

openstack™
CLOUD SOFTWARE

OpenStack 雲平台介紹與應用

迎棧科技



inwinSTACK



openstack®
FOUNDATION

GOLD MEMBER

陳彥勝 SAM

- Email : sam.c@inwinstack.com
- Web Site : <https://samopenstack.hackpad.com>
- SAM從2010年開始在網頁公司工作
- 負責前後端程式開發與資料庫應用
- 2012年加入雲端新創公司迎棧科技inwinSTACK
- 擔任資深架構師與講師,協助客戶專案導入與內外教育訓練
- 經常活動於OpenStack Taiwan User Group社群
- 將所學與經驗貢獻給社群
- 幫助更多使用者了解與使用OpenStack



Agenda

- 1. OpenStack Introduction**
- 2. OpenStack Core Concept**
- 3. Main Role**
 - 1. Controller**
 - 2. Compute**
 - 3. Network**
 - 4. Storage**

OpenStack Introduction

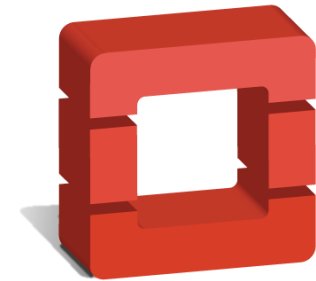
- **History: 2010-**
- **Community Status**
- **Who uses OpenStack?**
 - **PayPal**
 - **CERN**
 - **Cisco**
 - **Intel**
- **And You:)**



OpenStack Introduction

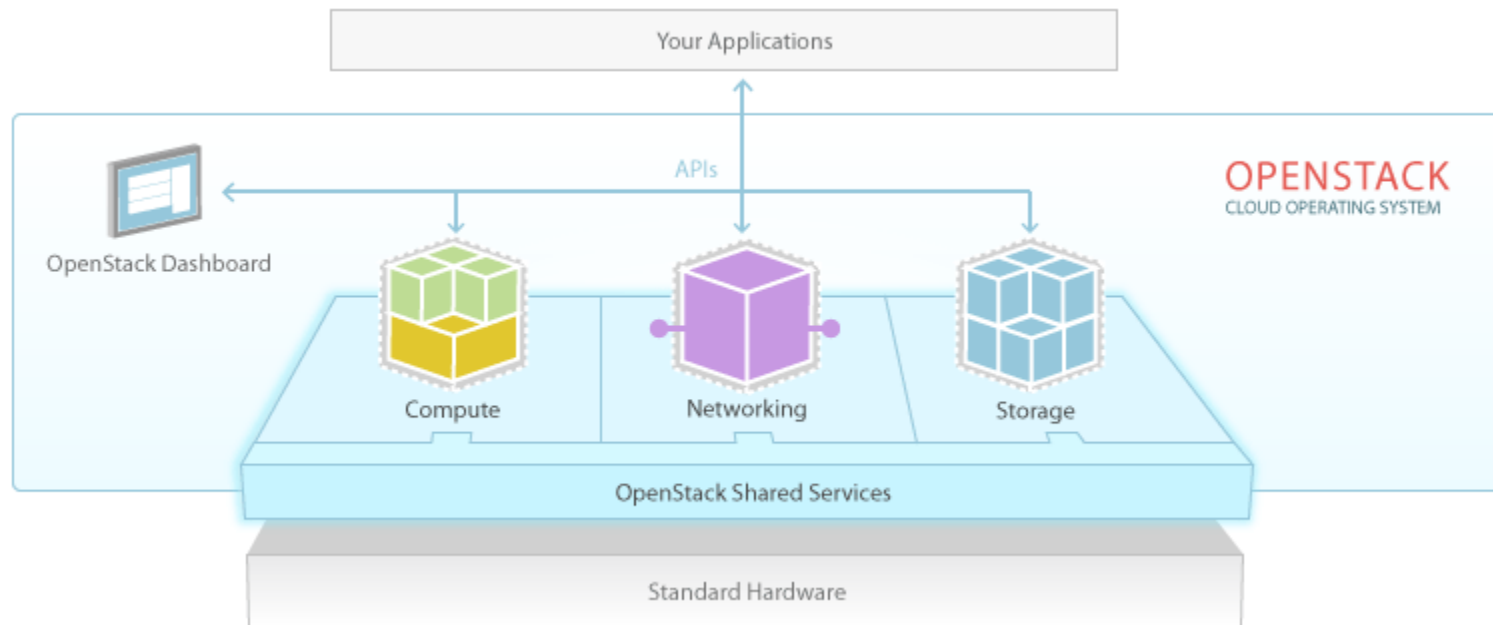
“After several years in this field, today we truly believe that **OpenStack is the Linux of cloud computing.**”

— **MARIANO CUNIETTI, CTO,
ENTER/CLOUDUP**

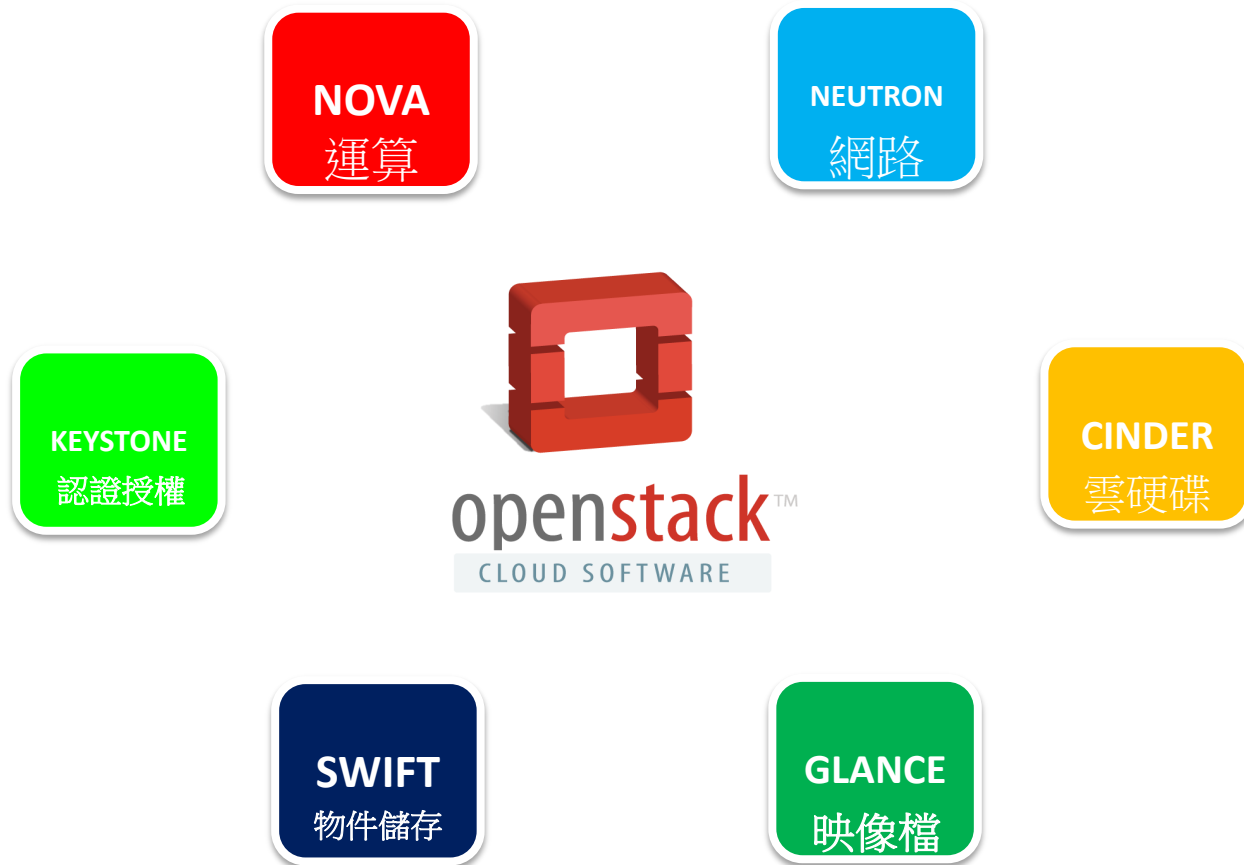


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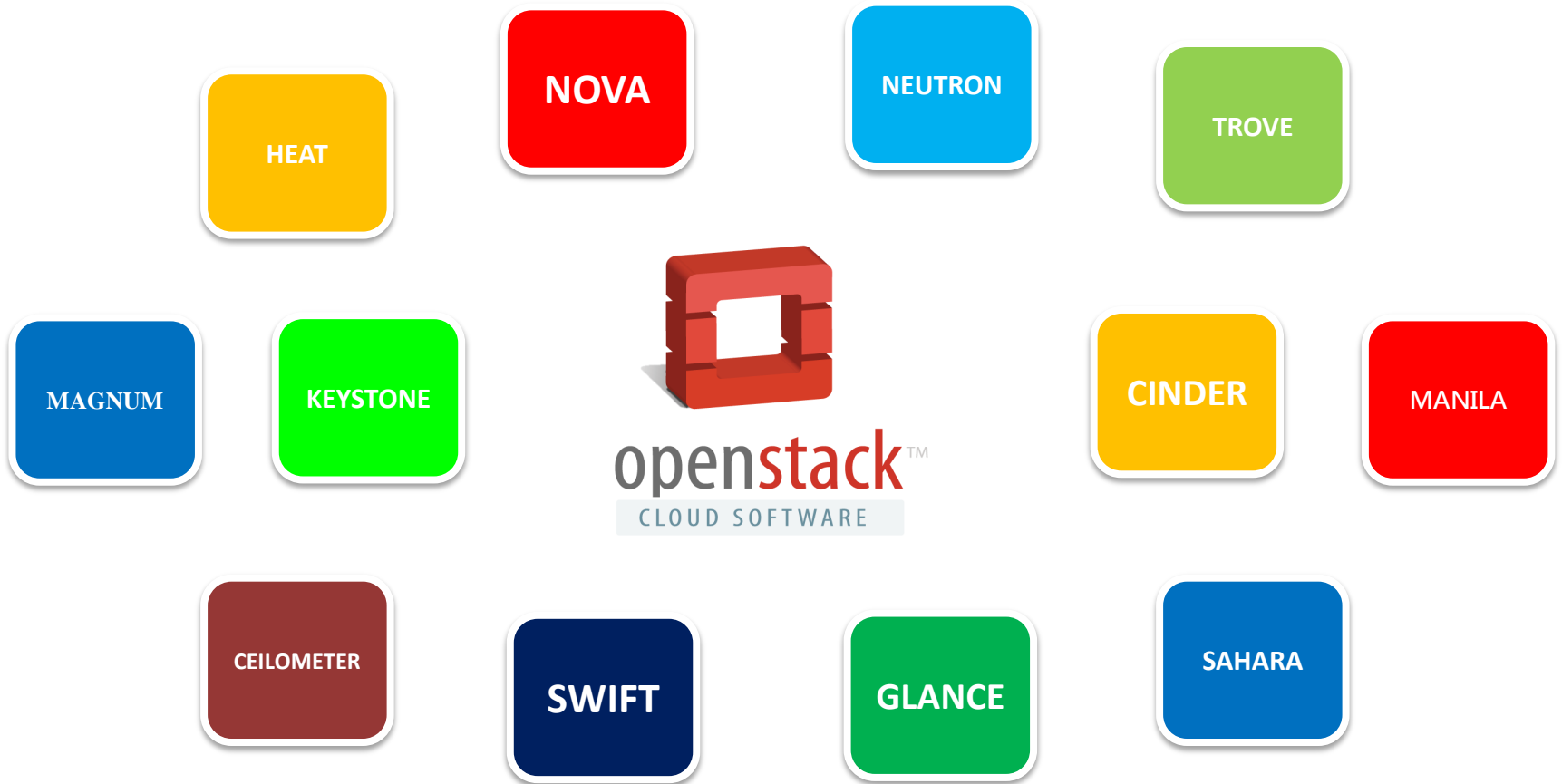
OpenStack Core Concept



