

IBISCO Cloud **Naples**

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UNIONE EUROPEA
Fondo Europeo di Sviluppo Regionale



*Ministero dell'Università
e della Ricerca*



ICSC
Centro Nazionale di Ricerca in HPC,
Big Data and Quantum Computing



INFN
NAPOLI
Istituto Nazionale di Fisica Nucleare
Sezione di Napoli

OpenStack - A collection of interacting softwares



Nova: Manages the creation and lifecycle of VMs.



Neutron: Provides networking services for VMs.



Keystone: Handles user authentication and authorization.



Placement: Manages resource allocation and usage.



Glance: Stores and manages virtual machine images.



Cinder: Provides block storage services for VMs.



Swift: Offers object storage for unstructured data.



Designate: Provides DNS and DHCP for VMs.



Ironic: Performs Bare Metal provisioning



Horizon: Dashboard, provides an user interface to Openstack services



Manila: provides coordinated access to shared or distributed file systems



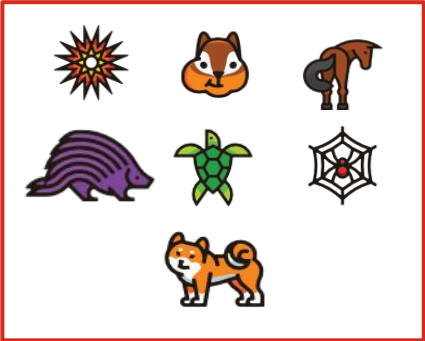
Ceilometer: performs metric collection;



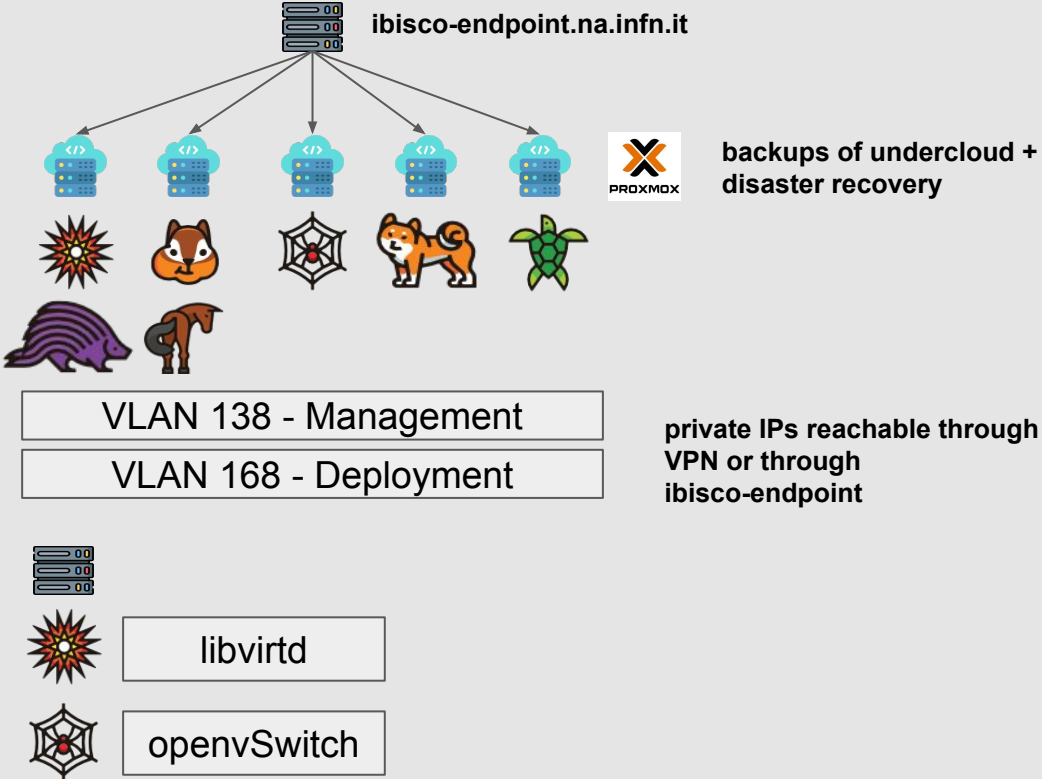
stores and transforms metrics;

