

IT Technology Recovery plan



Lillebaelt Academy of
Professional Higher Education
Course: IT-Technology-Network
Class: OEAIT16EINB

Instructors
Per Dahlstrøm
Morten Bo Nielsen

Author
Mikkel Juel Johansen
Nikolay Petrov
Alexader Moosmand
Jurij Jurczak

Mikk4972@edu.eal.dk
Niko010h@edu.eal.dk
Alex734d@edu.eal.dk
Juri0103@edu.eal.dk

Wednesday 18 January 2017

Table of Contents

1	Introduction.....	1
2	Recovery.....	1
2.1	Overview.....	1
2.2	VMware.....	2
2.2.1	Importing devices.....	2
2.2.1.1	Debian image	2
2.2.1.2	Junos image.....	2
2.2.2	Connections	3
2.2.2.1	Router-INT settings	5
2.2.2.2	Router-EXT settings	5
2.2.3	Setting up Debian machines	6
2.2.3.1	Changing user	6
2.2.3.2	Setting up IPs	7
2.2.3.2.1	Static IP.....	8
2.2.3.2.2	DHCP.....	9
2.2.3.3	Installation web server.....	10
2.3	Configuring VPN on your Router-EXT	11
2.4	Backup.....	11
2.4.1	Importing configurations to the SRX-Router.....	11
3	Conclusion	14

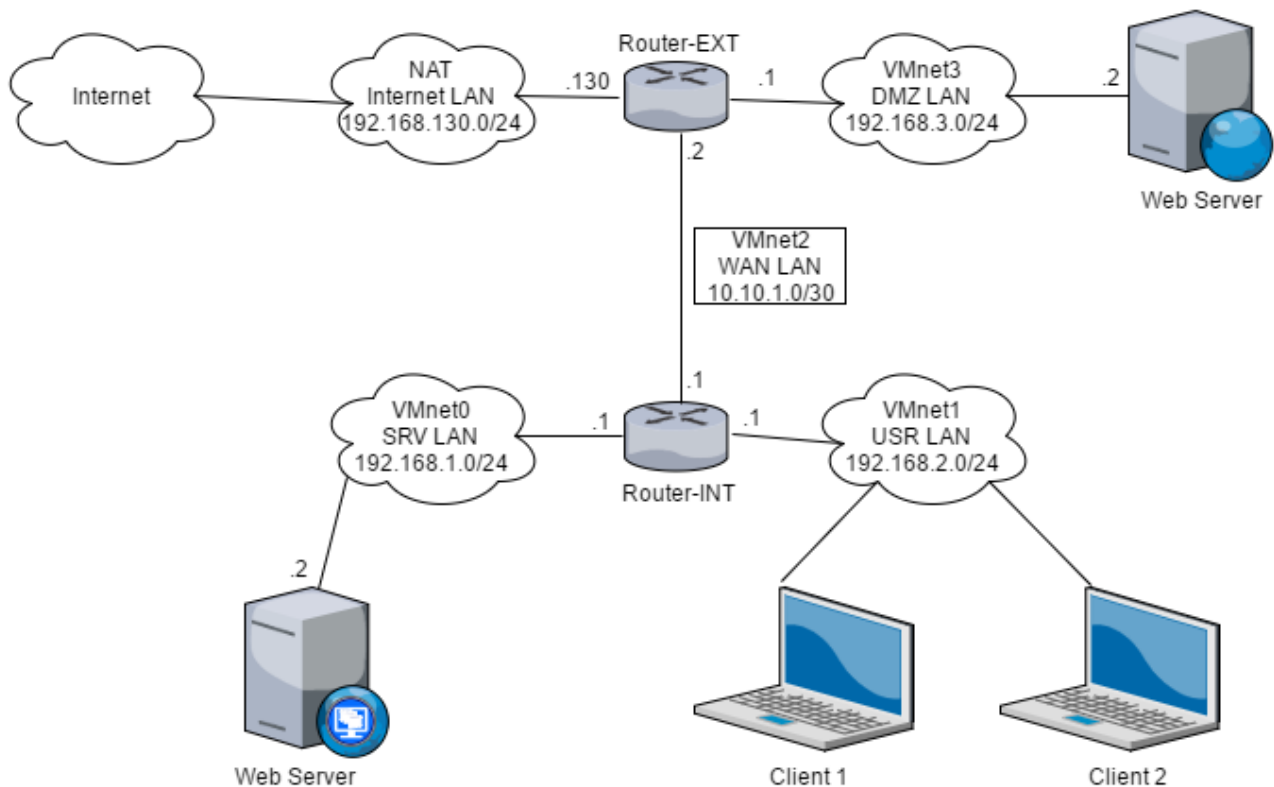
1 Introduction

This is a recovery document with the purpose of providing a description of, how to set up the network in its current state. So that if you lose a virtual machine or an entire setup, you can easily restore it. This document assumes that the user has the program VMware Workstation Pro, installed on their computer and has only been tested on a windows system.

2 Recovery

2.1 Overview

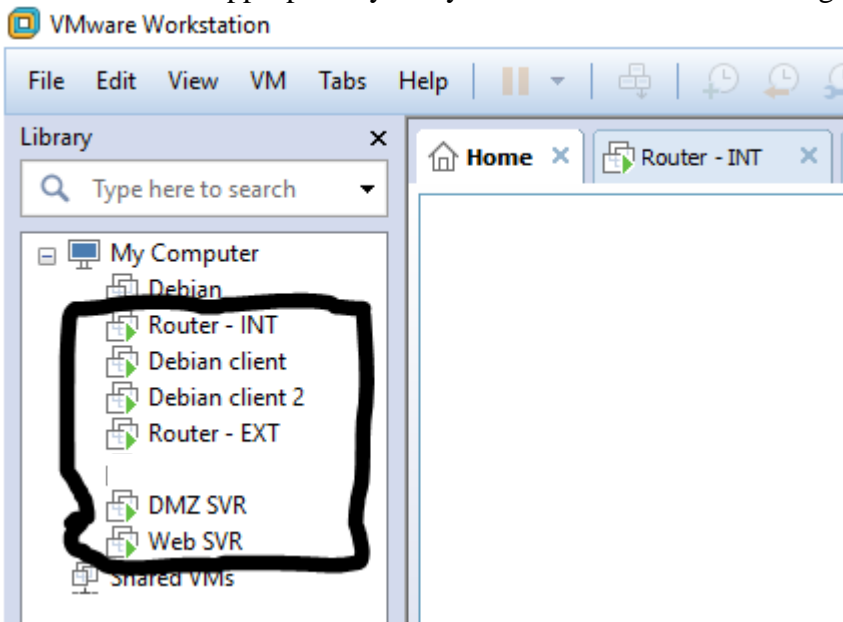
We are going to use the following L3 topology, as a guideline, for what to set up. Note that at current point in the project, we do not have the internet connection, and all the four servers/clients are virtually identical, since we used the same Debian Linux image to install them. So we would only need the two router configurations and one Debian image, which could then be cloned for the four servers/clients.



