



SUSE OpenStack Cloud HA

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HA概述

标准

最小数据恢复时间

最小宕机时间

稳定性	宕机时间/年	宕机时间/月	宕机时间/周	宕机时间/天
99%（两个9）	3.65天	7.2小时	1.68小时	14.4分钟
99.9%	8.67小时	43.8分钟	10.1分钟	1.44分钟
99.99%	52.56分	4.38分钟	1.01分钟	8.66秒
99.999%	5.26分	25.9秒	6.05秒	864.3毫秒
99.9999%(六个9)	31.5秒	2.59秒	604.8毫秒	86.4毫秒

避免单点故障

网络设备的冗余

APP 冗余以及服务自主迁移

电源模块的冗余

共享存储

Stateful与Stateless

状态	描述	示例
有状态(stateful)	服务之间没有依赖 无需数据同步	OpenStack-APIS,Scheduler
无状态(stateless)	一个操作设计多个请求 在冗余节点间，数据需要同步与恢复	MySQL, RabbitMQ

其他概念

名称	描述
failover	服务从master节点迁移到slave节点
failback	服务从master节点迁移回至master节点
fencing	将出错节点进行关机隔离
Active/Passive	主从模式 只有一个master
Active/Active	双活模式 有多个master

OpenStack HA

Pacemaker

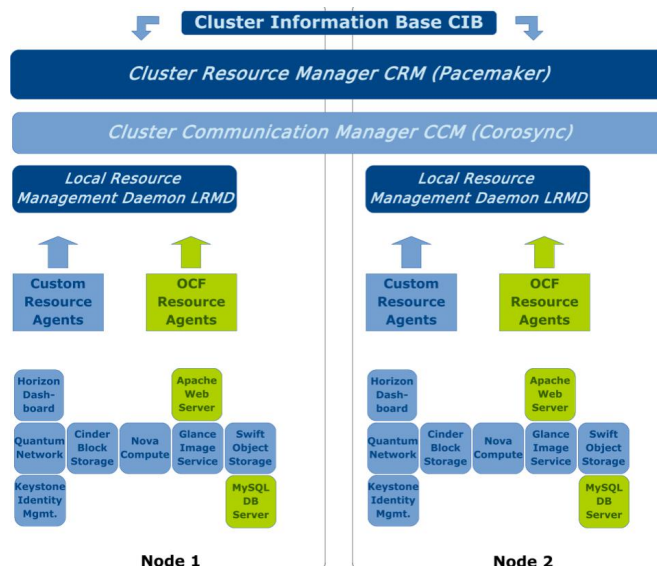
集群资源管理工具

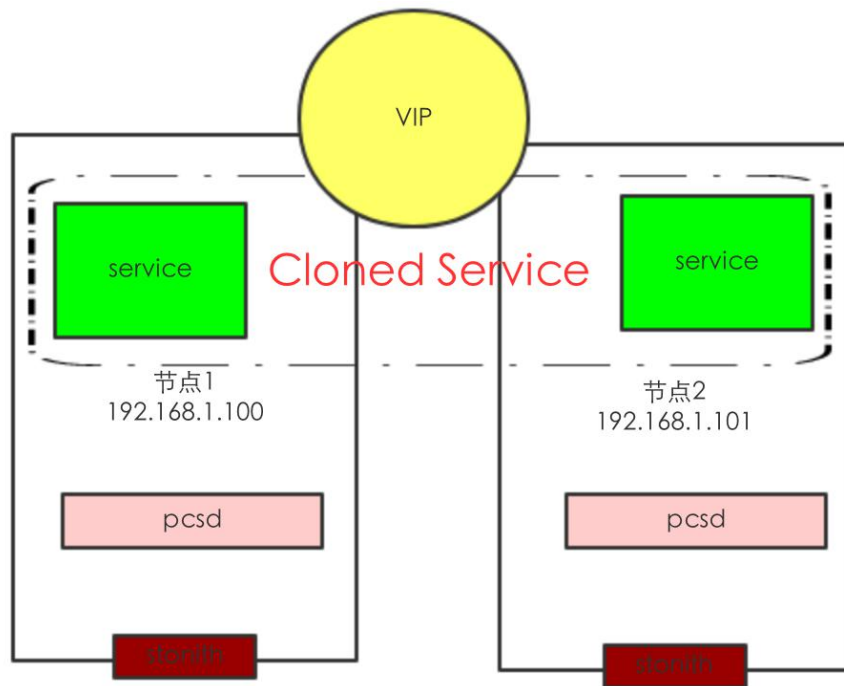
使用corosync作为集群通信的工具

浮动的VIP

Cloned Service (active/active)

