HP Cloud Connector

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Cloud Services Reference Architectures (CSRA)

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Services

Cloud Infrastructure from HP consists of individual services installed and integrated together across one or more machines to form a cloud environment. Each service is large grained with a REST API and can consist of many internal components that can also be distributed across one or more machines when installed. It is through plug-in points in each service integrated to the service API that services are composited together and integrated into a single cloud solution. Each service has a code name and is responsible for a separate set of functionality that is encapsulated behind its API. The list of possible services that can be deployed for HP Cloud Infrastructure are:

- **Keystone:** OpenStack service to provide identity management, access token, and service catalog functionality.
- **Glance:** OpenStack service to provide for discovering, registering, and retrieving virtual machine images.
- **Eden:** HP service to provide foundation support for other HP services in the area of security and management.
- **Peer:** HP service to provide for discovering, registering, and retrieving resource pool definitions for compute resources.
- **Eve:** HP service to provide for provisioning lifecycle of a TOSCA-based infrastructure topology template of compute resources in a defined resource pool.
- **Focus:** HP service to provide for discovering, registering, versioning, and retrieving of document types necessary to describe TOSCA-based infrastructure topologies.
- **Nova:** OpenStack service to provide a cloud computing fabric controller, the main part of an IaaS environment.

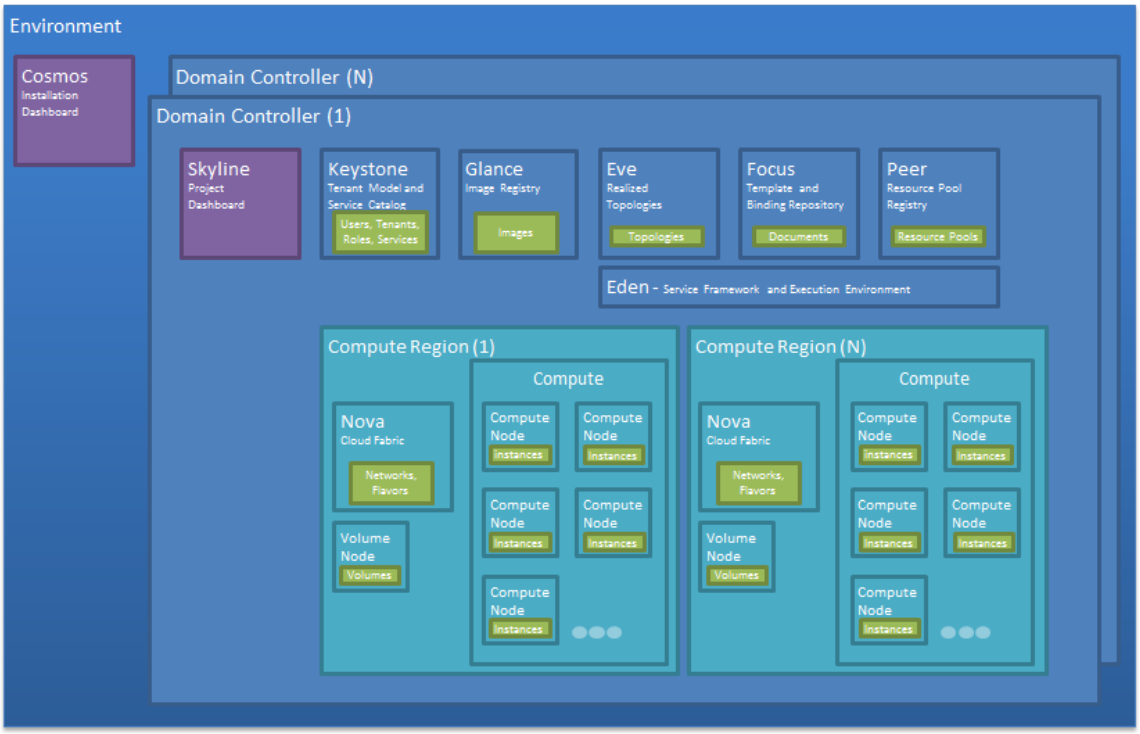
Note: HP Cloud Administration Dashboard is based on OpenStack Horizon for user and project management of resources.

Controllers

While each service can be individually deployed, HP Cloud Infrastructure groups these services into two distinct groups for ease of architectural description:

- **Domain Controller:** A Domain Controller contains those services that are considered singleton for a cloud environment, such as Keystone, Glance, Eden, Peer, Eve and Focus, and define the boundaries of the cloud environment from an identity standpoint.
- **Resource Region:** A Resource Region is commonly known as Compute Region. A Compute Region is a pool of resources, such as compute and storage, that can be consumed through a service API by consumers of the cloud, such as Nova. A cloud environment can have one or more resource regions of a particular type or no resource regions. For example, a cloud can have more than one compute region that is divided by geography, availability, organization, hardware characteristics, and so on.

The following diagram illustrates an example cloud environment with multiple Domains, where within one Domain there are multiple Compute Regions.



Deployment

For smaller cloud environments, the Domain Controller can be installed on a single node (machine) that is called a Controller Node. Controller Node sizing depends on the scale of the cloud solution.

The Compute Region (Nova) consists of three main internal components:

- **Cloud Controller and Volume Controller:** These components can be installed on the same controller node or they can be separated out for larger scale situations.
- **Compute Worker:** This component must be installed on all compute nodes that make up the pool of compute resources to be consumed by cloud consumers. In a small cloud, a single node is used as an admin node. The admin node contains the cloud installation services, a controller node that contains the domain controller services, the compute region, cloud controller and volume services, and one or more compute nodes to make up the compute resource pool.
  Note: This can be scaled-out significantly, depending on the number of compute regions required and the scale requirements.