2.2 VMware

2.2.1 Importing devices

You start by importing a clean Junos router and a clean Debian image, then clone these according to the topology in the overview, in total there should be four Debian images, and two Junos routers. Then name them appropriately and you should have the following in VMware:



Both of these virtual machines are stored on a google drive which can be accessed thru following link: <https://drive.google.com/drive/folders/0B4eNUmcReFSEbEdBdWl1YVVjYUk?usp=sharing>

2.2.1.1 Debian image

To get the Debian machine you go to the link above and get the default Debian image. Then you open the Debian OVF file in VMware, after it has been imported, go to the read me file for login information there is a Standard User, which you should replace.

2.2.1.2 Junos image

To get the Junos SRX you go to the link above and get the default Junos image. Then you open the Junos OVF file in VMware, after it has been imported you are ready to start setting up your router.

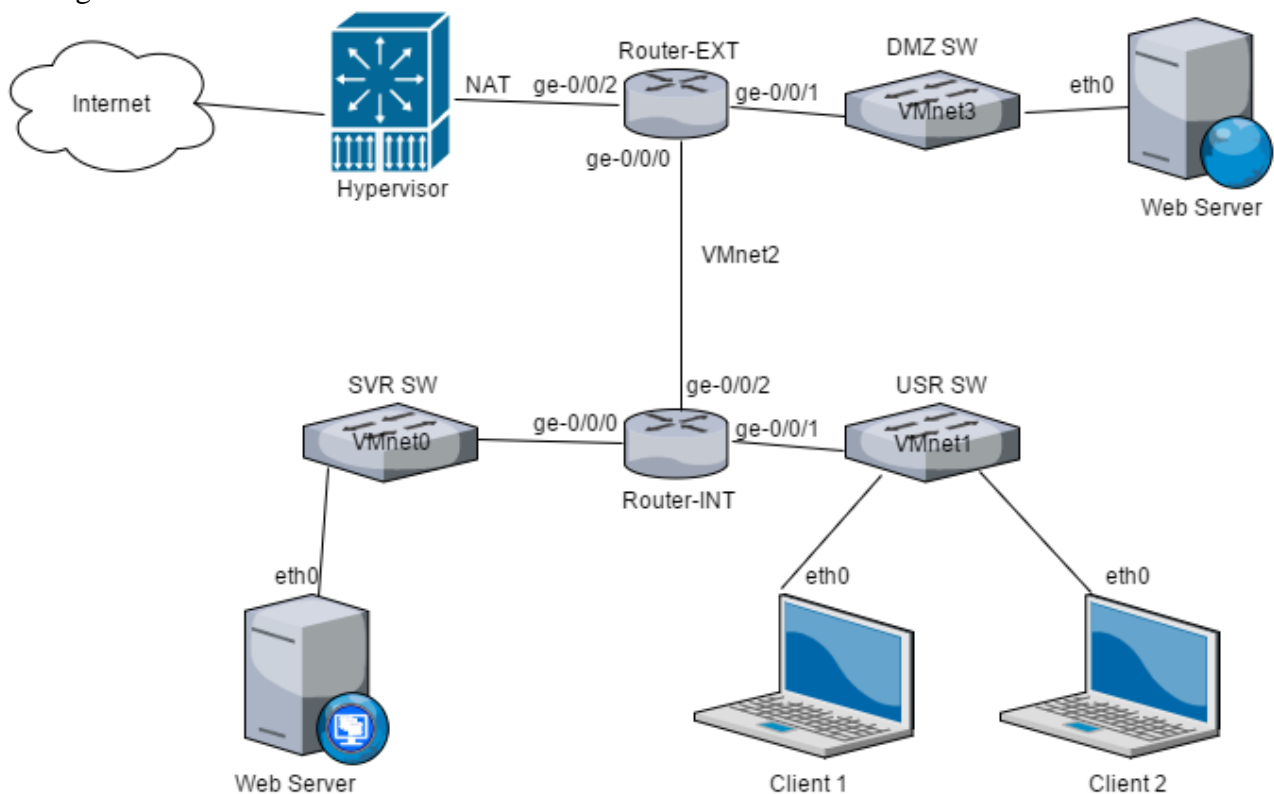
2.2.2 Connections

This is table with our connections, so all you need to do is to follow it.

