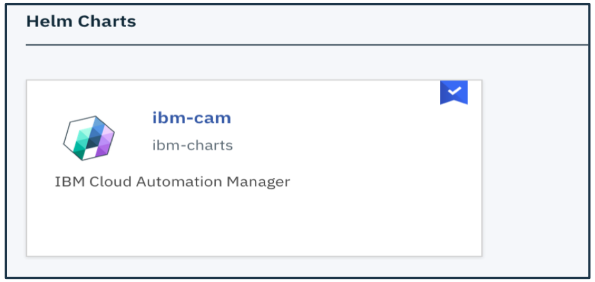
Persistent storage requirements for Cloud Automation Manager:

Persistent storage requirement	Size (GB)	Notes
cam-mongo-pv	20 GB	Additionally, the size grows to 30G for every 15k 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

CAM Installation

CAM 3.1.2 Installation Steps

Login to the ICP GUI as administrator and deploy the ibm-cam Helm chart

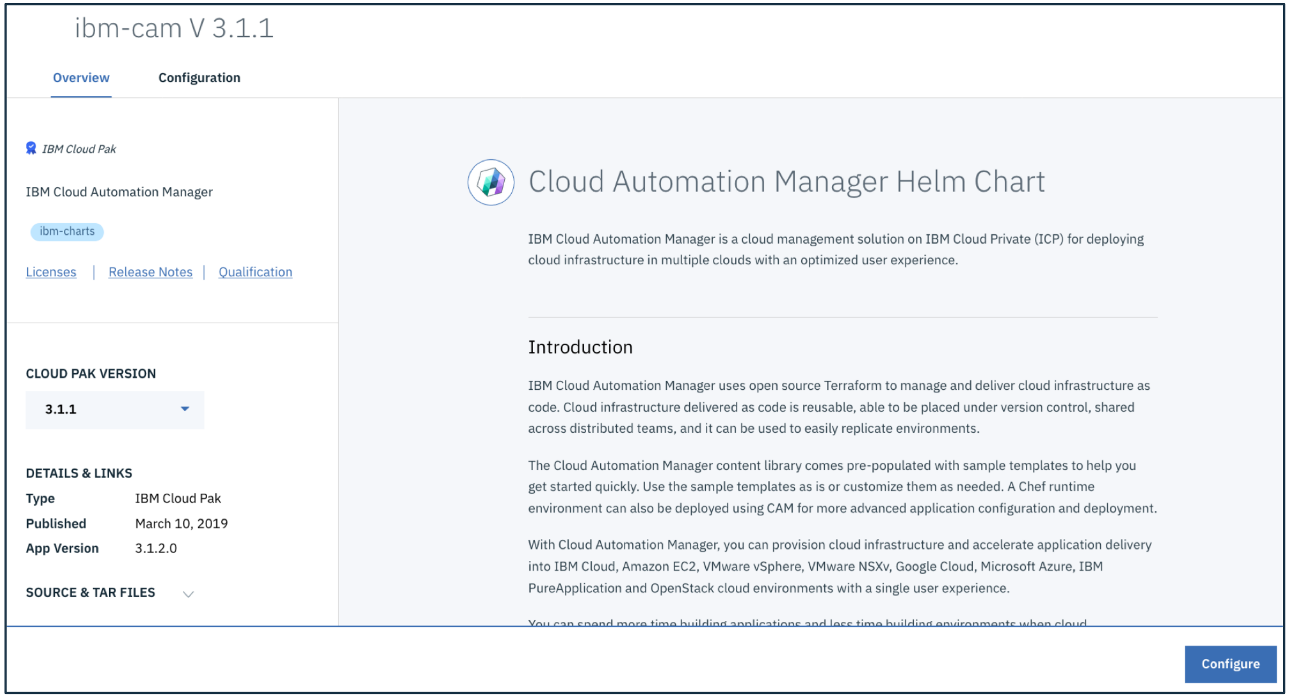


Helm Charts

ibm-cam

ibm-charts

IBM Cloud Automation Manager



ibm-cam V 3.1.1

IBM Cloud Pak

IBM Cloud Automation Manager

ibm-charts

Licenses | Release Notes | Qualification

CLOUD PAK VERSION

3.1.1

DETAILS & LINKS

Type	IBM Cloud Pak
Published	March 10, 2019
App Version	3.1.2.0

SOURCE & TAR FILES

Cloud Automation Manager Helm Chart

IBM Cloud Automation Manager is a cloud management solution on IBM Cloud Private (ICP) for deploying cloud infrastructure in multiple clouds with an optimized user experience.

Introduction

IBM Cloud Automation Manager uses open source Terraform to manage and deliver cloud infrastructure as code. Cloud infrastructure delivered as code is reusable, able to be placed under version control, shared across distributed teams, and it can be used to easily replicate environments.

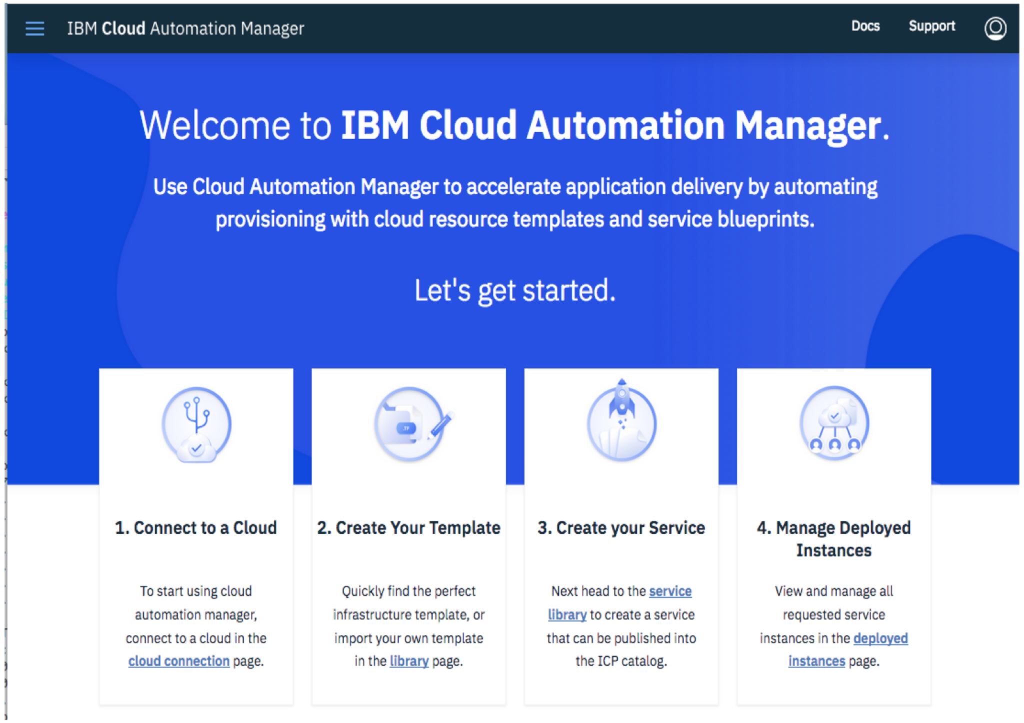
The Cloud Automation Manager content library comes pre-populated with sample templates to help you get started quickly. Use the sample templates as is or customize them as needed. A Chef runtime environment can also be deployed using CAM for more advanced application configuration and deployment.

With Cloud Automation Manager, you can provision cloud infrastructure and accelerate application delivery into IBM Cloud, Amazon EC2, VMware vSphere, VMware NSXv, Google Cloud, Microsoft Azure, IBM PureApplication and OpenStack cloud environments with a single user experience.

You can spend more time building applications and less time building environments when cloud

CAM Configuration & Use

CAM Configuration & Use



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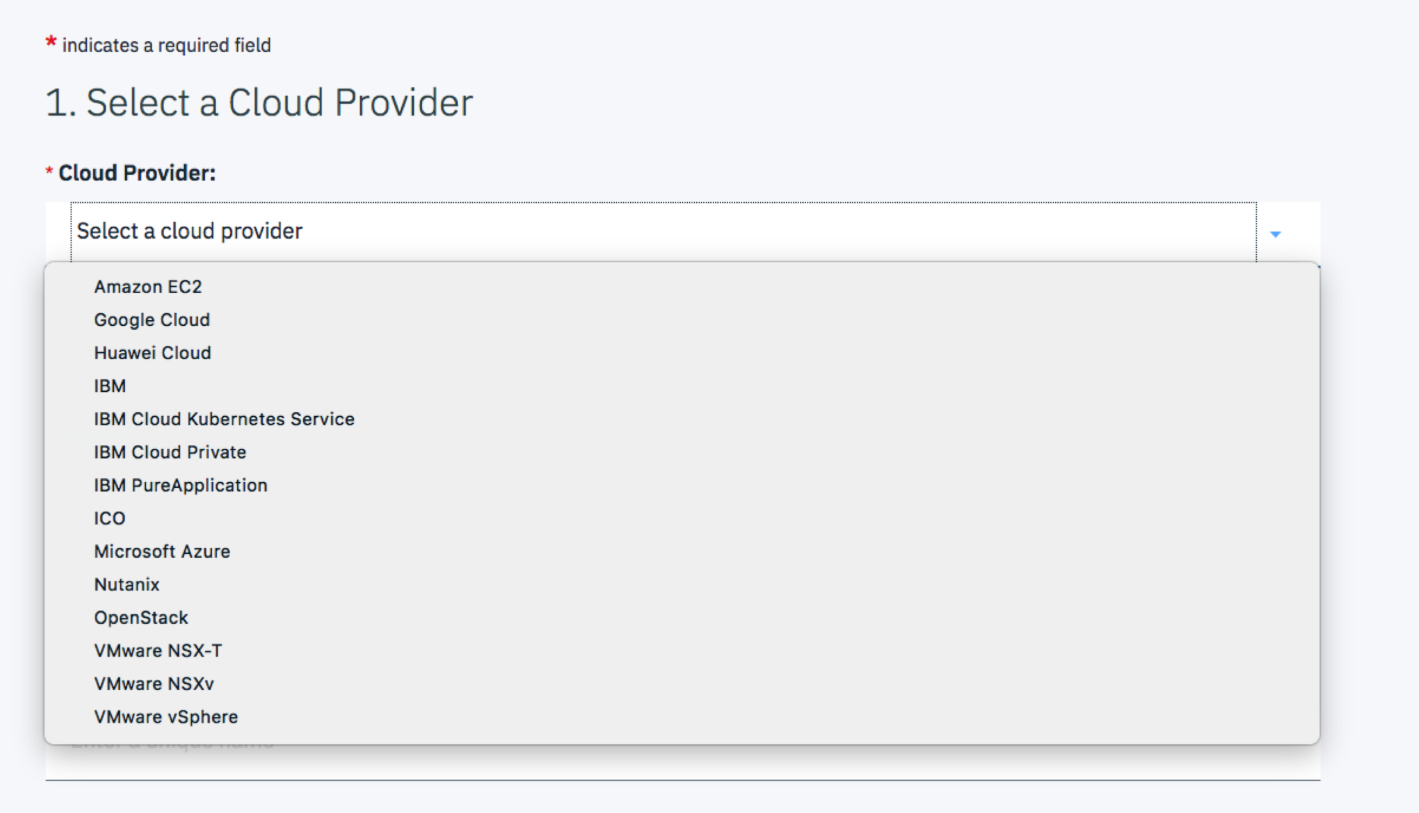
4. Manage Deployed Instances

View and manage all requested service instances in the deployed instances page.

- Cloud Connections
  - Private Clouds (like PowerVC, OpenStack, vmWare, etc)
  - Public Clouds (like AWS, Azure, IBM, etc)
- CAM Templates
  - Deployment specifications
- CAM Services
  - Plans, Workflows, Exposure of select variables

CAM Configuration & Use

Create Cloud Connection for PowerVC



* indicates a required field

1. Select a Cloud Provider

* **Cloud Provider:**

Select a cloud provider

- Amazon EC2
- Google Cloud
- Huawei Cloud
- IBM
- IBM Cloud Kubernetes Service
- IBM Cloud Private
- IBM PureApplication
- ICO
- Microsoft Azure
- Nutanix
- OpenStack
- VMware NSX-T
- VMware NSXv
- VMware vSphere

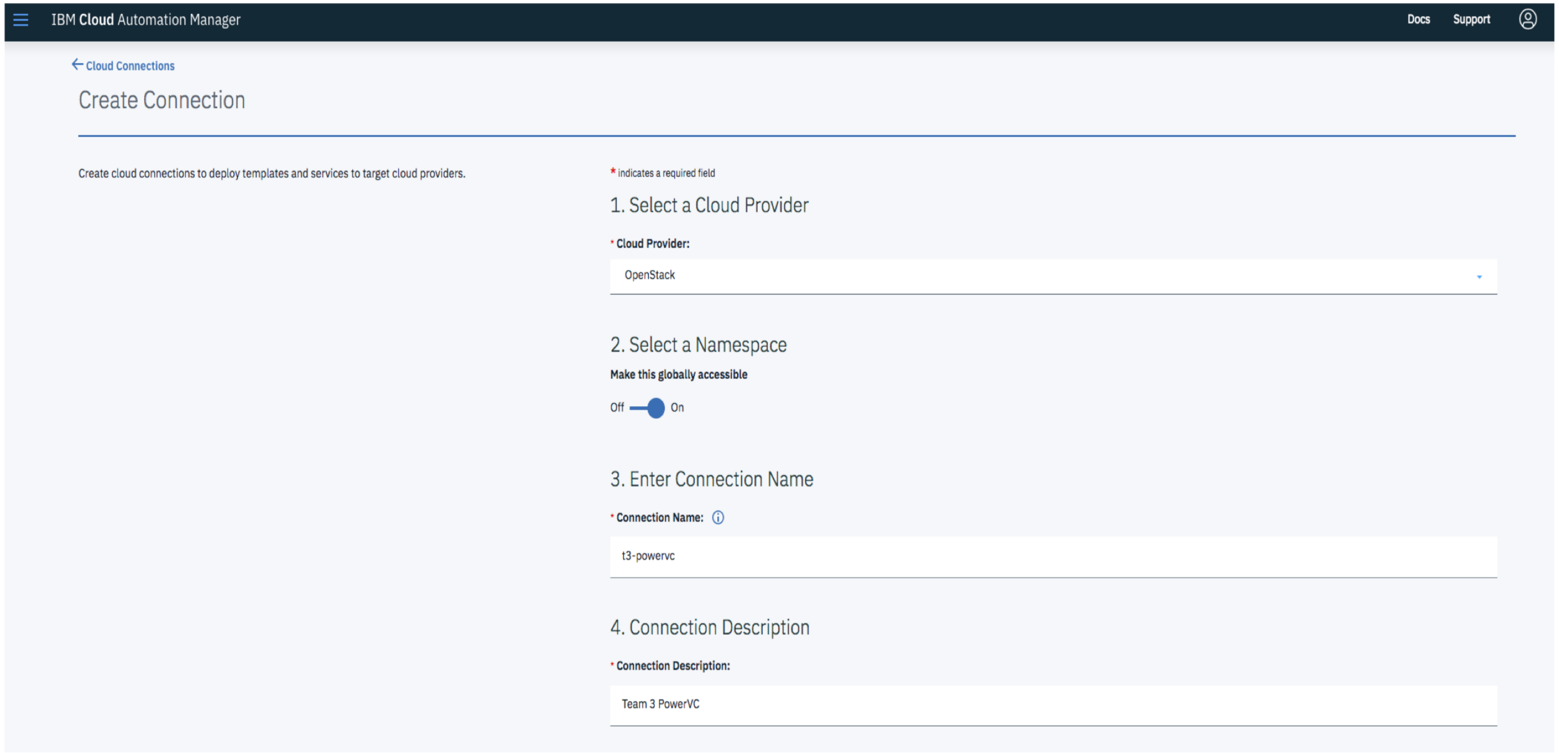
Select Cloud Provider:

A large variety of clouds are available

Choose "OpenStack" for PowerVC

CAM Configuration & Use

Create Cloud Connection for PowerVC



Create Connection

Create cloud connections to deploy templates and services to target cloud providers.

