# **Zeroshell HOWTO**



The multifunctional OS created by <u>Fulvio.Ricciardi@zeroshell.net</u>

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How to secure my private network

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# How to secure my private Network:

This short guide will let us configure a network firewall for our network in less than one hour. Zeroshell will secure our private network from external attacks. Our private network is connected to internet through a xDSL router. Here the steps to follow:

First start and login
Preparing a partition disk where to store our configurations
Storing our configuration
Network adapters configuration
Internet surfing
Captive Portal activation
DNS Service
DHCP Service
Static routes to remote networks
Virtual Servers
Security: check default policies

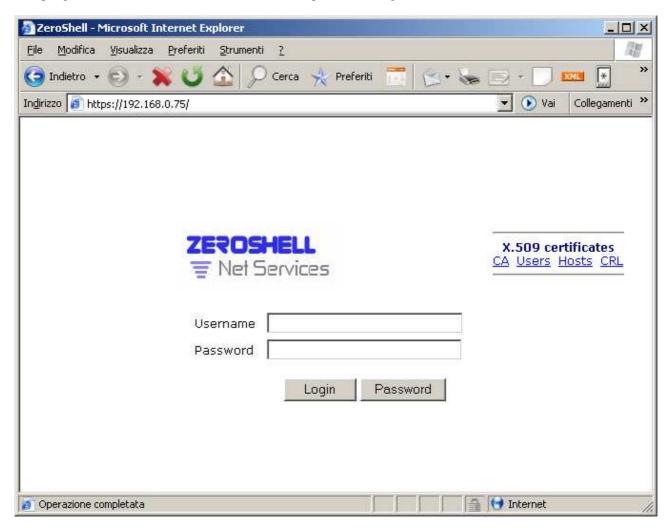
In Zeroshell we can find many other important features for more complex networks; this is a great scalable solution for our network.

# First start and login:

After booting from CD, the system is reachable with a browser at the http secure:

# https://192.168.0.75

Accepting the secure connection we are asked user and password to login:



Use these:

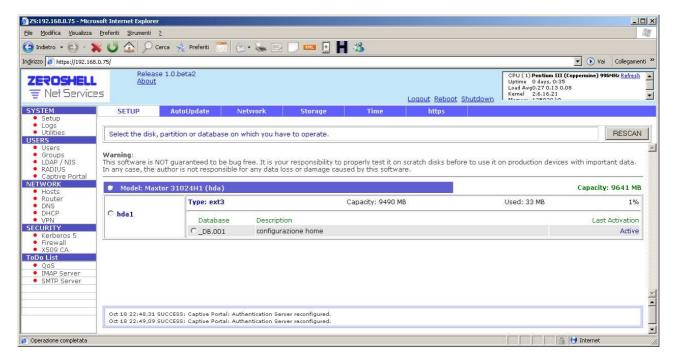
User: admin Password: zeroshell

Now we can use web interface to setup our firewall.

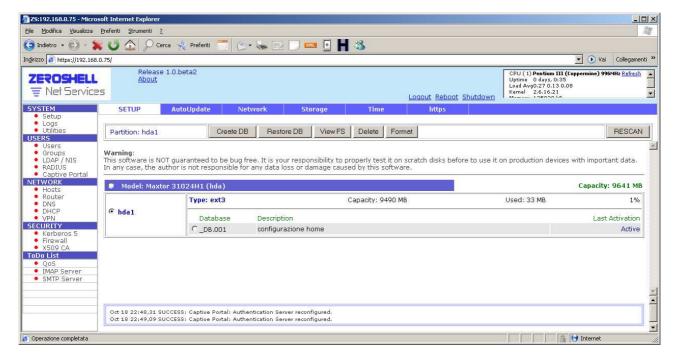
#### Preparing a partition disk where to store our configurations:

It's so important to save our changes that Zeroshell lets us save them in a configuration file. It can be stored in a partition on a hard disk. It's not necessary to farmat any existing partitions, we can save our configuration files in existing partition such as: ext3, reiserfs, ext2 o fat32. For my own preference I prefer to create a new partition ext3. So I choose to delete any existing partition on my disk (all data on this disk will be lost).

