Live Tour of IBM Cloud Infrastructure Center

Michael Snihur
IBM Cloud Infrastructure Center
snihurm@us.ibm.com

IBM Cloud Infrastructure Center

Infrastructure as a Service on IBM Z and LinuxONE

- Lifecycle management for z/VM and KVM virtual infrastructure
- Automation of deployed services on Z
- OpenShift UPI using Ansible
- Integration into hybrid cloud models
- Self-service portal for end user provisioning
- On-boarding management of existing z/VM instances

IBM Cloud Infrastructure Center 1.2.0
z/VM pre-requisites

Hardware platforms:

- IBM z16™ (all models)
- IBM z15™ (all models)
- IBM z14® (all models)
- IBM z13® and IBM z13s®
- IBM® LinuxONE 4 (all models)
- IBM® LinuxONE III (all models)
- IBM® LinuxONE II (all models)
- IBM® LinuxONE I (all models)

Environment:

z/VM 7.2 or 7.3

SMAPI

Directory Manager

VSWITCH

External Security Manager

Template profile

ECKD/FBA diskpool or Storage through FCP (DS8K, IBM Storage FlashSystem)

Management Node:

RHEL 8.6 or 8.8
~0.5 IFL, 16 GB RAM, 40 GB disk

Compute Node:

RHEL 8.6 or 8.8
~0.2 IFL, 8 GB RAM, 80 GB disk

Live Tour of IBM Cloud Infrastructure Center

- IBM Cloud Infrastructure Center dashboard
  - Add host, add network, add image, deploy virtual machine
- Using terraform to deploy virtual machines
  - Infrastructure as code
- Openshift deployment using UPI Ansible Playbooks
  - Ansible playbook deployed using Jenkins server
- Monitoring and chargeback considerations
  - Prometheus, node exporter to Grafana

IBM Cloud Infrastructure Center

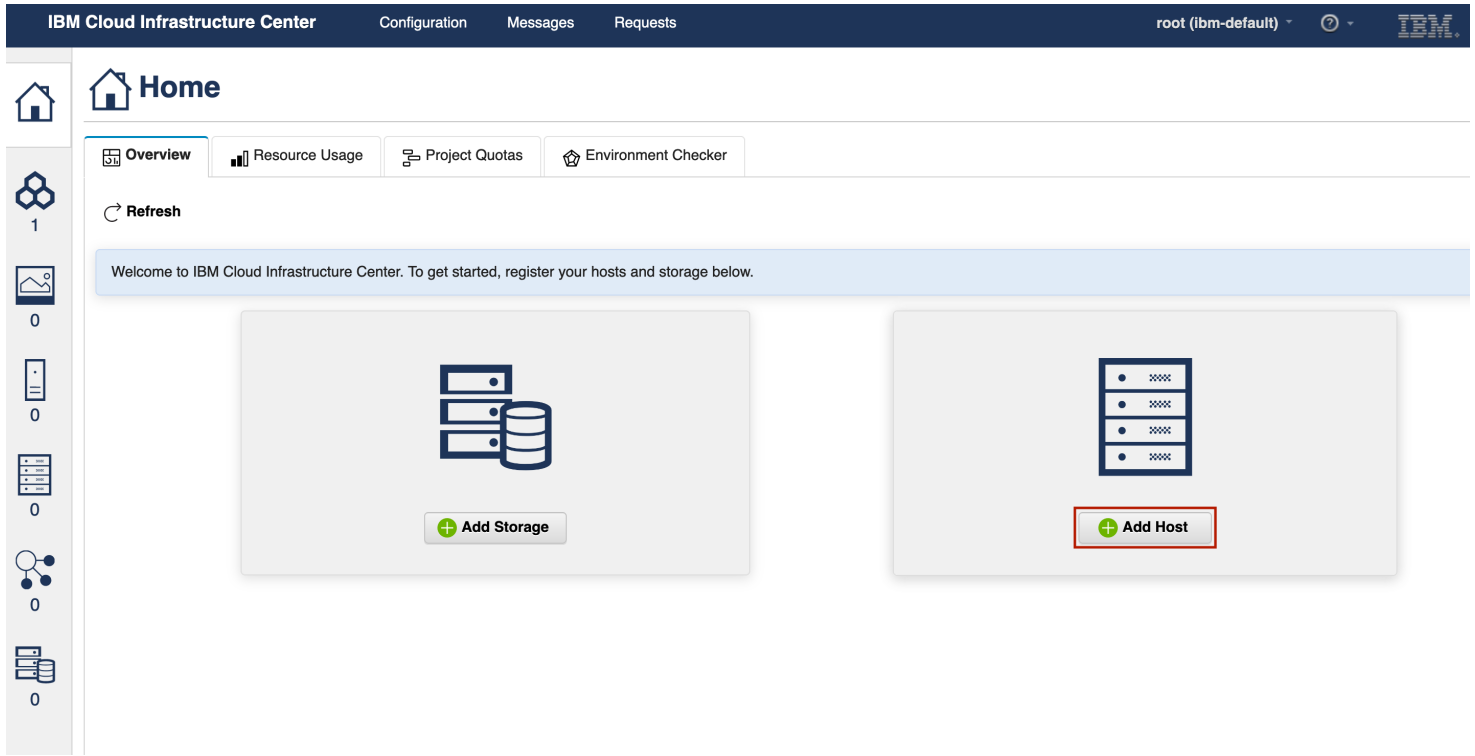
Setup and configure ICIC environment

- Add host through web interface
- Add flat network using web interface
- Add images using command line interface
- Deploy virtual machine