Ibisco Cloud Naples - Distribution of Services

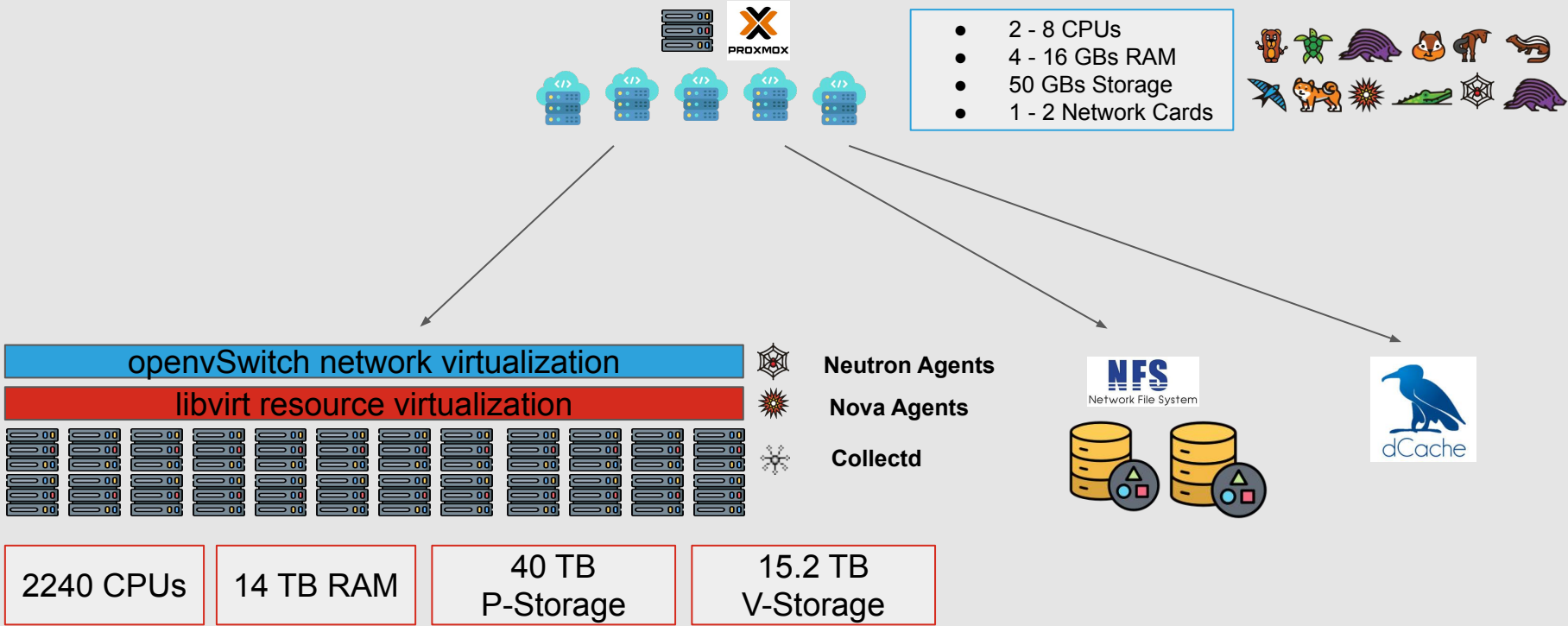
Core Services



Extra



Ibisco Cloud Naples -Infrastructure at a glance



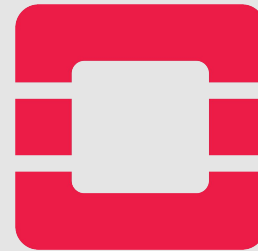
PAAS

Platform as a Service



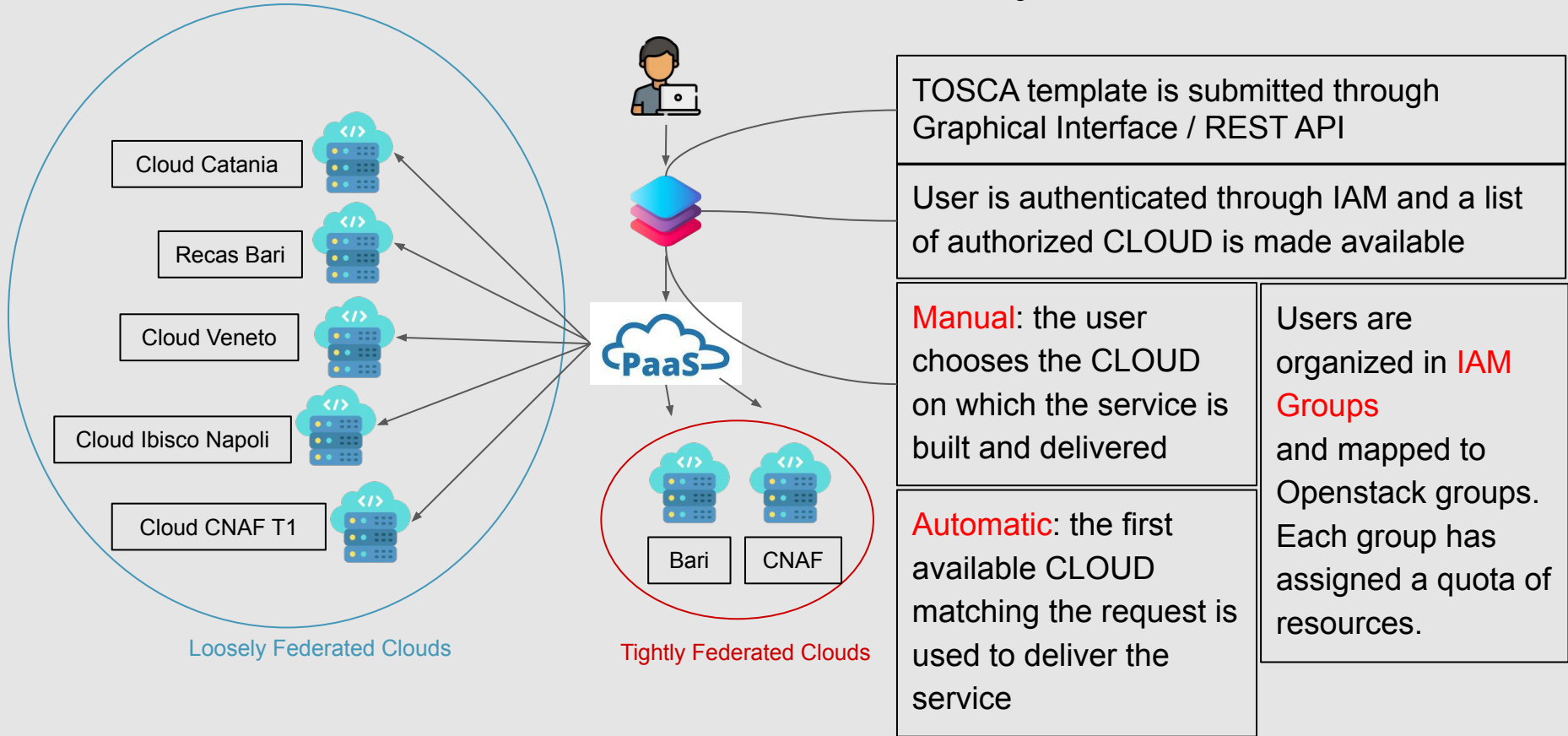
IAAS

Infrastructure as a
Service







IBISCO
Cloud
Naples

The INFN Federated Cloud - **PAAS** Layer















INFN Cloud Dashboard

CENTRALISED SERVICES:

- INFN Cloud object storage**
the centrally managed service based on MinIO-Gateway
 [Go to service](#)
- Notebooks as a Service (NaaS)**

- INFN Cloud Registry**

- INFN-Cloud monitoring**


ON-DEMAND SERVICES:

- Virtual machine**

- Docker compose**
Deploy a virtual machine with docker engine and docker compose pre-installed. Optionally run docker compose file 1.1
[Read More](#) [Configure](#)
- Run docker**

- INDIGO IAM as a Service**

- Elasticsearch and Kibana**
 
- Kubernetes cluster**

- Spark + Jupyter cluster**

- HTCondor mini**

- Jupyter with persistence for Notebooks**

- Jupyter + Matlab (with persistence for Notebooks)**
 
- Sync&Share aaS**


Virtual machine

Description: Launch a compute node getting the IP and SSH credentials to access via ssh

Deployment description
description

Configuration **Advanced**

hostname

ports
 [Add rule](#)

Ports to open on the host

flavor
--Select--
Number of vCPUs and memory size of the Virtual Machine

operating_system
--Select--
Operating System for the Virtual Machine

[Submit](#) [Cancel](#)

INFN Cloud Dashboard

Welcome to the INFN Cloud Dashboard!

[Please login, or register »](#)



INFN CLOUD
Istituto Nazionale di Fisica Nucleare

Welcome to **infn-cc**

Sign in with




INFN CDF-AM

Not a member?
[Apply for an account](#)

Protocol	Port Range	Source	
TCP	e.g. [8080,8082] or 80	0.0.0.0/0	Remove
Add rule			

Ports to open on the host

The IBISCO Cloud Napoli - IAAS Layer



openstack.