* indicates a required field

1. Select a Cloud Provider

* Cloud Provider: OpenStack

2. Select a Namespace

Make this globally accessible

Off ● On

3. Enter Connection Name

* Connection Name: t3-powervc

4. Connection Description

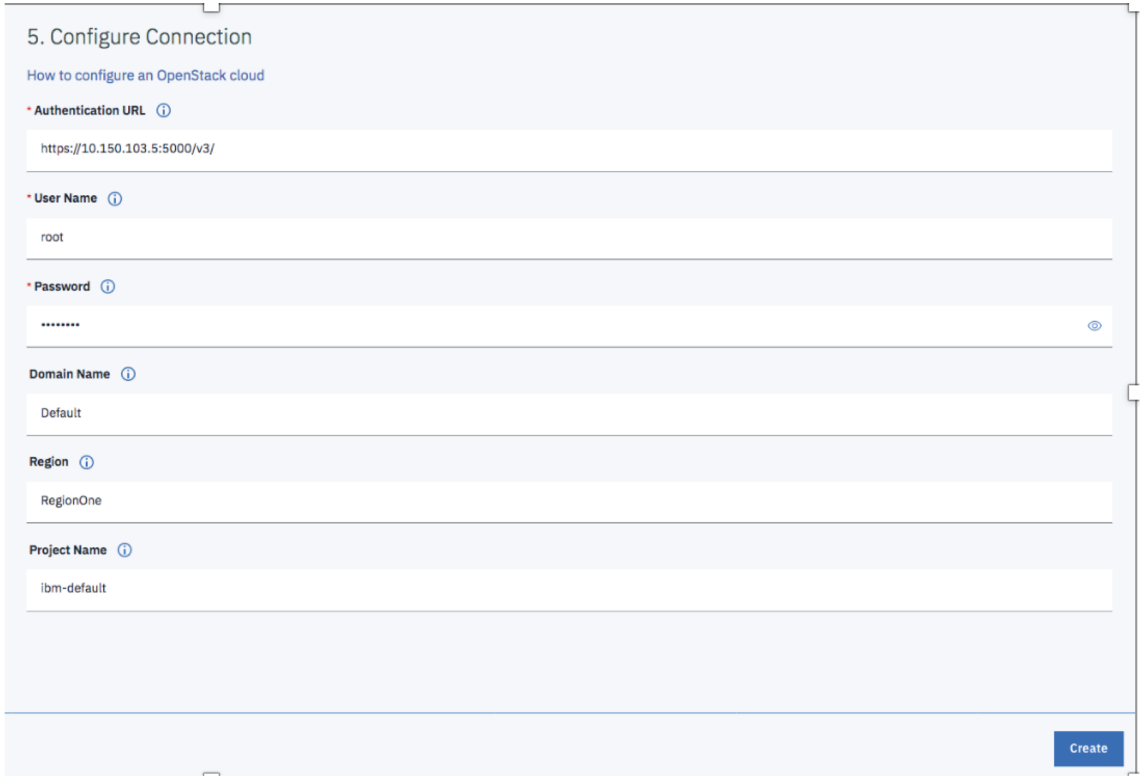
* Connection Description: Team 3 PowerVC

Select Namespace: Global allows use in all namespaces

Provide Connection Name and Description

CAM Configuration & Use

Create Cloud Connection



5. Configure Connection

How to configure an OpenStack cloud

* Authentication URL	https://10.150.103.5:5000/v3/
* User Name	root
* Password	....
Domain Name	Default
Region	RegionOne
Project Name	ibm-default

Obtain connection values from the powervcrc file

Authorization URL: https://<PowerVC IP>:5000/v3/

Username: <powervc admin>

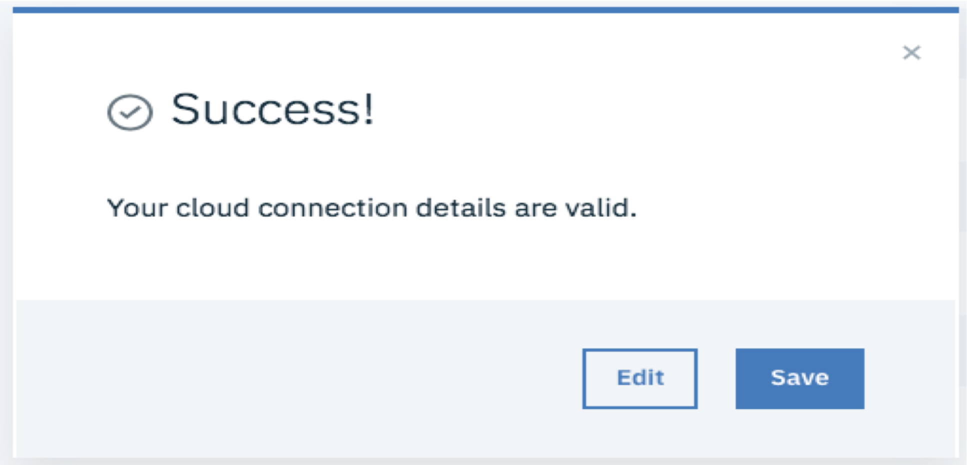
Domain Name: Default

Region: RegionOne

Project Name: ibm-default (or any custom project)

CAM Configuration & Use

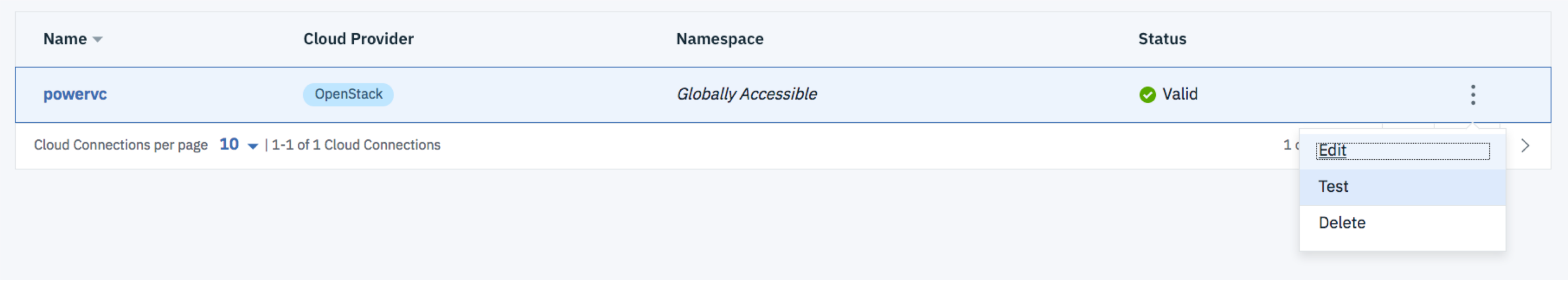
Create Cloud Connection



Success!

Your cloud connection details are valid.

- Network Connection will be validated during save
- Menu option to re-test connection at any later time



Name	Cloud Provider	Namespace	Status
powervc	OpenStack	*Globally Accessible*	✓ Valid

Cloud Connections per page 10 | 1-1 of 1 Cloud Connections

CAM Templates and Services

You create and configure Templates and Services from CAM UI

- A **CAM Template** is source code and input/output variables that define a terraform deployment
- A CAM Template can be deployed directly from CAM GUI and/or used as a component within a “Service”
- A **CAM Service** defines a workflow that consumes one or more CAM templates.
- A CAM Service can be deployed from CAM GUI and/or published to the ICP Catalog to allow deployment from ICP

CAM Template Configuration & Use

Demonstration 1:

Create and deploy a simple AIX VM template

Create a new version/release of the template

Modify existing deployment (plan and apply)

CAM Service Configuration & Use

Demonstration 2:

Create a multi-cloud environment

Deploy multi-cloud environment across containers within ICP, Linux VMs in public cloud and AIX VM in private cloud

CAM Service Configuration & Use

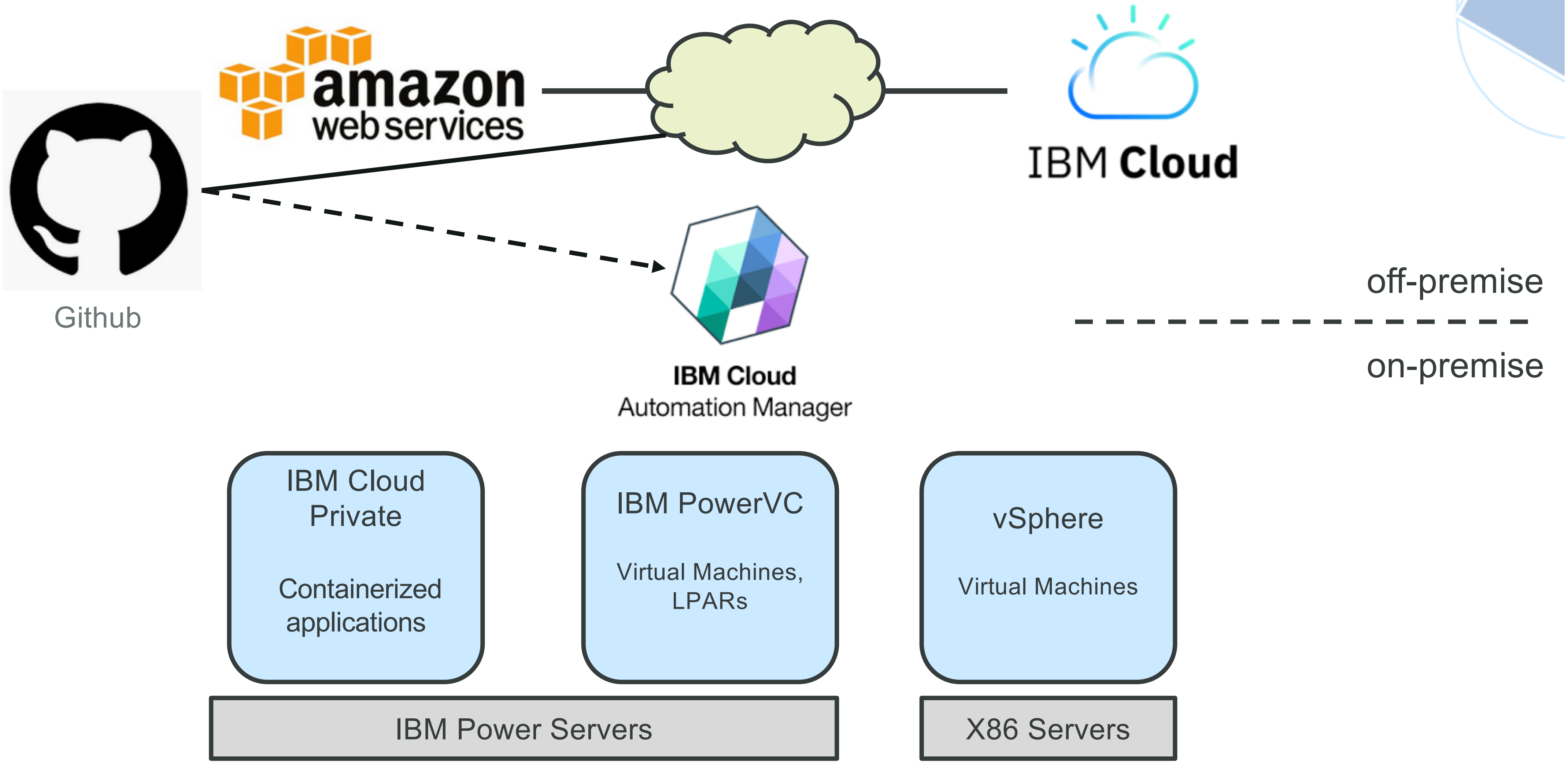
Demonstration 3:

Create a service with a decision tree

Deploy decision tree service to a chosen cloud provider

Publish the service to ICP and deploy from there

Multi-cloud environment



Github

amazon web services

IBM Cloud

IBM Cloud Automation Manager

off-premise

on-premise

IBM Cloud Private

Containerized applications

IBM PowerVC

Virtual Machines, LPARs

vSphere

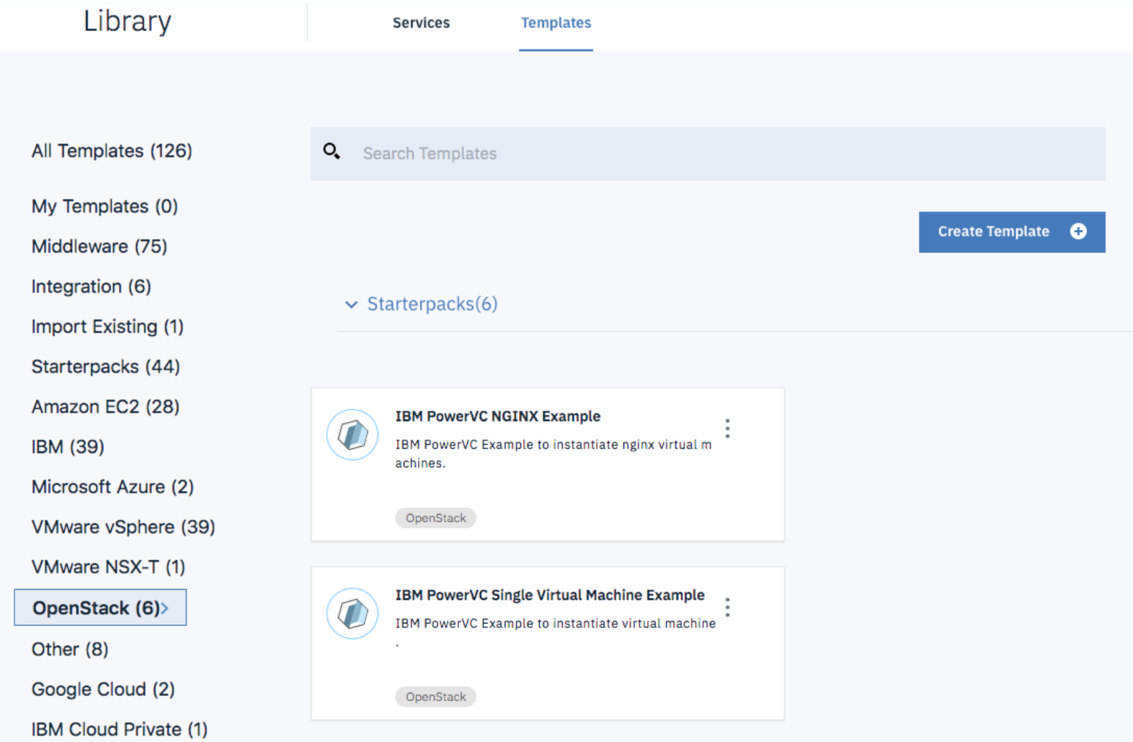
Virtual Machines

IBM Power Servers

X86 Servers

CAM Template Configuration & Use

Provided Templates



IBM PowerVC NGINX Example

IBM PowerVC Example to instantiate nginx virtual machines.