Using SETUP menu (in left frame) choose tag STORAGE (in upper frame):



We are shown existing disks. We select existing partitions and **DELETE** them:

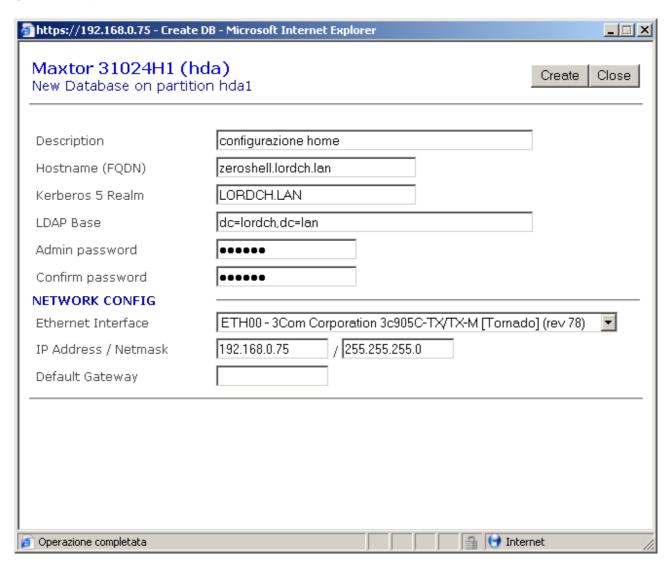


We are asked confirmation for deletion. YES

Now we have a blank disk without partitions. I am ready to create just one partition.

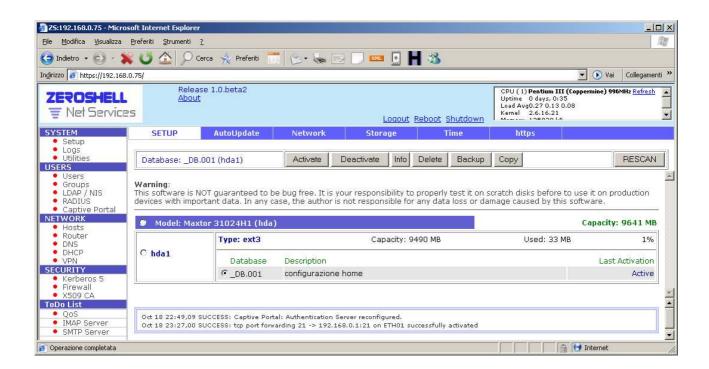
### Storing our configuration:

Once the disk is ready to be used, we can create our first configuration file. Chosing the right partition click on CREATE DB:



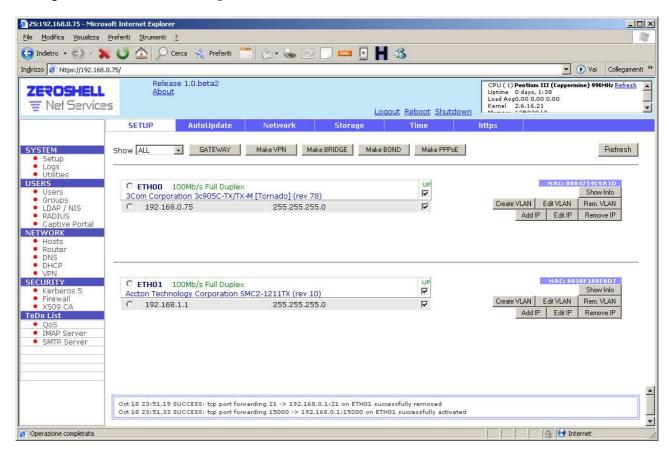
Insert a short description for the configuration file; fully qualified name of our system; Kerberos Realm and LDAP; choose a new password for user "admin"; Ip address for the interface used to configure the system; default gateway to access external networks ( to access internet).

This configuration will be used everytime the system will start. We can choose to create several different configuration files to be activated (ACTIVATE) for default startup of the system. Using BACKUP button we can create a copy of the selected configuration file on the pc we are using to browse Zeroshell administrative homepage .



