
Barracuda WAF Deployment on OpenStack

<https://campus.barracuda.com/doc/84312861/>

This section walks you through steps of how to deploy Barracuda WAF on OpenStack.

Getting Started

OpenStack is an open source cloud computing platform for public and private clouds. They provide infrastructure as a service on which administrators can run virtual servers, services and other resources.

Barracuda Web Application Firewall is deployed on OpenStack as a virtual machine and protects web applications running on OpenStack as well as external web applications.

Deploying and Provisioning the Barracuda Web Application Firewall on OpenStack

The following instructions have been written with respect to OpenStack Horizon dashboard.

Before you begin to verify if the following pre-requisites are met:

1. Create an account with access to -OpenStack nova for computing, neutron for networking, glance for uploading an image.
2. Upload the Barracuda WAF Vx image for KVM/QEMU to Openstack.
3. A functional openstack platform with
 1. At least one network with access to the internet
 2. Availability zone
 3. Instance flavors
4. A valid key pair on Openstack
5. A security group allowing inbound access to the following network ports:

Inbound:

- TCP 8000
- TCP 80
- TCP 8443
- TCP 443

Outbound:

- TCP 8000
- TCP 443
- TCP 80

- ICMP

Basic Provisioning

Using the GUI

1. Log into OpenStack dashboard.
2. Click **Instances** from the left pane.
3. Click **Launch Instance**. The **Launch Instance** page appears. Provide the following details in the respective sections.

- **Details:**

Instance Name - hostname for the instance

Description - Description of the instance

Availability Zone - availability zone where the instance is deployed

Count - the number of instances that need to be created

- **Source:**

Select Boot Source – option selected to boot the instance. Here, the option “Image” is used to boot the instance. Click the arrow provided next to the instance to allocate for booting.

- **Flavor:**

Flavors selected for an instance determines the amount of computing, storage and memory resources that will be carved out for the instance. Click the arrow provided next to the flavor to allocate enough resources to support the type of instance you are trying to create.

- **Networks:**

Networks selected to provide the communication channels for instances in the cloud. Click the arrow provided next to the network to use this network for communication.

- **Network Ports:**

Ports selected for providing extra communication channels to your instances. Instances attach their interfaces to ports. You can select ports instead of networks or a mix of both. Click the arrow provided next to the port to attach the IP address(es) to the interfaces plugged into them.

- **Security Groups:**

The security group selected to launch the instance.

- **Key Pair:**

Key pairs selected to allow you to SSH into your newly created instance. You can select an existing key pair, import a key pair, or generate a new key pair.

Using the CLI

To deploy a Barracuda Web Application Firewall, you must launch an instance. This instance serves as a virtual machine.

Arguments	Values
flavor	<flavor type>
Image	<image name>
nic net-id	<port ID>
security-group	<security group name>
key-name	<key pair name>

Set the environment variables using theOpenstackRC file:

1. On the **API Access** tab, click **Download OpenStack RC File** and save the file. The filename will be in the form "PROJECT-openrc.sh" where PROJECT is the name of the project for which you downloaded the file.To use the demo user profile: #. demo-openrc.
2. Gathering the required information before launching the instance:

To launch an instance, you must choose a flavor and an image. The flavor represents the size of the instance, including the number of CPUs and amount of RAM and disk space. An image is a prepared OS installation from which you clone your instance.

1. To list the images: # glance image-list.

```
root@controller:~# glance image-list
+-----+-----+
| ID | Name |
+-----+-----+
| 826e4928-9dcf-4f8c-b38c-b5274b5f012f | BarracudaWAFControlCenterRelr20190109 |
| adb0d2cc-a102-4cae-ad43-df5acfe6e3ab | Barracuda_kvm_9.2_20190108 |
| acf8a5ec-c989-4e79-a2b3-6e38ece498e0 | cirros |
+-----+-----+
```

2. To list the instance types: # openstackflavorlist.

```
root@controller:~# openstack flavor list
```

ID	Name	RAM	Disk	Ephemeral	VCPUs	Is Public
0	m1.nano	64	1	0	1	True
1	m3.large	4000	1	0	4	True
2	m4.large	4000	16	0	4	True
3	m5.large	4000	80	0	4	True

3. Check the available networks.

To list the networks: # openstack network list.

In the example below, two networks are created (selfservice and provider) and instances can be launched instances in either of them.

ID	Name	Subnets
9c990948-c9df-44e0-9968-2460fb34ea68	provider	5b7310f3-8829-44d3-8bf2-9a816277d0d0
d618dbb9-02d6-4e1c-8bae-cd4f94f33809	selfservice	1eb11834-2a55-45bb-b0ca-8a2ce0655142

Command to create a VM

`openstack server create --flavor m5.large --image Barracuda_kvm_9.2_20190108 --nic net-id=d618dbb9-02d6-4e1c-8bae-cd4f94f33809 --security-group default --key-name mykey barracudawafNew-instance`. This will launch the VM in the self service network.