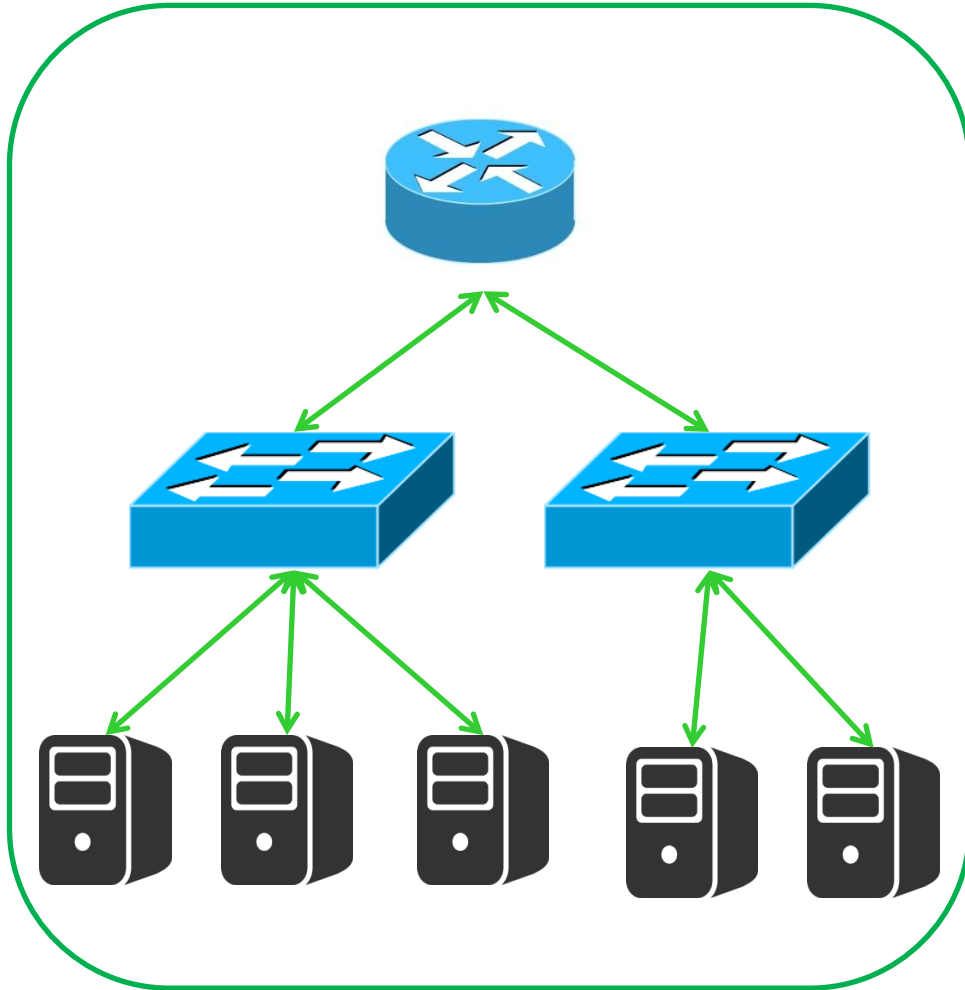
OpenStack Core Concept



OpenStack Core Concept



OpenStack Core Concept



HORIZON

操作介面

NEUTRON

雲網路管理模組

NOVA

運算模組

KEYSTONE

認證與授權模組

GLANCE

映像檔模組

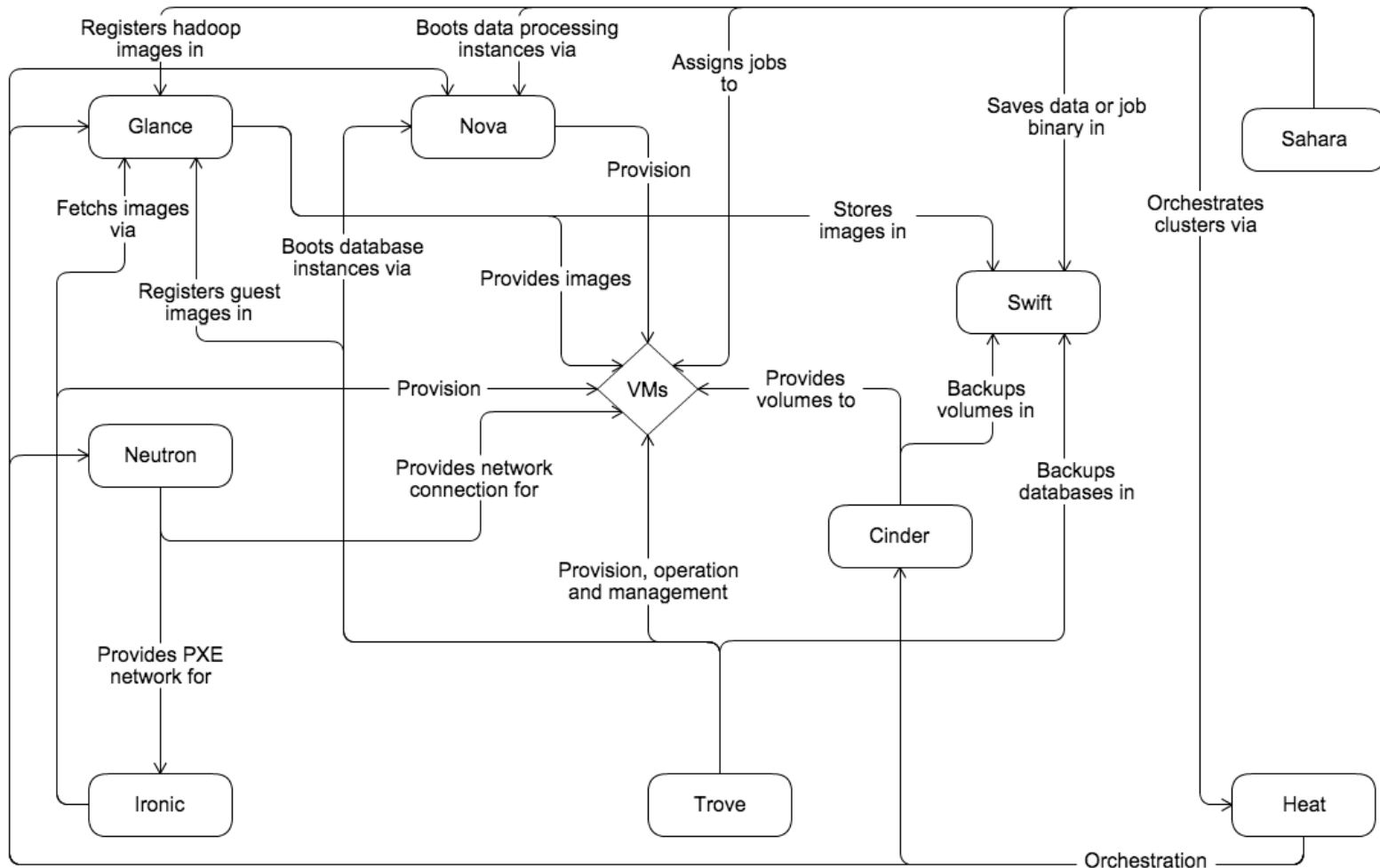
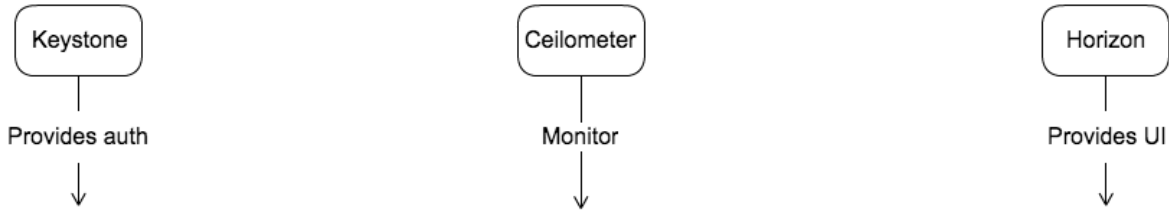
CINDER