### **Network adapters configuration:**

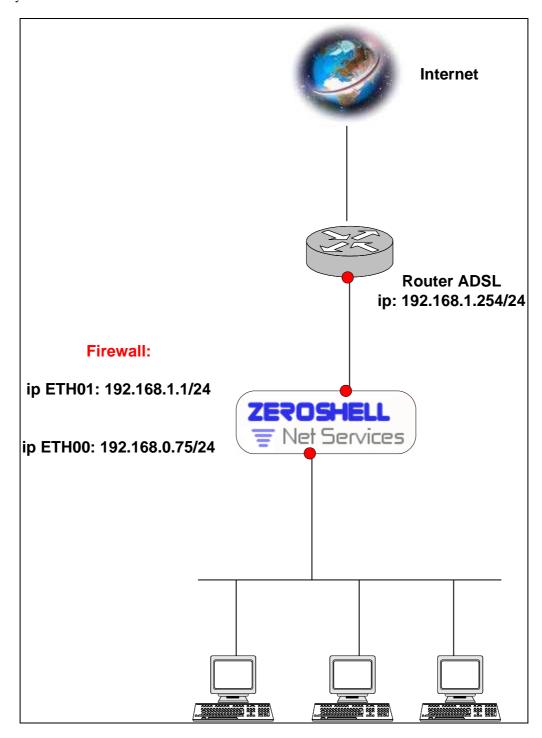
Once prepared disk and created the first configuration file we can configure the ip address of the network adapters, by clicking **SETUP** nad **NETWORK tag**:



Usually ETH00 is the internal network adapter (secure interface of the firewall) and ETH01 is the external that communicate with xDSL router. Using **Add IP** buttons we can set static ip addresses for these interfaces. I have choosen 192.168.0.75 for internal interface (ETH00)and 192.168.1.1 for the external one (ETH01); now I set default gatewayusing button **DEFAULT GW.** My gateway is 192.168.1.254; I can now verify the statics routes in **ROUTER** menu:



# So this is my network:

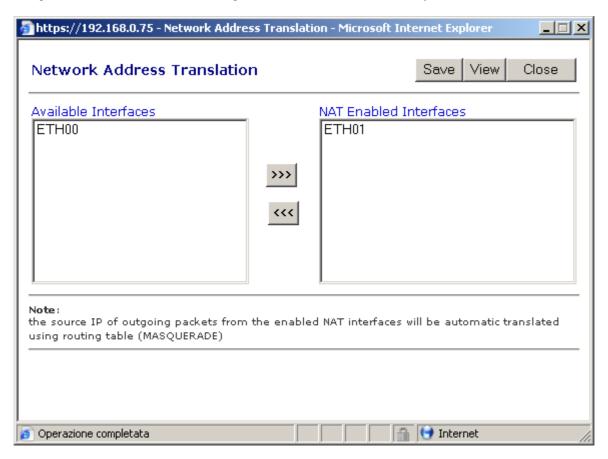


It's is to understand that this network thopology is very scalable by Zeroshell; we can now begin to create policies for our internal network (192.168.0.0/24); or we can user Captive Portal to create user and password for internal users that want to use internet browser; we can create virtual server to share our services with external networks, etc.

# Internet surfing:

To let internal clients use internet connection, we must activate Network Address Translation (NAT) to protect them.

Using **ROUTER** menu, click on **NAT** tag and set that ETH00 is translated by ETH01:

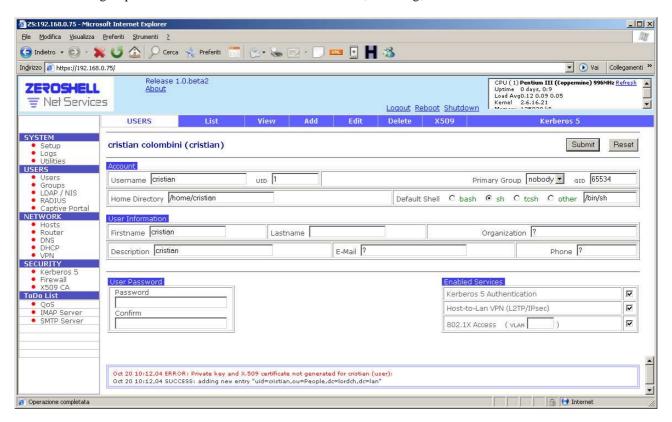


Now we can use internet connection on our clients.

#### **Captive Portal activation:**

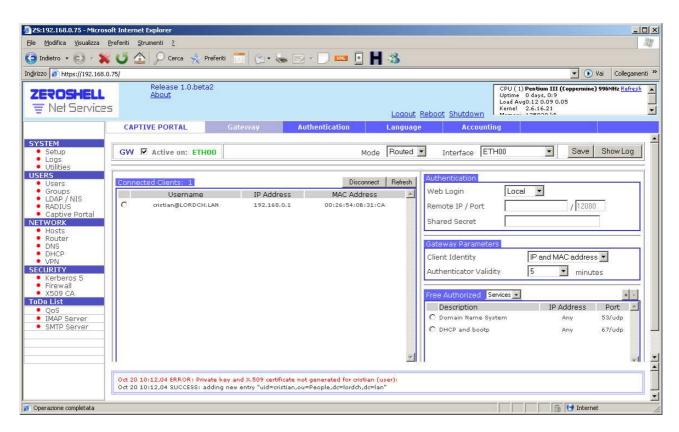
Thi useful features let us set internet users and password to filter connection to external (internet). In this way a user on internal network must authenticate against Zeroshell before opening connections to internet ( for web browsing, mail dowload, etc...)