Log in

Authenticate using

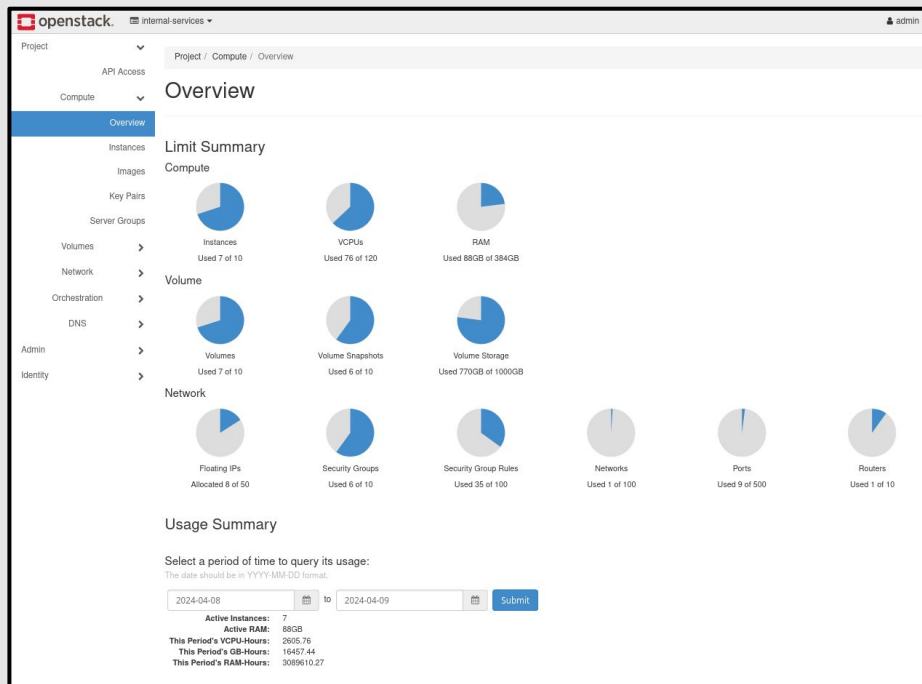
Keystone Credentials

If you are not sure which authentication method to use, contact your administrator.

User Name

Password

Sign In



The INFN Federated Cloud - Loosely Federated Rules

1. Enable Monitoring with Rally on all Compute Nodes
2. API endpoints reachable by CNAF and BARI
3. Connect to IAM Endpoints and enable authentication
4. Accept rules and policies

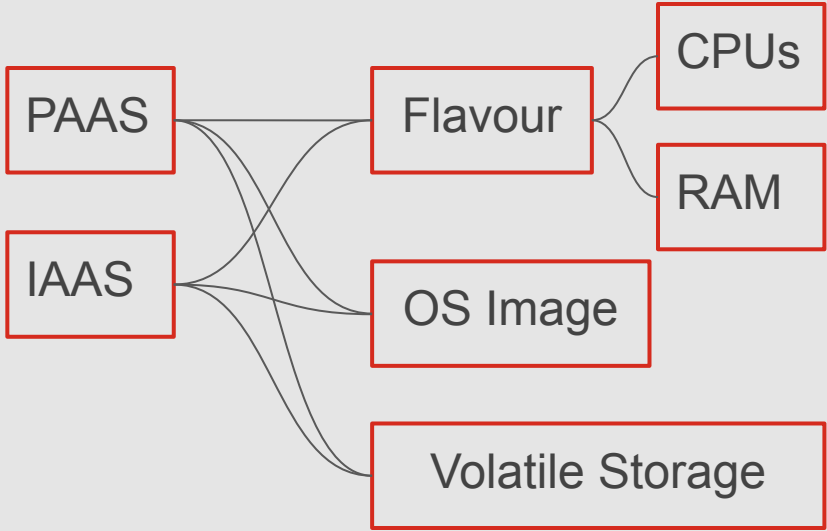
Public Projects

1. Must have public (general internet) IP address
2. Open management ports to CNAF and BARI
3. **Open application ports** (80, 443, 22 etc)

