

Setting up a Private Cloud Using Mirantis OpenStack 6.0 and CloudByte ElastiStor

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Mirantis OpenStack 6.0 resources

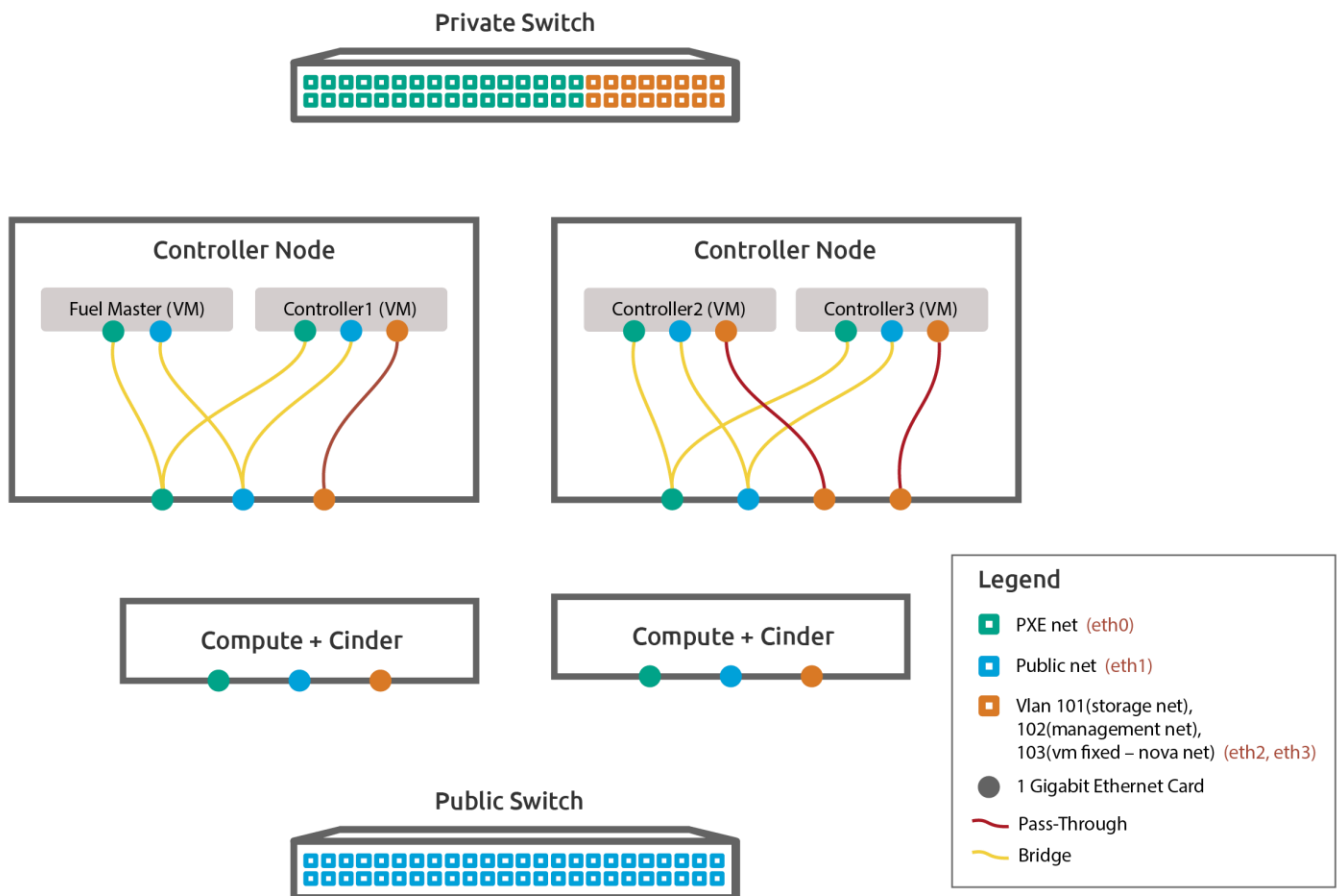
The following links help you download, install, and setup Mirantis OpenStack 6.0:

- [Documentation](#)
- [Reference Architectures](#)
- [Download](#)

OS specifications

The following document uses CentOS 6.5. Depending on the flavor of Linux that you use, the procedures might vary.

Mirantis OpenStack setup diagram



- Each Gigabit Ethernet (Dots) is connected to the respective color in the switch.

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- If you have more than one VLAN on a port (a "trunk port"), since you need to indicate the packet that belongs to the VLAN on the other end, "tag" a packet with a VLAN tag.
- On private network, you have three VLANs, one each for Storage Network, Management Network, and Nova Network respectively. If you are not using VLANs, you require three additional Ethernet ports.