IBM Cloud Infrastructure Center

Setup and configure ICIC environment

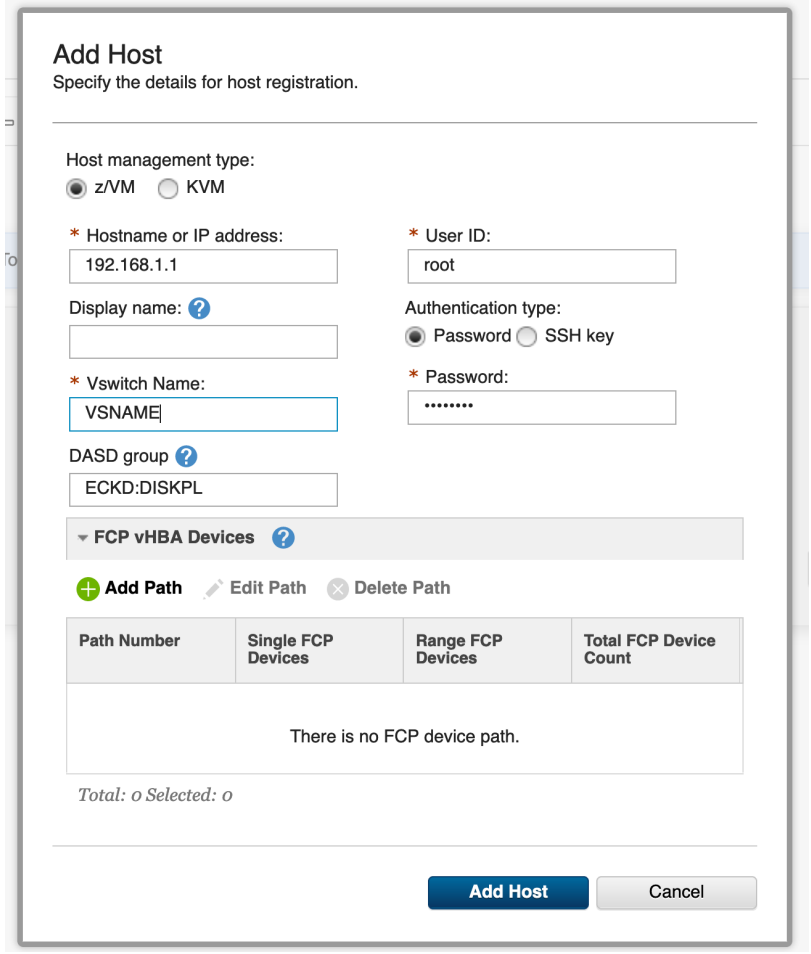
- Add host through web interface



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

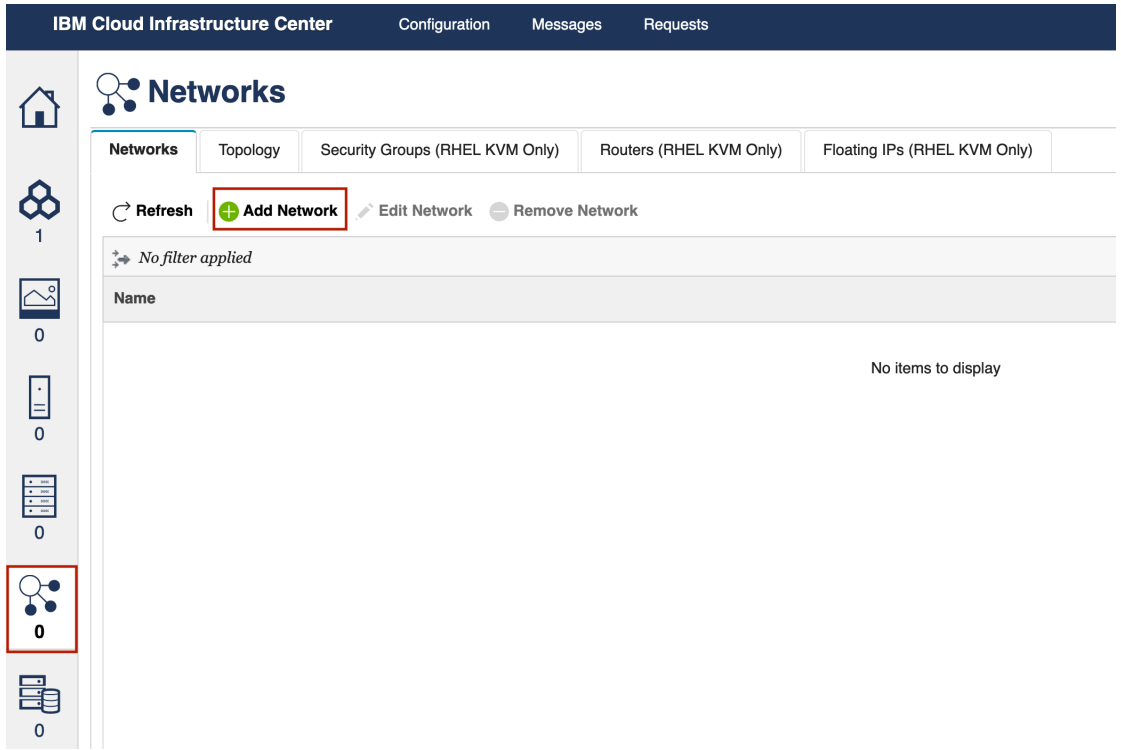
- Add host through web interface



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

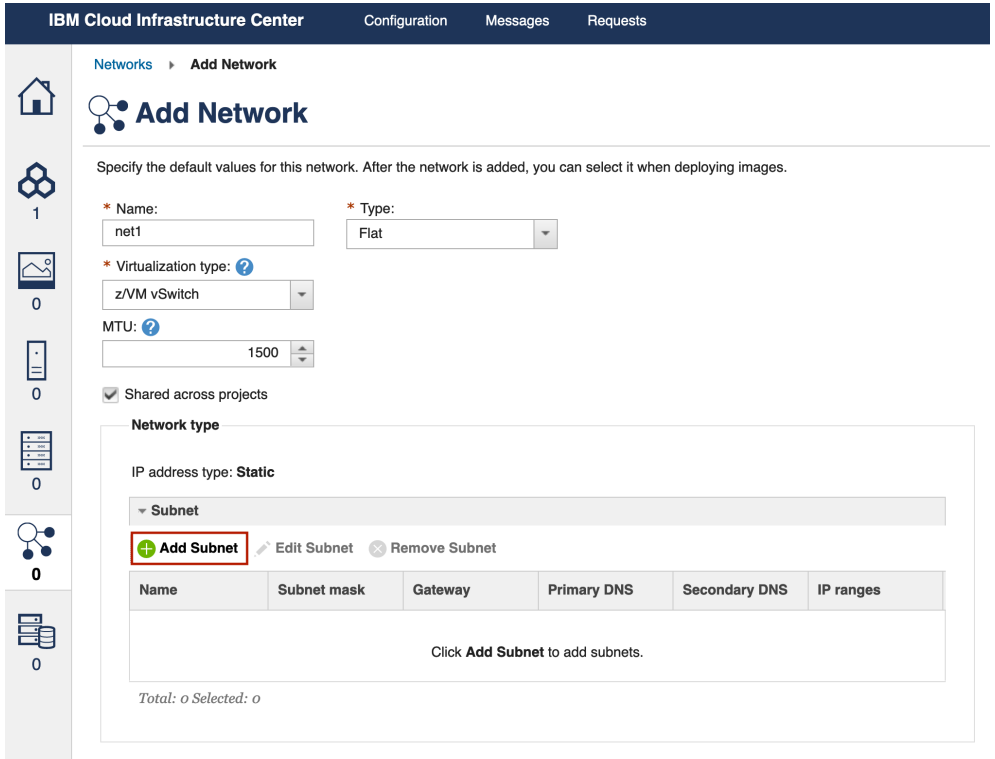