雲硬碟模組

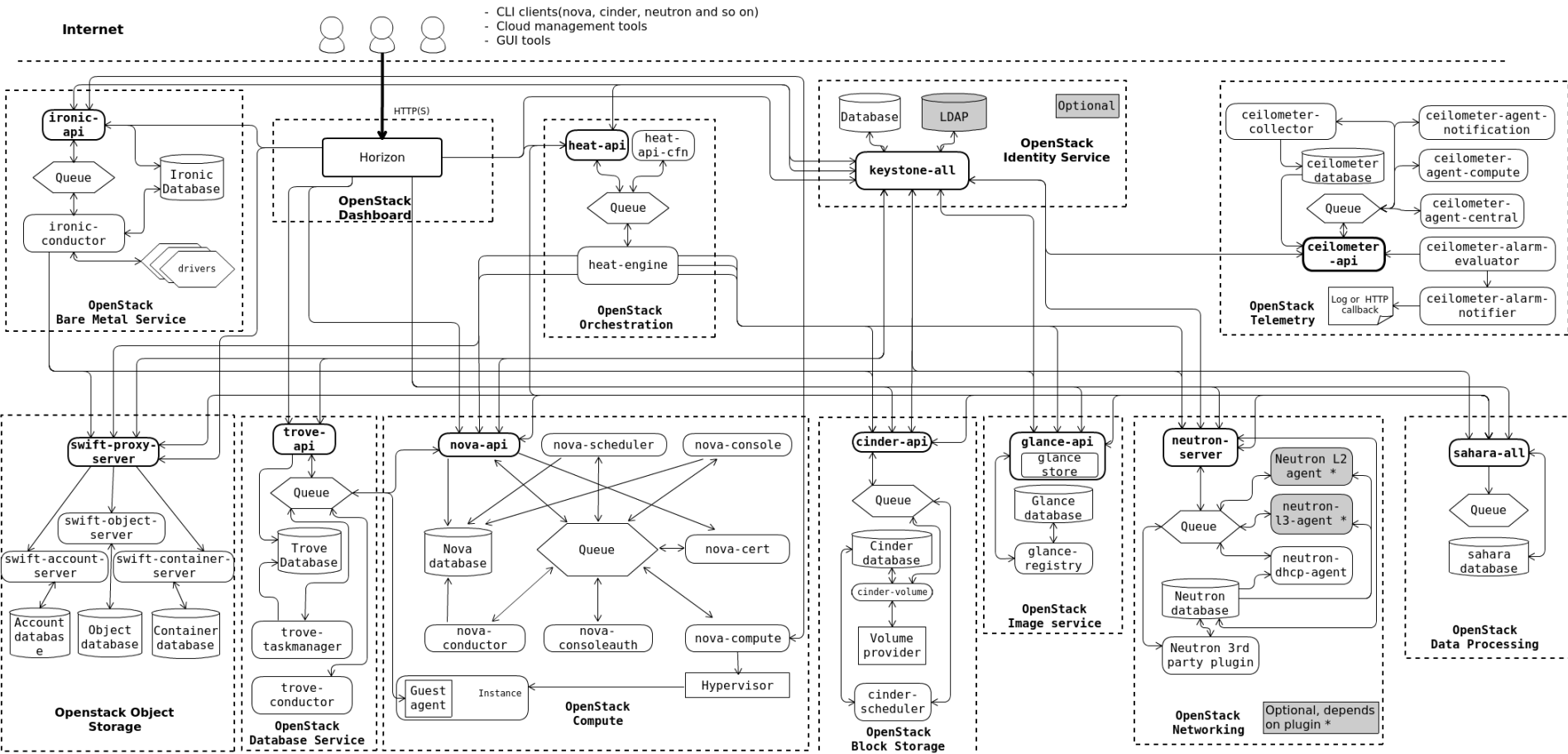
SWIFT

物件儲存模組

OpenStack Core Concept



OpenStack Core Concept




OpenStack

Version Introduction


Release Name	Release Date	Included Components
Austin	21 October 2010	Nova, Swift
Bexar	3 February 2011	Nova, Glance, Swift
Cactus	15 April 2011	Nova, Glance, Swift
Diablo	22 September 2011	Nova, Glance, Swift
Essex	5 April 2012	Nova, Glance, Swift, Horizon, Keystone
Folsom	27 September 2012	Nova, Glance, Swift, Horizon, Keystone, Quantum, Cinder
Grizzly	4 April 2013	Nova, Glance, Swift, Horizon, Keystone, Quantum, Cinder
Havana	17 October 2013	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Ceilometer, Heat
Icehouse	17 April 2014	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Ceilometer, Heat, Trove
Juno	October 2014	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Ceilometer, Heat, Trove
Kilo	Apr 30, 2015	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Ceilometer, Heat, Trove, Sahara
Liberty	Oct 15, 2015	Nova, Glance, Swift, Horizon, Keystone, Neutron, Cinder, Ceilometer, Heat, Trove, Sahara, Searchlight, Designate, Zaqar, Barbican, Manila

HORIZON


openstack
DASHBOARD

Log in

Domain

User Name
Password 

HORIZON

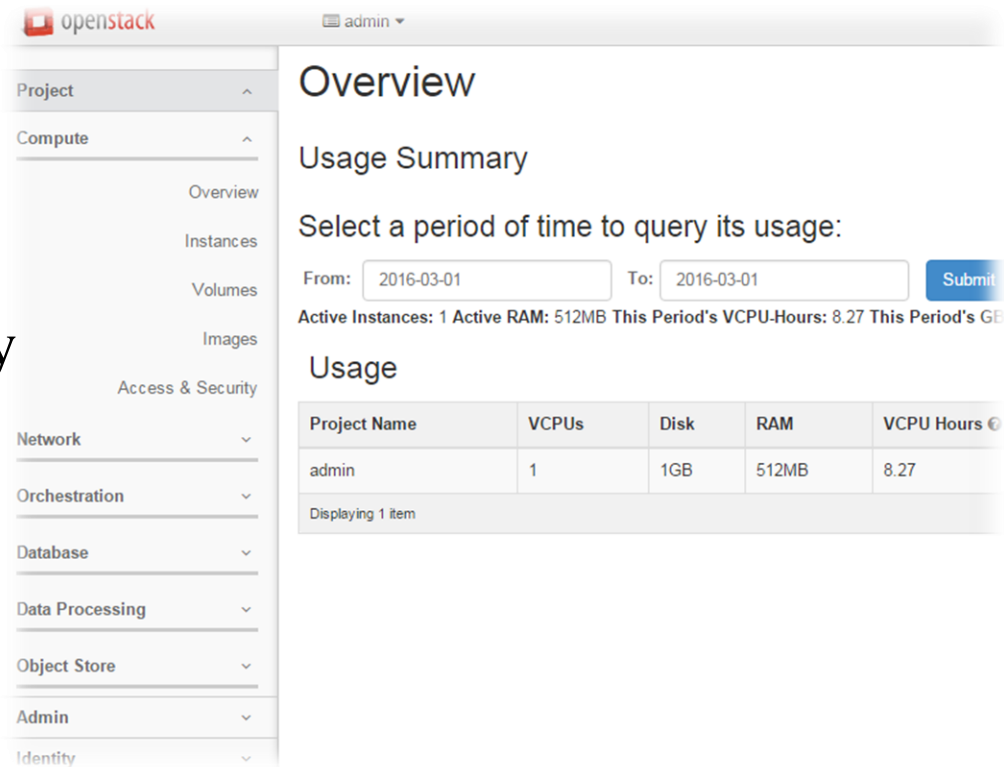
- Python
- Django
- Apache (mod_wsgi)
- RESTFul APIs

```
def vnc(request, instance_id):
    try:
        instance = api.nova.server_get(request, instance_id)
        console_url = project_console.get_console(request, 'VNC', instance)[1]
        return shortcuts.redirect(console_url)
    except Exception:
        redirect = reverse("horizon:project:instances:index")
        msg = _('Unable to get VNC console for instance "%s".') % instance_id
        exceptions.handle(request, msg, redirect=redirect)

def spice(request, instance_id):
    try:
        instance = api.nova.server_get(request, instance_id)
        console_url = project_console.get_console(request, 'SPICE',
                                                instance)[1]
        return shortcuts.redirect(console_url)
    except Exception:
        redirect = reverse("horizon:project:instances:index")
        msg = _('Unable to get SPICE console for instance "%s".') % instance_id
        exceptions.handle(request, msg, redirect=redirect)
```

HORIZON

- **Project**
 - Compute
 - Overview
 - Instances
 - Volumes
 - Images
 - Access & Security
 - Network
 - Object Storage
 - Orchestration



openstack admin

Project ^

Compute ^

- Overview
- Instances
- Volumes
- Images
- Access & Security

Network v

Orchestration v

Database v

Data Processing v

Object Store v

Admin v

Identity v

Overview

Usage Summary

Select a period of time to query its usage:

From: To:

Active Instances: 1 Active RAM: 512MB This Period's VCPU-Hours: 8.27 This Period's GB

Usage

Project Name	VCPU	Disk	RAM	VCPU Hours
admin	1	1GB	512MB	8.27

Displaying 1 item

HORIZON

- **Admin**

- System

- Overview
- Resource Usage
- Hypervisors
- Host Aggregates
- Instances
- Volumes
- Flavors
- Images
- Networks
- Routers
- Defaults
- Metadata Def
- System Info

Hypervisor Summary



VCPU Usage
Used 1 of 4



Memory Usage
Used 1GB of 15.6GB

Hypervisor [Compute Host](#)