Network	Used for
Admin PXE (Fuel Network)	Internal Fuel communications and PXE booting (untagged on the scheme)
Public Network	Getting access from virtual machines to outside, Internet, or office network (untagged on the scheme)
Storage Network	Storage traffic (VLAN 101 on the scheme)
Management network	Internal OpenStack communications (VLAN 102 on the scheme)
Nova Network	Providing Nova services(VLAN 103 on the scheme)

Set up BOM

Component	Quantity	Description
Fuel Master server	1	<ul style="list-style-type: none"> • System : KVM VM • CPU : 1 x 3.09 Ghz • Memory : 1 x 8GB,8GB total • Disks : 1 drive,100.0 GB total • Interface : 3 x 1.0 Gbps
Cloud Controllers 3 x Controllers	3	<ul style="list-style-type: none"> • System : KVM VM • CPU : 1 x 3.09 Ghz • Memory : 1 x 8GB,8GB total • Disks : 1 drive,100.0 GB total • Interface : 3 x 1.0 Gbps
Cloud Computes 2 x Computes	2	<ul style="list-style-type: none"> • System : Intel corporation S2400SC • CPU : 12 x 2.19 Ghz • Memory : 4 x 16GB,64GB total • Disks : 1 drive,0.5 TB total • Interface : 3 x 1.0 Gbps
Public Switch	1	1Gb switch connected with the Public Network
Private Switch	1	1Gb switch with VLANs configured to support Admin PXE(Fuel network) and Private Network

Storage server RAID setup

CloudByte ElastiStor is used as the storage server (with various RAID setups), offering storage to VMs and ensuring guaranteed IOPS and throughput.

For further details, refer to [CloudByte ElastiStor documentation](#).

Networks allocation

The setup explained in the document is based on the network allocation defined in the following table. Depending on your network availability, the allocation varies.

Network	Subnet/Mask	Gateway	Notes
Admin (PXE)	10.20.0.0/24	N/A	Used to provision and manage Cloud nodes by way of the Fuel Master. The network is enclosed within a 1Gb switch and has no routing outside. This is the default Fuel network.
Management	192.168.0.0/24	N/A	The Cloud Management network. The network uses VLAN ID : 102 This is the default Fuel network.
Storage	192.168.1.0/24	N/A	Used to provide storage services. The network uses VLAN ID :101 This is the default Fuel network.
Nova Fixed Network	80.0.0.0/16	N/A	Used to provide Nova services. The network uses VLAN ID :103
Nova Floating IP Ranges	20.10.87.23 to 20.10.87.40	20.10.1.1	Used to provide Floating services. Assigns IP address to Client Virtual Machines
Public Network	20.10.87.3 to 20.10.87.20	20.10.1.1	Used to provide Public services. Not using VLAN ID

Creating the Controller VM Requirements

- **Requires four VMs**
 - 1 for Fuel Master
 - 3 for OpenStack Controllers

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Fuel Master configuration

In CentOS 6.5, go to Virtual Machine Manager and then select PXE as the boot option and then KVM as the hypervisor.

- **Configure the required Virtual Network Device for Fuel Master :**

Specify Virtual Hardware Detail for eth0 as follows:

- Source Mode -MACVtap eth0
- Device Model-e1000
- Source Mode- Bridge

Specify Virtual Hardware Detail for eth1 as

- Source Mode -MACVtap eth1
- Device Model-e1000
- Source Mode- Bridge

Controller Node configuration

Configure the required Virtual Network Device for Controllers:

Specify Virtual Hardware Detail for eth0 as

- Source Mode -MACVtap eth0
- Device Model-e1000
- Source Mode- Bridge

Specify Virtual Hardware Detail for eth1 as

- Source Mode -MACVtap eth1
- Device Model-e1000
- Source Mode- Bridge

Specify Virtual Hardware Detail for eth2 as

- Source Mode -MACVtap eth2
- Device Model-e1000
- Source Mode- Pass Through

Note: Source Mode is specified as Pass Through because, on eth2 you use three VLANs.

Installing the Fuel Master

1. Run the ISO.
2. Press the <TAB> key on the initial installation screen which says "Welcome to Fuel Installer".
3. Update the kernel option from `showmenu=no` to **`showmenu=yes`** and then press Enter.

The Fuel Master is installed and the server is rebooted.

Network setup for Fuel Master

1. Specify the following values in the Network Setup Console of the Fuel Master:

Interface	IP Address	Netmask	Default Gateway
eth 0	10.20.0.2	255.255.255.0	
eth1	20.10.87.1	255.255.0.0	20.10.1.1

2. Verify the PXE Setup.
3. Change the time synchronization as per your location, for example, `0.asia.pool.ntp.org`.
4. Save and quit. Once the Fuel Master installation is over, the console provides Fuel access details for both SSH and HTTP.

Accessing Fuel Master and Setup OpenStack Environment

1. Access Fuel Web UI using the following URL:
`http:<Fuel_Master_IP_Address_provided_during_installation>`.
2. Use `admin` as both username and password.
3. [Setup OpenStack Environment.](#)