- Add network through web interface



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

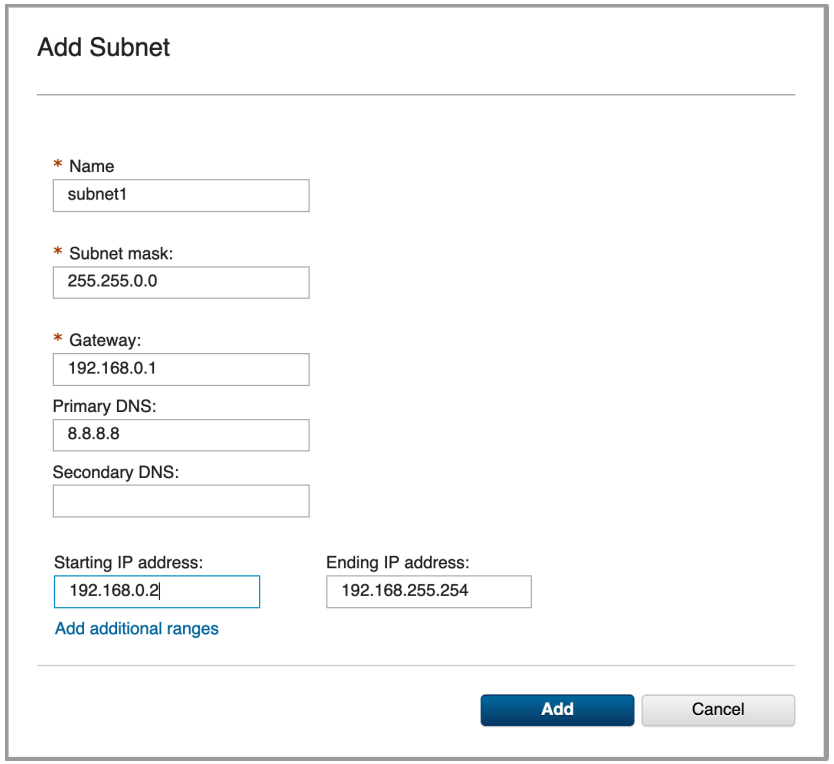
- Add network through web interface



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

- Add network through web interface



IBM Cloud Infrastructure Center

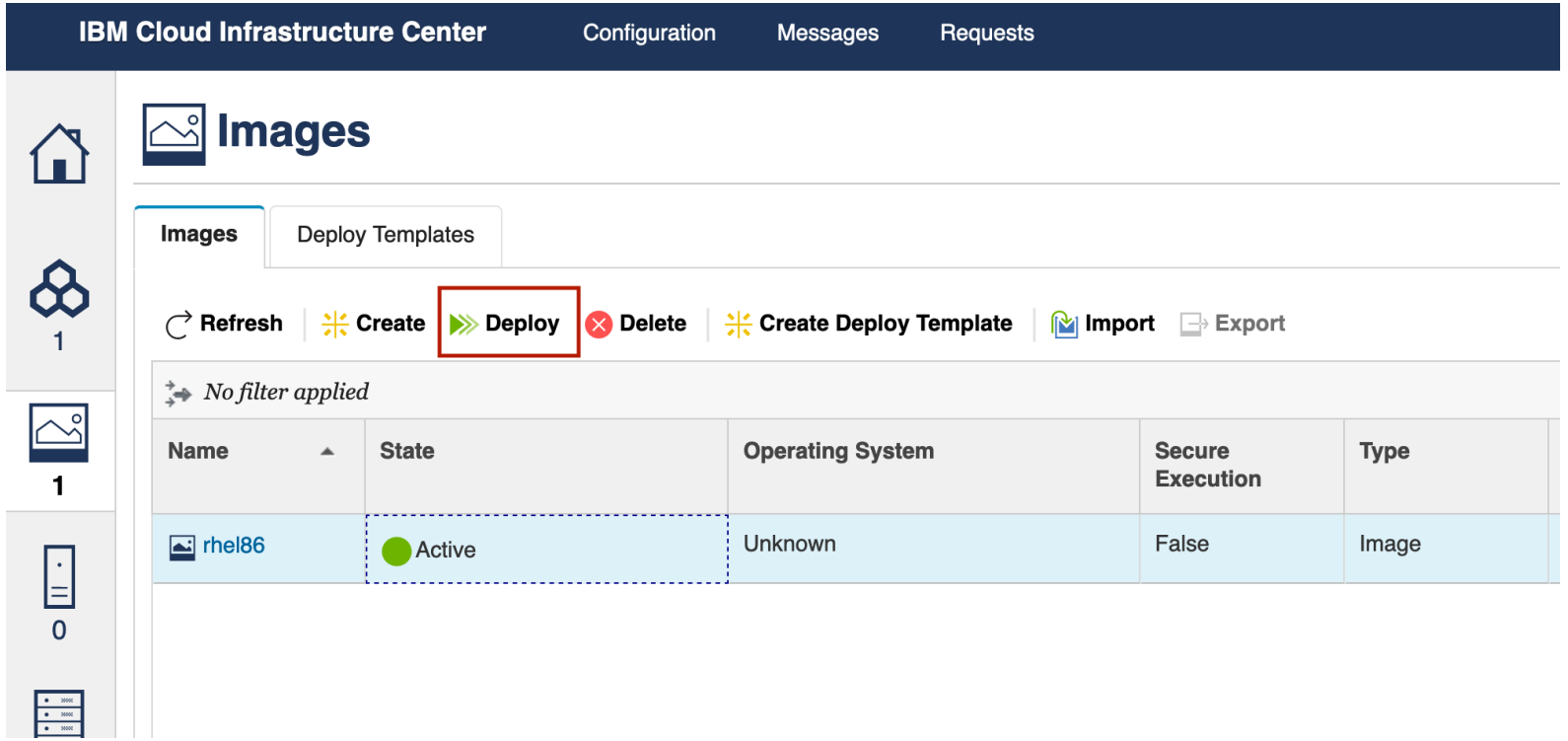
Setup and configure ICIC environment

- Add image using openstack CLI
  - `source /opt/ibm/icic/icicrc`
  - `openstack image create --disk-format=raw \`
    `--file=/root/images/rhel86_multipath_ext4_eckd.img rhel86`
  - `openstack openstack image set --property architecture=s390x \`
    `--property hypervisor_type=zvm --property os_distro=RHEL8.6 \`
    `--property disk_type=DASD <image-uuid>`