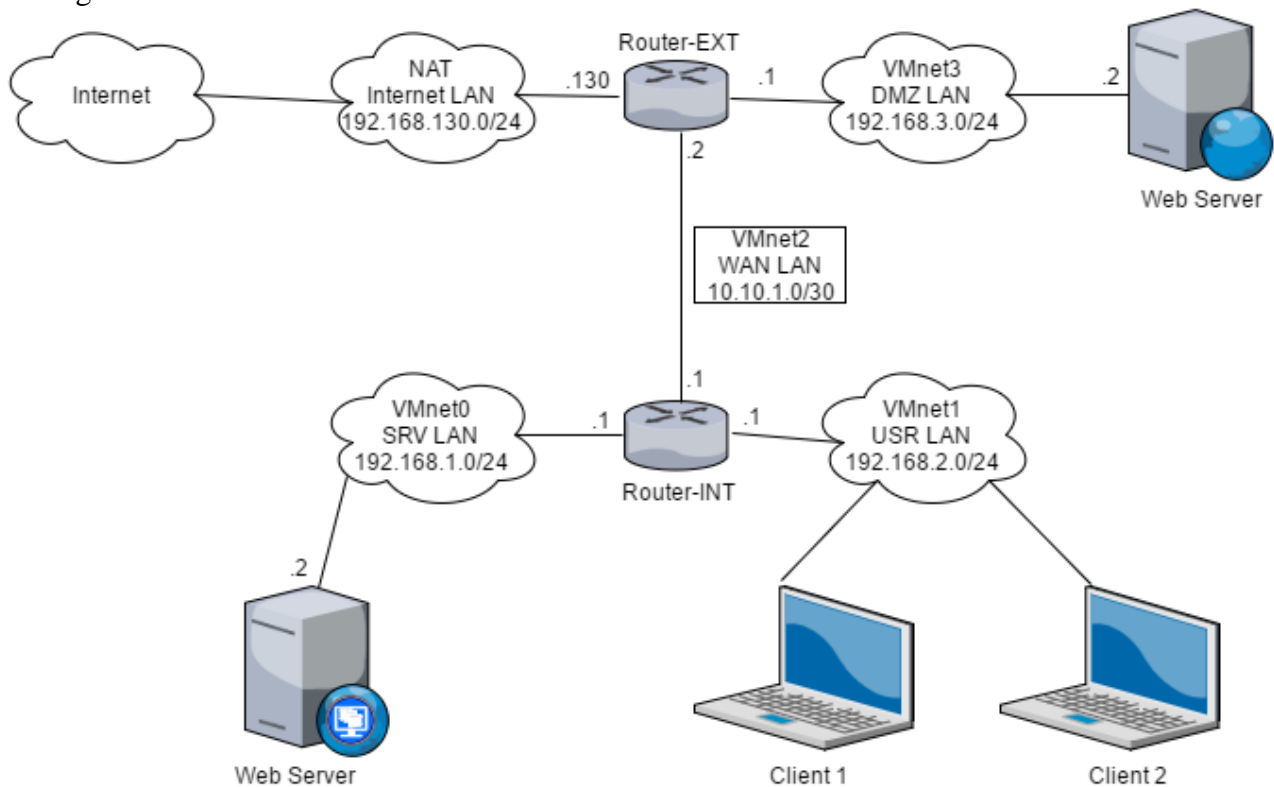
Router	Router-INT			Router-EXT		
Interface	Ge-0/0/0	Ge-0/0/1	Ge-0/0/2	Ge-0/0/0	Ge-0/0/1	Ge-0/0/2
LAN	SVR	USR	WAN	WAN	DMZ	Internet
NetID	192.168.1.0 /24	192.168.2.0 /24	10.10.1.0 /30	10.10.1.0 /30	192.168.3.0 /24	192.168.130.0 /24
User	Web server: 192.168.1.2 eth0	Clients DHCP eth0	10.10.1.1	10.10.1.2	Web server: 192.168.3.2 eth0	Internet
VMnet	VMnet0	VMnet1	VMnet2	VMnet2	VMnet3	NAT

These are our L2 and L3 Diagrams, so you can get an overview, of how your network should look and work.

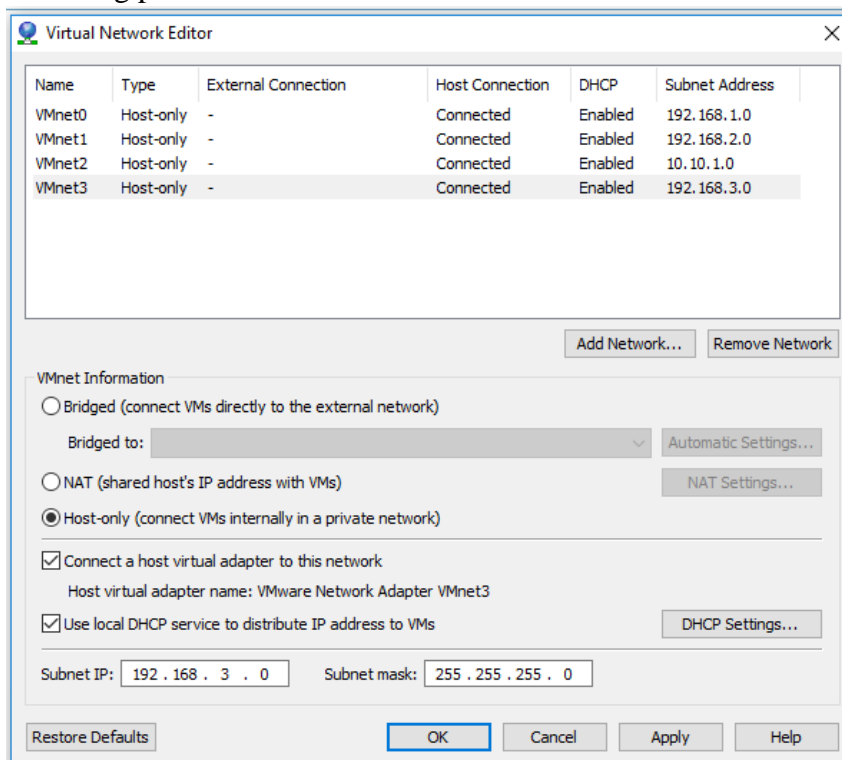
L2 diagram:



L3 diagram:



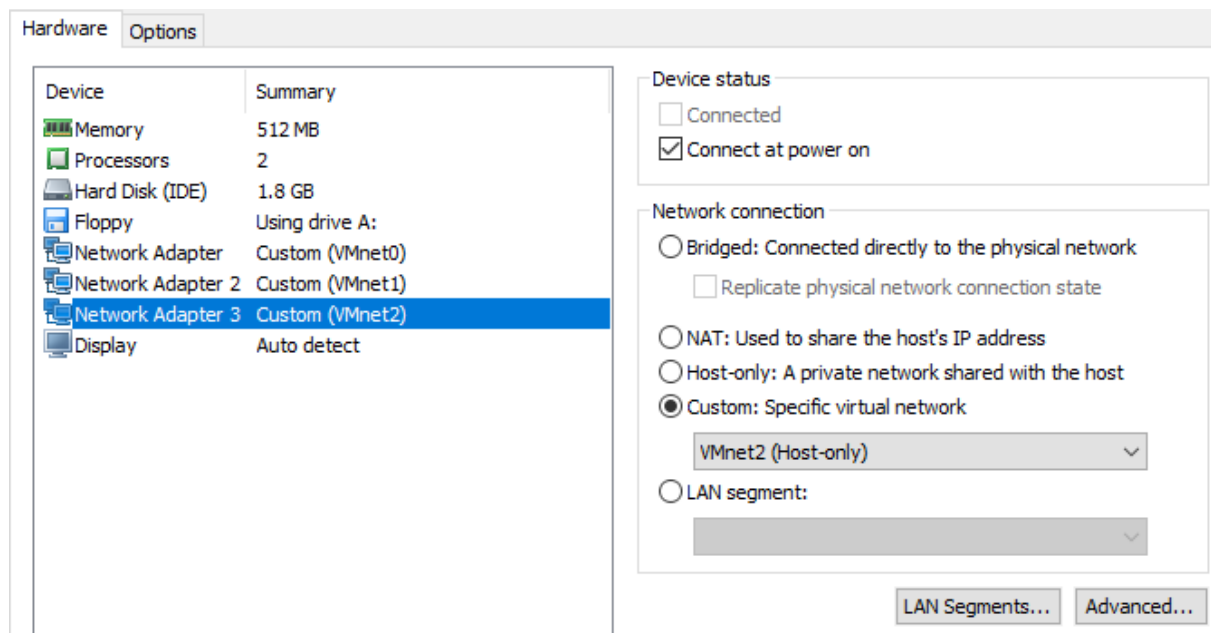
To setup the VMnets go to Edit -> Virtual Network Editor... and set the connections like in the following picture.