Stonith-通过电源管理实现fencing





Stonith-一般为IPMI或者共享裸盘

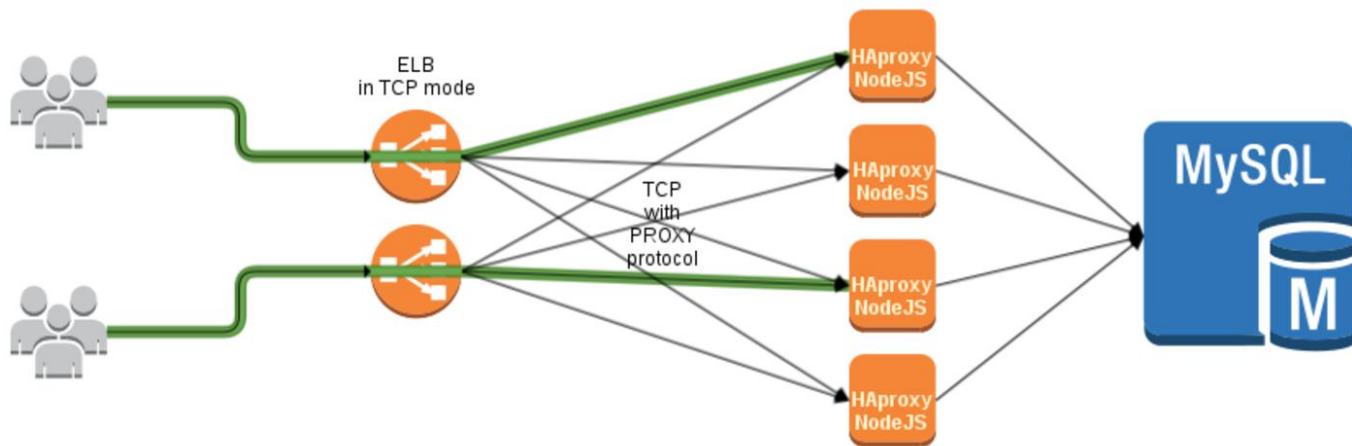
HAProxy应用

提供高可靠、负载均衡的代理

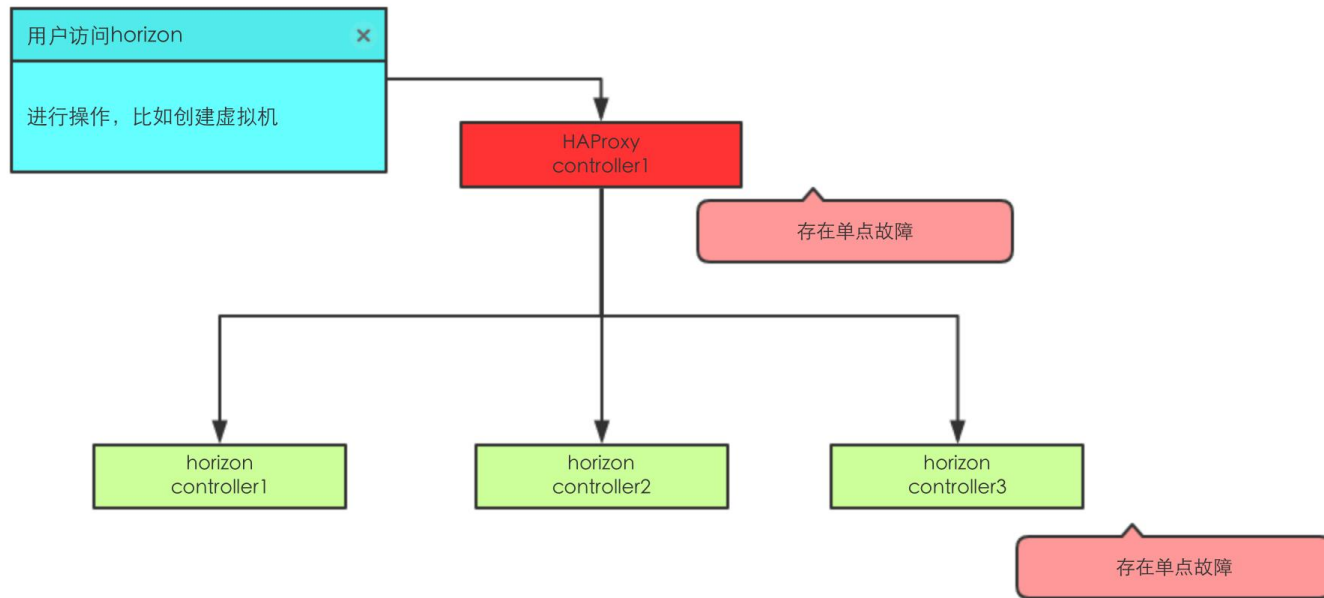
主流的web application负载均衡器

健康检测

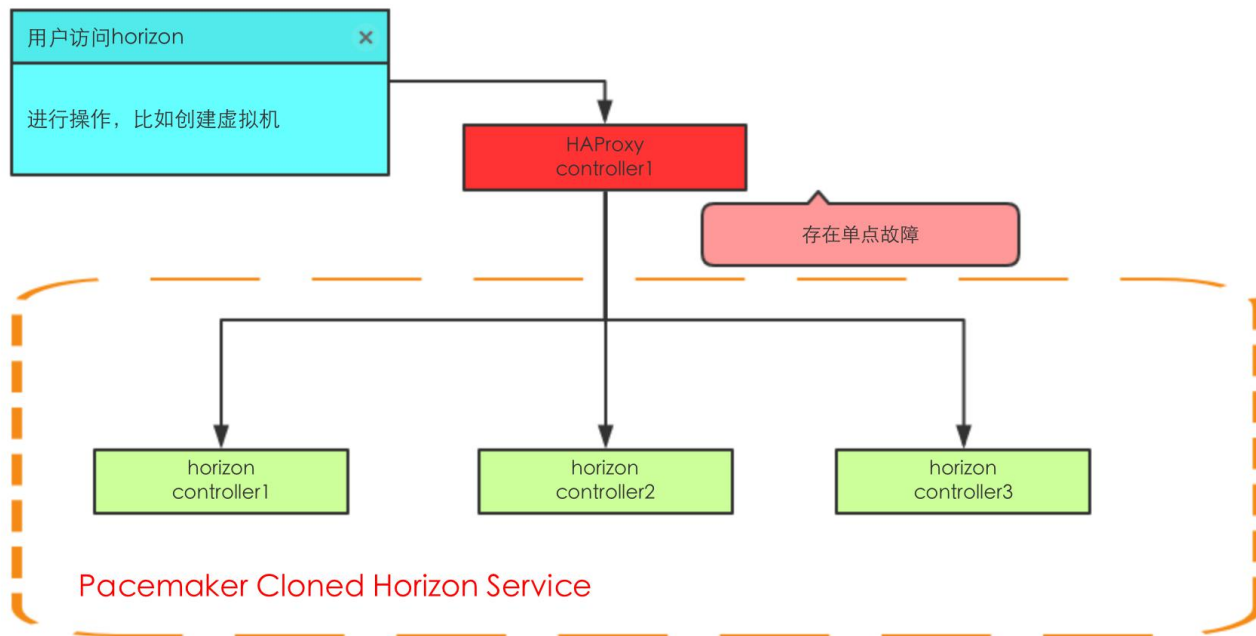
基于ACL的持久性