Private Projects

1. Allow users to connect to VMs through VPNs
2. Open management ports to CNAF and BARI

Computing as a Service



Persistent Storage

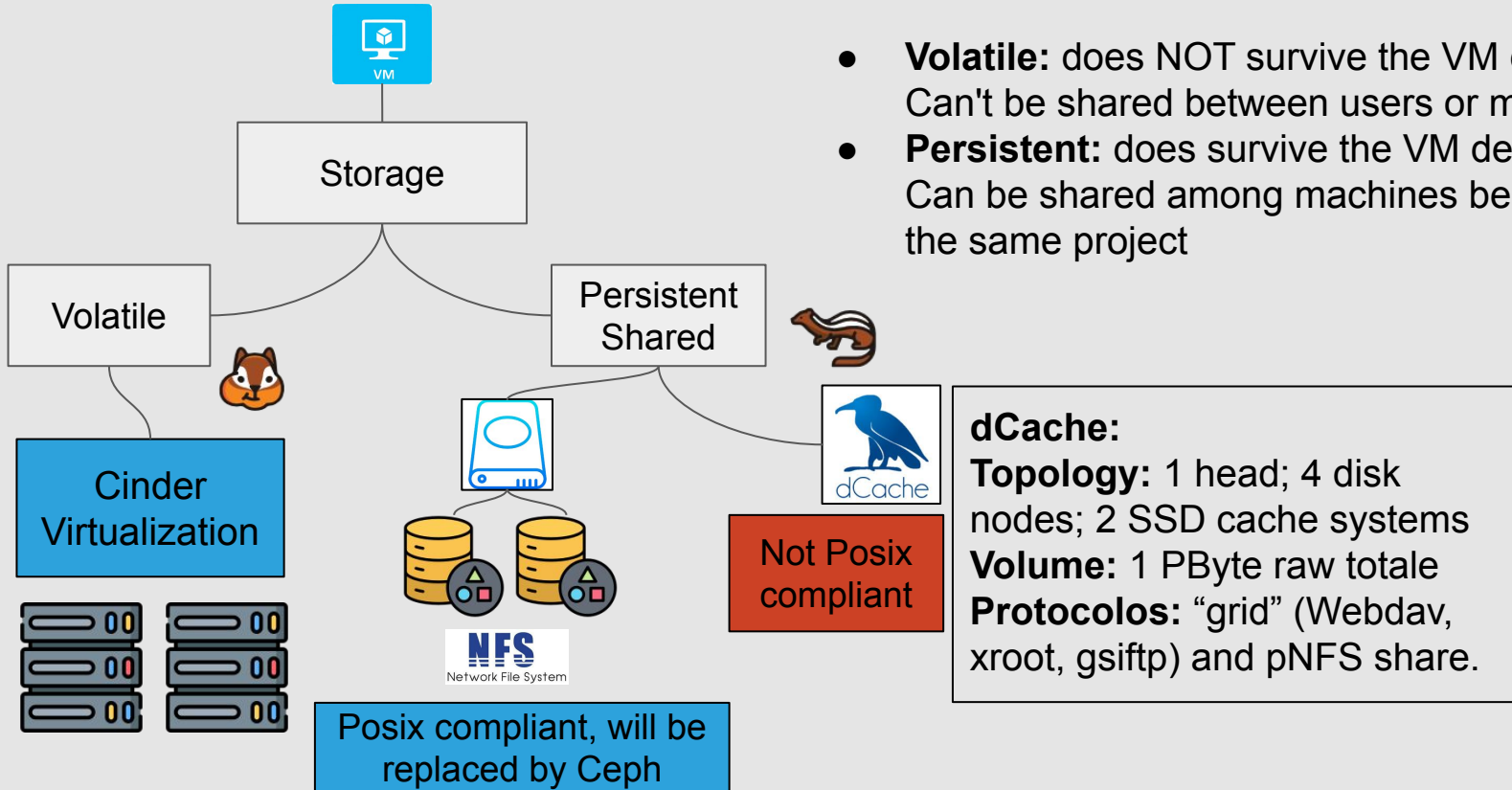
Shared Filesystem



Floating IP



Storage as a Service

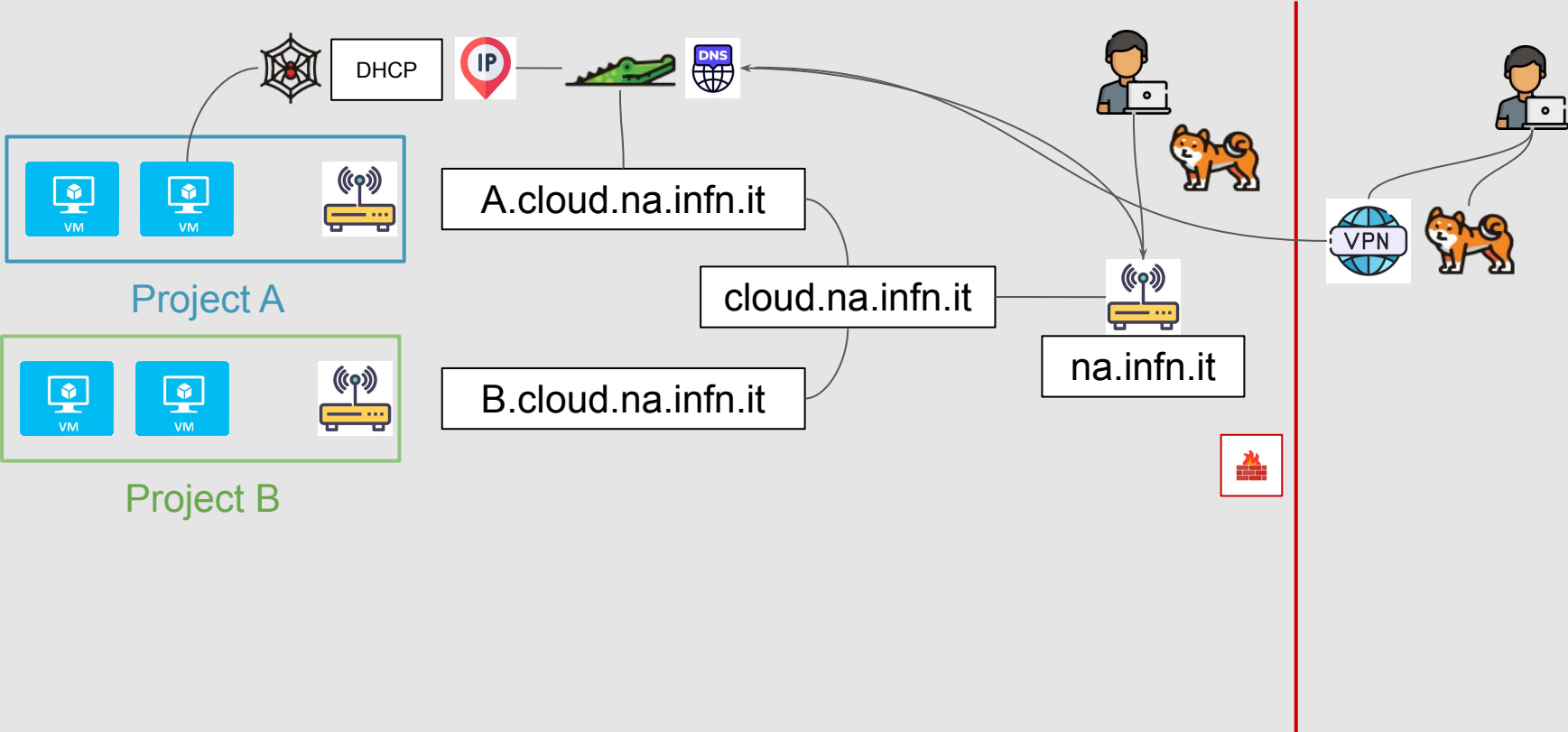


- **Volatile:** does NOT survive the VM destruction. Can't be shared between users or machines.
- **Persistent:** does survive the VM destruction. Can be shared among machines belonging to the same project

dCache:

Topology: 1 head; 4 disk nodes; 2 SSD cache systems
Volume: 1 PByte raw total
Protocols: “grid” (Webdav, xroot, gsiftp) and pNFS share.

DNS as a Service



User and Data **Security** as a Service

GROUP A



GROUP B



VLAN A



Tenant A



VLAN B



Tenant B

- **Authentication and Authorization** based on IAM groups
- **Tenants** are isolated, each tenant has its own VLAN
- **Private VLAN** only reachable through user VPN