2.2.2.1 Router-INT settings

Right Click on the “Router-INT” on the left, then go to settings and change the Network Adapters, like shown in the following picture.

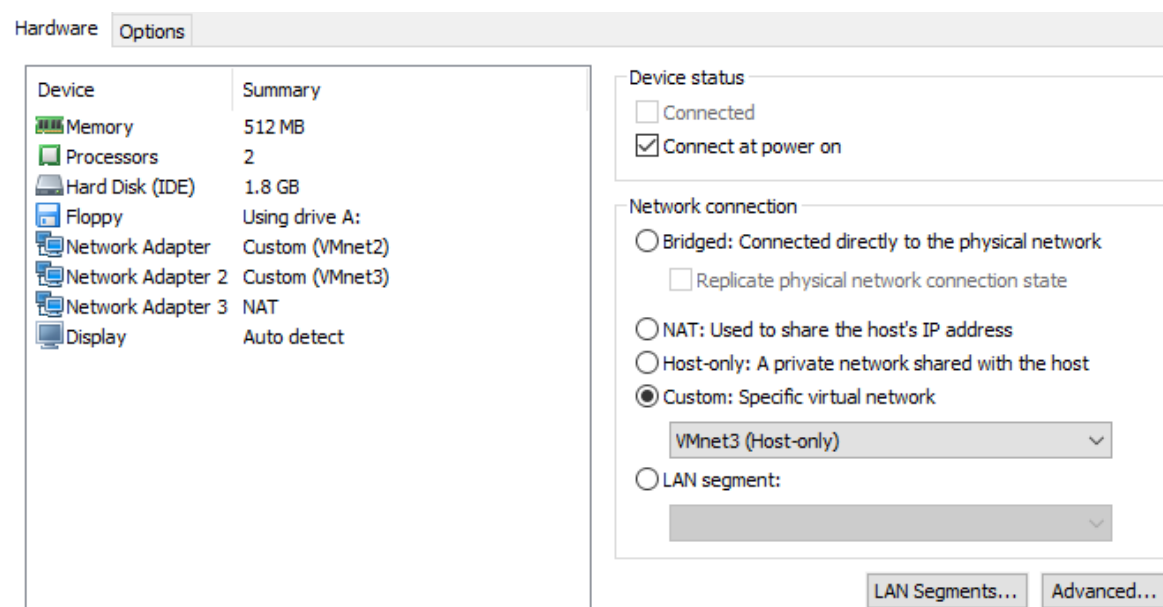
Network Adapter	Ge-0/0/0
Network Adapter 2	Ge-0/0/1
Network Adapter 3	Ge-0/0/2



2.2.2.2 Router-EXT settings

Right Click on the “Router-EXT” on the left, then go to settings and change the Network Adapters, like is shown in the following picture

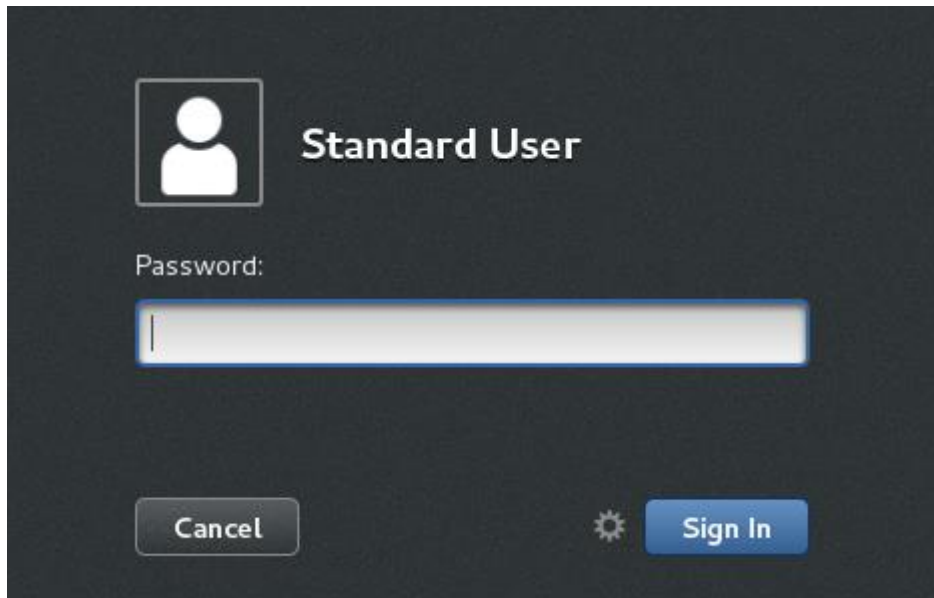
Network Adapter	Ge-0/0/0
Network Adapter 2	Ge-0/0/1
Network Adapter 3	Ge-0/0/2



Do the same for every VM and be careful which connection you are setting them on.