IBM Cloud Infrastructure Center

Setup and configure ICIC environment

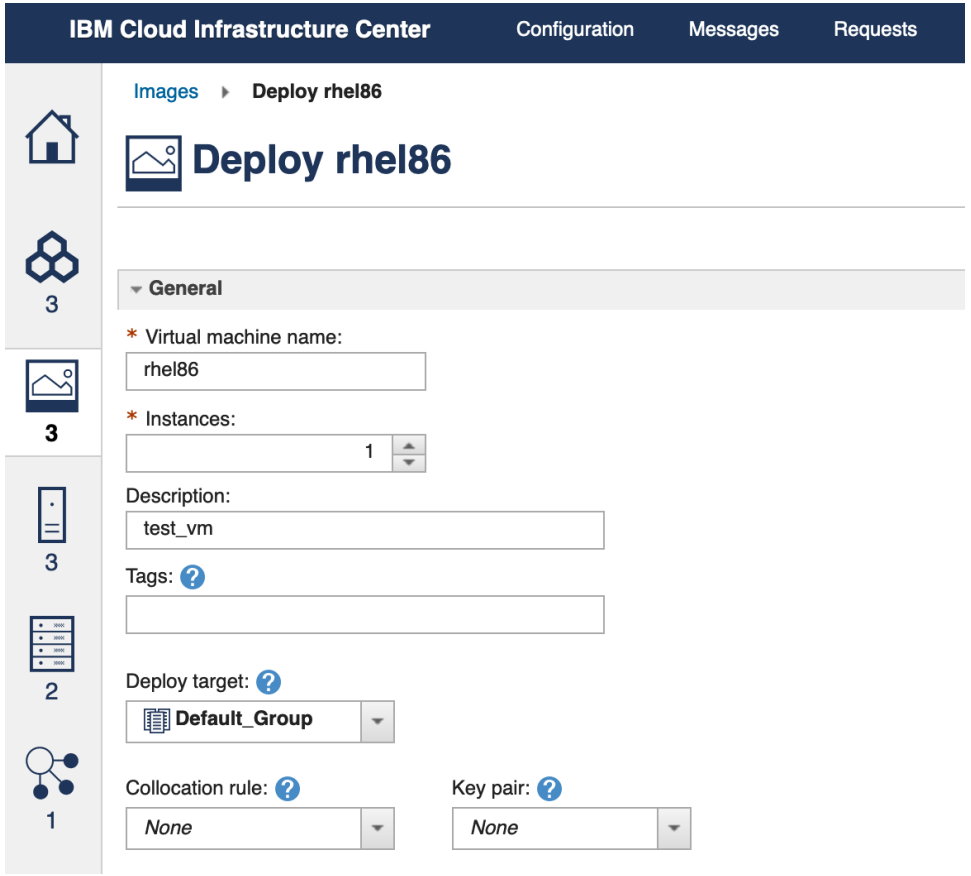
- Deploy virtual machine



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

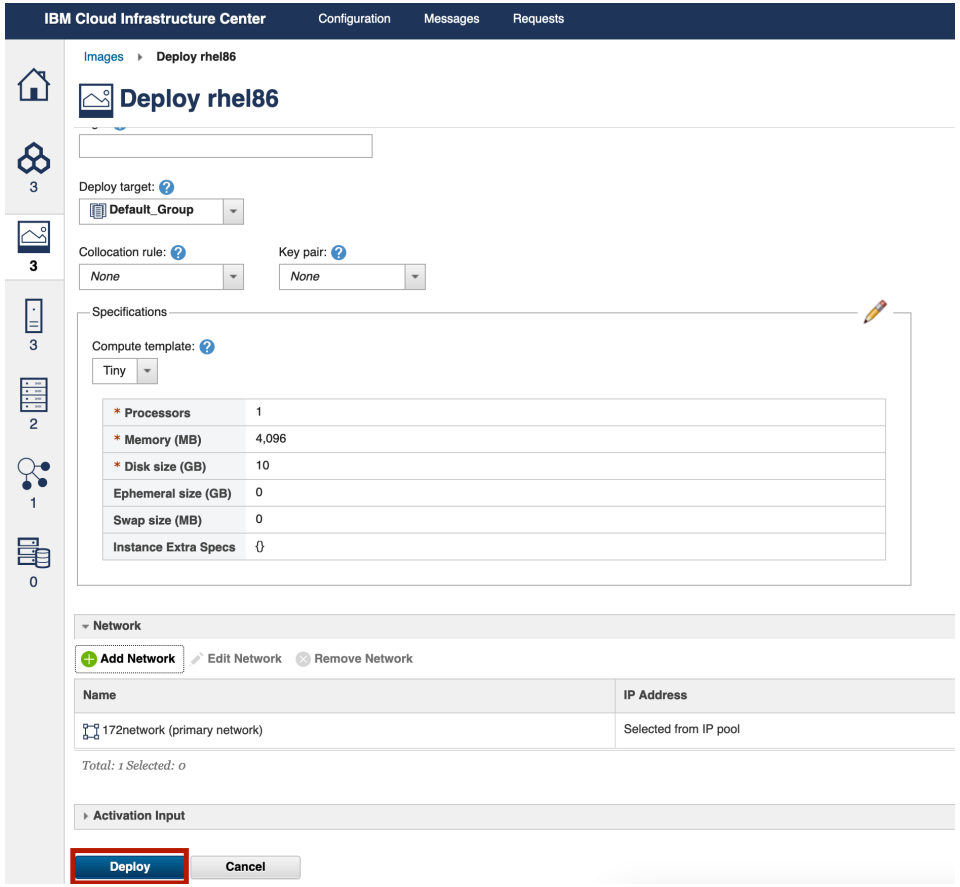
- Deploy virtual machine



IBM Cloud Infrastructure Center

Setup and configure ICIC environment

- Deploy virtual machine



IBM Cloud Infrastructure Center

Using terraform to deploy virtual machines

- Install terraform, install provider and add as a plugin
  - https://github.com/linux-on-ibm-z/docs/wiki/Building-Terraform
  - https://github.com/terraform-provider-openstack/terraform-provider-openstack