IBISCO Cloud Deployment through Foreman Puppet

Cloud Deployment through Puppet / Foreman

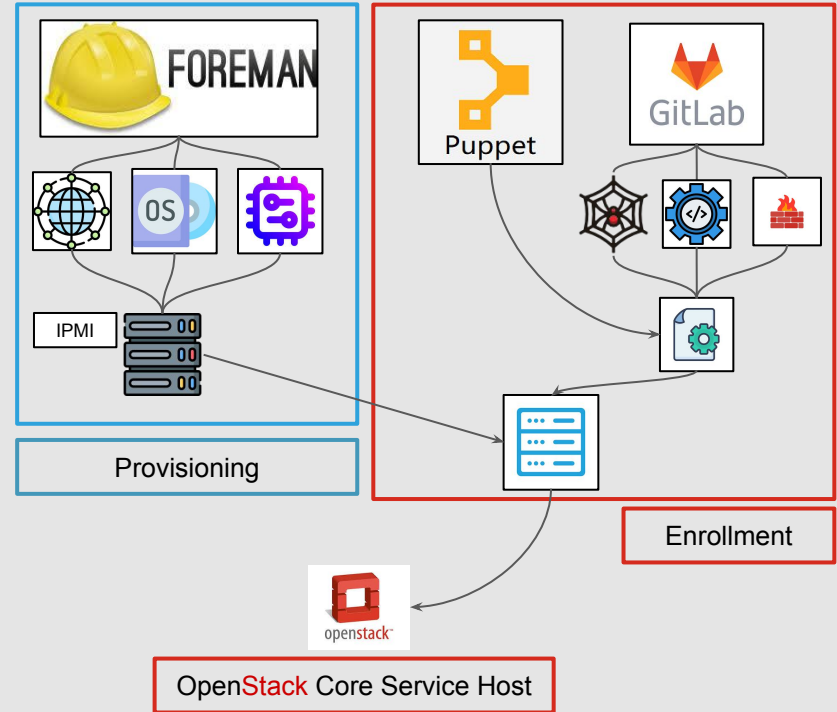


Proxmox: Proxmox Virtual Environment (Proxmox VE) is a free, open-source virtualization platform based on the Debian Linux distribution. It allows you to easily manage virtual machines (VMs), containers, and storage within a user-friendly web interface.

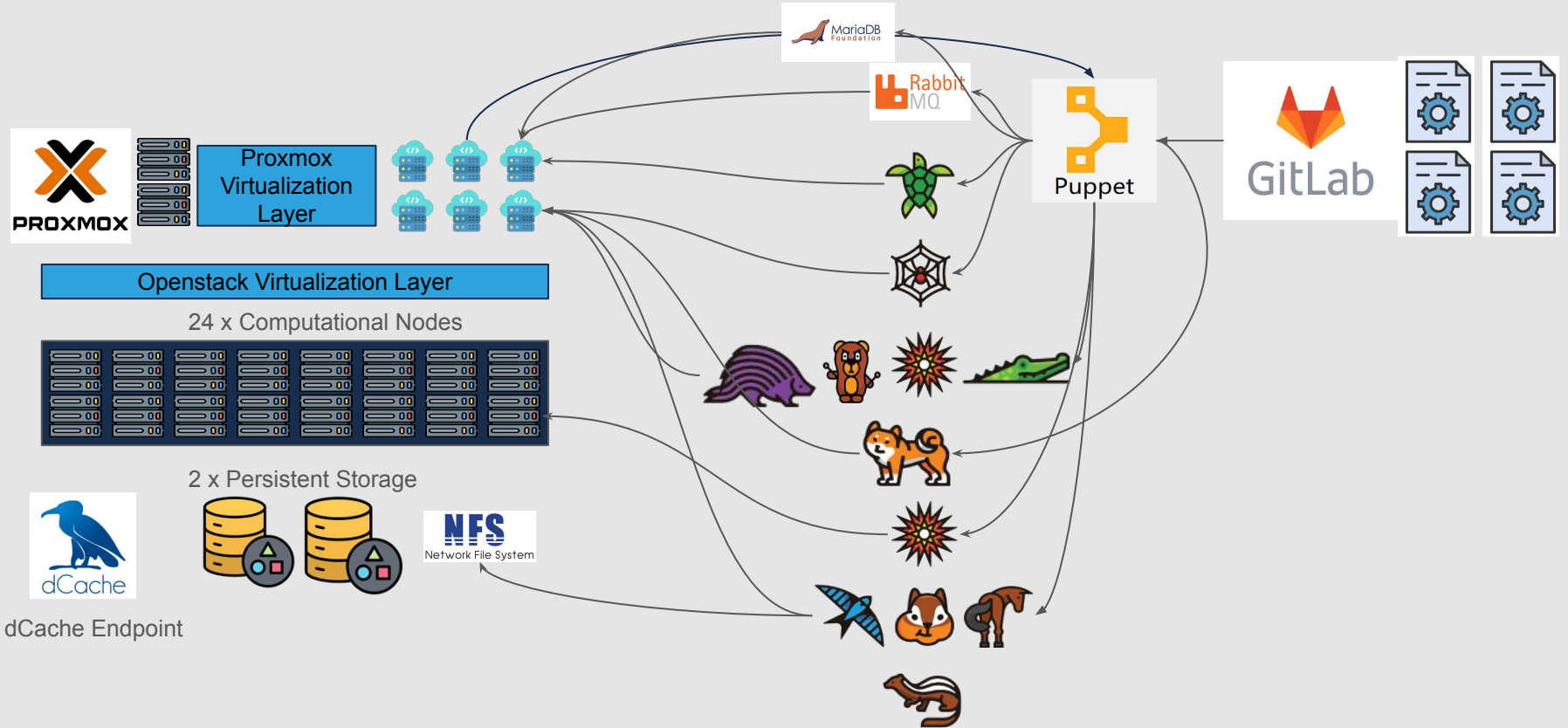
- Free and Open-Source
- Supports multiple operating systems
- Allows for the creation of templates