2.2.3 Setting up Debian machines

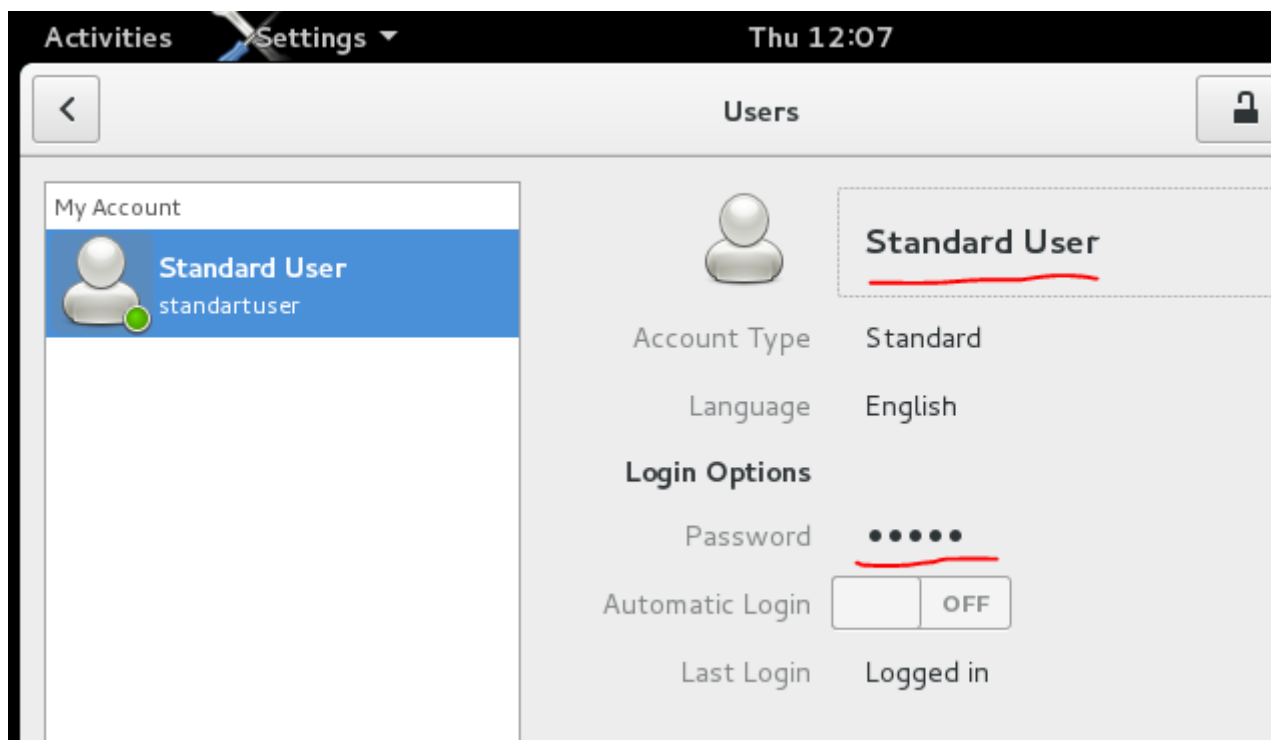
2.2.3.1 Changing user



When you start up the default Debian image the first time you are met with the screen shown above.

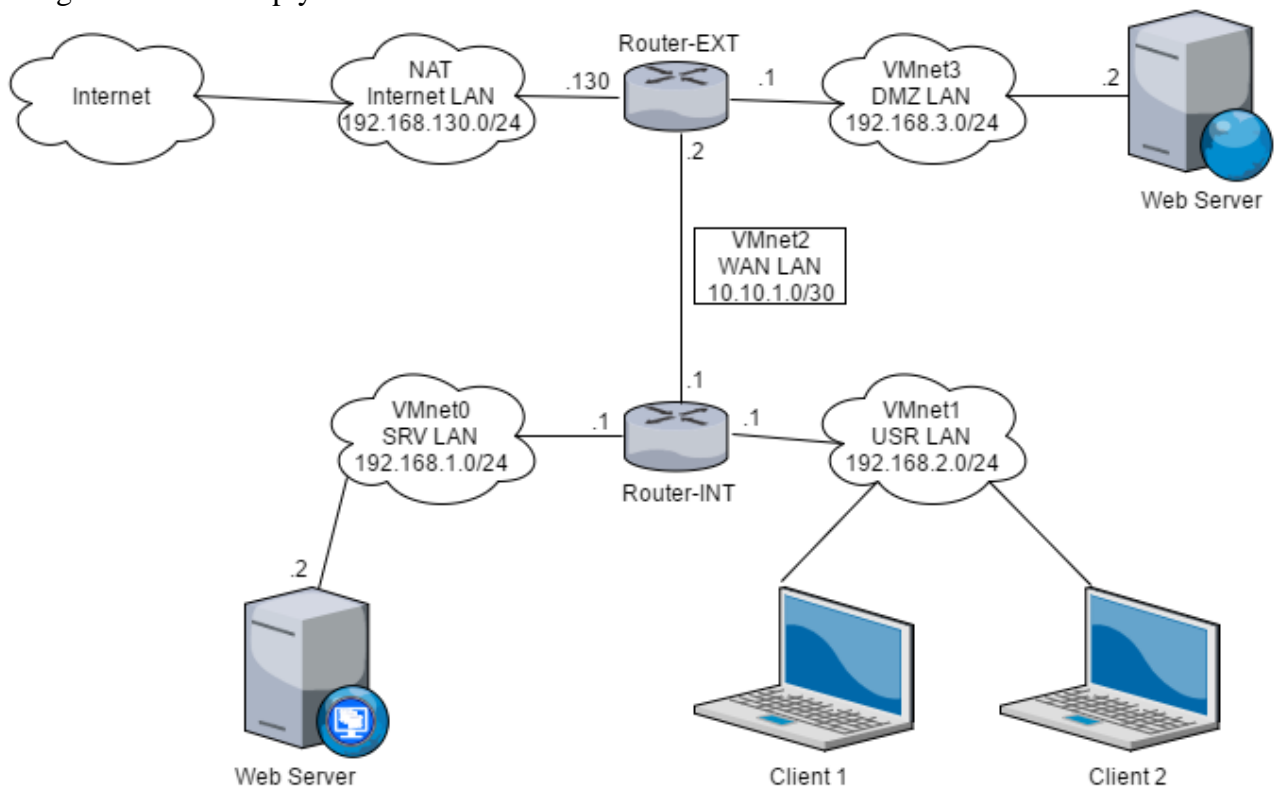
Look at the readme file for the default login.

To make your own login, go to settings then users, here you simply click just above the red lines, shown on the picture below, and then you can change user name and password.



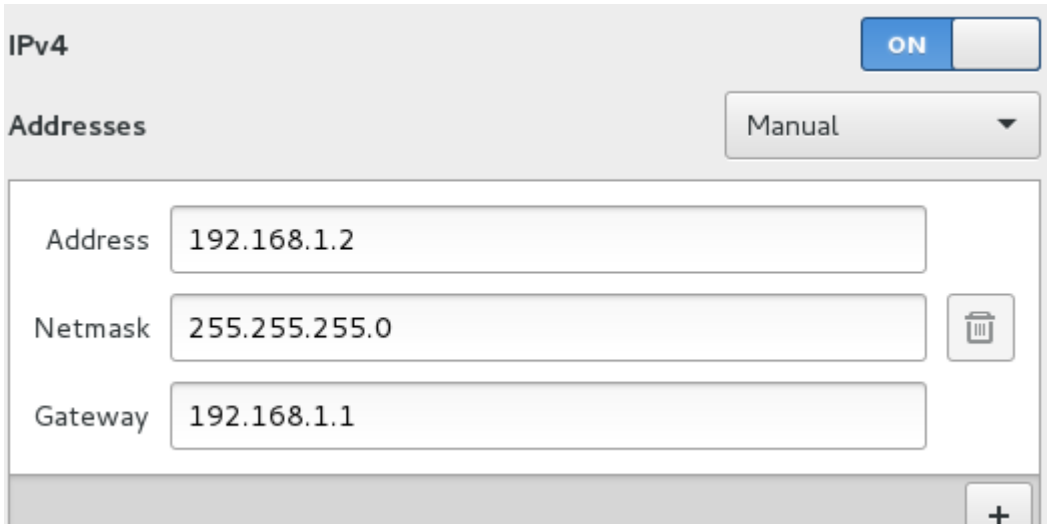
2.2.3.2 Setting up IPs

When all the VMnets have been set up, so all the devices are “physically” connected. Then we need to set up the IPs, if we look at the L3 diagram from earlier, we can use it to see what IP to give the different clients/servers. Again, do note that we do not have internet access, in the current configuration this simply shows where it is wanted.