- Use terraform-provider-openstack to provision virtual machines
  - Make changes and apply
  - Destroy created resources

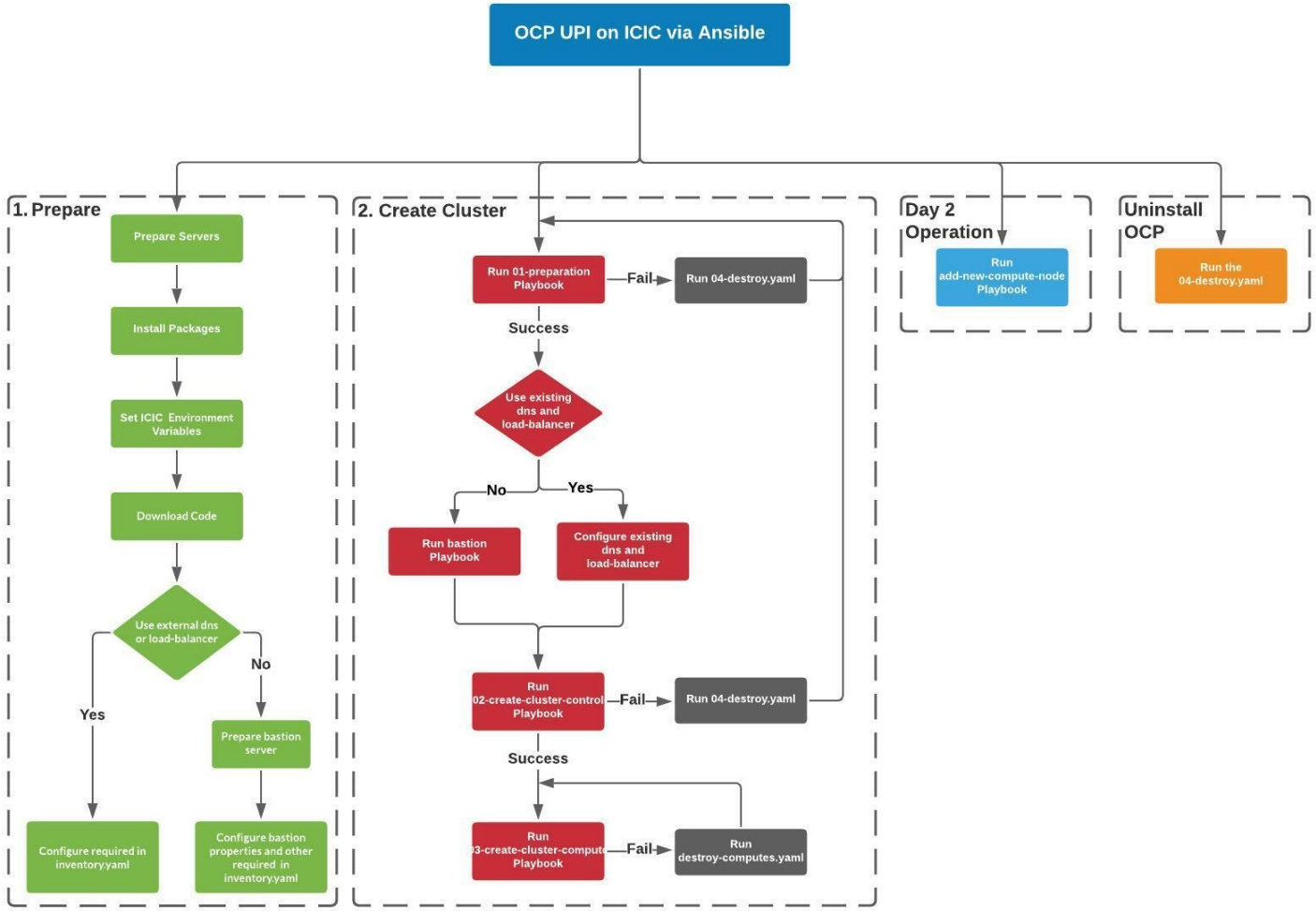
IBM Cloud Infrastructure Center

Openshift UPI ansible playbooks as part of pipeline

- Retrieve UPI ansible playbooks
  - https://github.com/IBM/z_ansible_collections_samples/tree/main/z_infra_provisioning/cloud_infra_center/ocp_upi
- Automation to run the playbooks with our custom inventory.yaml
  - Jenkins pipeline to call playbooks
- Destory the Openshift Cluster during failure or using cleanup job