Advanced Provisioning

Barracuda WAF supports provisioning using metadata from a configuration drive. WAF mounts this drive during bootup and read files from it to get bootup information. This information is different from user data. Configuration drive can be used to pass networking, licensing as well as configuration import details to the WAF.

Booting up a WAF VM on Openstack and Assigning a Static IP

To provision the instance with a static IP, ensure the following pre-requisites are met:

- The port is configured on OpenStack
- A JSON file with the name "network.json" is created. This file contains the interface settings as per the port configuration mentioned above in point 1.

Sample JSON:

```
{
  "address" : "192.168.200.25",
```

```
"netmask"    : "255.255.255.0",  
"gateway"    : "192.168.200.200",  
"dns"        : "10.8.1.90"  
}
```

Command to provision the instance:

Note: The following command must be run from the directory in which the network.json file is located:
`openstack server create --flavor m5.large --image Barracuda_kvm_9.2_20190108 --nic net-id=d618dbb9-02d6-4e1c-8bae-cd4f94f33809 --security-group default --key-name mykey --config-drive true --file network=network.json barracudawaf-static-ip`

Result:

An instance is provisioned with the network details mentioned in the network.json file.

Bootstrapping a WAF VM with licensing, WCC details and configuration import on Openstack

To provision the instance with bootstrapping instructions, ensure the following pre-requisites are met:

- A fully functional WCC instance with at least one account admin.
- The neutron port is configured on OpenStack.
To create the port with a fixed IP, use the following command: `neutron port-create <network> -fixed-ip subnet_id=<subnet_id>,ip_address=<fixed-ip>`
where,
subnet_id is the subnet that the port is part of and ip_address is the fixed ip in the subnet that should be allocated to the port.
- A JSON file with the name "network.json" is created. This file contains the interface settings as per the port configuration mentioned above in point 2.
- WAF configuration file is imported into the system.
- Bootstrapping details in a file barracudaConf.json.

Sample JSON

```
{  
  "licenseFile" :  
  {  
    "releaseLicenseOnShutdown"  
    : "no",  
    "accessType"  
    : "wcc",  
    "host"
```

```

: "192.168.200.9",
"hostPort"
: "443"
},
"eulaSignature" :
{
"name"
: "test",
"email"
: "test@abc.com",
"company"
: "Barracuda Networks"
},
"wccDetails" :
{
"wccIpAddress"
: "192.168.200.9",
"wccPassword"
: "admin123",
"wccUserName"
: "demo@cuda.local",
"wccValidationToken"
: "rmRcCnDU"
},
"guiAdminPassword"           : "admin",
"systemTimezone"           :
"America/Los_Angeles",
"defaultDomain"           :
"cuda.local",
"bootstrap-method"         : "config-json"
}

```

The barracudaConf.json configuration parameters are listed in the table below:

Configuration parameter		Description
LicenseFile		
	releaseLicenseOnShutDown	Instructs the WAF to release the license during shutdown or termination.Values: <ul style="list-style-type: none"> • Yes • No: default
	accessType	Sourcefrom wherelicenseis retrievedValue: <ul style="list-style-type: none"> • wcc
	host	The ip address of the WCC unit

	hostPort	The port to be used to connect to the WCC instance
eulaSignature		
	name	The contact name for end user license agreement
	email	Email address of the user
	company	Company details of the user
wccDetails		The details of the account to which the WAF should be associated
	wccIpAddress	IP Address of the WCC instance
	wccPassword	Password of the account
	wccUserName	Username of the account
	wccValidationToken	Token generated for the account
guiAdminPassword		WAF admin password
systemTimezone		Time zone for the WAF unit
defaultDomain		Domain name for the WAF
bootstrap-method		Bootstrapping method for the WAF:Values: <ul style="list-style-type: none"> • Config-json: Uses the JSON file passed during the VM creation. For more details on how to create this file, please visit: file based configuration • Backup: Uses a WAF backup file passed during the VM creation

Command:

The following command should be run from the directory in which the files, barracudaConf.json, apiConfig.json and network.json are located:

```
openstack server create --flavor m5.large --image Barracuda_kvm_9.2_20190108 --nic net-id=d618dbb9-02d6-4e1c-8bae-cd4f94f33809 --security-group default --key-name mykey --config-drive true --file network=network.json --file barracudaConf=barracudaConf.json --file configFile=apiConfig.json barracudawaf-static-ip.
```

Result:

An instance is provisioned with the network and bootstrapping details mentioned in the JSON file.

Figures

1. img1.png
2. img2.png
3. img3.png

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