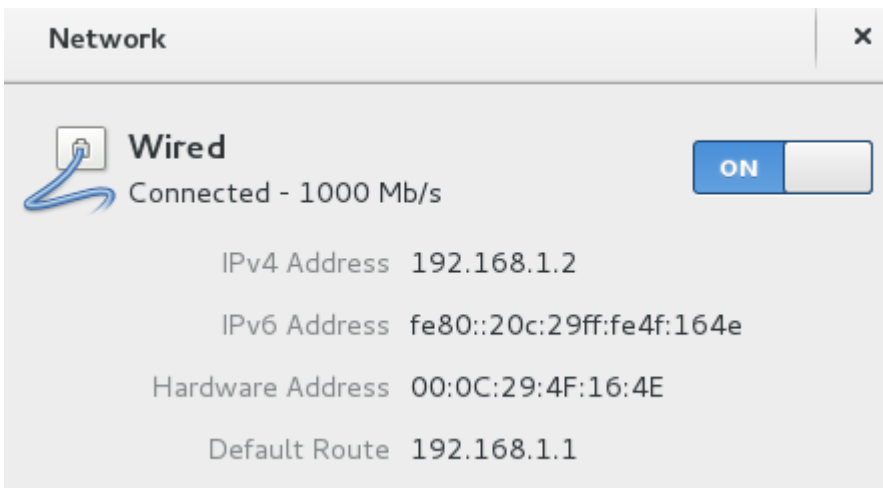
2.2.3.2.1 Static IP

For our three servers we are using static IPs meaning that we have to enter them our selves



The image shows a configuration window for IPv4. At the top right, there is a toggle switch labeled 'ON'. Below this, the 'Addresses' section has a dropdown menu set to 'Manual'. The main area contains three input fields: 'Address' with the value '192.168.1.2', 'Netmask' with the value '255.255.255.0', and 'Gateway' with the value '192.168.1.1'. A trash icon is located to the right of the Netmask field. At the bottom right, there is a '+' button.

As shown in the picture above the IPv4 is set to manual and the IP, subnet mask and default gateway, has been manually entered.

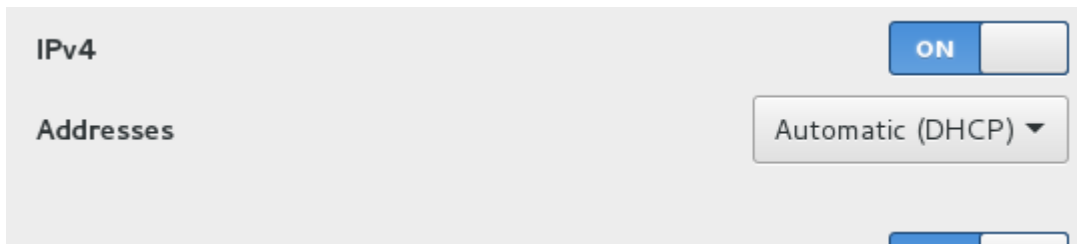


The image shows a 'Network' window with a close button (X) in the top right corner. It displays the status of a 'Wired' connection, which is 'ON' and 'Connected - 1000 Mb/s'. Below this, the following details are listed: 'IPv4 Address 192.168.1.2', 'IPv6 Address fe80::20c:29ff:fe4f:164e', 'Hardware Address 00:0C:29:4F:16:4E', and 'Default Route 192.168.1.1'.

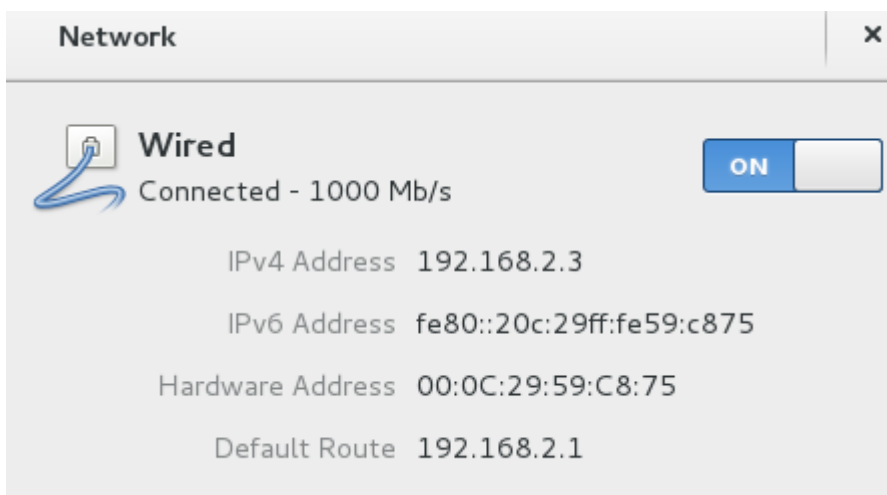
And as shown above the server has the given configuration.

2.2.3.2.2 DHCP

For our client, we have a DHCP service running on the INT – Router, so all we need to do is select DHCP as shown below.