IBM Cloud Infrastructure Center

Openshift UPI ansible playbooks as part of pipeline



IBM Cloud Infrastructure Center

Monitoring and chargeback

- Enable and start openstack telemetry services
- Use prometheus and node exporter into Grafana
- Connect openstack environment for chargeback based on allocation model

IBM Cloud Infrastructure Center

Monitoring and chargeback

- Enable openstack telemetry services

```
icic-config metering manage-service --enable ceilometer
icic-config metering manage-service --enable gnocchi
icic-config metering manage-service --enable panko
```

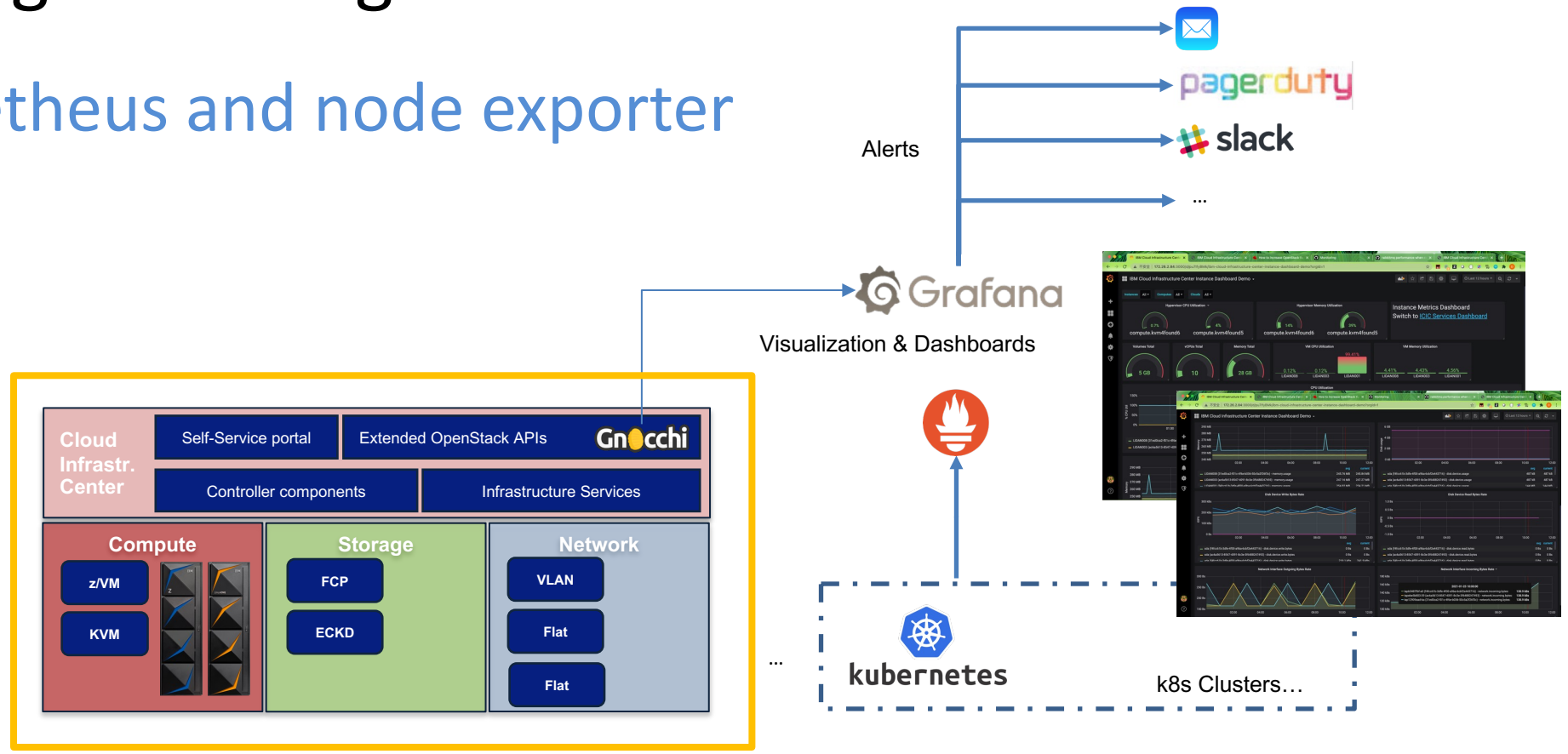
- Start services

```
icic-services start
```