Hypervisors

Hostname	Type	VCPUs (used)	VCPUs (total)
compute	QEMU	1	4

Displaying 1 item

HORIZON

- Identity
 - Projects
 - Users
 - Groups
 - Roles

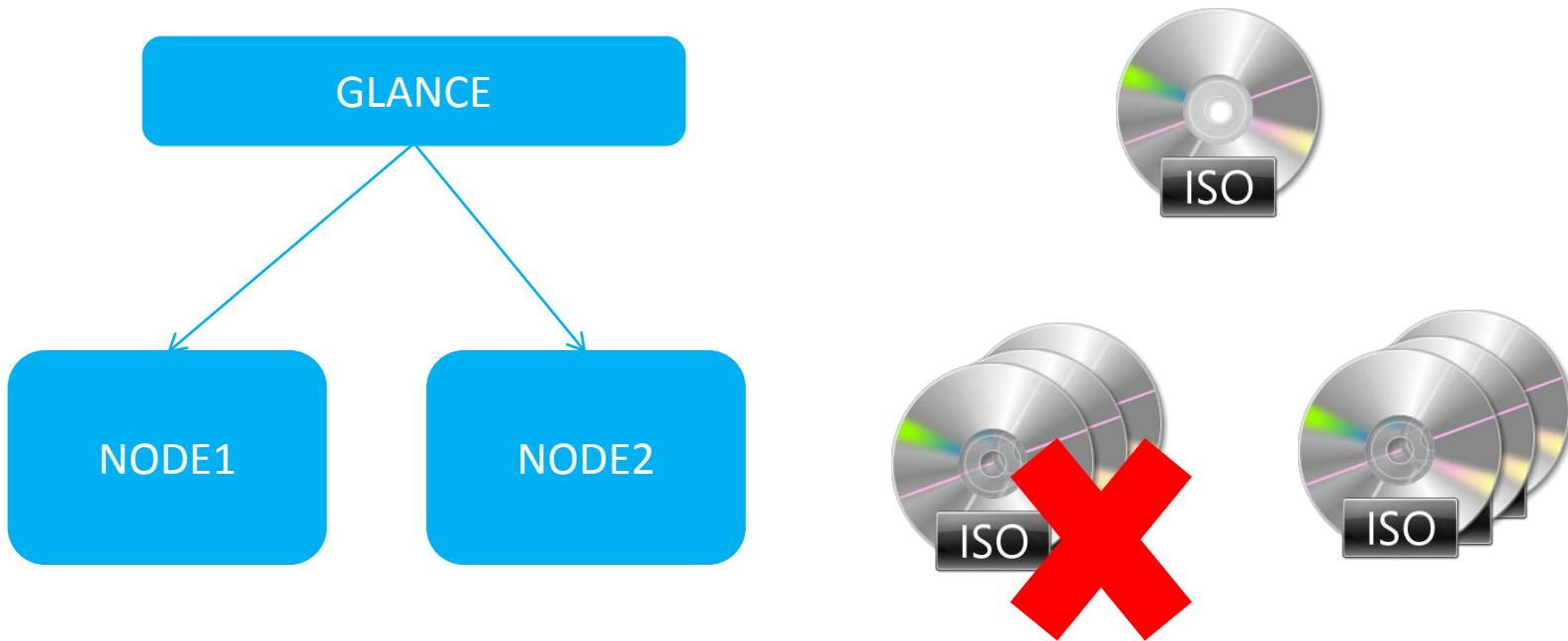
Users

<input type="checkbox"/>	User Name	Email	User ID	Enabled	Actions
<input type="checkbox"/>	demo	demo@example.com	4890c8756de84657bd50803d3aac1000	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	alt_demo	alt_demo@example.com	4ed7a78fbd72474e83f77548b1c851bc	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	heat		543495c9777b4716b60601525ba45cea	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	cinder		6649d31ba7ce456b9f53ff759208d57a	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	glance		7810b9ca815c48a88aeabcb3890c91dc	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	admin		90a9cddf51084b16b1cfcfb16ae3e431	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	neutron		9a91c52ebe4a4130843c36d619343968	True	Edit <input type="button" value="v"/>
<input type="checkbox"/>	nova		a057e6497d9946bc9e15d7a74edaf86c	True	Edit <input type="button" value="v"/>

Displaying 8 items

Image (Glance)

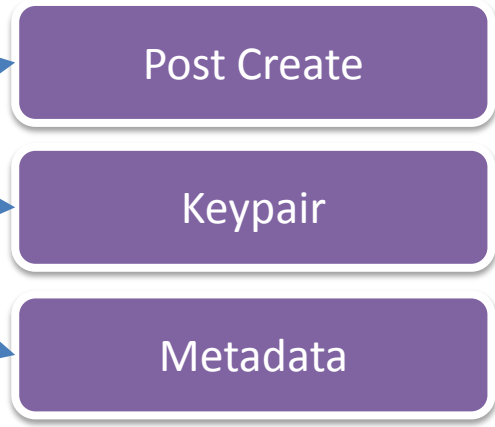
- **Image Service**
- **Golden images**



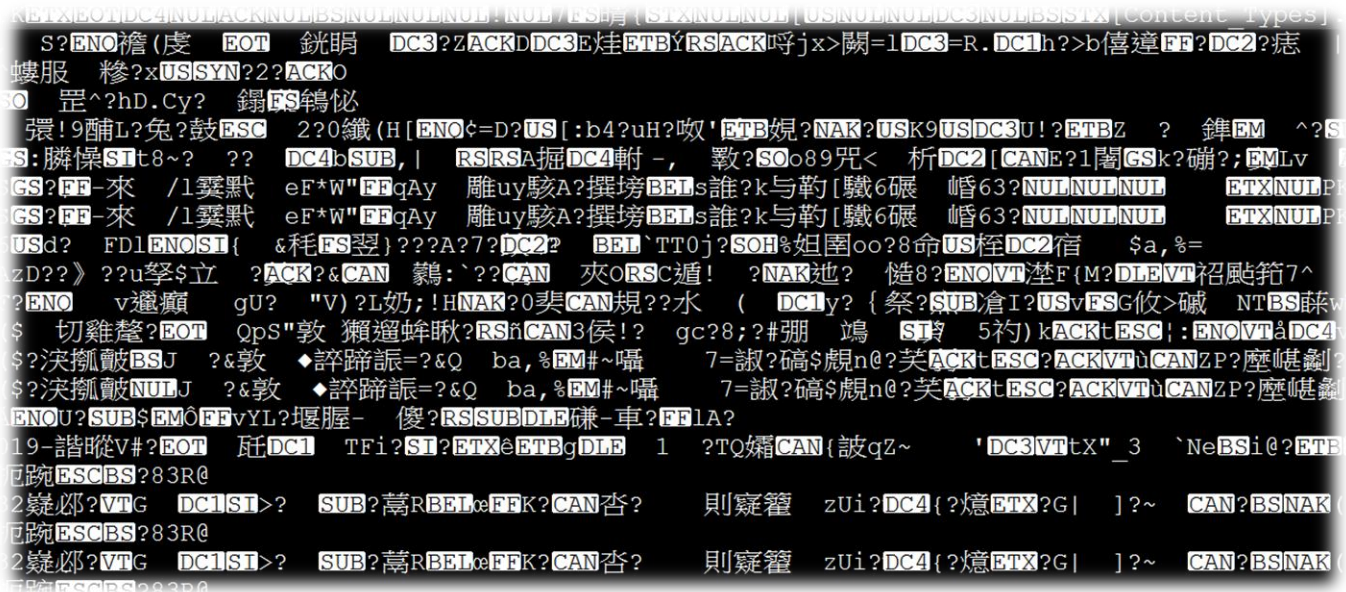
常用檔案格式須知與取得

• Download

- RAW
- QCOW2
- AMI/AKI/ARI
- UEC tarball
- VMDK
- VDI
- VHD
- VHDX
- OVF
- ISO

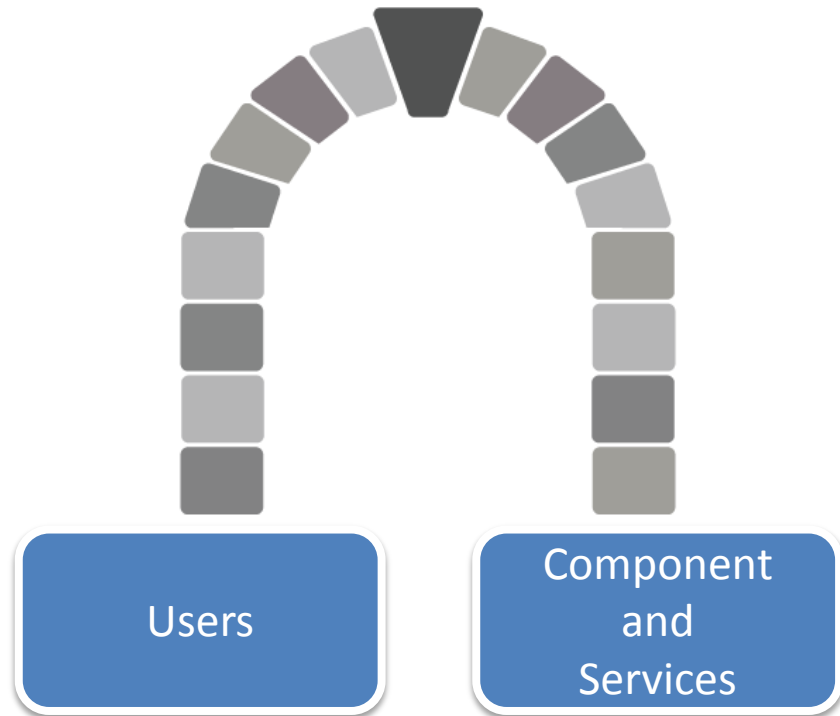


• **And more**



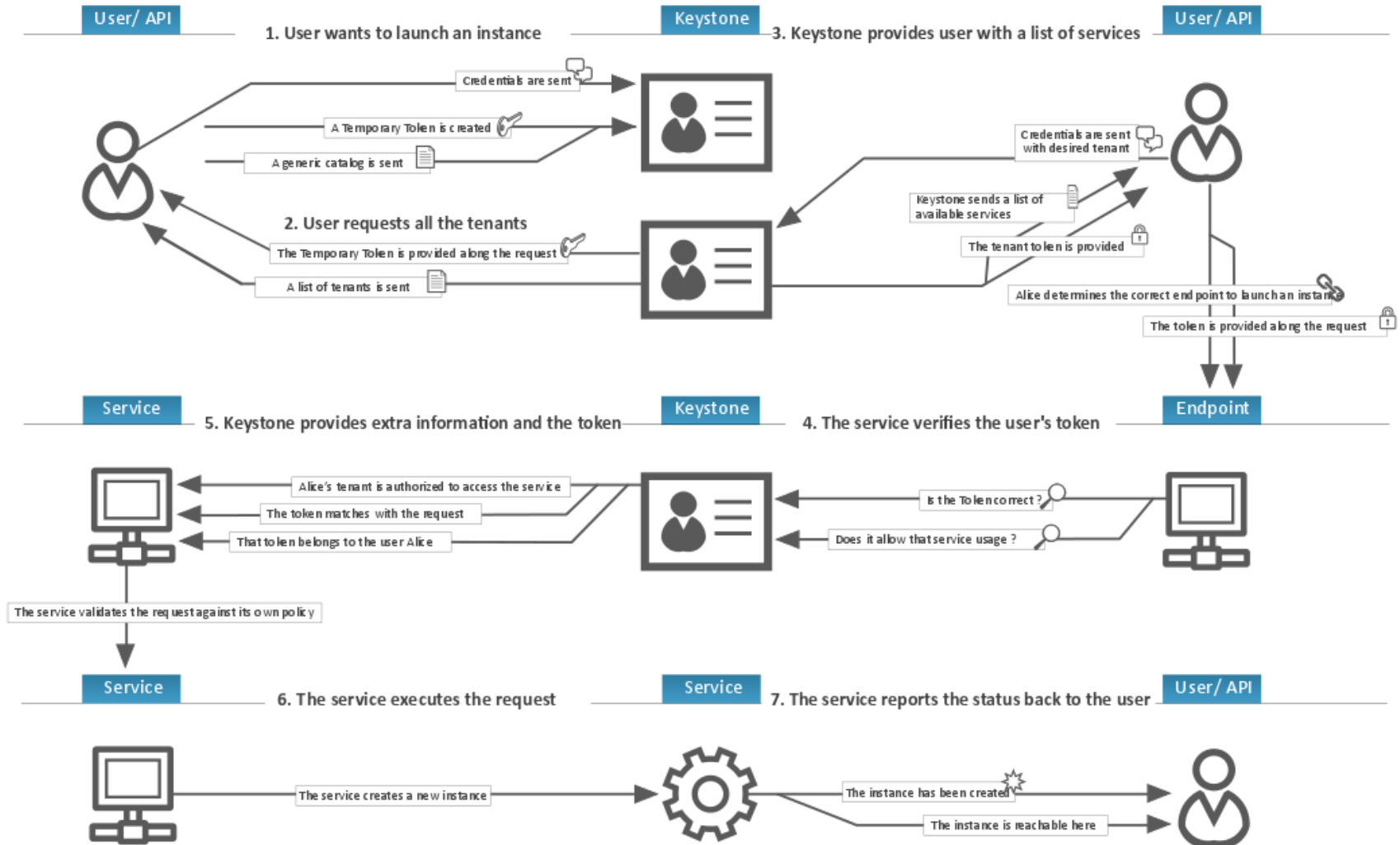
KEYSTONE

- **User**
- **Credentials**
- **Authentication**
- **Token**
- **Tenant**
- **Service**
- **Endpoint**
- **Role**
- **Keystone Client**



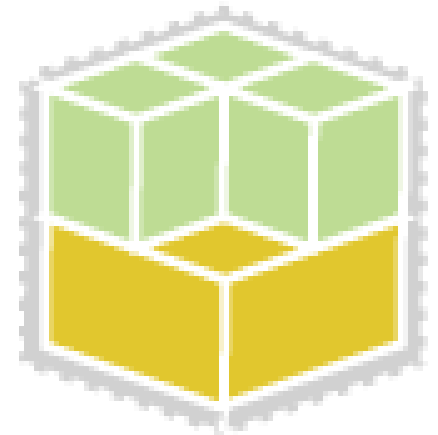
Identity (Keystone)

The Keystone Identity Manager



Compute (Nova)

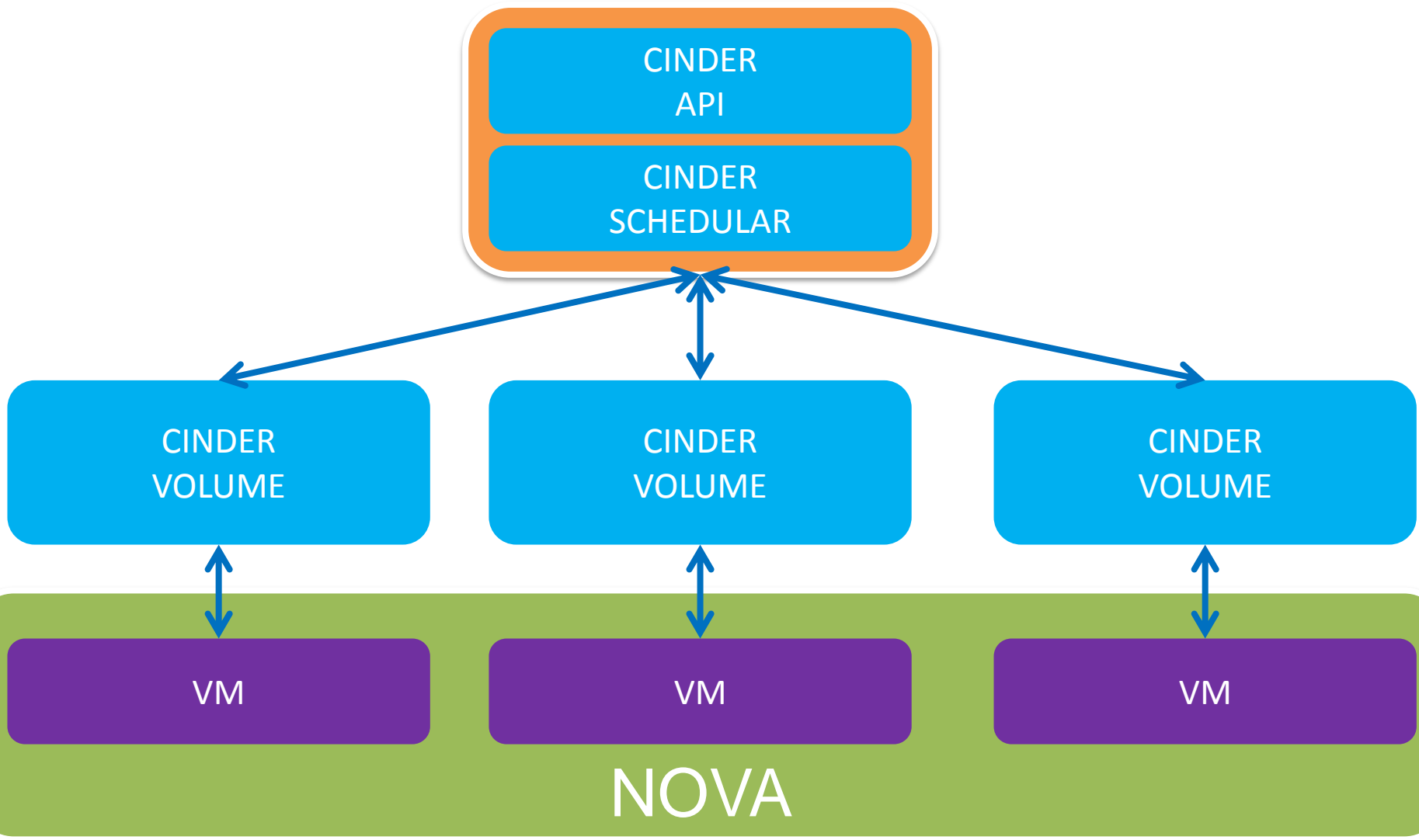
- **Flavor**
- **Access and Security**
 - **Keypair management**
 - **Security Group**
- **Instances Management**
- **Resource Usages**
- **Hypervisors**
- **Host Aggregates**
- **Quota Management**
- **System Information**



CINDER

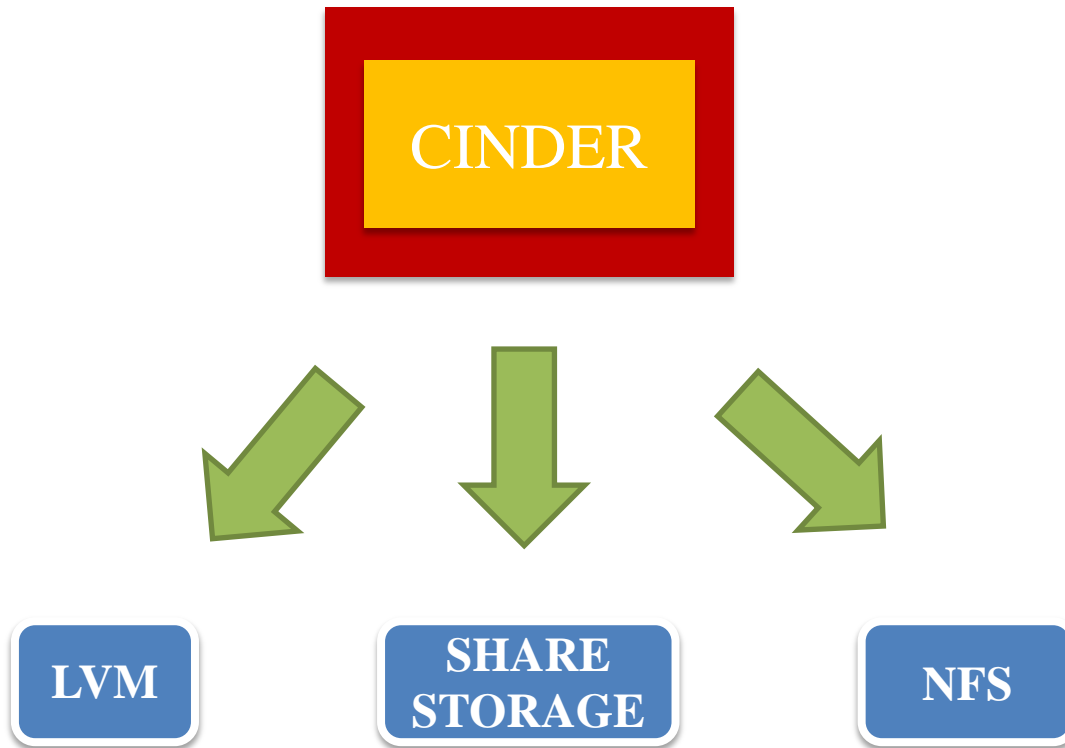
- **Block Storage Service**
- **NOVA-Volume**
- **Drivers**
- **Support List**
- **Backup Strategy**
- **Multi Backend**

CINDER



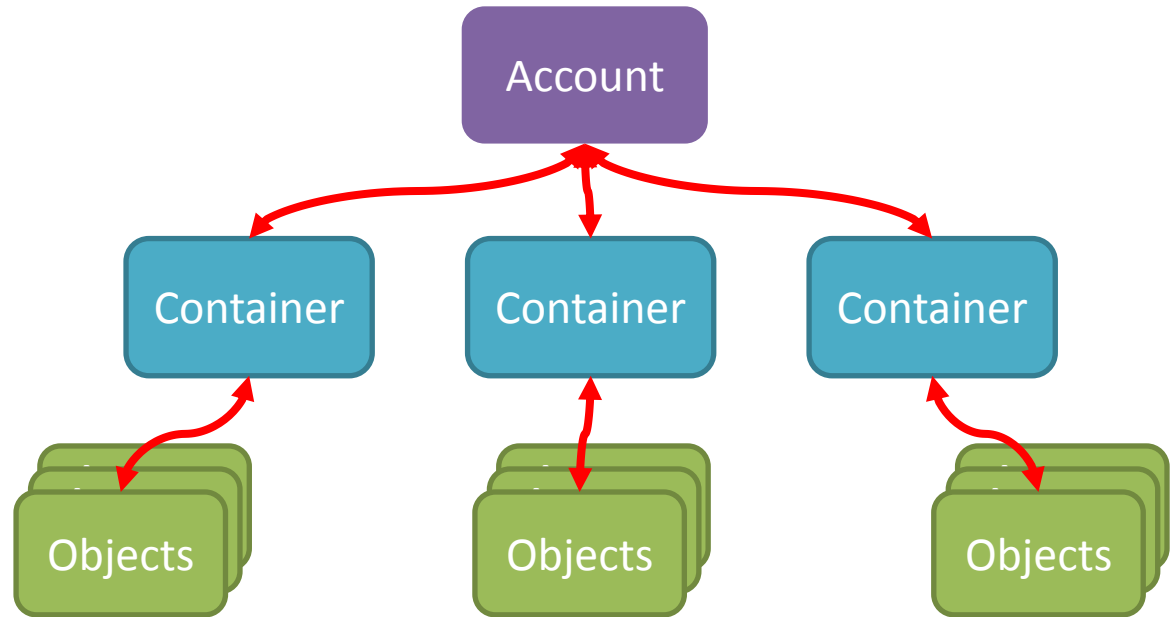
CINDER

- **Multi Backend**
- **Driver Support Matrix**



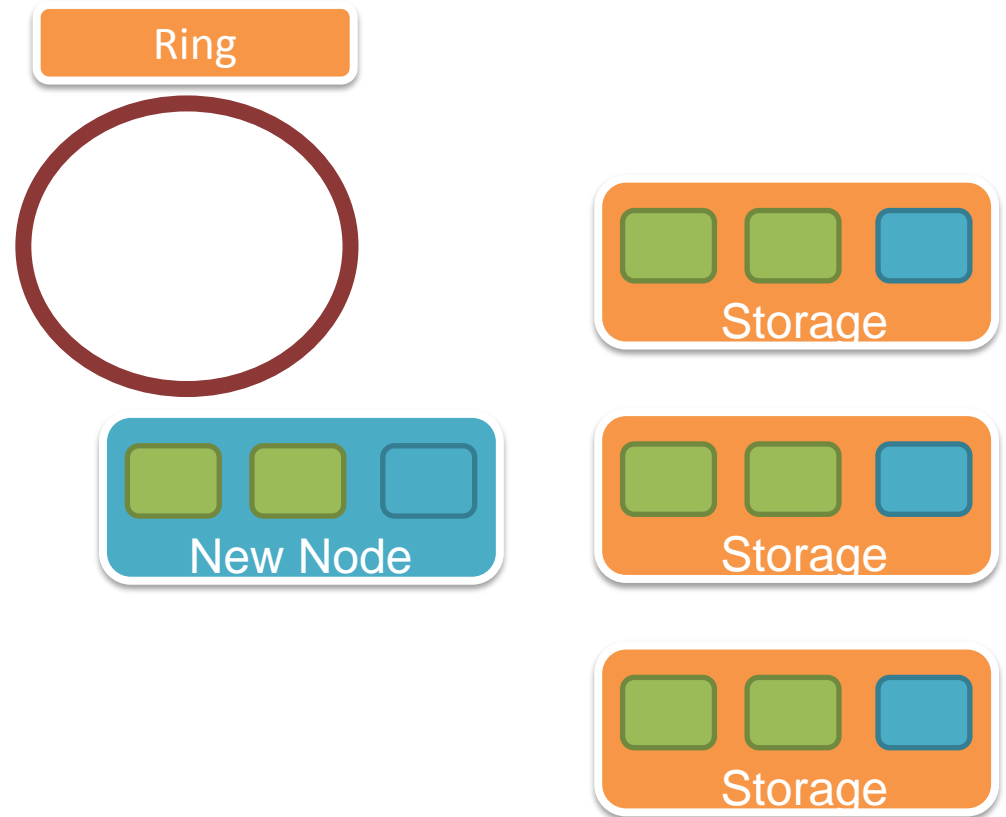
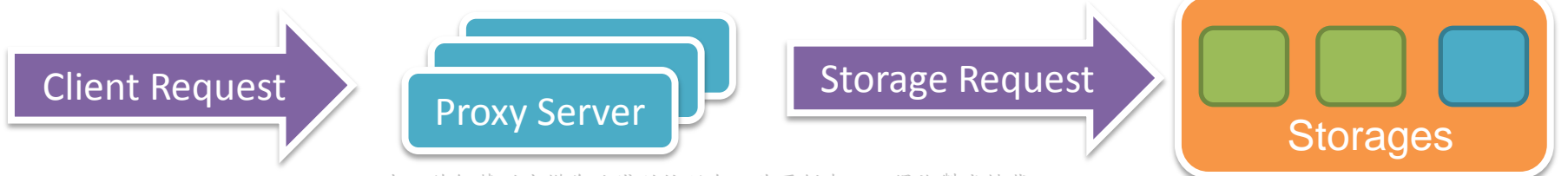
SWIFT

- **Object Storage**
- **AWS S3 API**
- **Architecture**
 - Node
 - Proxy node
 - Storage node
 - Ring
 - Replica
 - Zone
 - Region

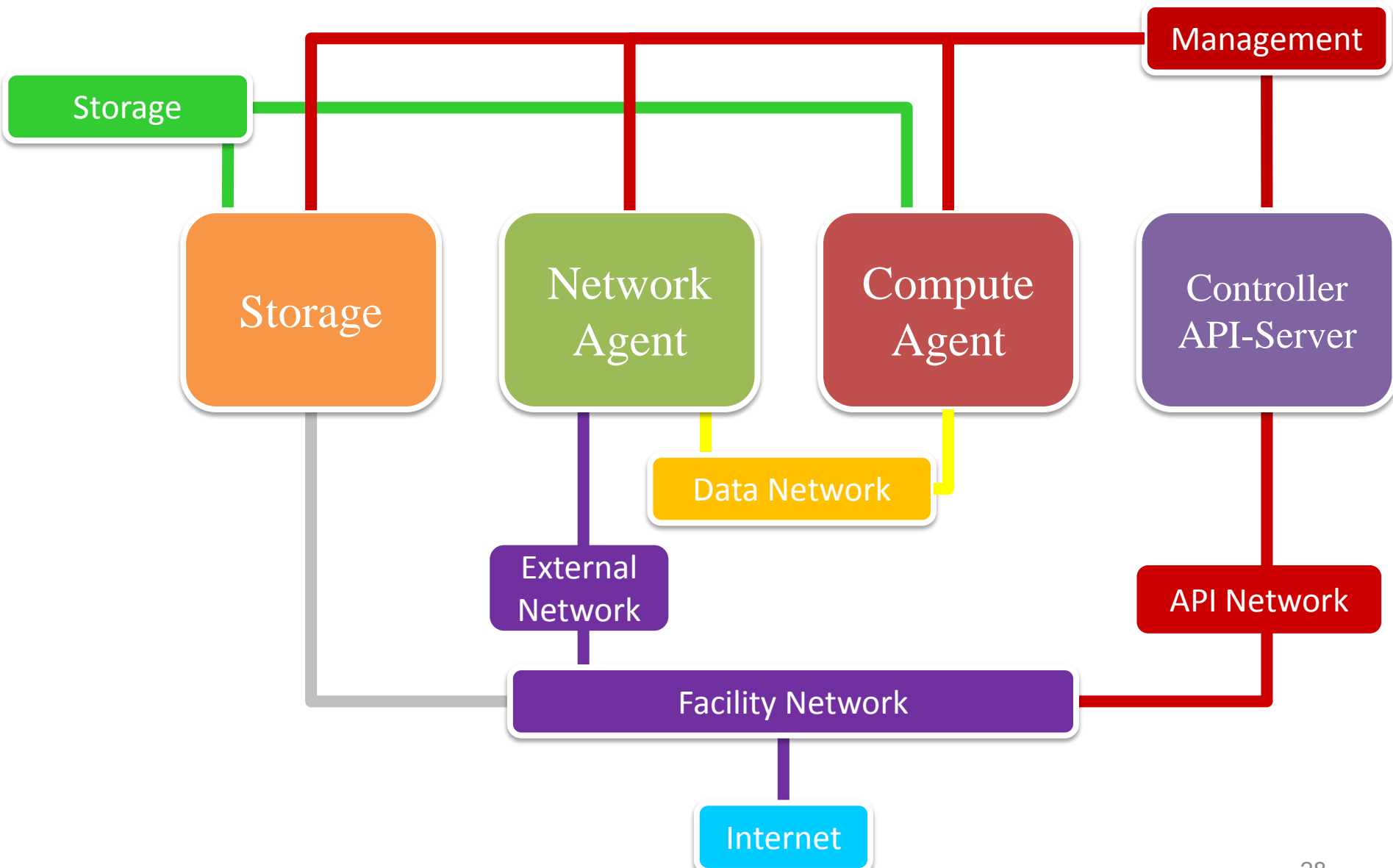


SWIFT

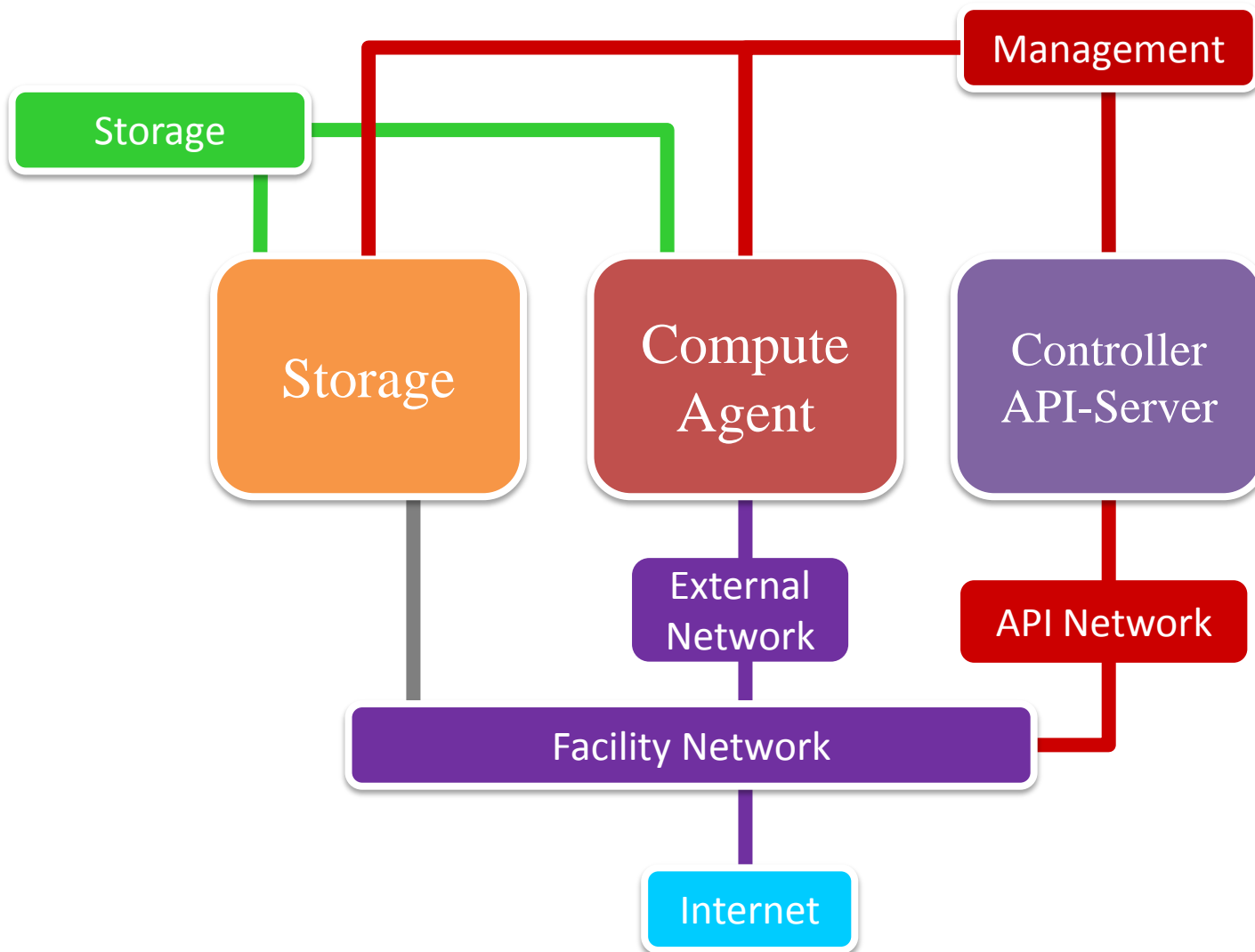
- **Object Storage**
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 - Replica
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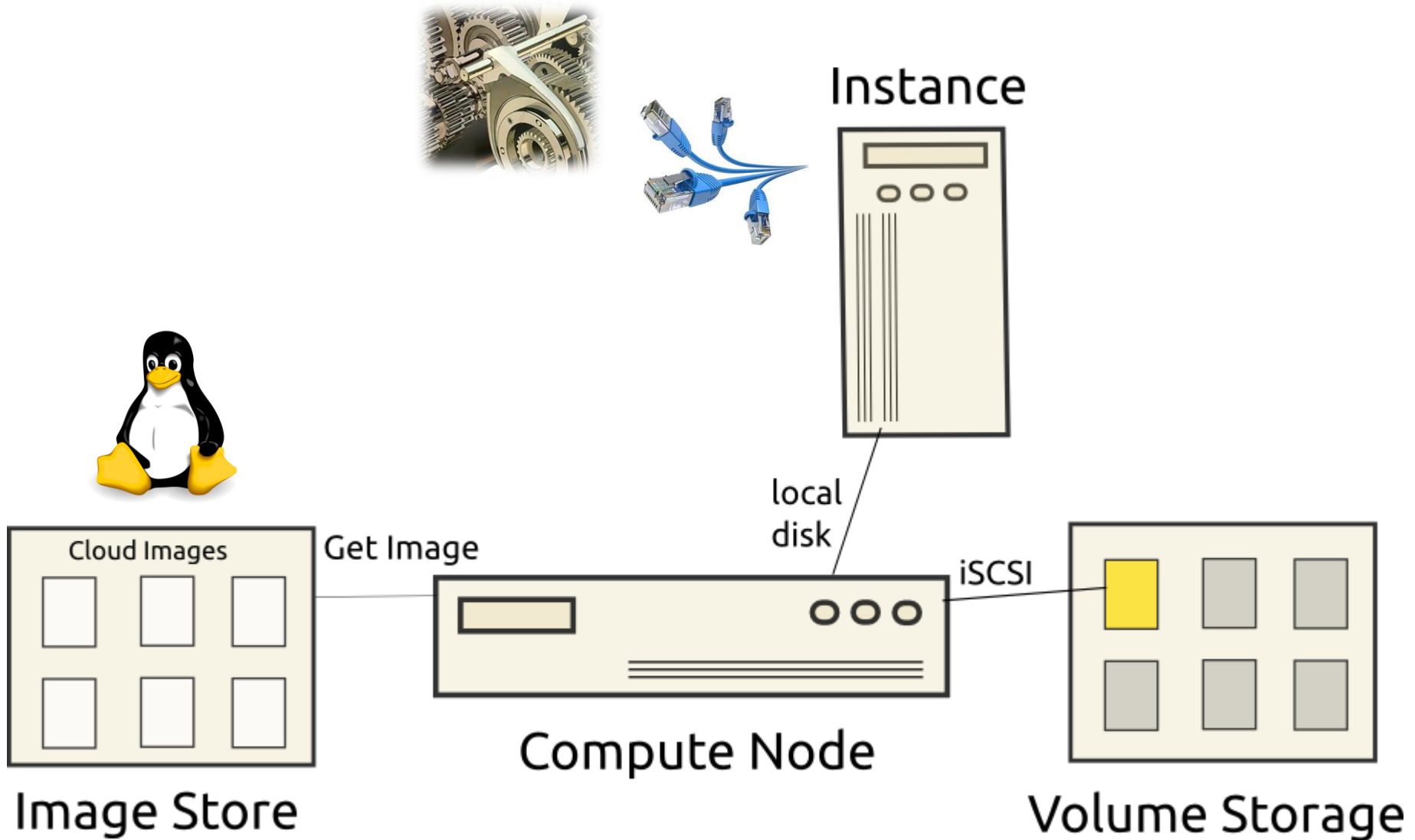
Neutron



Neutron



Main Role

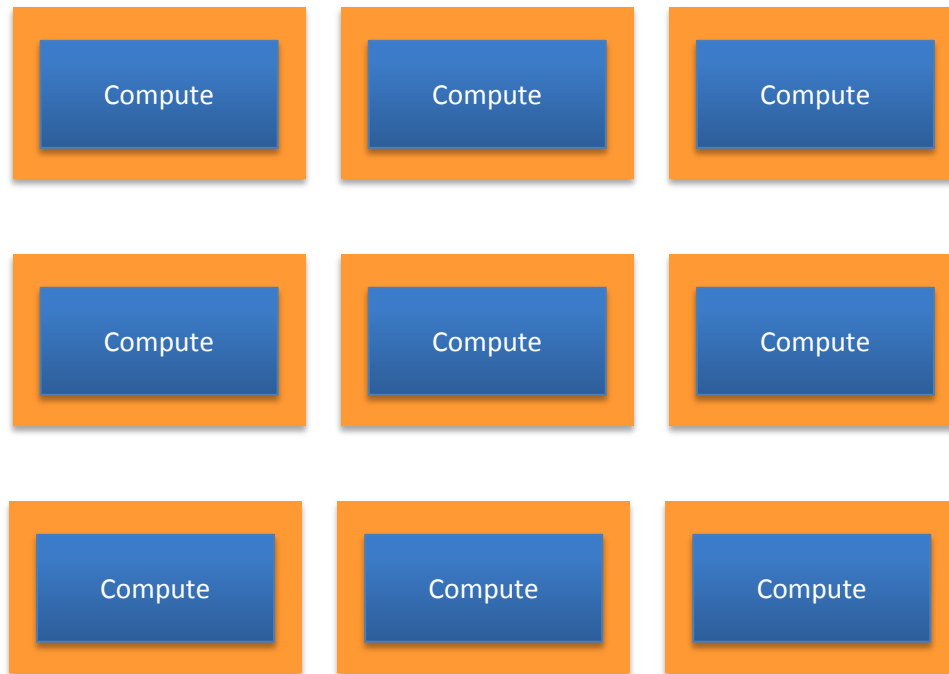


Main Role

API-Server

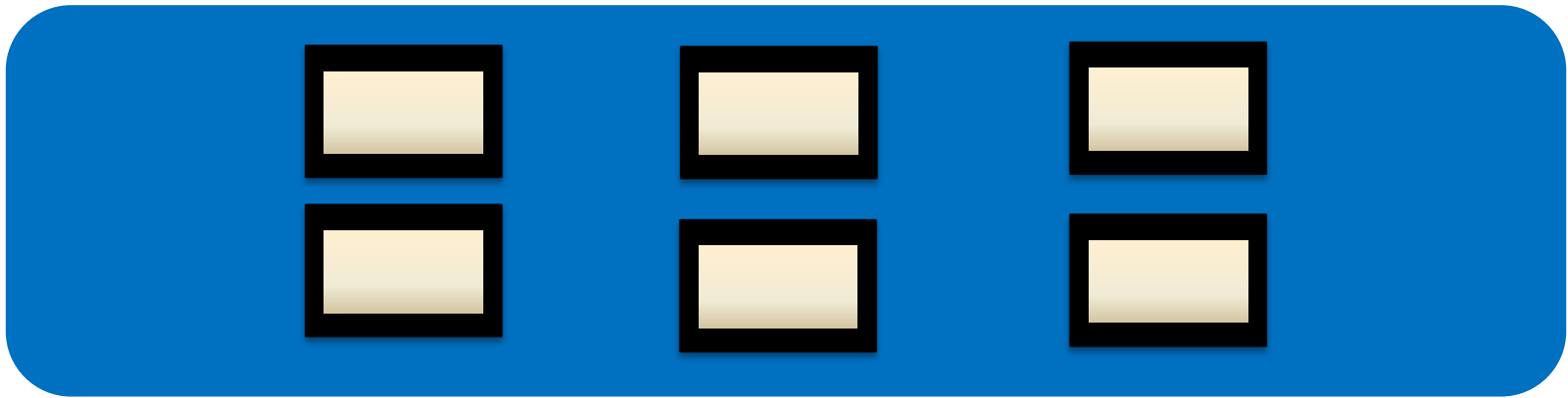
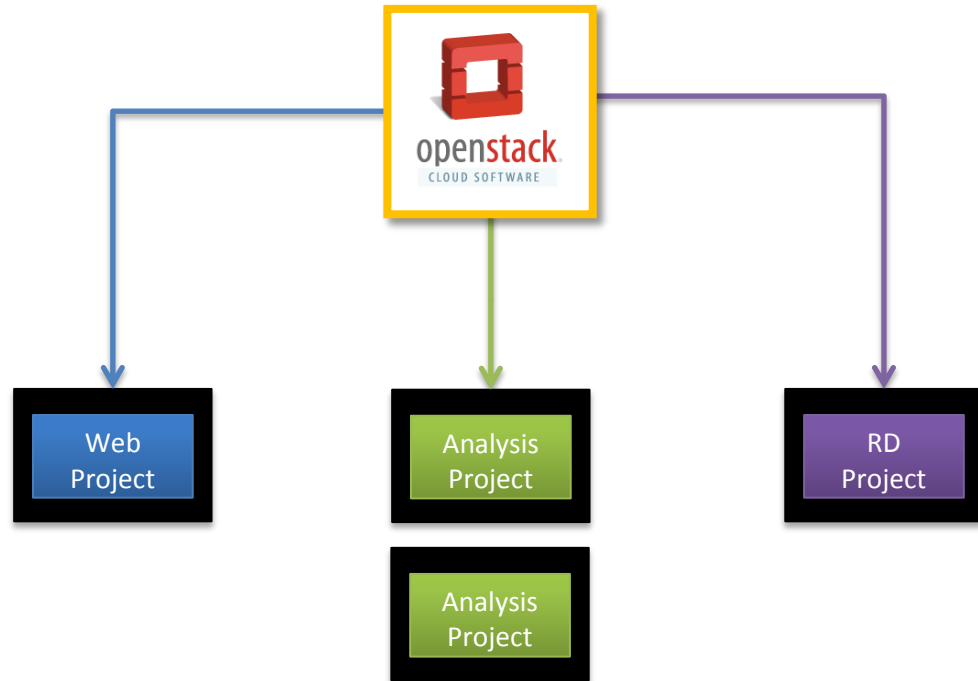
CONTROLLER

Agent

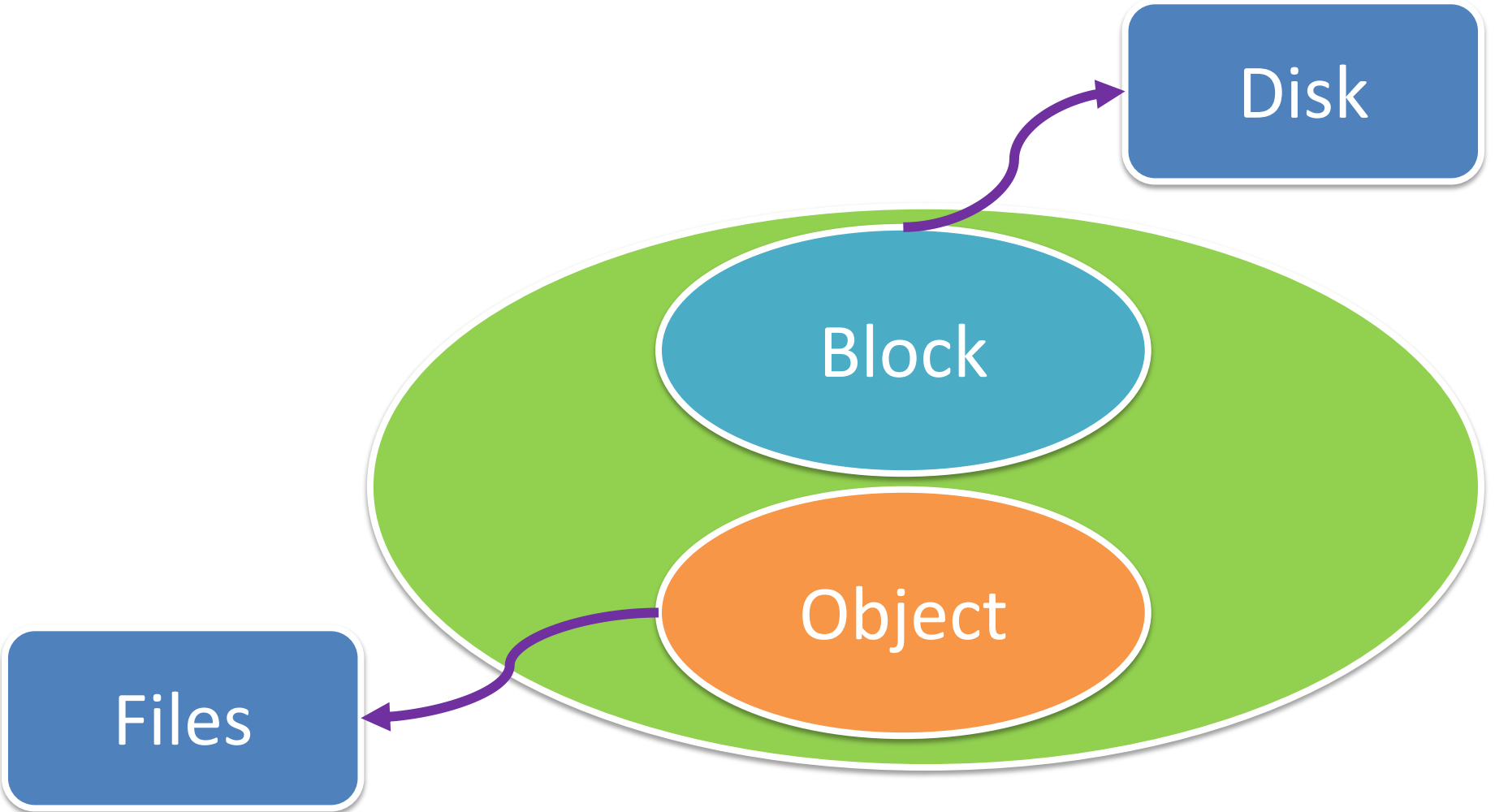


Main Role

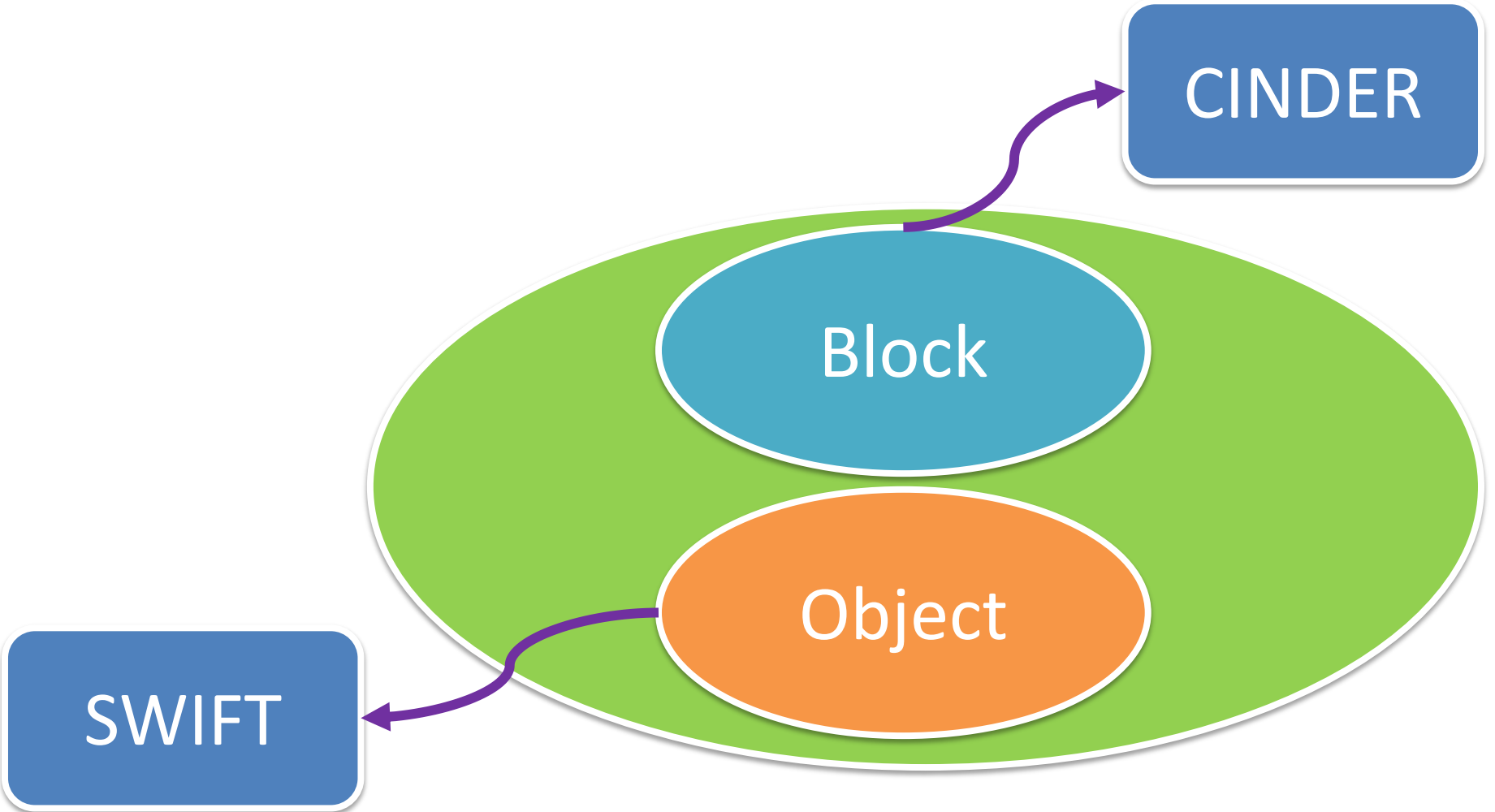
Projects



Main Role



Main Role





Thank You!

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