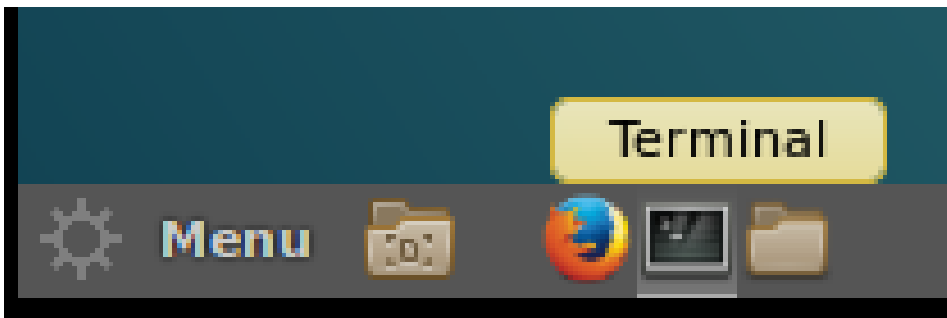
And then the router should take care of the rest, if you have connected the VMnets correctly. As you can see below, it has been given the appropriate information



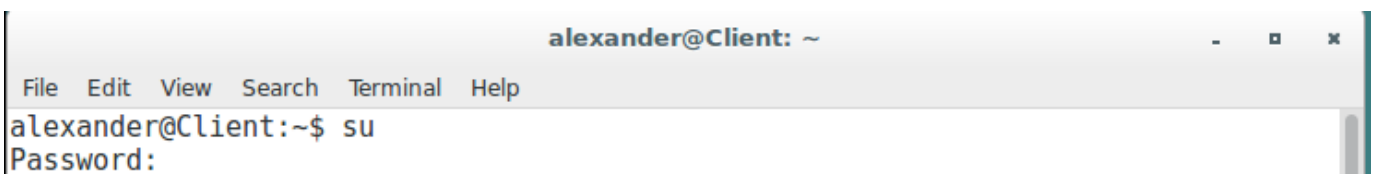
2.2.3.3 Installation web server

To install the web server, you will need to have set up your network, so that you have an internet connection.

- Open the terminal on the Debian machine



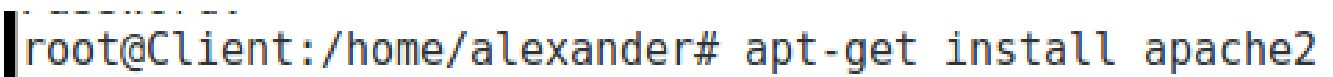
- Type in su, which will prompt you for the root password. This will log you in as the root.



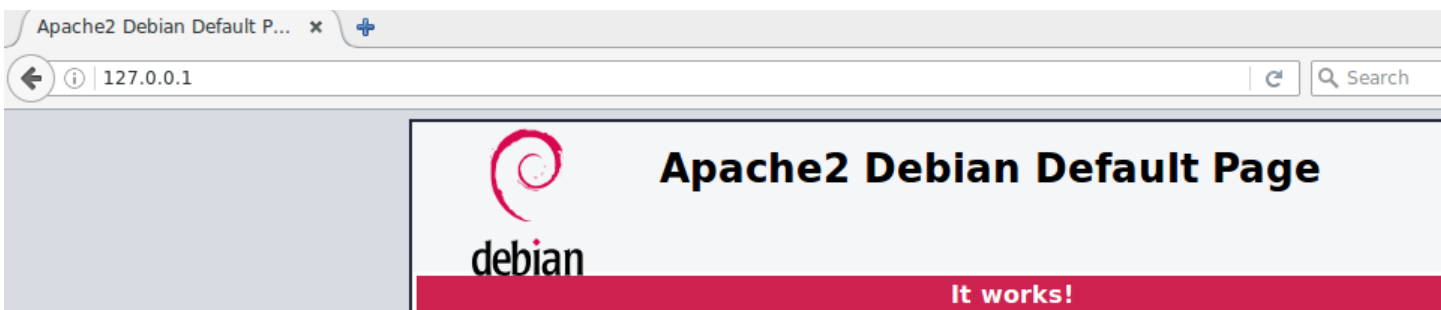
- Then you type in apt-get update, to update the database. This will make sure your machine can download the packages it needs to install programs.



- Then type apt-get install apache2, which is the application for the web services. This will start the installation.



- Now you have a web service running. To check this, go to your browser and type in the local IP address for the machine, which will be 127.0.0.1.



2.3 Configuring VPN on your Router-EXT

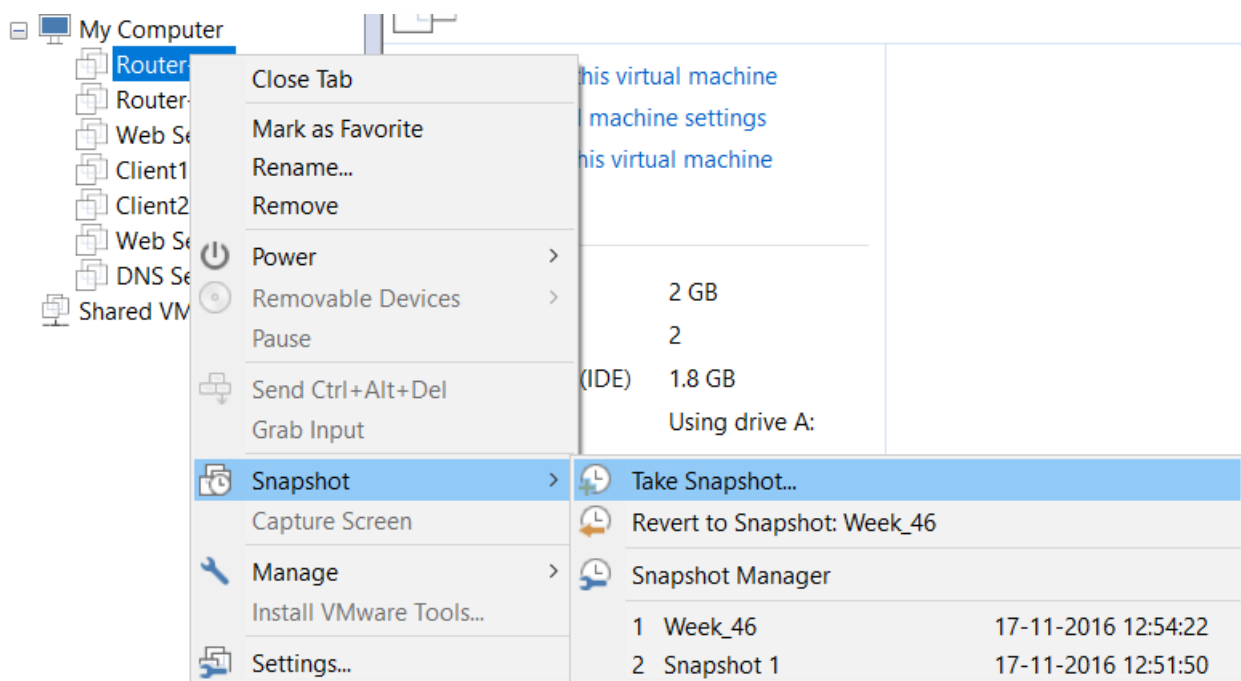
To set up VPN to your router you should first log in go to edit mode then follow the instructions in the link below:

<http://fridim.net/ipsec-configuration-junos-os>

the site is created by Fridi Mellemegaard ☺

2.4 Backup

Take snapshot of all your virtual machines.