IBM Cloud Infrastructure Center

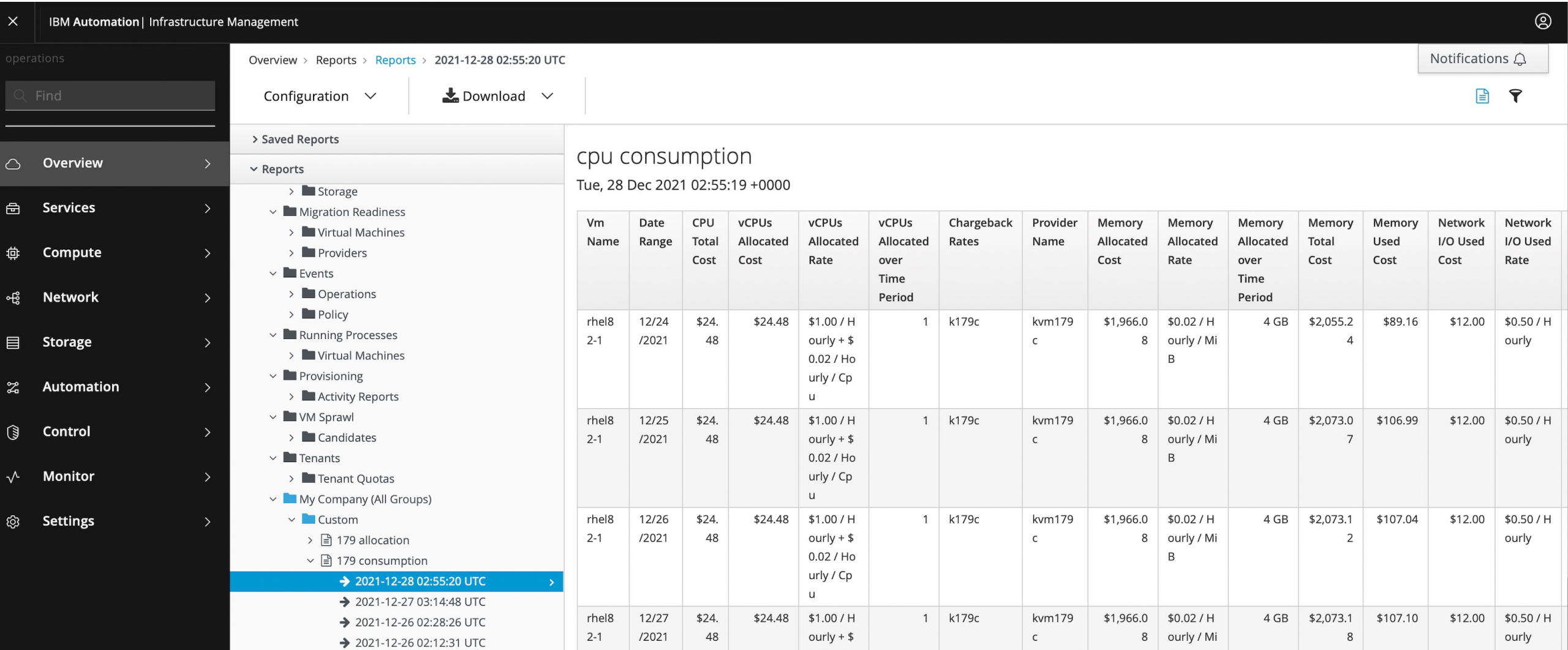
Monitoring and chargeback

- Prometheus and node exporter



IBM Cloud Infrastructure Center

Chargeback Report with IBM Automation



Vm Name	Date Range	CPU Total Cost	vCPUs Allocated Cost	vCPUs Allocated Rate	vCPUs Allocated over Time Period	Chargeback Rates	Provider Name	Memory Allocated Cost	Memory Allocated Rate	Memory Allocated over Time Period	Memory Total Cost	Memory Used Cost	Network I/O Used Cost	Network I/O Used Rate
rhel82-1	12/24/2021	$24.48	$24.48	$1.00 / Hourly + $0.02 / Hourly / Cpu	1	k179c	kvm179c	$1,966.08	$0.02 / Hourly / MiB	4 GB	$2,055.24	$89.16	$12.00	$0.50 / Hourly
rhel82-1	12/25/2021	$24.48	$24.48	$1.00 / Hourly + $0.02 / Hourly / Cpu	1	k179c	kvm179c	$1,966.08	$0.02 / Hourly / MiB	4 GB	$2,073.07	$106.99	$12.00	$0.50 / Hourly
rhel82-1	12/26/2021	$24.48	$24.48	$1.00 / Hourly + $0.02 / Hourly / Cpu	1	k179c	kvm179c	$1,966.08	$0.02 / Hourly / MiB	4 GB	$2,073.12	$107.04	$12.00	$0.50 / Hourly
rhel82-1	12/27/2021	$24.48	$24.48	$1.00 / Hourly + $	1	k179c	kvm179c	$1,966.08	$0.02 / Hourly / Mi	4 GB	$2,073.18	$107.10	$12.00	$0.50 / Hourly

Thank You

Michael Snihur
snihurm@us.ibm.com