Openstack Core Service Template: AlmaLinux 9.3, between 4 and 32 GBs of RAM, 4 to 9 Virtual Cores and 50 GBs of SSD storage.



The IBISCO Cloud Naples Infrastructure



IBISCO Cloud Napoli - Puppet Profiles

The screenshot shows the GitHub repository page for 'ibiscocloud-openstack-puppet-configs'. It includes a commit history table, project information, and a README section.

Name	Last commit	Last update
data	feat: connected to ICSC IAM	1 week ago
docs	feat: add commands for esaco int...	3 months ago
manifests	feat: connected to ICSC IAM	1 week ago
modules	feat: connected to ICSC IAM	1 week ago
.gitignore	feat(.gitignore): ignore vscode lo...	1 year ago
.gitlab-ci.yml	Configure SAST in '.gitlab-ci.yml'...	1 year ago
Puppetfile	fix: puppetfile influxdb version	1 month ago
README.md	docs: working in the morning wh...	6 months ago
environment.conf	updated initial files	1 year ago
hiera.yaml	feat: begin encrypted certificates...	5 months ago

IBISCO Cloud Openstack Puppet Configurations

Puppet files to install an instance of OpenStack Bobcat 2023.2 and Caracal 2024.1

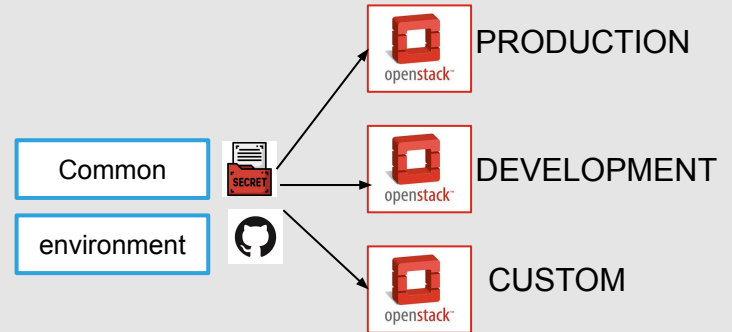
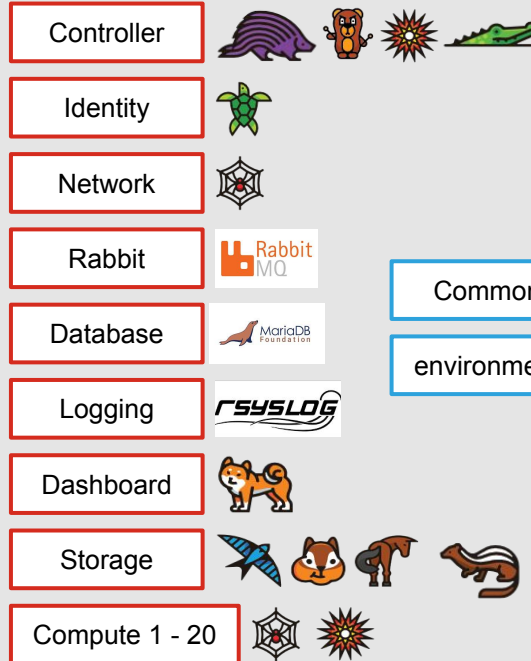
Full documentation

This is a brief Readme, for details [please see the docs folder](#)

Software Versions

Tested on:

- AlmaLinux 9.3
- OpenStack 2023.2
- Puppet 7.x



FIXED | **CUSTOMIZABLE**

Thank you for
the Attention