2.4.1 Importing configurations to the SRX-Router

First, you should configure at least one interface on router to be able to connect it from another machine.

After you have to download the configuration file on your machine with you will connect to the router. Open setting of your linux-machine and choose NAT Network connection to be able to connect to the internet:

Virtual Machine Settings



Write `cd` and directory where you want to download the file
 Write `git pull https://github.com/user/repository you need.git`

```
standartuser@debian:~$ su
Password:
root@debian:/home/standartuser# cd Documents
root@debian:/home/standartuser/Documents# git pull https://github.com/nickmeel6/somethi
ng.git
From https://github.com/nickmeel6/something
* branch      HEAD      -> FETCH_HEAD
Already up-to-date.
root@debian:/home/standartuser/Documents#
```

And after you have downloaded all files and changed you network setting you need to connect router from terminal of your machine:

```
Activities Terminal Thu 09:54
debian1@debian1: ~
File Edit View Search Terminal Help
debian1@debian1:~$ su
Password:
root@debian1:/home/debian1# ssh 192.168.2.1
The authenticity of host '192.168.2.1 (192.168.2.1)' can't be established.
ED25519 key fingerprint is 80:bf:73:b5:8a:fe:4d:c4:f1:35:11:92:90:86:94:c1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.2.1' (ED25519) to the list of known hosts.
Password:
```

Next thing to do is enter the *edit* mode in your router from terminal of your machine and load your settings (last line I recalled command I used to load the settings) and don't forget to *commit* changes you did.

Following command were used:

load override scp://machine_name@machine_IP:/root/file.cfg

```
debian1@debian1: ~  
File Edit View Search Terminal Help  
[edit]  
root# ...ian1@192.168.2.2:/home/debian1/Downloads/configINT.cfg  
The authenticity of host '192.168.2.2 (192.168.2.2)' can't be established.  
ECDSA key fingerprint is 68:18:ea:82:47:6f:df:b2:84:84:8c:e1:01:04:fa:a3.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '192.168.2.2' (ECDSA) to the list of known hosts.  
debian1@192.168.2.2's password:  
configINT.cfg          100% 4390      4.3KB/s   00:00  
load complete  
[edit]  
root# load override scp://debian1@192.168.2.2:/home/debian1/Downloads/confi...
```

If you want to save changes you made from router to document, etc. you can use following command:

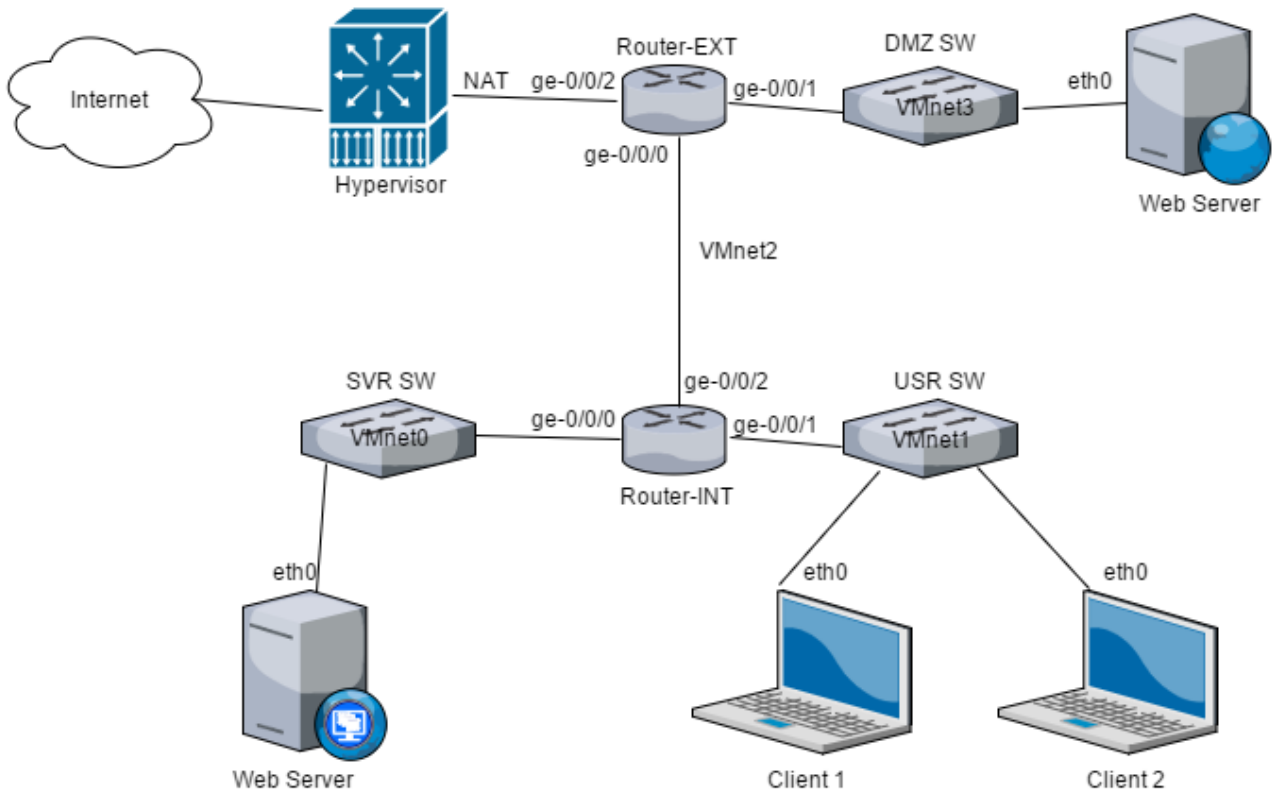
save scp://machine_name@machine_IP:/root/file.cfg

```
debian1@debian1: ~  
File Edit View Search Terminal Help  
[edit]  
root# commit  
commit complete  
[edit]  
root@SRX-INT# save scp://debian1@192.168.2.2:/home/debian1/Documents/configIN...  
debian1@192.168.2.2's password:  
tempfile          100% 4390      4.3KB/s   00:00  
Wrote 183 lines of configuration to 'scp://debian1@192.168.2.2:/home/debian1/Docum  
ents/configINT.cfg'  
[edit]  
root@SRX-INT#
```

3 Conclusion

If you have followed this document you should have, or know how to set up a network that looks like this:

Layer 2 diagram:



Layer 3 diagram:

