

OpenStack: Costruire il Cloud con tecnologie Open Source

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OpenStack è una piattaforma open source per la gestione di infrastrutture cloud pubbliche e private.

Consente di strutturare e gestire le proprie risorse in modo **scalabile** e **flessibile**.

Analisi

Vantaggi:

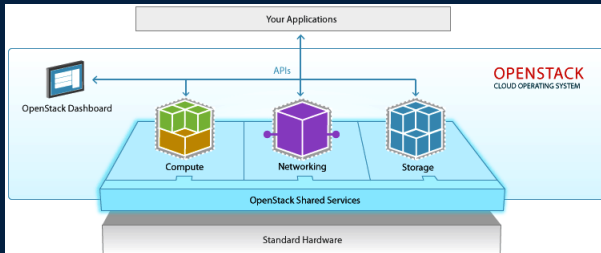
- Open Source
- Flexibility
- Scalability
- Modular Architecture
- Interoperability
- Multi-cloud Support
- Extensibility
- Security Enhancements

Svantaggi:

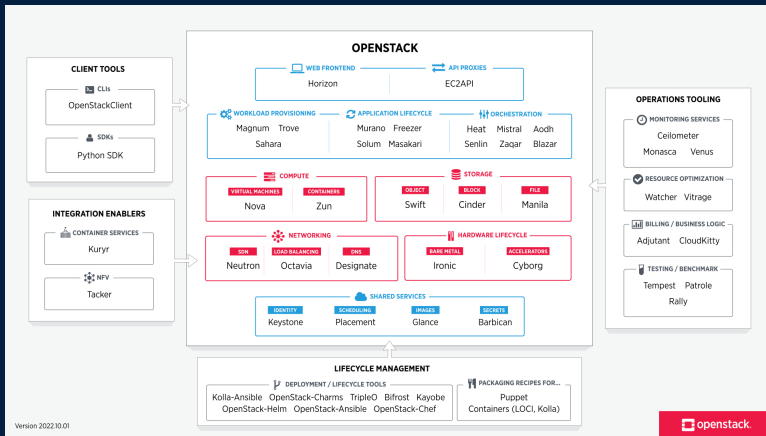
- Complex Deployment
- High Maintenance
- Skill Requirements
- Integration Challenges
- Security Concerns
- Performance Overhead

Architettura: Componenti

- Nova (Compute)
- Neutron (Networking)
- Cinder (Block Storage)
- Swift (Object Storage)
- Keystone (Identity Service)
- Glance (Image Service)
- Horizon (Dashboard web-based)

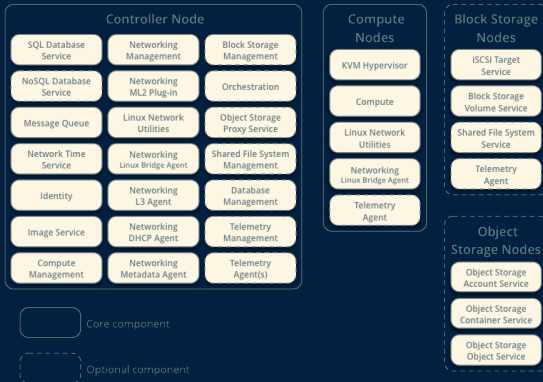


Architettura: Componenti



Architettura: Cluster

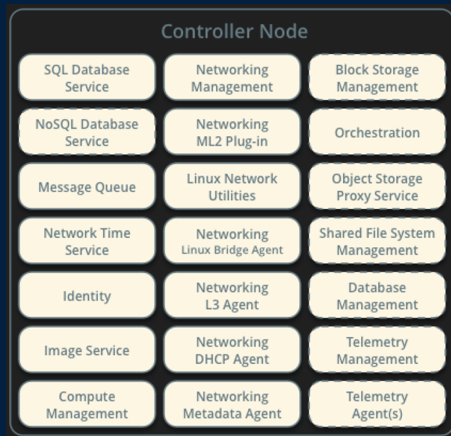
Networking Option 2: Self-Service Networks Service Layout



Architettura: Controller Node

Componenti essenziali:

- Horizon (Dashboard web-based)
- Neutron Server (Networking Service)
- Glance (Image Service)
- Keystone (Identity Service)
- Cinder API (Block Storage Service)
- Nova Scheduler (Compute Resource Scheduler)

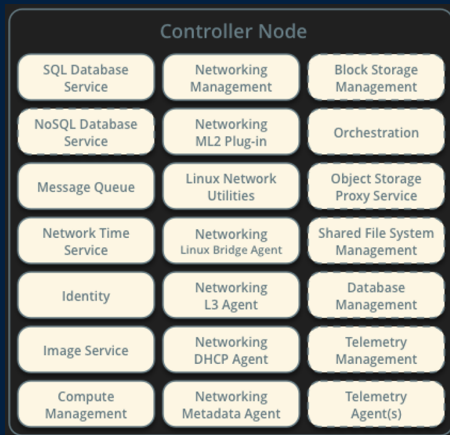


Architettura: Controller Node

Componenti opzionali:

- Swift Proxy (Object Storage Proxy)
- Placement API (Resource Placement)
- Heat (Orchestration Service)
- Telemetry Services (Monitoring):
 - Ceilometer (Metrics Collection)
 - Gnocchi (Metrics Storage)
- Database (Relational Database)
 - MariaDB
- Message Queue (Messaging Service)
 - RabbitMQ

Gestione anche di **Keepalived** e **HAProxy**.



Architettura: Compute Node

Componenti essenziali:

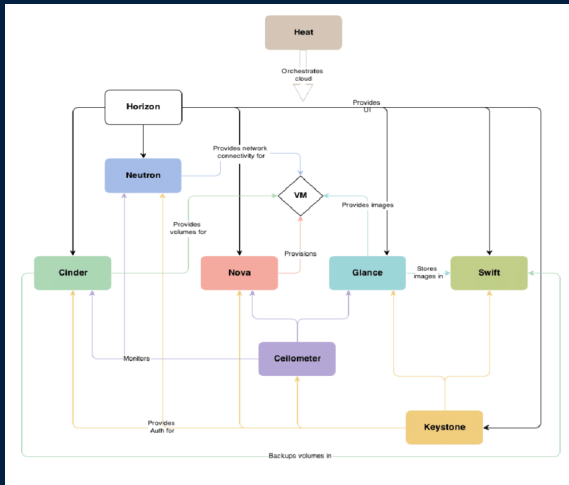
- Nova Compute (Compute Service)
- Neutron Agents (Networking Agents)

Componenti opzionali:

- Cinder Volume (Volume Service)
- Swift Object Storage (Object Storage Node)
- Ceilometer Agent (Monitoring Agent)
- Manila (Shared File Systems Service)



Dipendenze



Implementazione

■ Python:

- Scripting per l'automazione.
- Base per Kolla-Ansible.

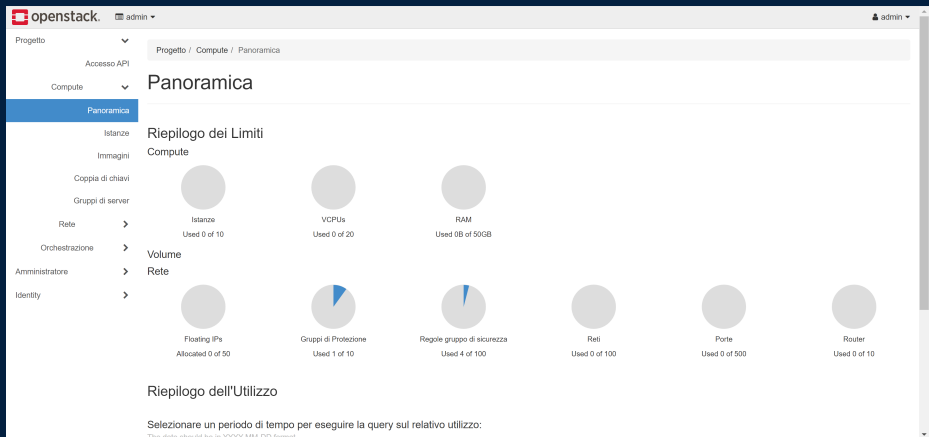
■ Ansible:

- Strumento di configurazione automatizzata.
- Gestione tramite **Playbook** YAML.
- Architettura agentless (nessun software richiesto sui nodi gestiti).

■ Kolla-Ansible:

- Deployment containerizzato di OpenStack.
- Uso di Ansible per configurare e orchestrare i container Docker.
- Preconfigurazioni pronte per ambienti di produzione.

OpenStack Dashboard: Horizon



Grazie per l'attenzione!