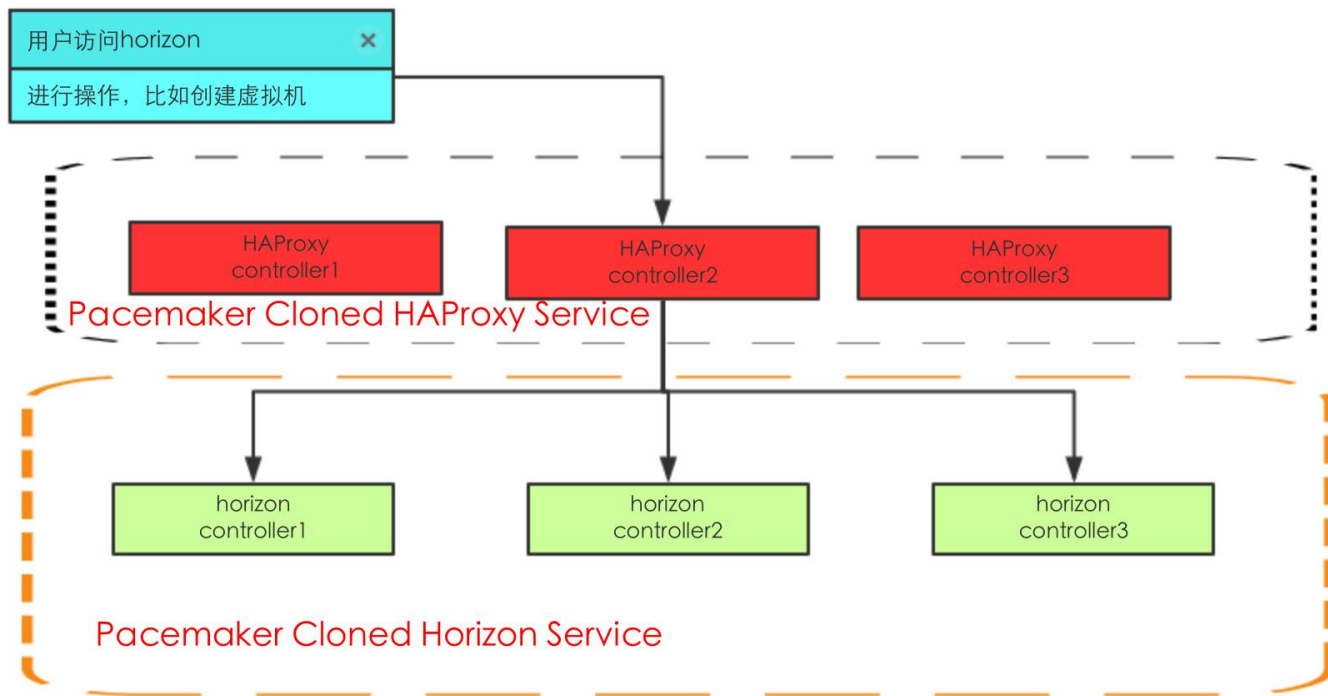
Pacemaker应用



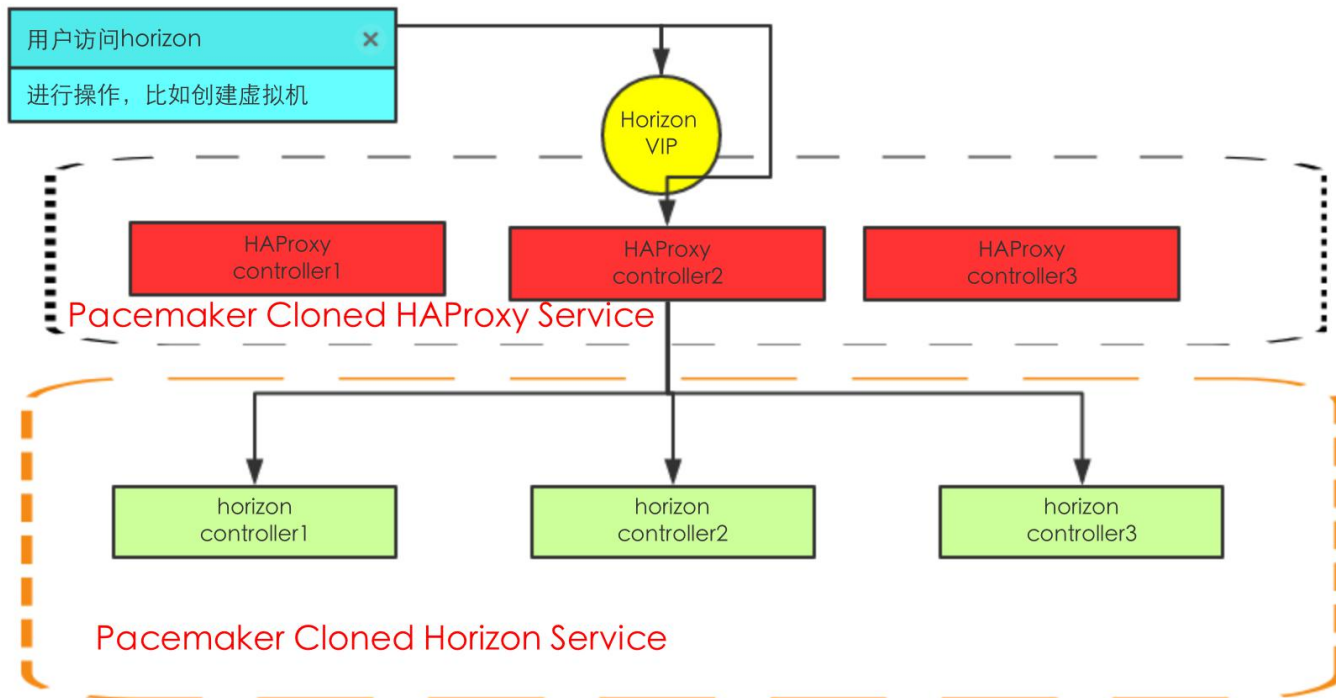
Pacemaker应用



Pacemaker应用



Pacemaker应用

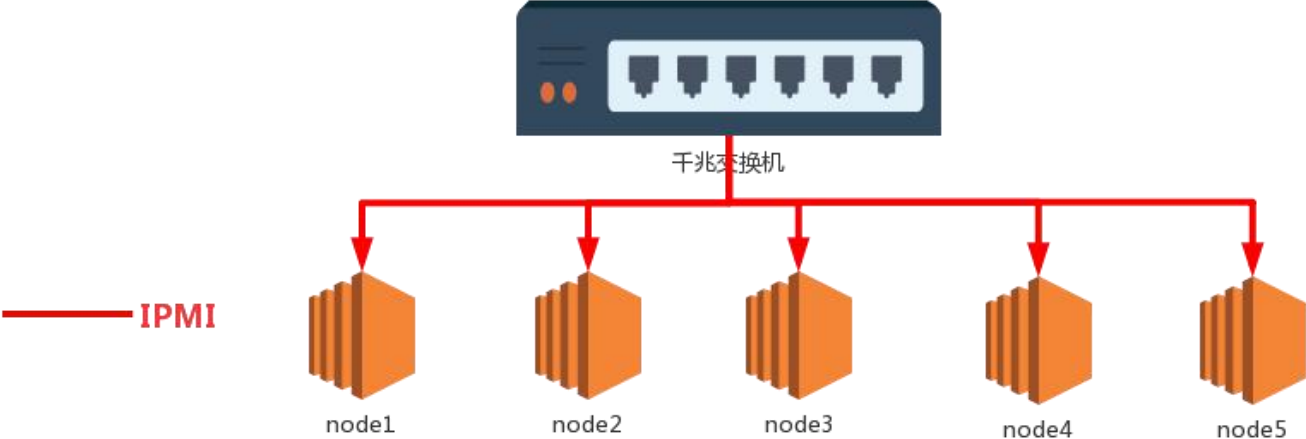


Stonith

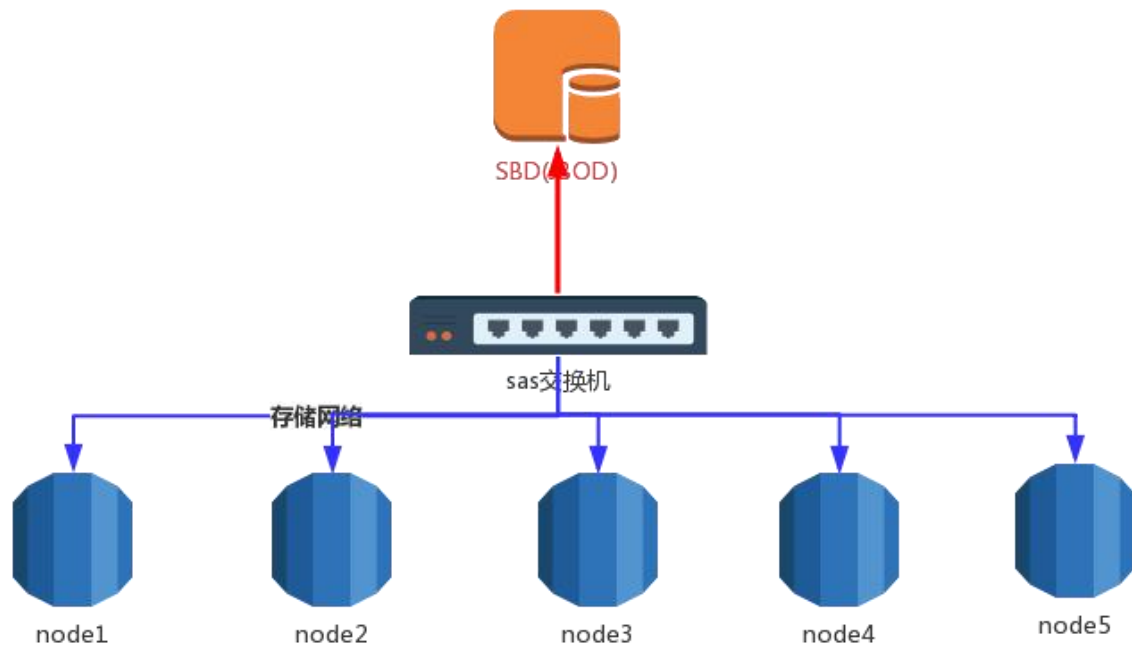
(Shoot-The-Other-Node-In-The-Head)

采用电源或者裸盘隔离节点

stonith实现-IPMI



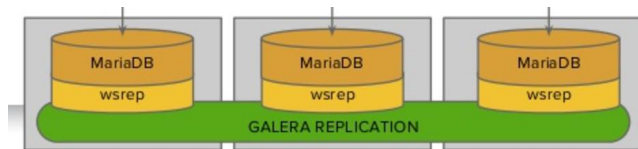
stonith实现-SBD



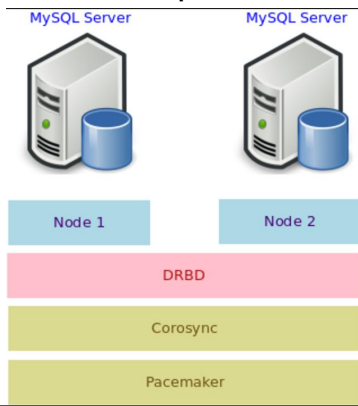
DB MQ高可用实现

DB、MQ HA

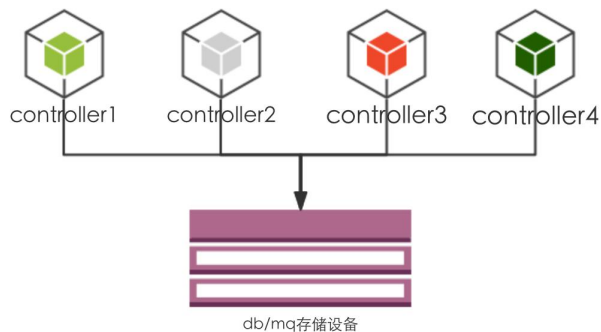
mysql可采用现有成熟方案实现ha，比如galera



对于集群中只有两个controller节点，db/mq可采用drbd的方式

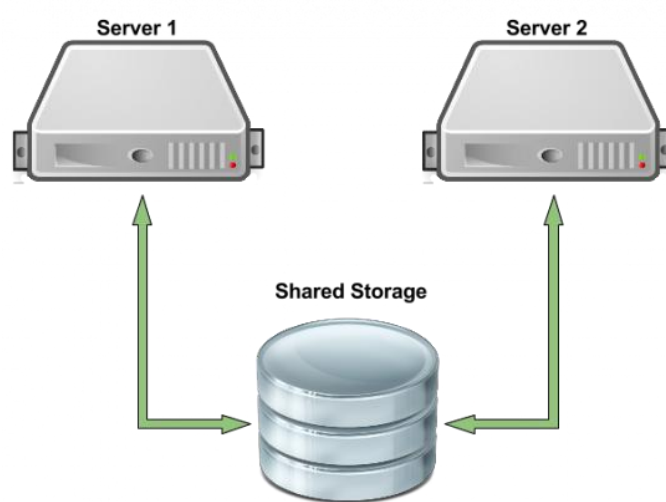
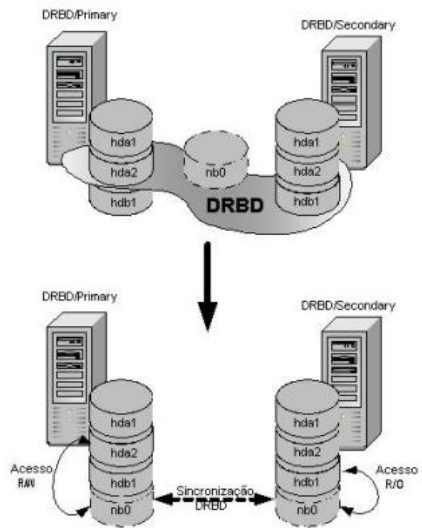


对于集群中只有多个controller节点，db/mq可采用共享存储的方式



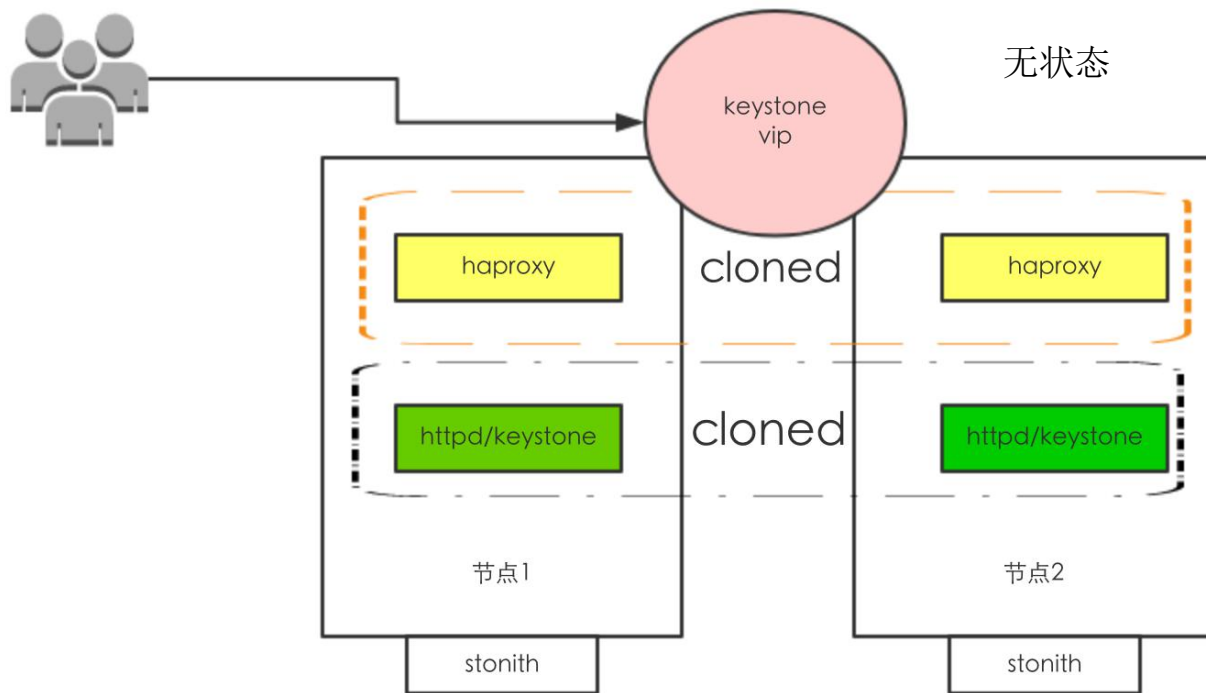
DB、MQ存储

DRBD

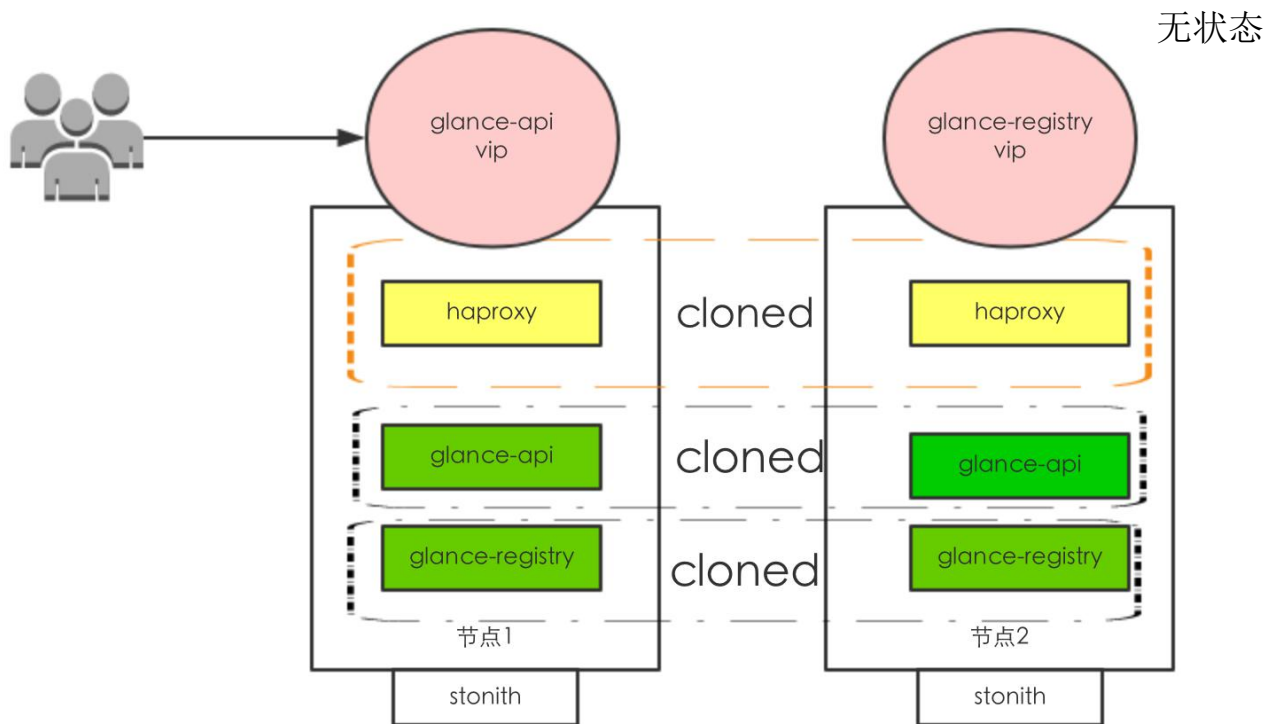


OpenStack Services高可用

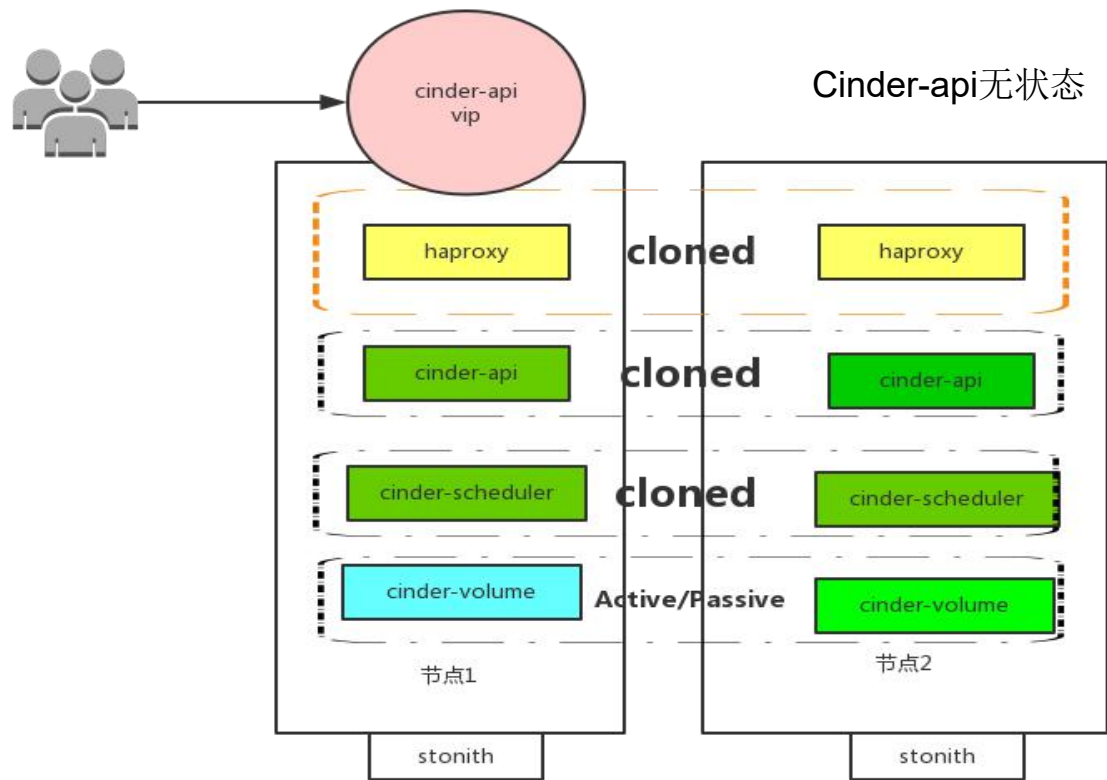
Keystone



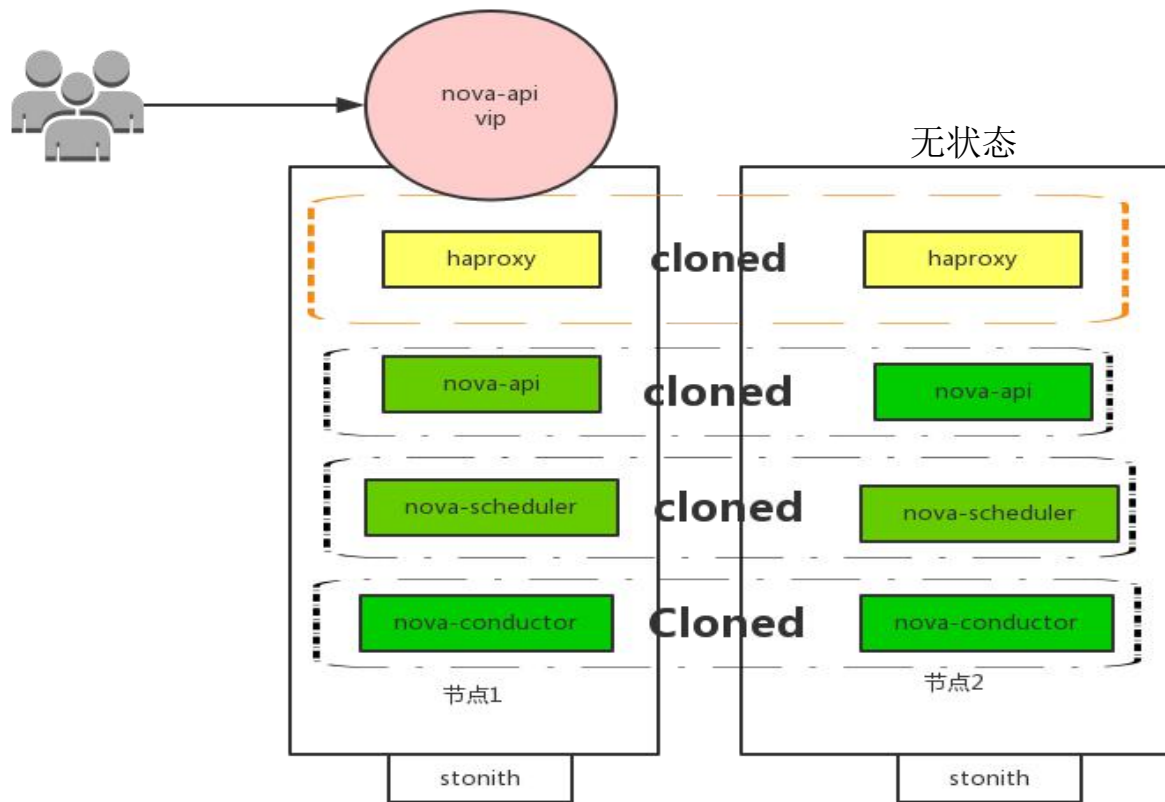
Glance



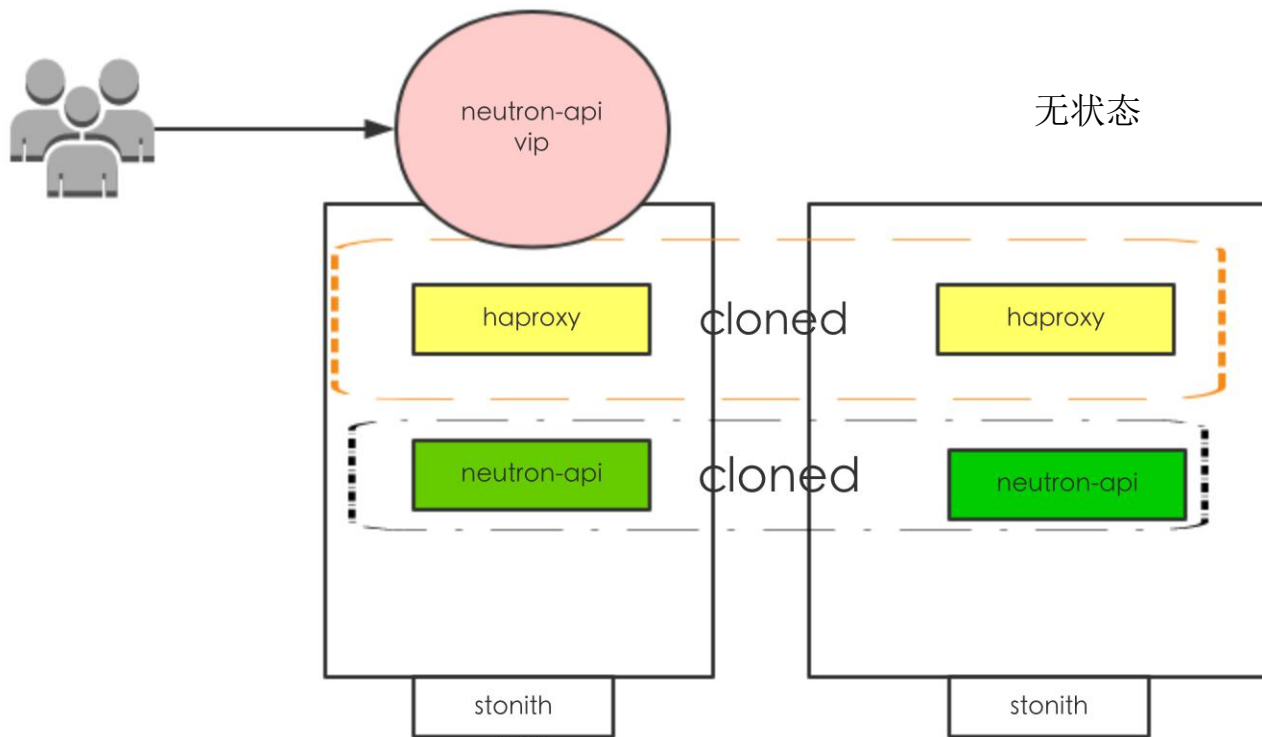
Cinder



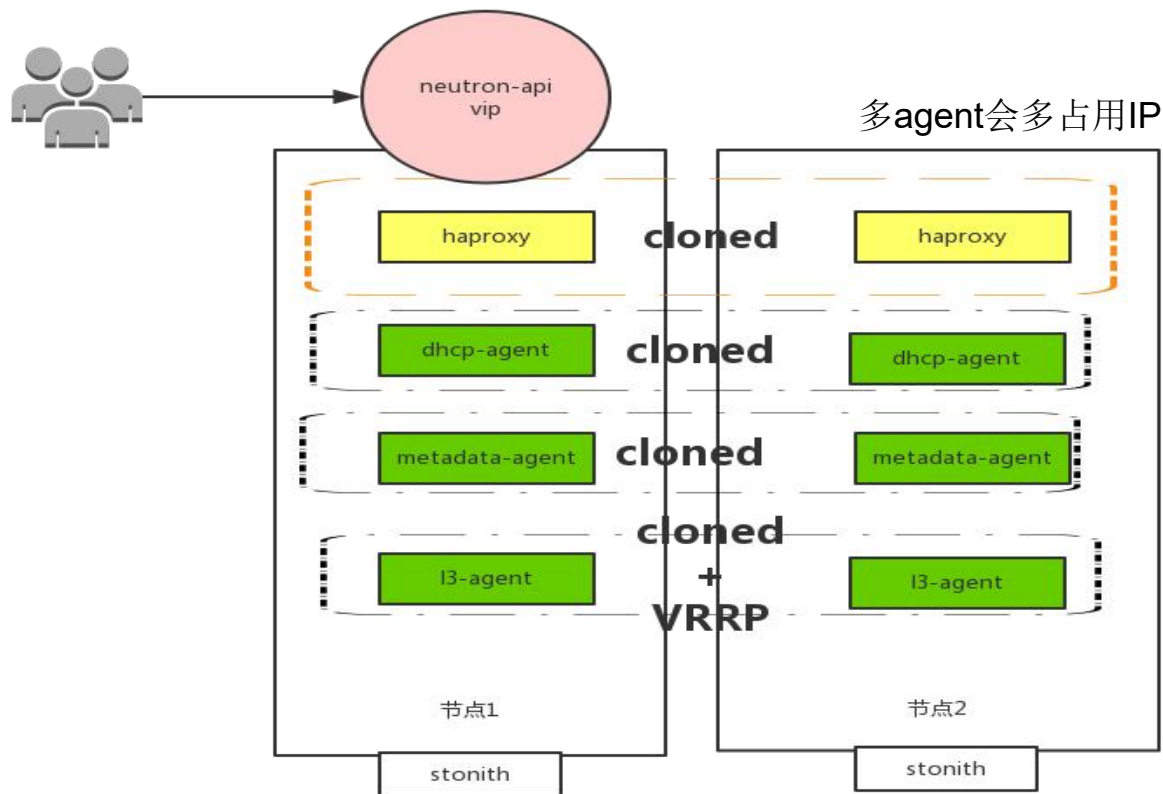
Nova



Neutron API



Neutron Agent



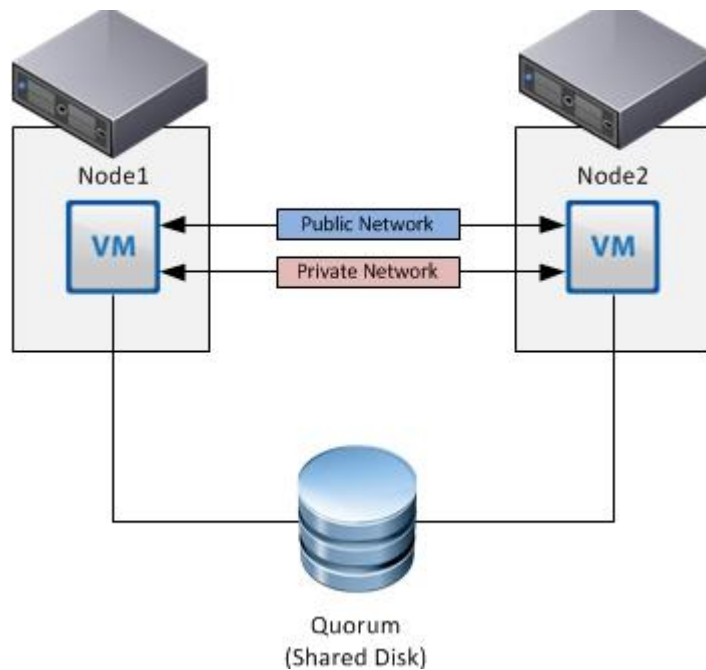
计算节点高可用

Pacemaker_remote

Pacemaker_remote自恢复

虚拟机自动迁移

短暂的不可访问

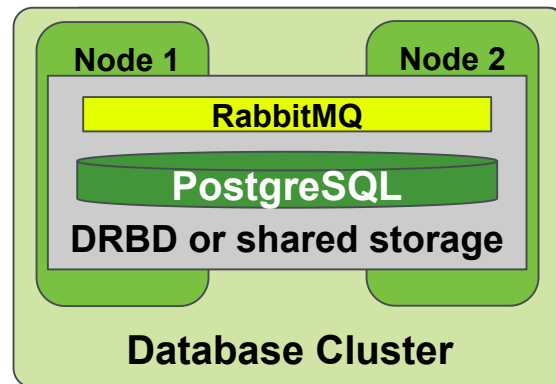
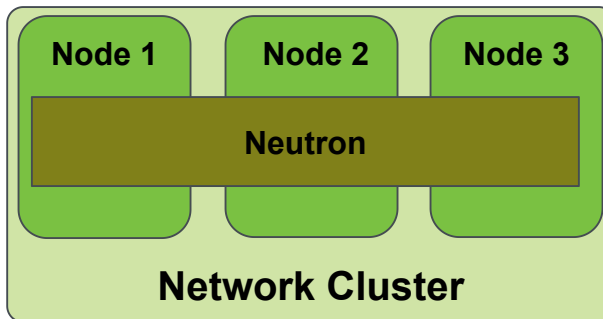
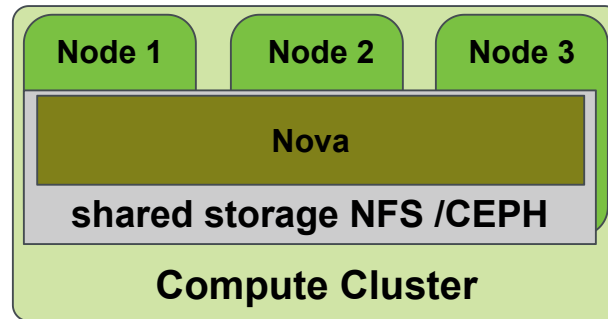
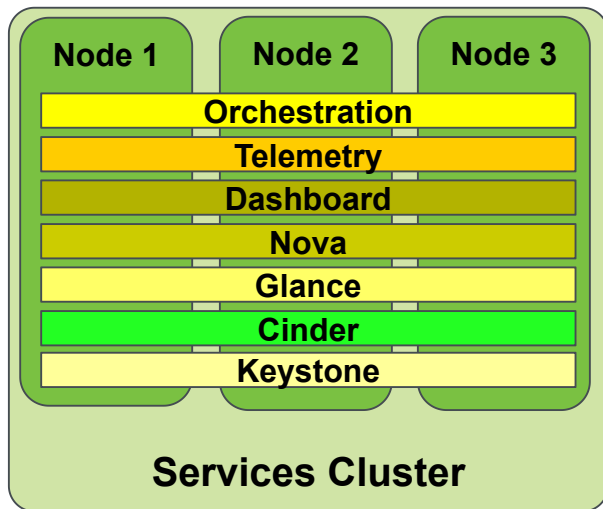


SUSE OpenStack Cloud高可用

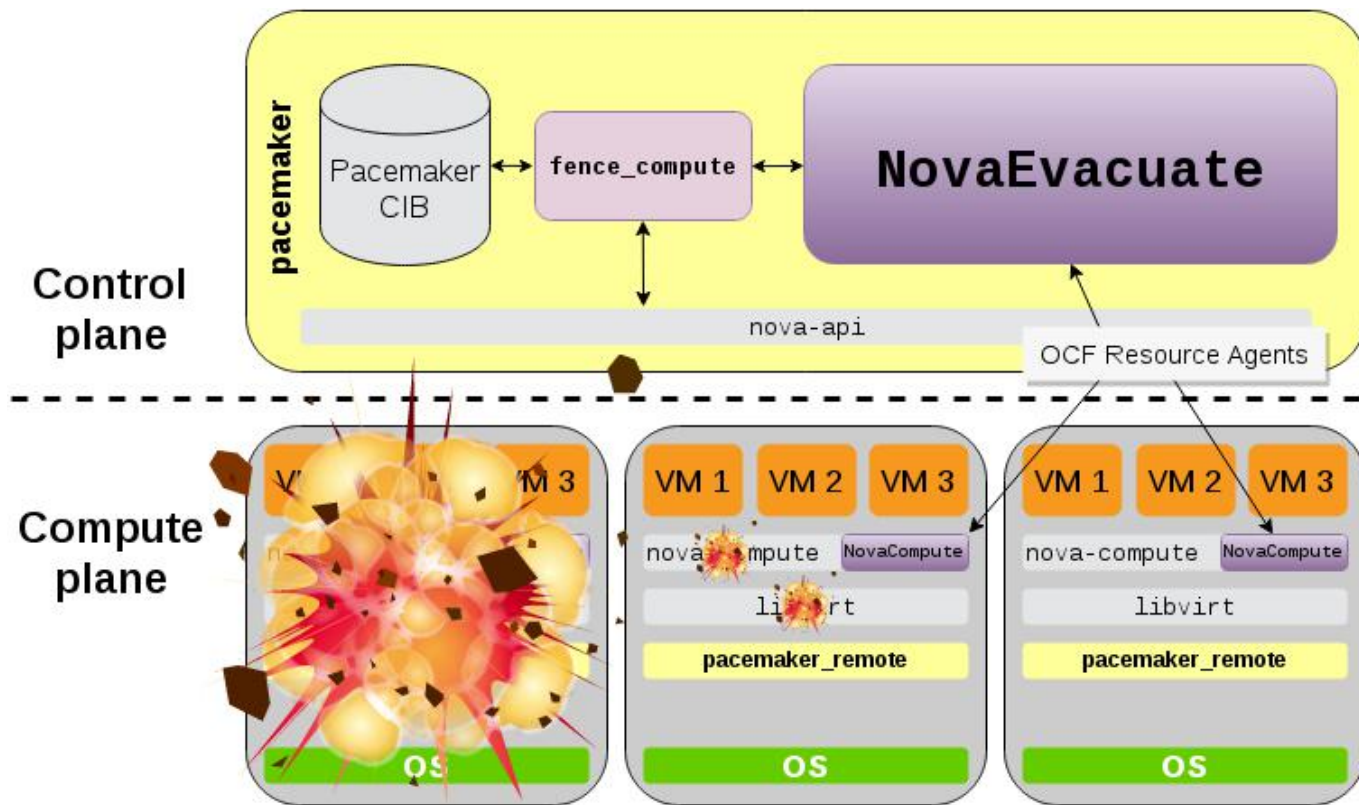
Crowbar Base

- 由SUSE主要维护
- 基于成熟的SUSE HA套件: Corosync+Pacemaker
- Many Bugs Fixed
- HA组件更好协同
- DRBD支持（不需要共享存储）
- 计算节点HA增强
- 容易部署
- 容易管理和监控Web UI

Crowbar Base HA 概览



计算节点HA



计算节点HA部署举例

Deployment

[Raw](#)

Drag nodes for deployment from Available Nodes into the selected Role

Available Clusters

?

services

?

Available Clusters with Remote Nodes

?

services (2 remote nodes)

Available Nodes

compute1

compute2

controller1

controller2

crowbar

nova-controller

[Remove all](#)

services

nova-compute-docker

[Remove all](#)

nova-compute-hyperv

[Remove all](#)

nova-compute-kvm

[Remove all](#)

services (2 remote nodes)

nova-compute-qemu

[Remove all](#)

nova-compute-vmware

[Remove all](#)

nova-compute-xen

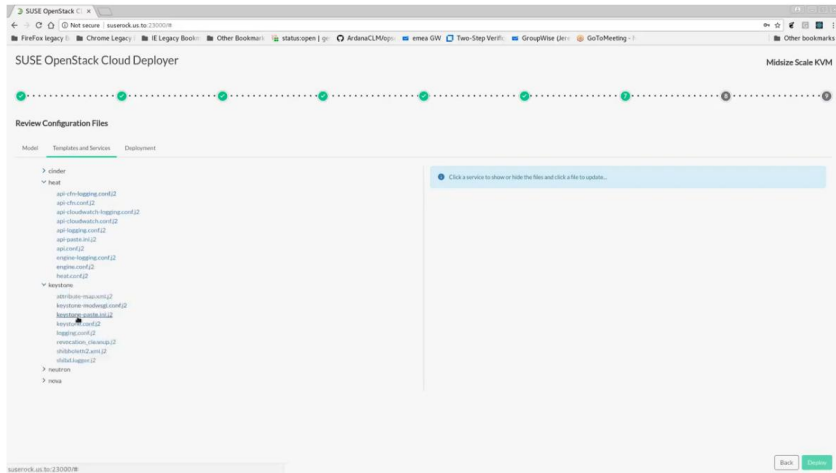
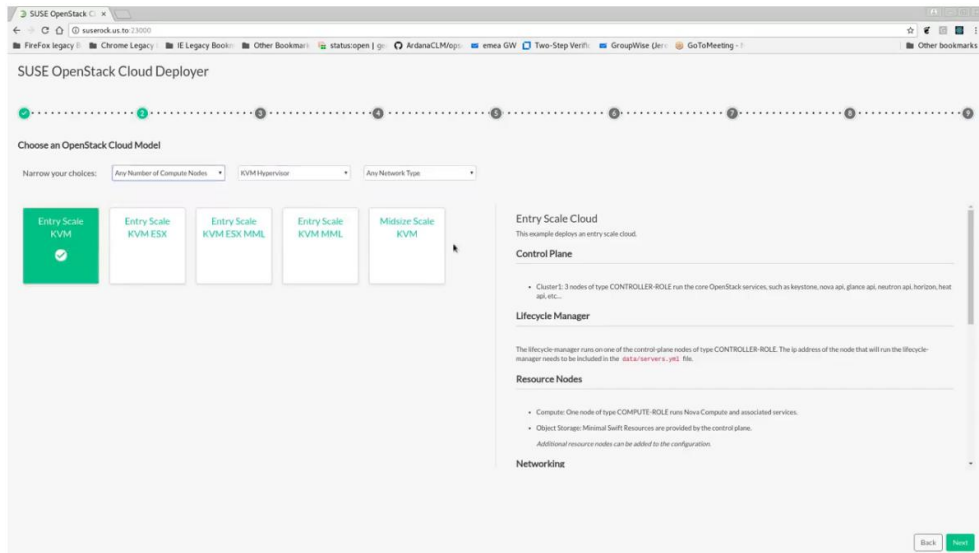
[Remove all](#)

nova-compute-zvm

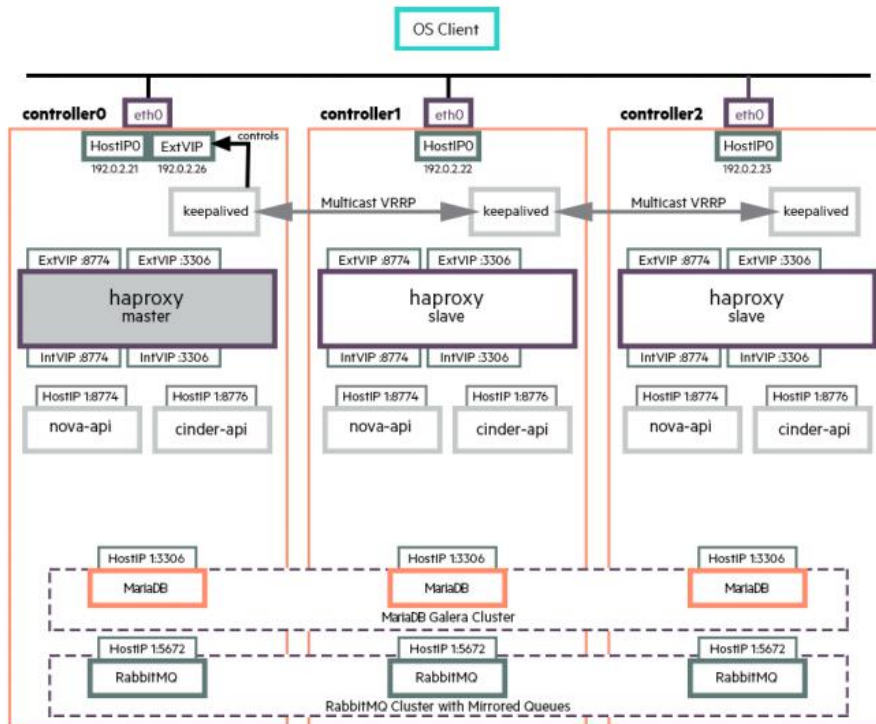
[Remove all](#)

Ardana Base

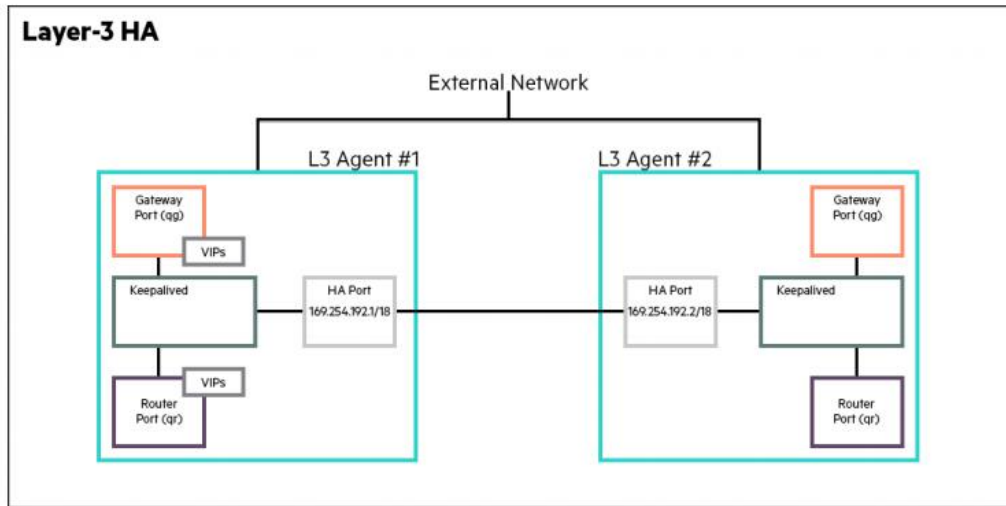
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- 基于成熟的开源HA套件:
Haproxy+ Keepalived
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- HA组件更好协同
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- 容易管理和监控Web UI



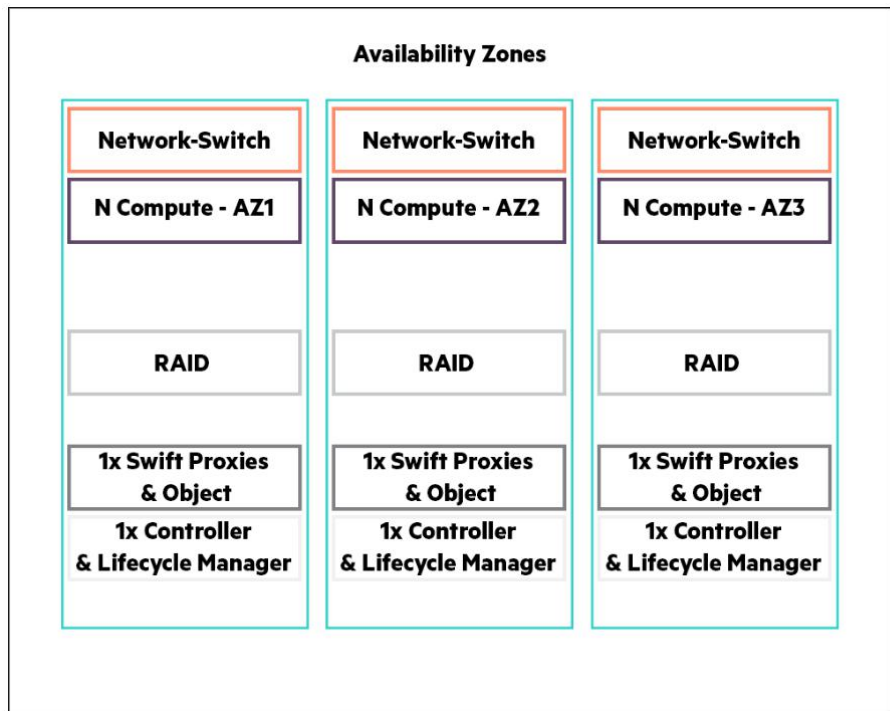
Ardana Base 控制节点HA



Ardana Base L3 Agent HA



Ardana Base HA AZ



Questions



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