

# OpenVPN Bridges

## Introduction

- We are very excited about a new feature which is now part of **MESHdesk** as well as **APdesk**.
- With this feature you can bridge one or more of the entry points (or SSIDs) with a OpenVPN tunnel that can sit any place on the Internet.
- I can now for instance connect to a SSID in South Africa while it will appear that I am browsing from an IP Address that is located somewhere in Europe or North America.
- This feature opens up the door to so many new possibilities but those we leave to your own creative powers.
- Our tests have proven that there is not reason for a dramatic drop on bandwidth while going this route, in fact, depending how and where you connect, you might even experience an increase in available bandwidth!
- We are sure by now you are in a dire need to check out this feature. Unfortunately the initial setup can be quite involved, but once everything is in place it should run like a Swiss watch.
- We will follow a divide and conquer rule and break the tasks up into categories in order to accomplish our goal.

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## Our Setup

- For this document we will have the configure the following setup.
  - One Ubuntu 14.04 server with two Ethernet cards and one public IP Address.
    - Eth1 will have the Public IP Address (198.27.111.78)
    - Eth0 will be segmented using VLANs.
    - We will not need any VLAN capable switches.
  - Another server (can be the same) running the latest SVN of RADIUSdesk
  - An Access Point with Internet access, running the latest build from SVN of the MESHdesk firmware.
- We will use VLANs configured on Eth0 as follows:
  - VLAN 101 will have Address range 10.101.0.0/16.
  - VLAN 102 will have Address range 10.102.0.0/16.
  - VLAN 103 will have Address range 10.103.0.0/16.
- These VLANs will each be bridged on the one side with a VLAN on eth0.
  - br0.101 are bridged with eth0.101.
  - br0.102 are bridged with eth0.102.
  - br0.103 are bridged with eth0.103.
- The other side of the bridge is a VPN tunnel.
  - We will create three instances of OpenVPN in server mode.
  - Each of these instances will be bound to a common IP Address (198.27.111.78) but it will have a unique port to ensure uniqueness.
  - Each of the bridges will have a Coova Chilli captive portal running.
    - The IP Address range of each of these Coova Chilli instances will be such that it can provide enough IP Addresses but also in such a manner that the OpenVPN server will be able to provide up to 100 Clients with IP Addresses and the RADIUSdesk

- server should provide another 100 Clients with IP Addresses without a conflict.
- The IP Address range should also reflect that which was assigned to the VLAN.

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## Steps Involved

- Prepare the hardware and OS
- Install and configure OpenVPN
- Install and configure CoovaChilli
- Configure RADIUSdesk
- Configure MESHdesk
- Configure APdesk

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## Prepare the hardware and OS

- In order for us to run VLANs on the server we need to install the VLAN module

```
#Install the VLAN package
sudo apt-get update
sudo apt-get install vlan
#Permanently load the module during boot time
sudo su -c 'echo "8021q" >> /etc/modules'
#Reboot the server
sudo reboot
#Confirm that it is loaded
lsmod | grep 8021q
```

- In order for us to be able to use the bridging capabilities on the server, we need to install the bridge utilities.

```
#Install the bridge-utils package
sudo apt-get update
sudo apt-get install bridge-utils
```

- Edit the **/etc/network/interfaces** file to contain the following configuration.

```
#Remember also to configure eth1 to contain the public IP Address...

auto eth0.101
iface eth0.101 inet manual
    up ip link set $IFACE up promisc on

auto br0.101
iface br0.101 inet static
    address 10.101.0.1
    netmask 255.255.0.0
    bridge_ports eth0.101
```

```
auto eth0.102
iface eth0.102 inet manual
    up ip link set $IFACE up promisc on

auto br0.102
iface br0.102 inet static
    address 10.102.0.1
    netmask 255.255.0.0
    bridge_ports eth0.102

auto eth0.103
iface eth0.103 inet manual
    up ip link set $IFACE up promisc on

auto br0.103
iface br0.103 inet static
    address 10.103.0.1
    netmask 255.255.0.0
    bridge_ports eth0.103
```

- Reboot the server and confirm that it came up with these bridges configured.

```
#Issue the ifconfig command to confirm the br0.101, br0.102 and br0.103 are up and has the correct IP Address.
#Also use the brctl command to show you the bridges present
system@rd:~$ brctl show
bridge name bridge id          STP enabled  interfaces
br0.101      8000.000c294aafdf    no          eth0.101
br0.102      8000.000c294aafdf    no          eth0.102
br0.103      8000.000c294aafdf    no          eth0.103
```

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Last update: 2016/09/26 04:59