OpenStack

IBM PowerVC Single Virtual Machine Example

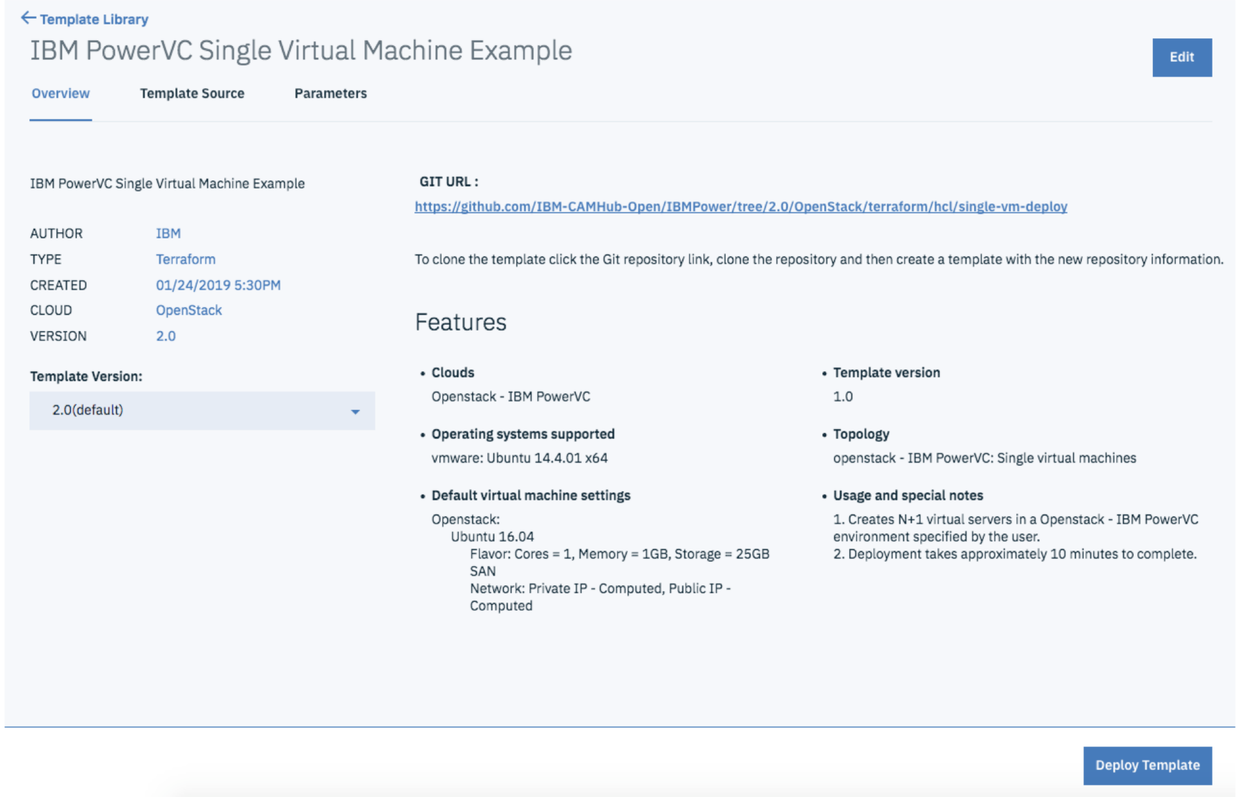
IBM PowerVC Example to instantiate virtual machine .

OpenStack

- Templates are provided by CAM for all kinds of clouds
- These can be used as is or as a starting point for your own template
- OpenStack -> IBM PowerVC Single Virtual Machine Example will be used for illustration

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



IBM PowerVC Single Virtual Machine Example

IBM PowerVC Single Virtual Machine Example

AUTHOR	IBM
TYPE	Terraform
CREATED	01/24/2019 5:30PM
CLOUD	OpenStack
VERSION	2.0

Template Version: 2.0(default)

GIT URL :
https://github.com/IBM-CAMHub-Open/IBMPower/tree/2.0/OpenStack/terraform/hcl/single-vm-deploy

To clone the template click the Git repository link, clone the repository and then create a template with the new repository information.

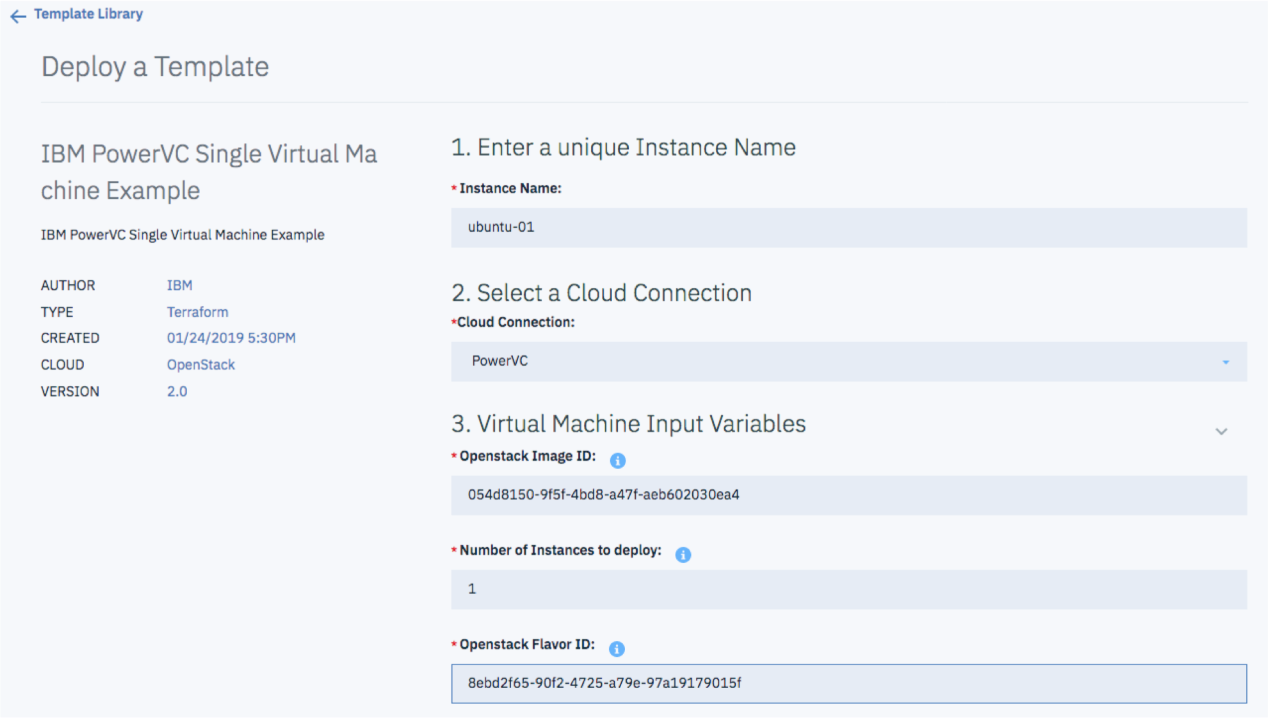
Features

- **Clouds**
  Openstack - IBM PowerVC
- **Operating systems supported**
  vmware: Ubuntu 14.4.01 x64
- **Default virtual machine settings**
  Openstack:
  Ubuntu 16.04
  Flavor: Cores = 1, Memory = 1GB, Storage = 25GB SAN
  Network: Private IP - Computed, Public IP - Computed
- **Template version**
  1.0
- **Topology**
  openstack - IBM PowerVC: Single virtual machines
- **Usage and special notes**
  1. Creates N+1 virtual servers in a Openstack - IBM PowerVC environment specified by the user.
  2. Deployment takes approximately 10 minutes to complete.

- Note this example template is maintained on a GIT hub site
- You could create your own GIT hub repository for your own custom templates

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



Deploy a Template

IBM PowerVC Single Virtual Machine Example

IBM PowerVC Single Virtual Machine Example

AUTHOR	IBM
TYPE	Terraform
CREATED	01/24/2019 5:30PM
CLOUD	OpenStack
VERSION	2.0

1. Enter a unique Instance Name

*Instance Name: ubuntu-01

2. Select a Cloud Connection

*Cloud Connection: PowerVC

3. Virtual Machine Input Variables

*Openstack Image ID: 054d8150-9f5f-4bd8-a47f-aeb602030ea4

*Number of Instances to deploy: 1

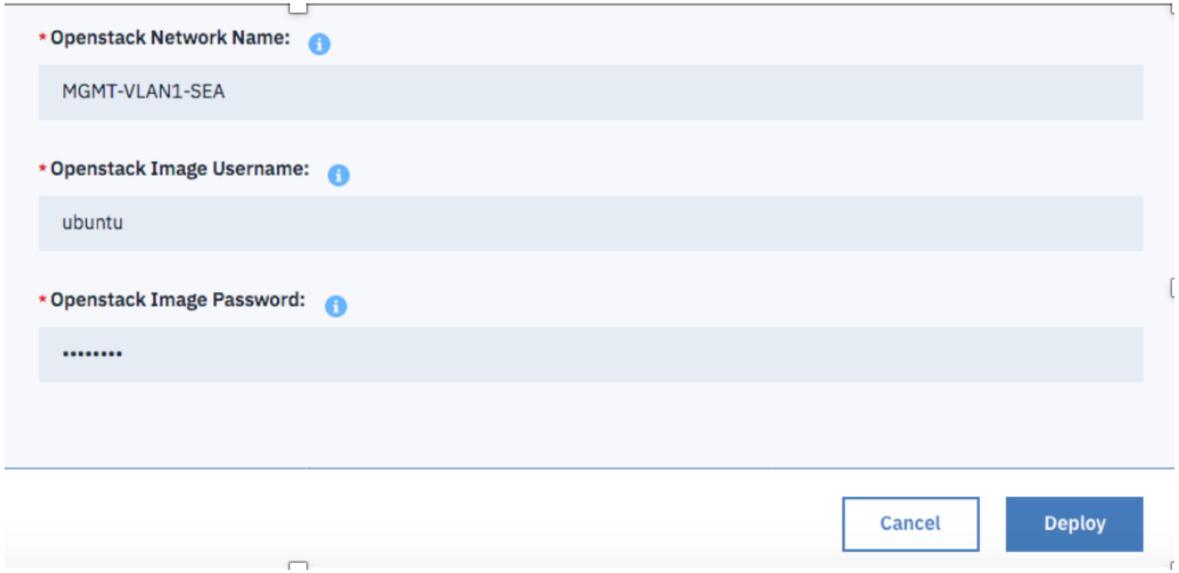
*Openstack Flavor ID: 8ebd2f65-90f2-4725-a79e-97a19179015f

- Fill in Deployment Parameters using the Openstack information from your specific PowerVC resources:

  - Openstack Image ID
  - Openstack Flavor ID

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



* Openstack Network Name:

MGMT-VLAN1-SEA

* Openstack Image Username:

ubuntu

* Openstack Image Password:

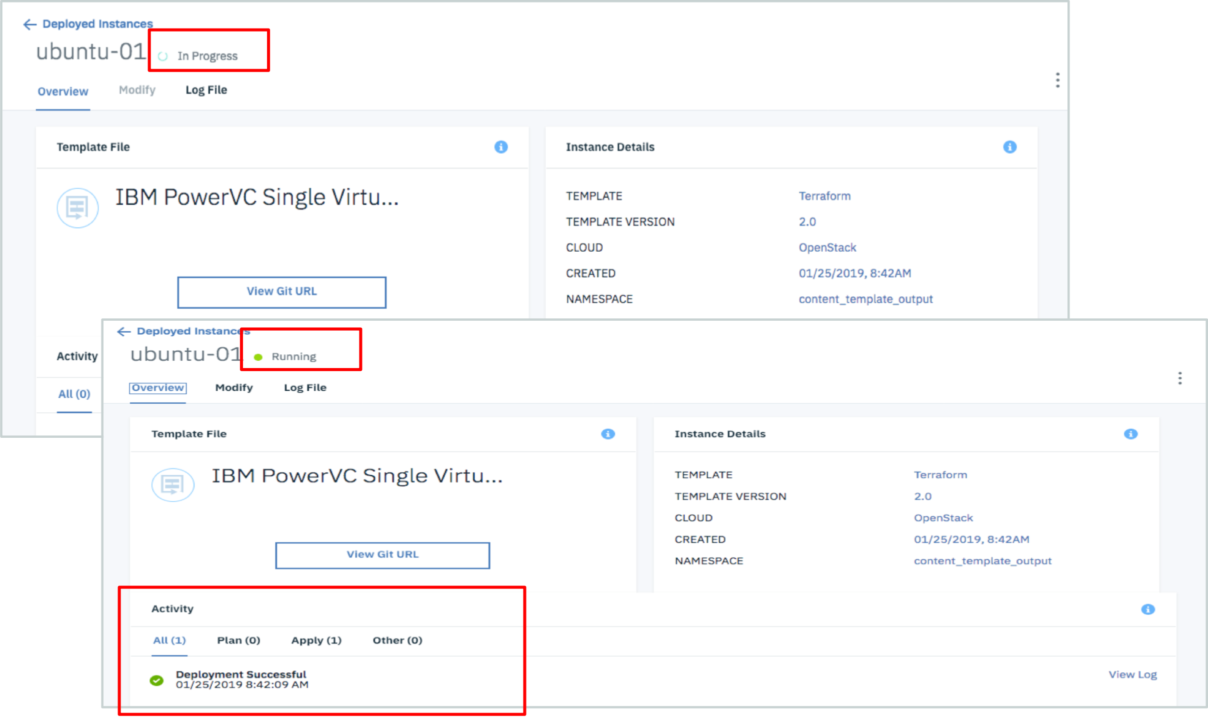
••••••••

- Fill in Deployment Parameters using the Openstack ID information from your specific PowerVC resources:

  - Openstack Network Name
  - Openstack Image User ID
  - Openstack Image Password

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



ubuntu-01 In Progress

Template File

IBM PowerVC Single Virtu...

Instance Details

TEMPLATE	Terraform
TEMPLATE VERSION	2.0
CLOUD	OpenStack
CREATED	01/25/2019, 8:42AM
NAMESPACE	content_template_output

ubuntu-01 ● Running

Template File

IBM PowerVC Single Virtu...

Instance Details

TEMPLATE	Terraform
TEMPLATE VERSION	2.0
CLOUD	OpenStack
CREATED	01/25/2019, 8:42AM
NAMESPACE	content_template_output

Activity

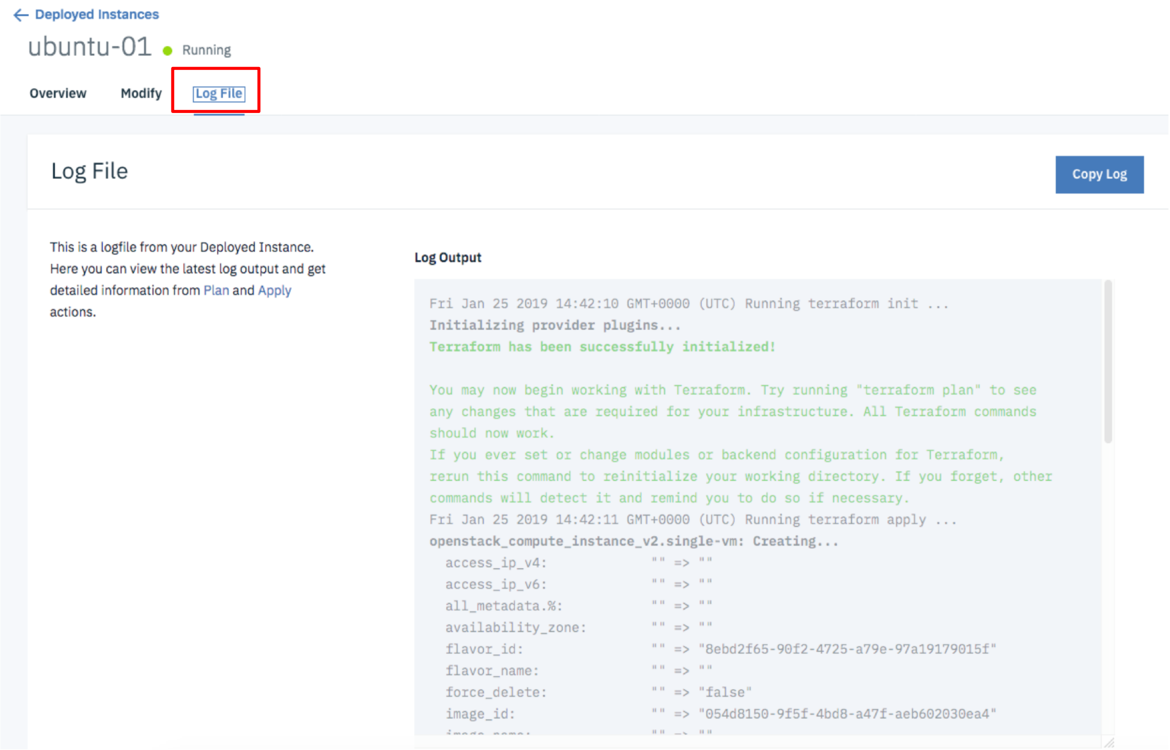
All (1) Plan (0) Apply (1) Other (0)

✓ Deployment Successful
01/25/2019 8:42:09 AM

- Deployment shows in-progress
- Follows the Terraform process:
  - Plan
  - Apply
  - Modify
- This process allows for post error modification of a parameter and retry

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



This is a logfile from your Deployed Instance. Here you can view the latest log output and get detailed information from Plan and Apply actions.

Log Output

```
Fri Jan 25 2019 14:42:10 GMT+0000 (UTC) Running terraform init ...
Initializing provider plugins...
Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.
If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
Fri Jan 25 2019 14:42:11 GMT+0000 (UTC) Running terraform apply ...
openstack_compute_instance_v2.single-vm: Creating...
  access_ip_v4:             "" => ""
  access_ip_v6:             "" => ""
  all_metadata.%:           "" => ""
  availability_zone:        "" => ""
  flavor_id:                "" => "8ebd2f65-90f2-4725-a79e-97a19179015f"
  flavor_name:              "" => ""
  force_delete:             "" => "false"
  image_id:                 "" => "054d8150-9f5f-4bd8-a47f-aeb602030ea4"
  image_name:               "" => ""
```

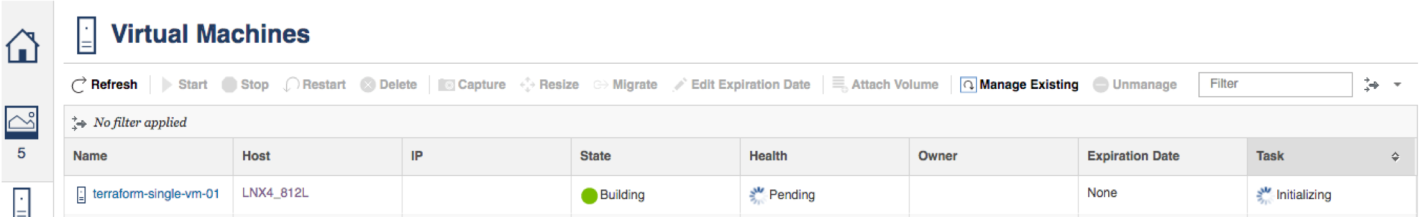
Log File:

- Shows Terraform Parameters
- Shows Status during deploy
- Shows Resultant State
- Shows Terraform error messages if “apply” fails

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template

PowerVC deployment will show a hard coded VM name from the example template.

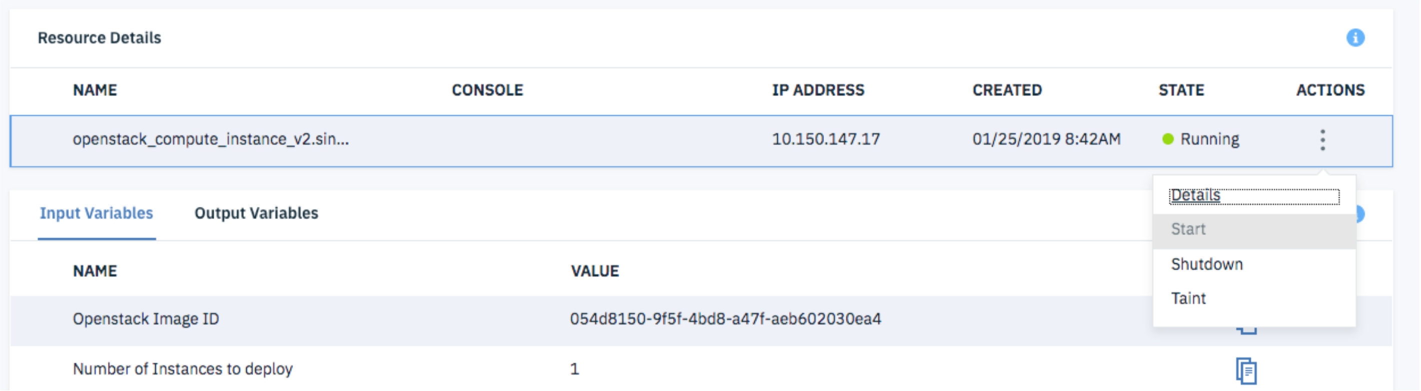


Name	Host	IP	State	Health	Owner	Expiration Date	Task
terraform-single-vm-01	LNX4_812L		● Building	Pending		None	Initializing

Note: Modifications we have made to this example template are available at end of this presentation. Modifications were to allow input of VM name, Optional IP assignment, Optional cloud-init activation input, and an appvg disk size.

CAM Template Configuration & Use

Deploy PowerVC Single VM Example Template



Resource Details

NAME	CONSOLE	IP ADDRESS	CREATED	STATE	ACTIONS
openstack_compute_instance_v2.sin...		10.150.147.17	01/25/2019 8:42AM	● Running	⋮

Input Variables   Output Variables

NAME	VALUE
Openstack Image ID	054d8150-9f5f-4bd8-a47f-aeb602030ea4
Number of Instances to deploy	1

Lifecyle Activities include:

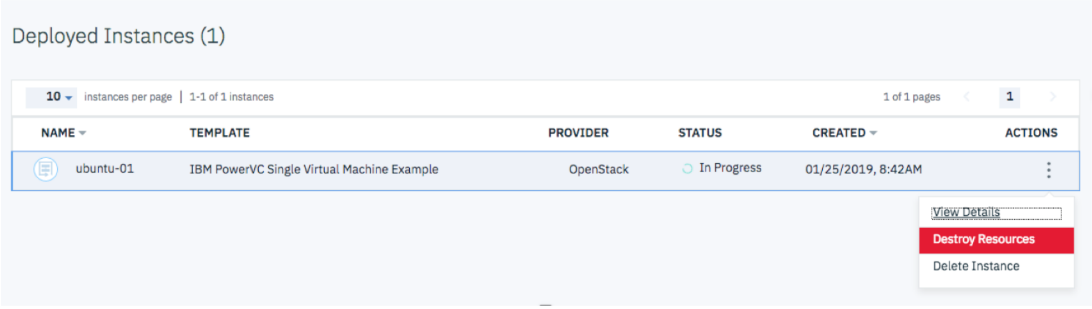
Details (allows modifications)
Stop/Start
Taint (forces delete and redeploy of VM upon next change)

CAM Template Configuration & Use

Removal of the deployed instance is done in two steps

1. Destroy Resource. This deletes the deployed VM in PowerVC, but does not delete the instance definition within the CAM UI. You could then just re-apply the CAM instance to recreate the VM again later.

2. Delete Instance. This removes the deployed instance from within the CAM UI. It does not touch PowerVC. So this is similar to PowerVC Unmanage VM provided you have not executed step 1.



Deployed Instances (1)

10 instances per page | 1-1 of 1 instances   1 of 1 pages 1

NAME	TEMPLATE	PROVIDER	STATUS	CREATED	ACTIONS
ubuntu-01	IBM PowerVC Single Virtual Machine Example	OpenStack	In Progress	01/25/2019, 8:42AM	⋮

CAM Service Configuration & Use

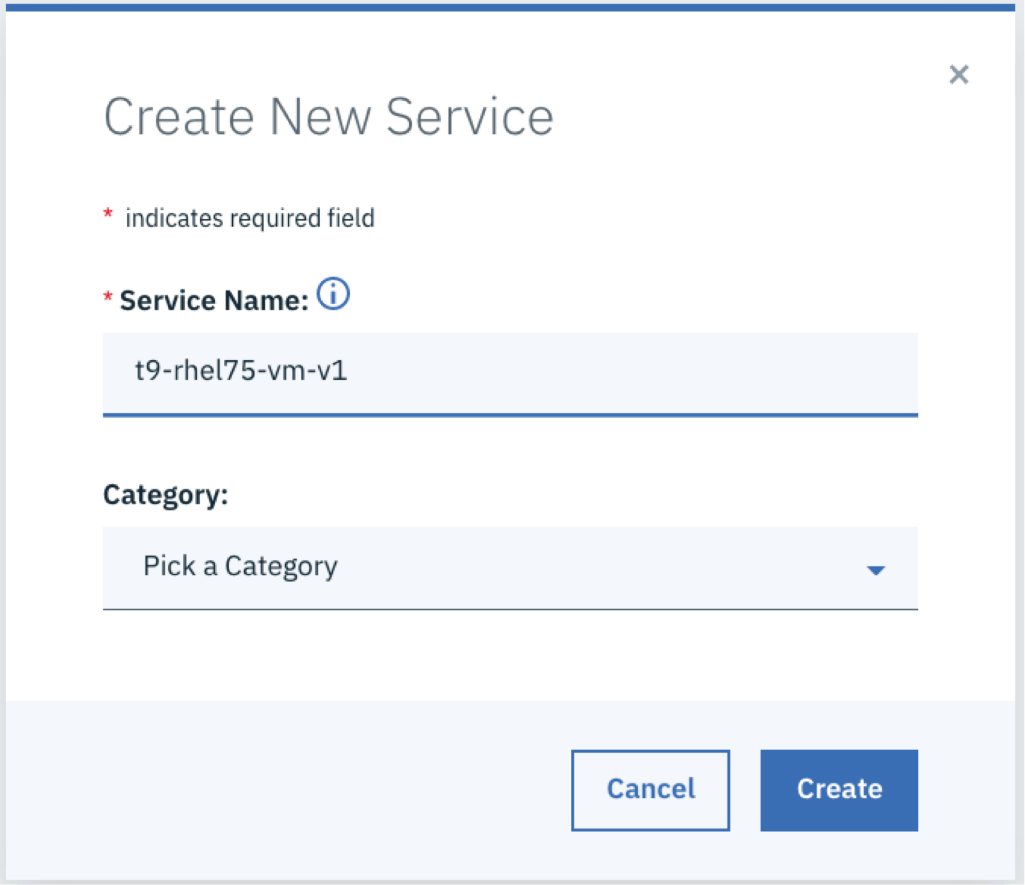
Once you have the template(s) working properly, you can then create a CAM service that can be deployed directly from CAM or Published to ICP Catalog and deployed from ICP.

Here we will cover

- Creation and Configuration of the CAM Service
- Publishing the CAM Service to the ICP Catalog
- Deploying the CAM Service from ICP UI

CAM Service Configuration & Use

Create New Service



Create New Service

* indicates required field

* Service Name: t9-rhel75-vm-v1

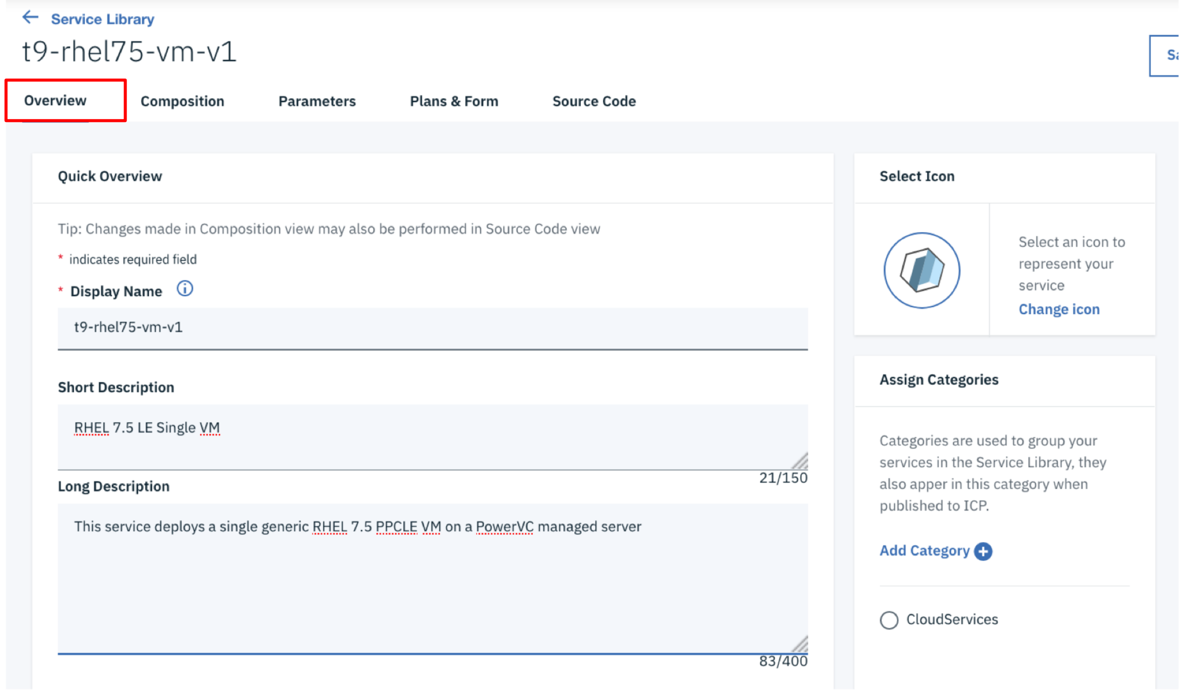
Category: Pick a Category

- Provide a new Service Name
- Optionally add your own category

Examples:
- Generic Linux VMs
- Database Services
- Web Services
- SAP HANA Services
- IBM AI Services

CAM Service Configuration & Use

Create New Service



← Service Library

t9-rhel75-vm-v1

Quick Overview

Tip: Changes made in Composition view may also be performed in Source Code view

* indicates required field

* Display Name: t9-rhel75-vm-v1

Short Description: RHEL 7.5 LE Single VM (21/150)

Long Description: This service deploys a single generic RHEL 7.5 PPCLE VM on a PowerVC managed server (83/400)

Select Icon

Select an icon to represent your service

Change icon

Assign Categories

Categories are used to group your services in the Service Library, they also apper in this category when published to ICP.

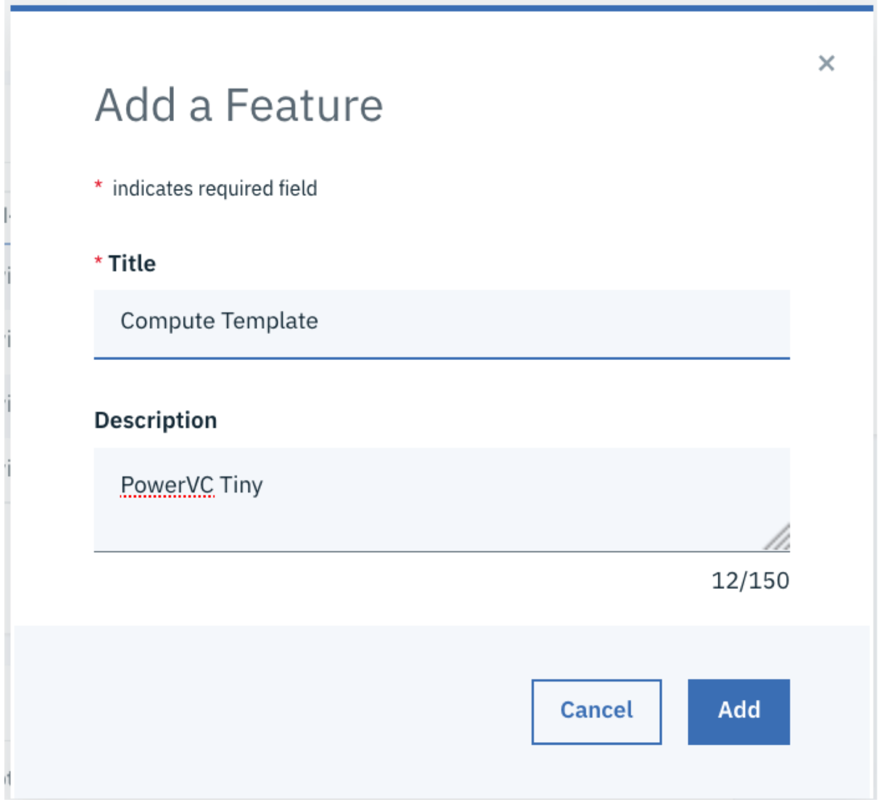
Add Category

○ CloudServices

- Provide Description
  - Short
  - Long
  - ICON
- Information here will be presented as the initial page when selected from the ICP Catalog

CAM Service Configuration & Use

Create New Service



Add a Feature

* indicates required field

* Title

Compute Template

Description

PowerVC Tiny

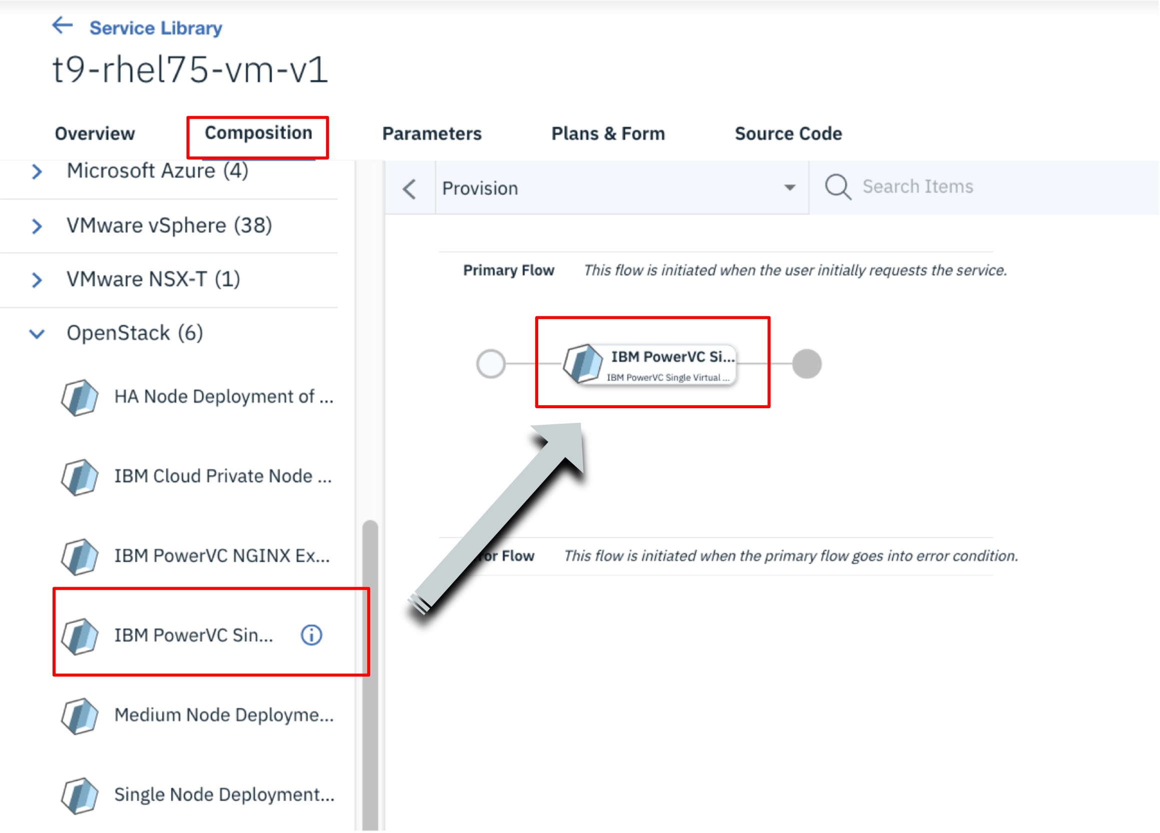
12/150

- Add Features
  - VM Characteristics

- Information here will be presented as the initial page when selected from the ICP Catalog

CAM Service Configuration & Use

Create New Service



← Service Library

t9-rhel75-vm-v1

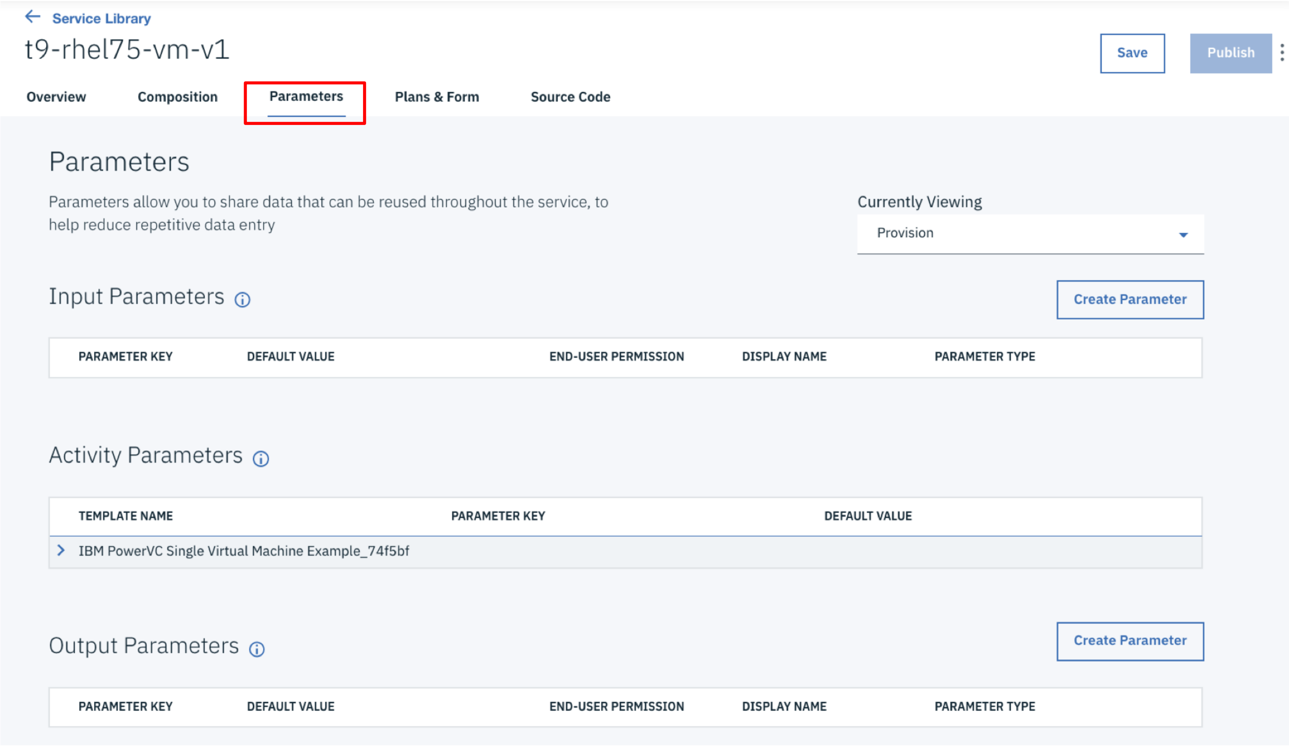
Primary Flow *This flow is initiated when the user initially requests the service.*

or Flow *This flow is initiated when the primary flow goes into error condition.*

- Select the “Composition” tab
- Drag and Drop the OpenStack IBM PowerVC Single VM Deploy Template onto the canvas area
- Although not illustrated, notice there are many other templates that could be included in this workflow

CAM Service Configuration & Use

Create New Service



Parameters

Parameters allow you to share data that can be reused throughout the service, to help reduce repetitive data entry

Currently Viewing: Provision

Input Parameters ⓘ

PARAMETER KEY	DEFAULT VALUE	END-USER PERMISSION	DISPLAY NAME	PARAMETER TYPE

Activity Parameters ⓘ

TEMPLATE NAME	PARAMETER KEY	DEFAULT VALUE
› IBM PowerVC Single Virtual Machine Example_74f5bf		

Output Parameters ⓘ

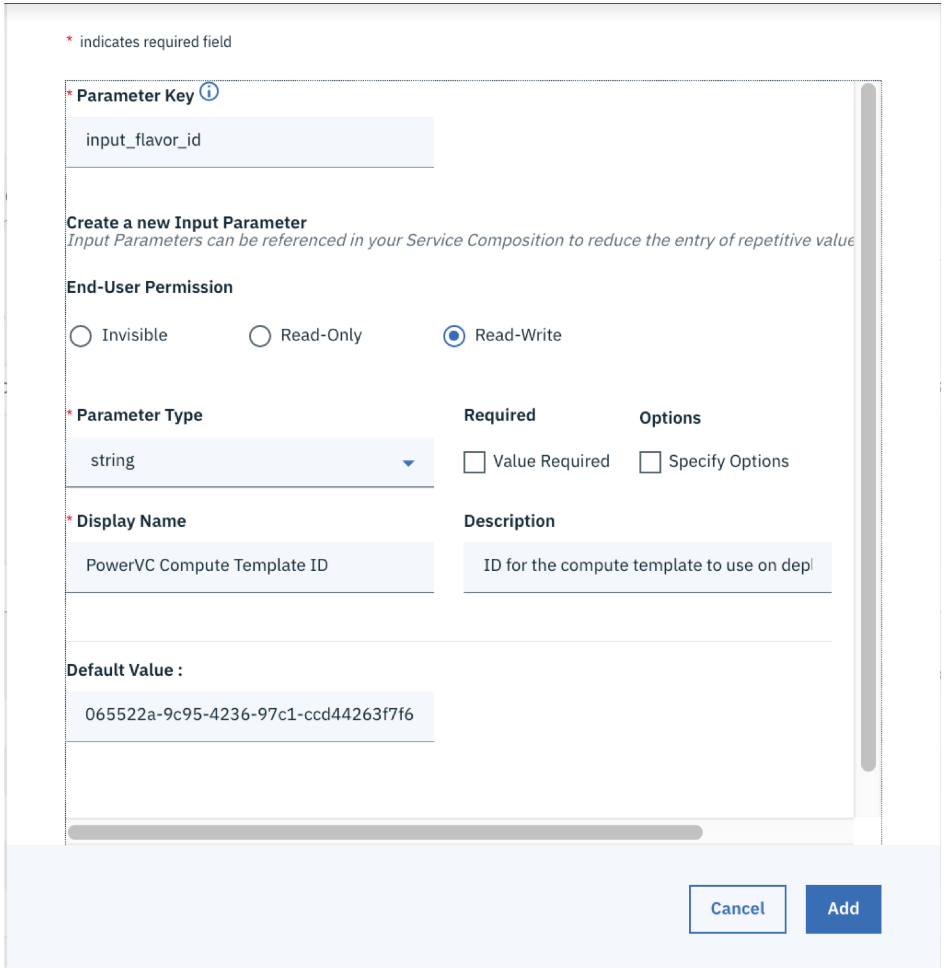
PARAMETER KEY	DEFAULT VALUE	END-USER PERMISSION	DISPLAY NAME	PARAMETER TYPE

- Click on the “Parameters” tab

- There are three sections
  - Input (User Defined)
  - Activity (From Template)
  - Output (User Defined)

CAM Service Configuration & Use

Create New Service



* indicates required field

* **Parameter Key** ⓘ

input_flavor_id

Create a new Input Parameter

Input Parameters can be referenced in your Service Composition to reduce the entry of repetitive value

End-User Permission

○ Invisible ○ Read-Only ● Read-Write

* **Parameter Type**: string

Required: □ Value Required

Options: □ Specify Options

* **Display Name**: PowerVC Compute Template ID

Description: ID for the compute template to use on depl

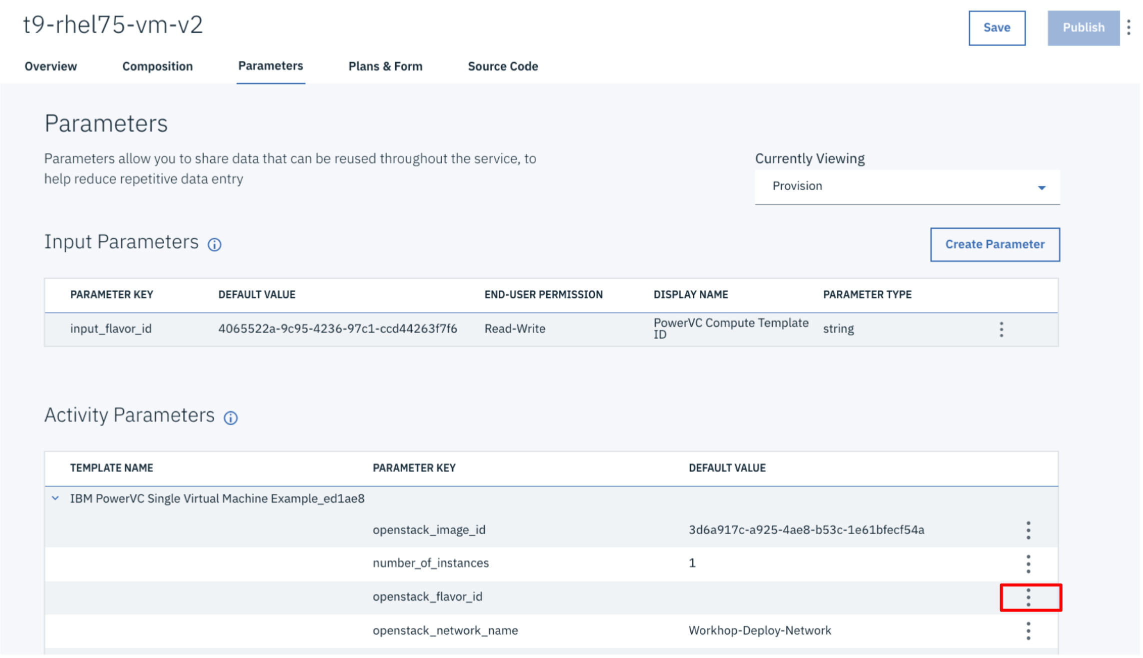
Default Value : 065522a-9c95-4236-97c1-ccd44263f7f6

- We will create a service input variable named input_flavor_id to pass into the CAM template

- Characteristics
  - Read-Write
  - String Type
  - Display Name
  - Description (for hover)
  - Default Value (used PVC ID for Tiny Compute Size)

CAM Service Configuration & Use

Create New Service



t9-rhel75-vm-v2

Parameters

Parameters allow you to share data that can be reused throughout the service, to help reduce repetitive data entry

Currently Viewing: Provision

Input Parameters

PARAMETER KEY	DEFAULT VALUE	END-USER PERMISSION	DISPLAY NAME	PARAMETER TYPE
input_flavor_id	4065522a-9c95-4236-97c1-ccd44263f7f6	Read-Write	PowerVC Compute Template ID	string

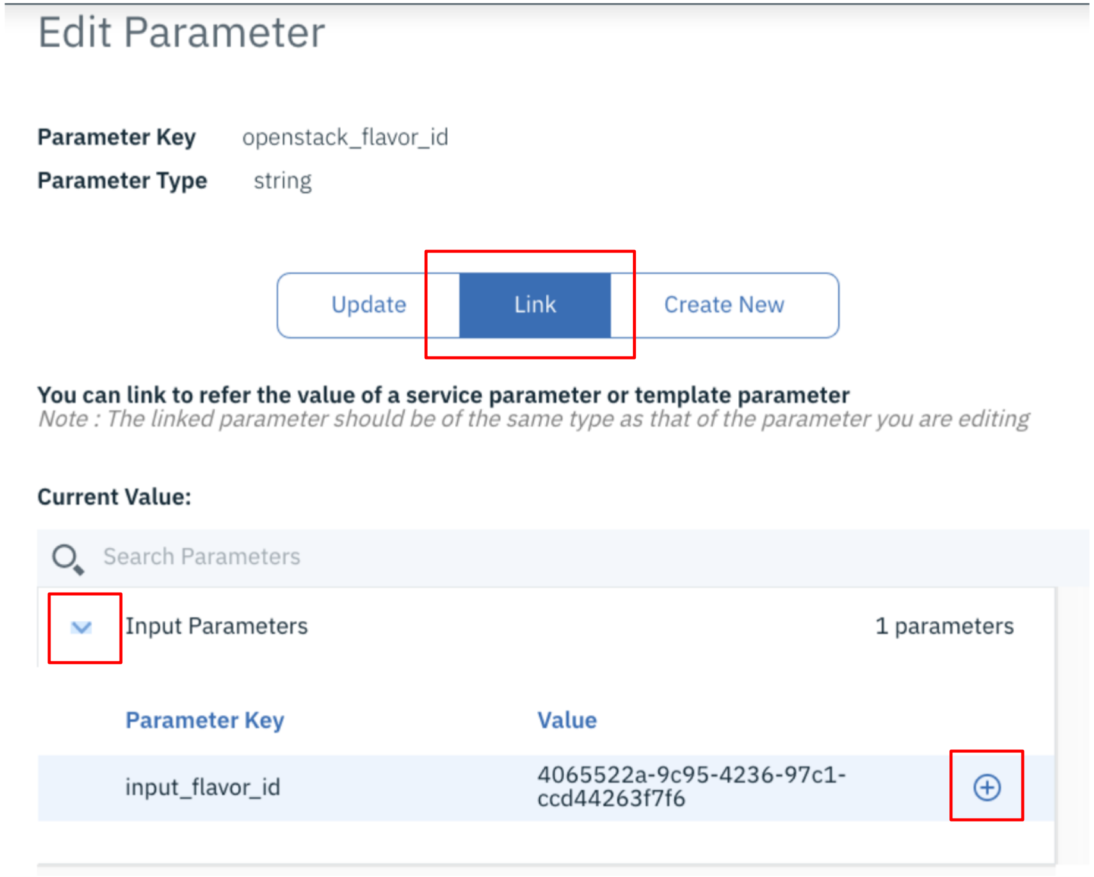
Activity Parameters

TEMPLATE NAME	PARAMETER KEY	DEFAULT VALUE
IBM PowerVC Single Virtual Machine Example_ed1ae8		
	openstack_image_id	3d6a917c-a925-4ae8-b53c-1e61bfecf54a
	number_of_instances	1
	openstack_flavor_id	
	openstack_network_name	Workhop-Deploy-Network

- Now we will link our new Input Parameter to the associated Activity Parameter
- Expand the Activity Parameters
- Select “edit” from the right side menu of the Openstack_flavor_id row

CAM Service Configuration & Use

Create New Service



Edit Parameter

Parameter Key openstack_flavor_id

Parameter Type string

You can link to refer the value of a service parameter or template parameter
Note : The linked parameter should be of the same type as that of the parameter you are editing

Current Value:

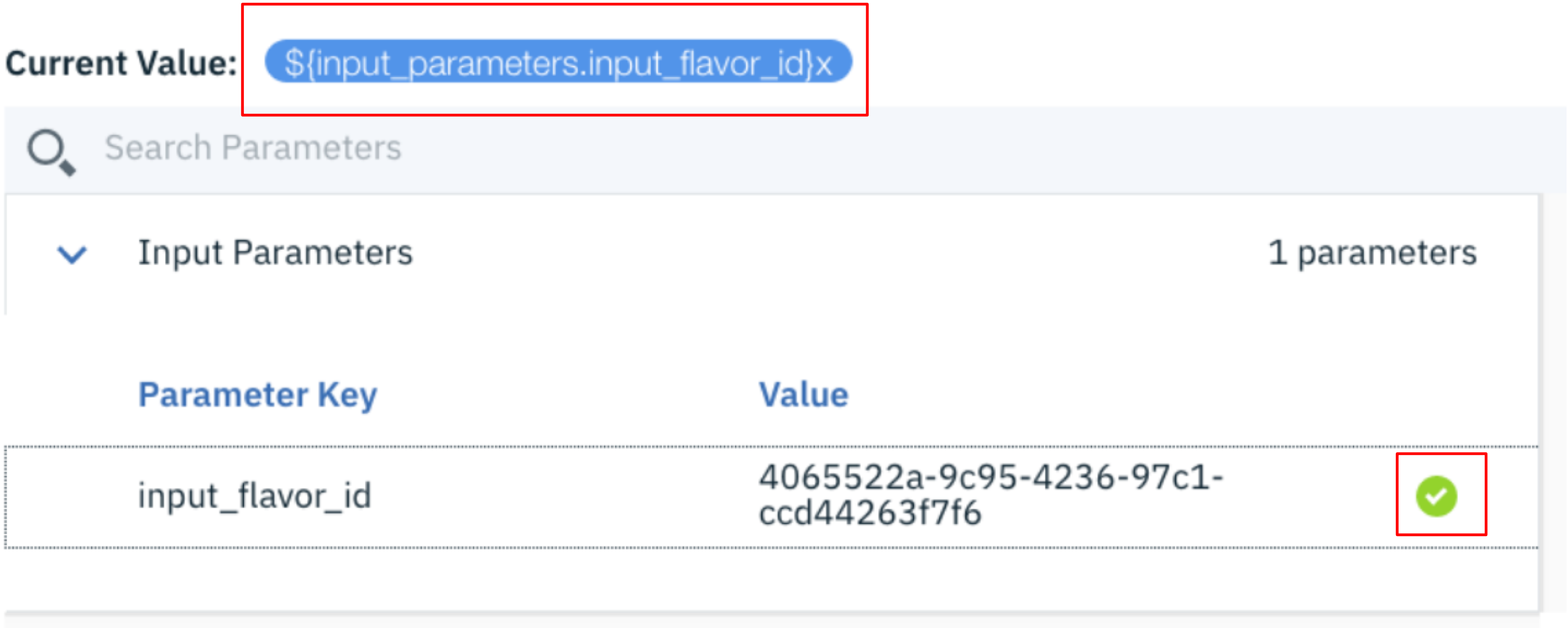
Input Parameters 1 parameters

Parameter Key	Value
input_flavor_id	4065522a-9c95-4236-97c1-ccd44263f7f6

- Select the “Link” tab
- Expand the Input Parameters section
- Click on the “+” sign to the right of input_flavor_id to link the two variables together

CAM Service Configuration & Use

Create New Service



Current Value: ${input_parameters.input_flavor_id}x

Search Parameters

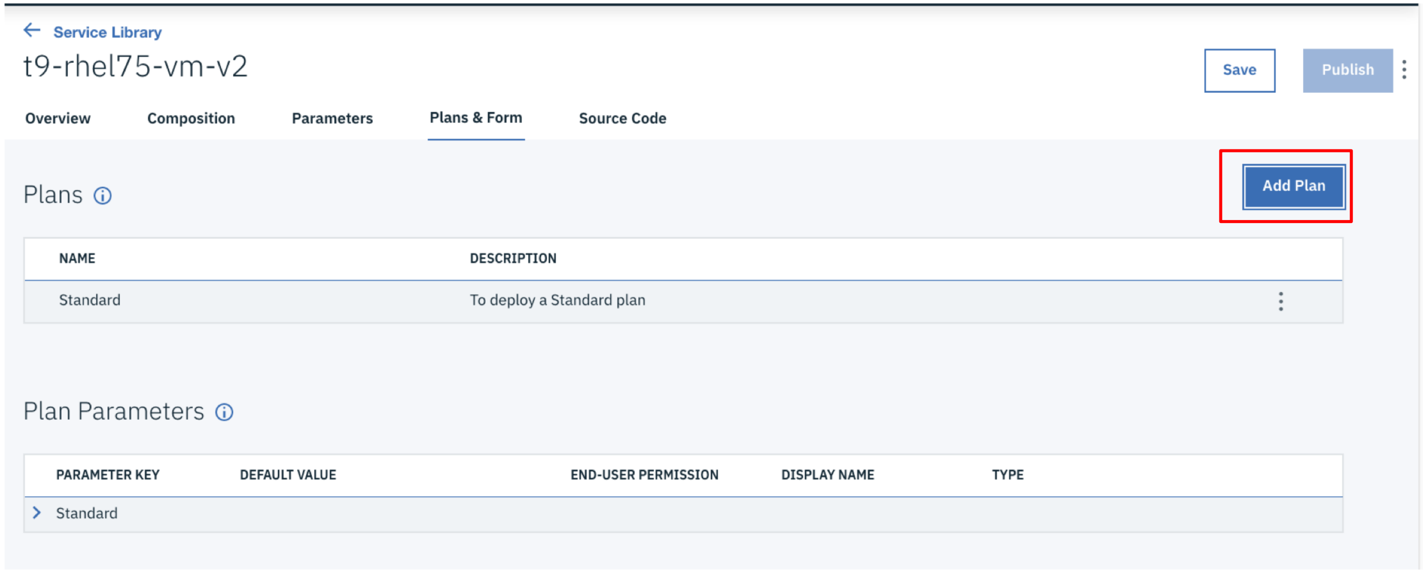
Input Parameters 1 parameters

Parameter Key	Value
input_flavor_id	4065522a-9c95-4236-97c1-ccd44263f7f6 ✓

Status after the two variables have been linked

CAM Service Configuration & Use

Create New Service



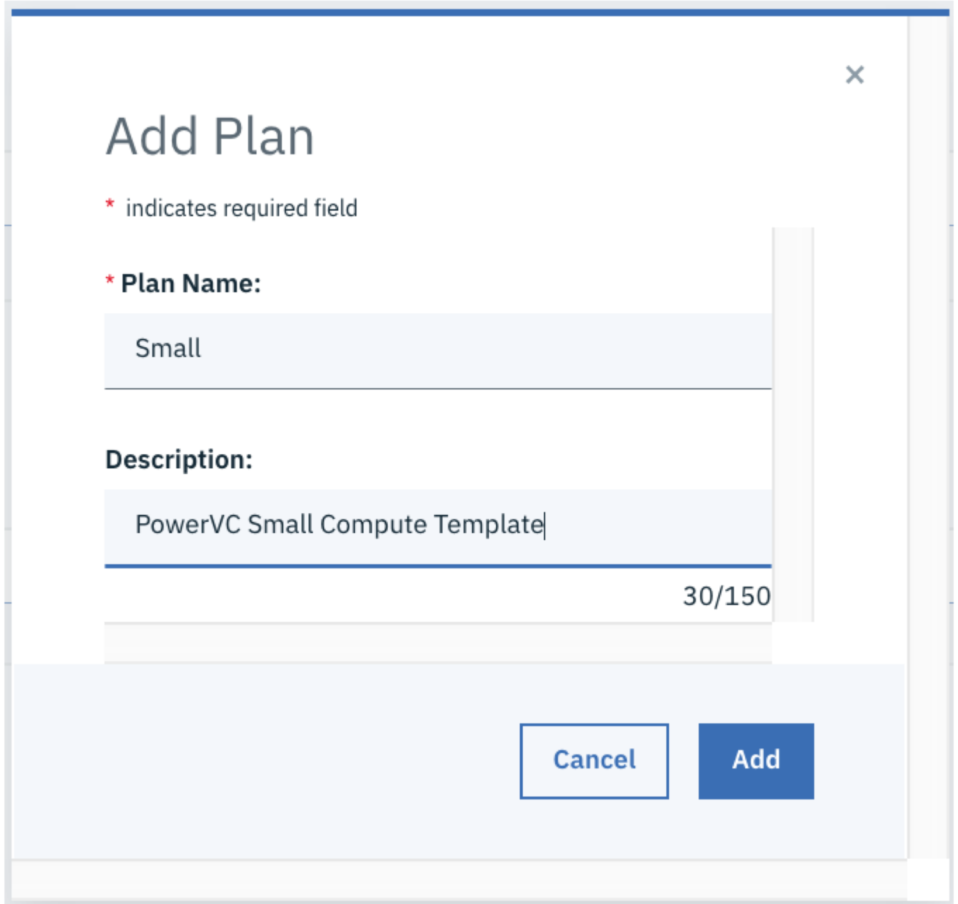
NAME	DESCRIPTION
Standard	To deploy a Standard plan

PARAMETER KEY	DEFAULT VALUE	END-USER PERMISSION	DISPLAY NAME	TYPE
› Standard				

You get a ”Standard” plan by default, but let’s add another “Small” Plan and modify it’s input_flavor_id to be the PowerVC Small Compute Template.

CAM Service Configuration & Use

Create New Service



Add Plan

* indicates required field

* **Plan Name:** Small

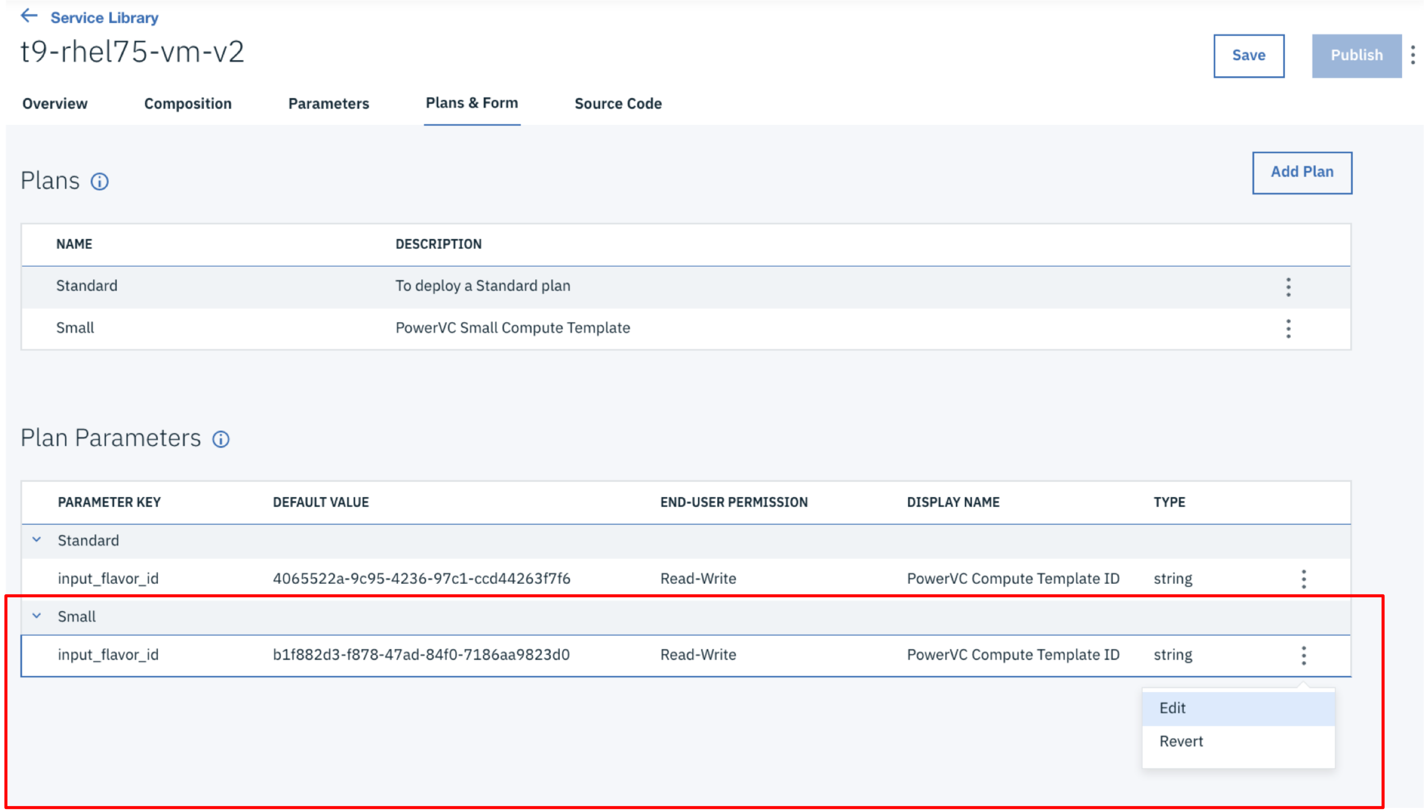
Description: PowerVC Small Compute Template

30/150

Add "Small" Plan with a Description

CAM Service Configuration & Use

Create New Service



t9-rhel75-vm-v2

Plans

NAME	DESCRIPTION
Standard	To deploy a Standard plan
Small	PowerVC Small Compute Template

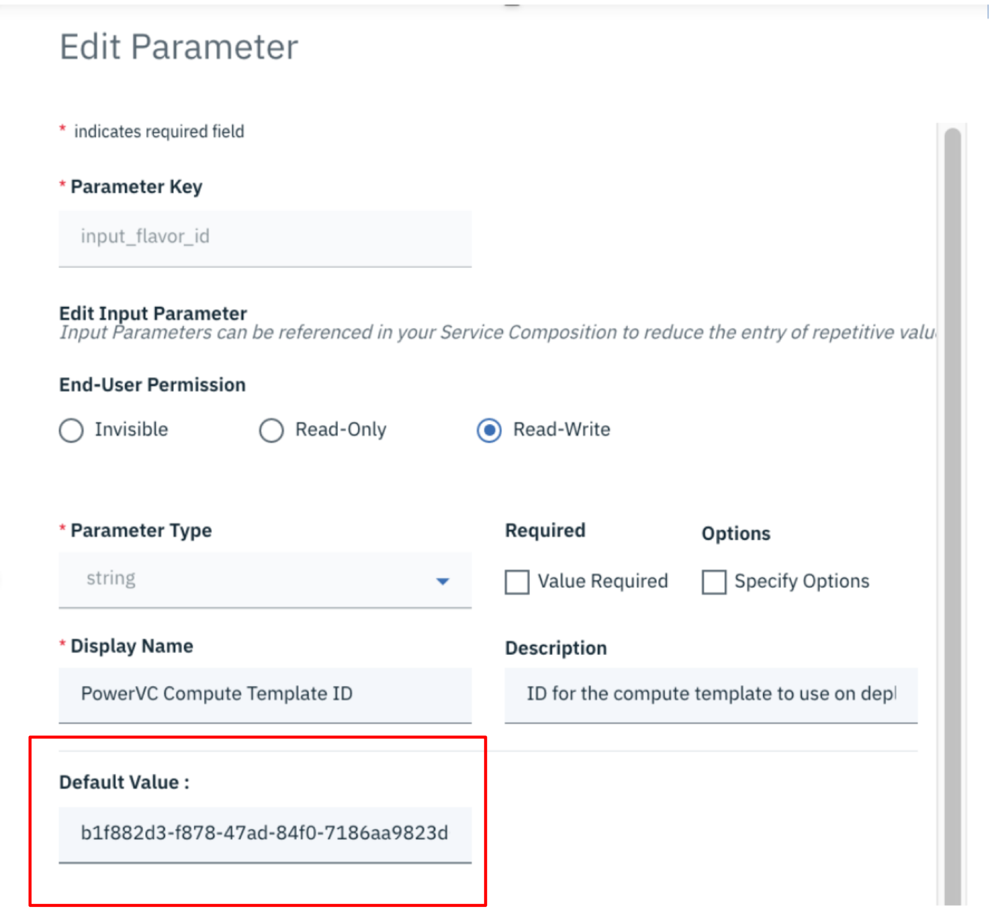
Plan Parameters

PARAMETER KEY	DEFAULT VALUE	END-USER PERMISSION	DISPLAY NAME	TYPE
Standard				
input_flavor_id	4065522a-9c95-4236-97c1-ccd44263f7f6	Read-Write	PowerVC Compute Template ID	string
Small				
input_flavor_id	b1f882d3-f878-47ad-84f0-7186aa9823d0	Read-Write	PowerVC Compute Template ID	string

Edit the input_flavor_id of the “Small” plan

CAM Service Configuration & Use

Create New Service



Edit Parameter

* indicates required field

* **Parameter Key**

input_flavor_id

Edit Input Parameter

Input Parameters can be referenced in your Service Composition to reduce the entry of repetitive valu

End-User Permission

○ Invisible ○ Read-Only ● Read-Write

* **Parameter Type**

string

Required

□ Value Required

Options

□ Specify Options

* **Display Name**

PowerVC Compute Template ID

Description

ID for the compute template to use on depl

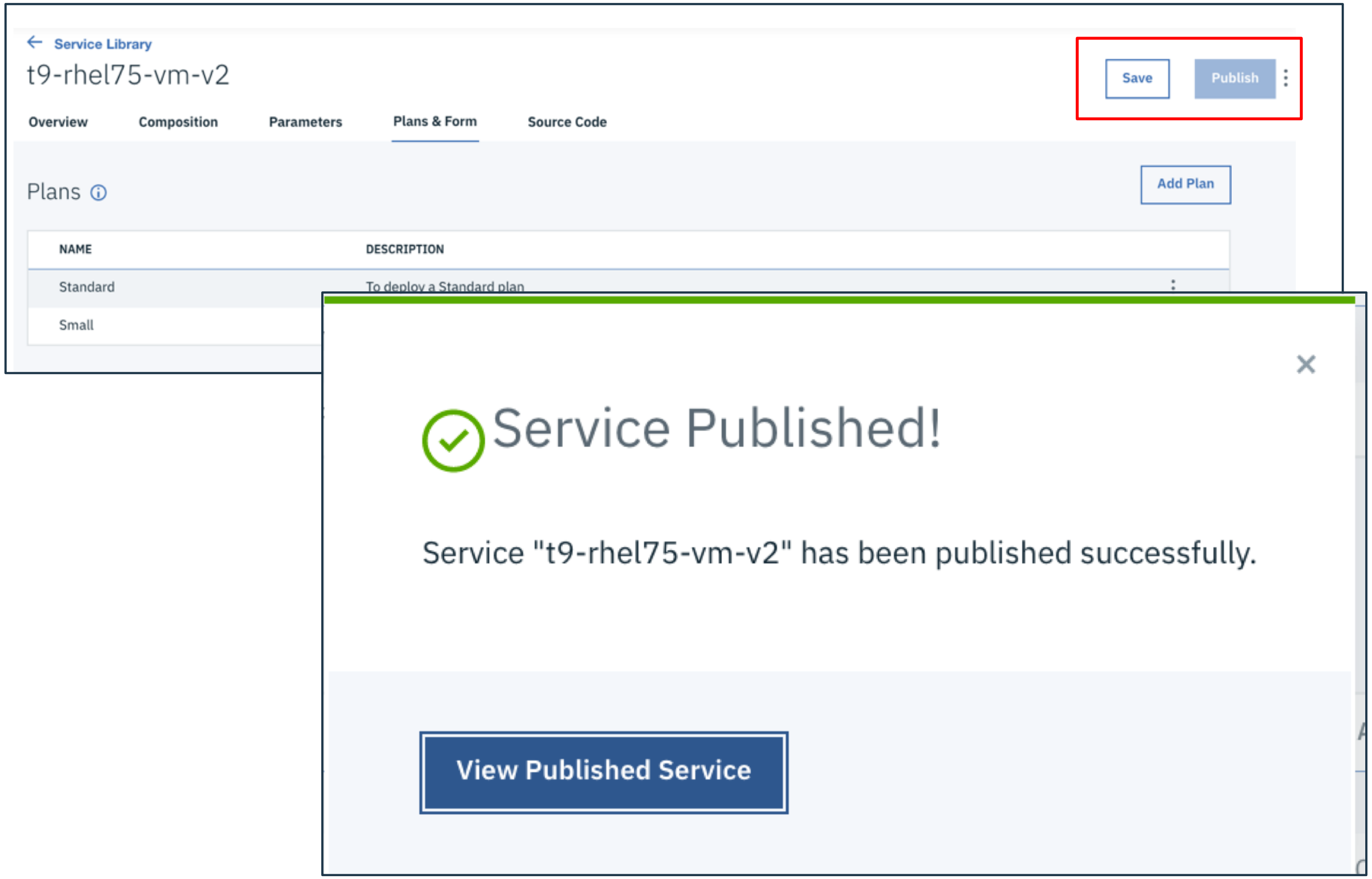
Default Value :

b1f882d3-f878-47ad-84f0-7186aa9823d

Change the default value to the PowerVC Small Compute Template Openstack ID and Save.

CAM Service Configuration & Use

Publish New Service



NAME	DESCRIPTION
Standard	To deploy a Standard plan
Small	

Service Published!

Service "t9-rhel75-vm-v2" has been published successfully.

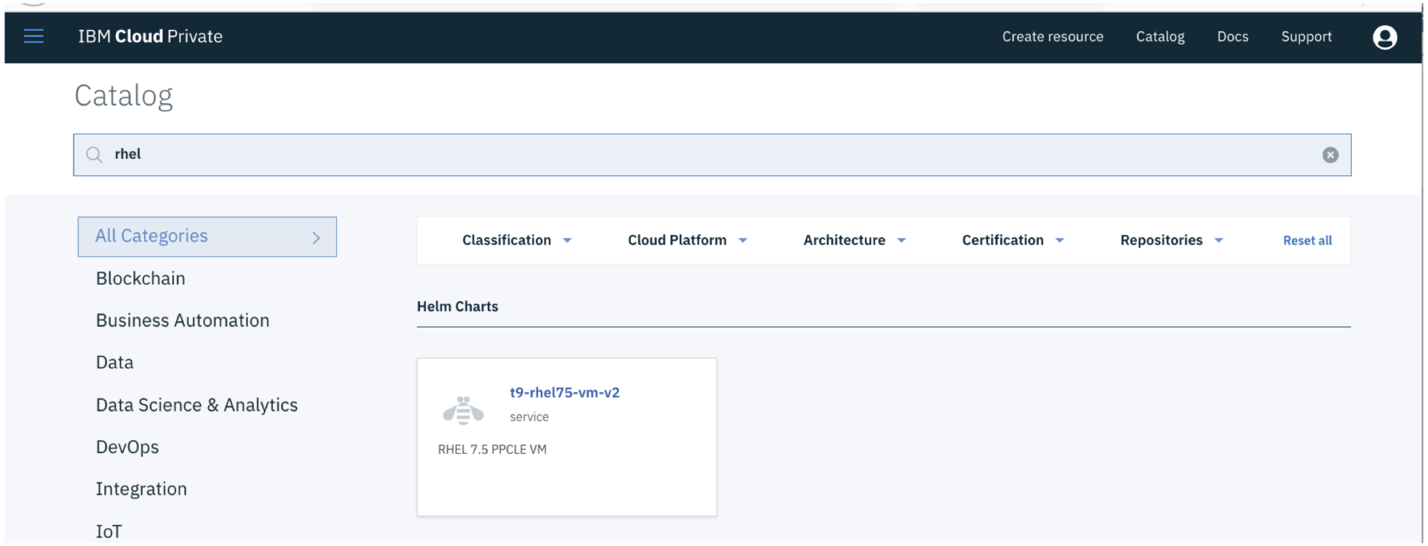
Now save the service, and then click on “Publish” to the ICP Catalog

Note – Once a service is published, you **cannot re-use it’s name** even if you retire the service; thus the suggestion to add –v# for version in the name. This is planned to be fixed in a future release

Although not shown here you can test a service deploy from within CAM prior to publishing

CAM Service Configuration & Use

Publish New Service

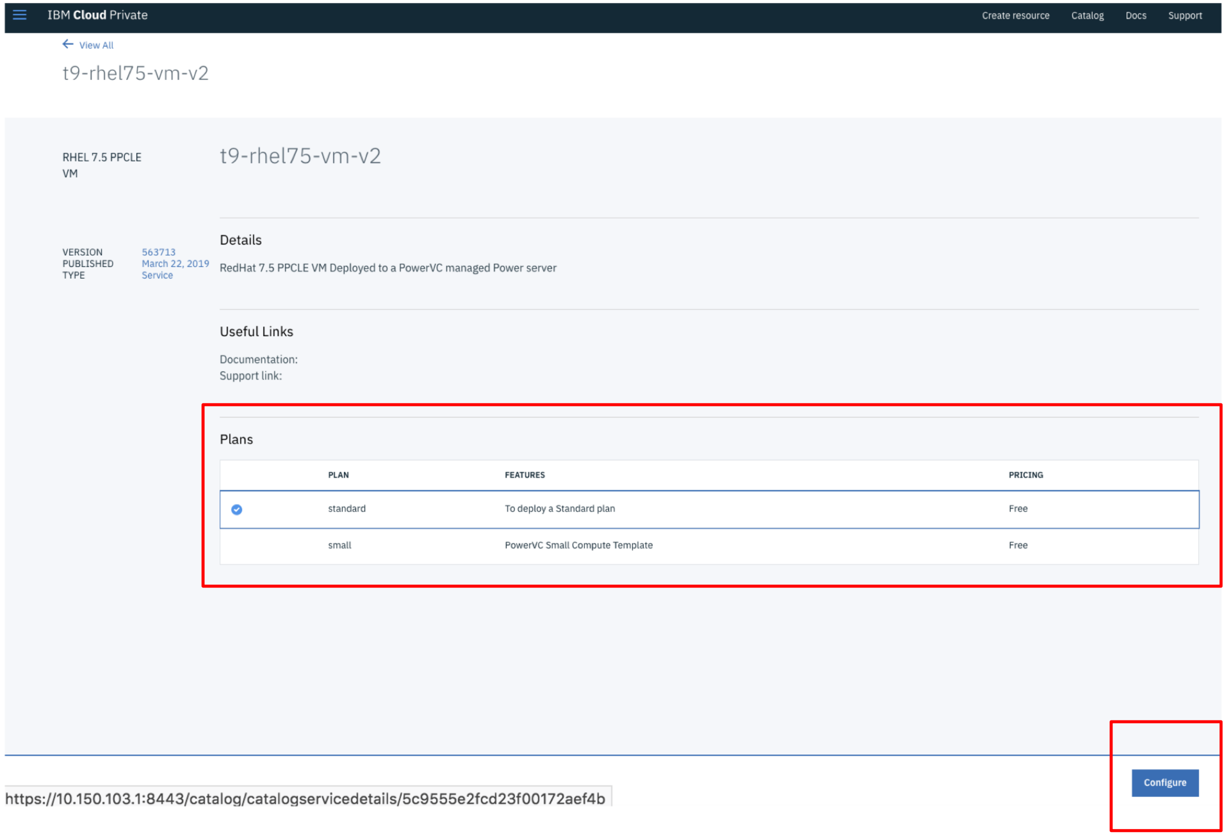


The new service should now be available to use from the ICP Catalog

If it is not immediately available, you may want to try Manage -> Helm Repositories -> Synchronize in ICP

CAM Service Configuration & Use

Deploy the New Service from ICP



IBM Cloud Private | Create resource | Catalog | Docs | Support

← View All

t9-rhel75-vm-v2

RHEL 7.5 PPCLE VM

t9-rhel75-vm-v2

VERSION	563713
PUBLISHED	March 22, 2019
TYPE	Service

Details

RedHat 7.5 PPCLE VM Deployed to a PowerVC managed Power server

Useful Links

Documentation:
Support link:

Plans

	PLAN	FEATURES	PRICING
●	standard	To deploy a Standard plan	Free
	small	PowerVC Small Compute Template	Free

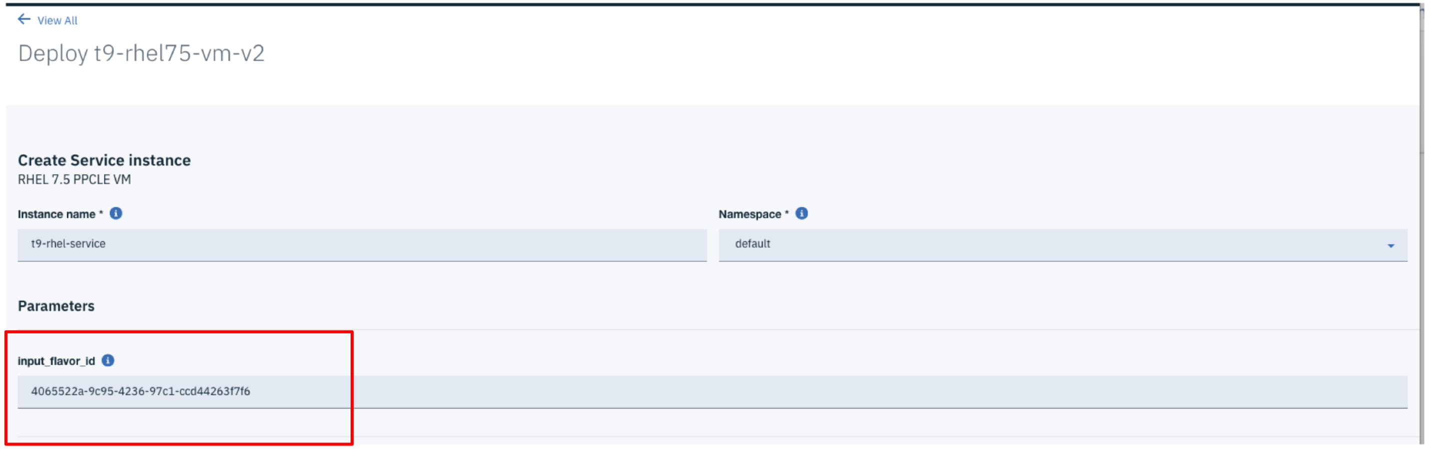
Configure

https://10.150.103.1:8443/catalog/catalogservicedetails/5c9555e2fcd23f00172aef4b

- Click on the new service in the ICP Catalog
- Select the desired Plan
- And click on "Configure"

CAM Service Configuration & Use

Deploy the New Service from ICP



← View All

Deploy t9-rhel75-vm-v2

Create Service instance

RHEL 7.5 PPCLE VM

Instance name * ⓘ: t9-rhel-service

Namespace * ⓘ: default

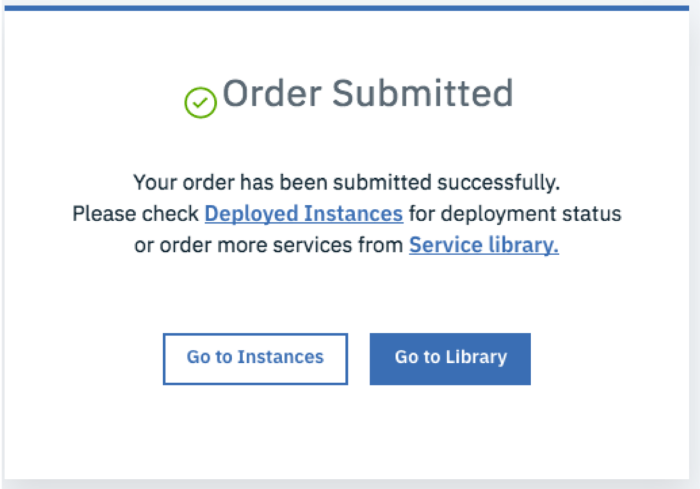
Parameters

input_flavor_id ⓘ: 4065522a-9c95-4236-97c1-ccd44263f7f6

- Provide a new service name for the deployment
- Choose your desired namespace for deployment
- Input Flavor ID should contain the appropriate default value for the plans compute template
- Click on Submit

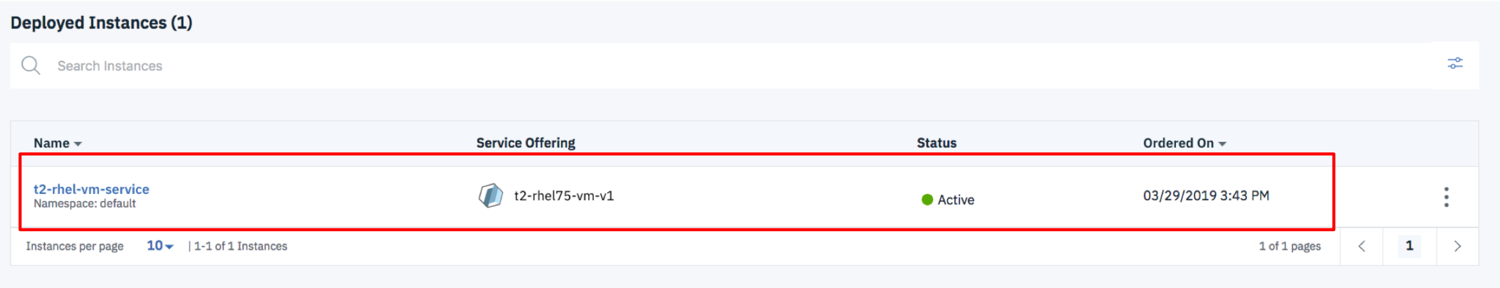
CAM Service Configuration & Use

Deploy the New Service from ICP



Order Submitted

Your order has been submitted successfully.
Please check Deployed Instances for deployment status
or order more services from Service library.



Deployed Instances (1)

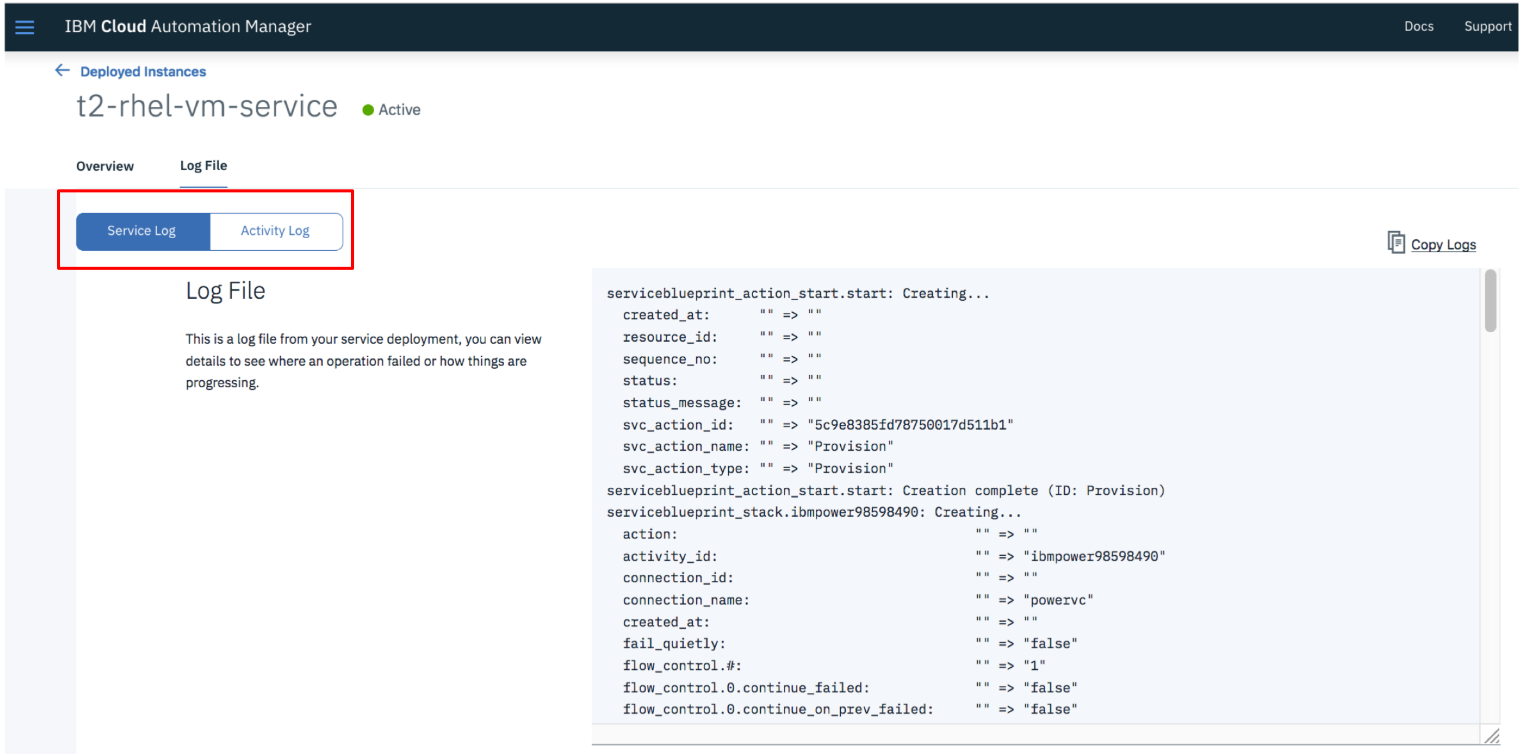
Name	Service Offering	Status	Ordered On
t2-rhel-vm-service Namespace: default	t2-rhel75-vm-v1	● Active	03/29/2019 3:43 PM

Instances per page 10 | 1-1 of 1 Instances — 1 of 1 pages — 1

- Order Confirmation
- “Go to Instances” navigate back to CAM to see details
- Once deployment completes you will have active status
- Details are viewed by clicking on the service name, then viewing logs.

CAM Service Configuration & Use

Deploy the New Service from ICP



Log File

This is a log file from your service deployment, you can view details to see where an operation failed or how things are progressing.

```
serviceblueprint_action_start.start: Creating...
  created_at:      "" => ""
  resource_id:     "" => ""
  sequence_no:     "" => ""
  status:          "" => ""
  status_message:  "" => ""
  svc_action_id:   "" => "5c9e8385fd78750017d511b1"
  svc_action_name: "" => "Provision"
  svc_action_type: "" => "Provision"
serviceblueprint_action_start.start: Creation complete (ID: Provision)
serviceblueprint_stack.ibmpower98598490: Creating...
  action:                                    "" => ""
  activity_id:                               "" => "ibmpower98598490"
  connection_id:                             "" => ""
  connection_name:                           "" => "powervc"
  created_at:                                "" => ""
  fail_quietly:                              "" => "false"
  flow_control.#:                            "" => "1"
  flow_control.0.continue_failed:            "" => "false"
  flow_control.0.continue_on_prev_failed:    "" => "false"
```

For a service you will have both ”Service” and ”Activity” logs