Before activating Captive Portal we must create users in USERS, ADD tag; fill the fields as below:

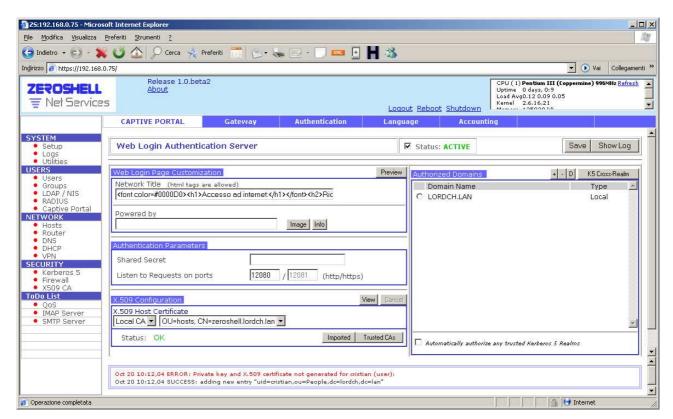


**USERNAME** contains the name of the user for authentication.

Once created our users, click **CAPTIVE PORTAL** menu; set a flag on **GW**, choose **ROUTED MODE** and internal ethernet adapter on wich authentication process will happen (in our client the ETH00's ip is the dafault gateway).



#### Activate AUTHENTICATION:



Now we can close our web browser and reopen it; it will ask us to authenticate. Here below I have customized my authentication page:

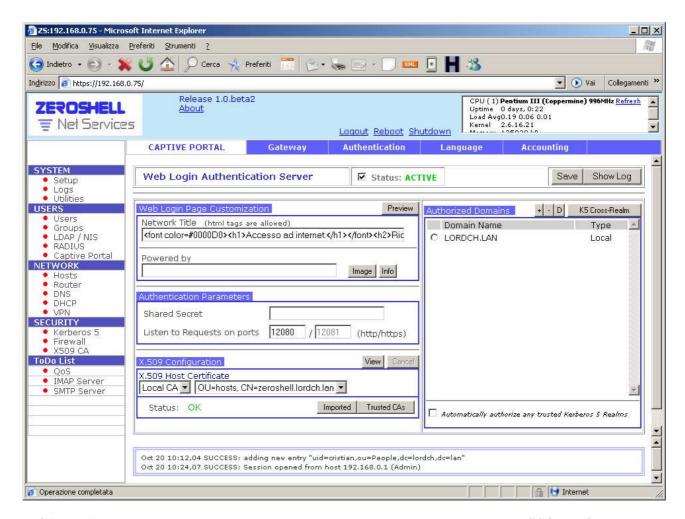


Using correst user and password:

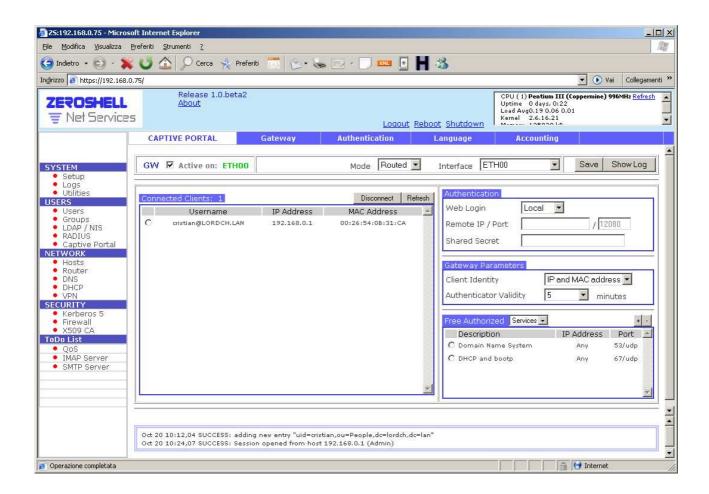


we can see this popup: we can use internet resources until this page is open.

You can customize this page using AUTHENTICATION tag with an HTML script:

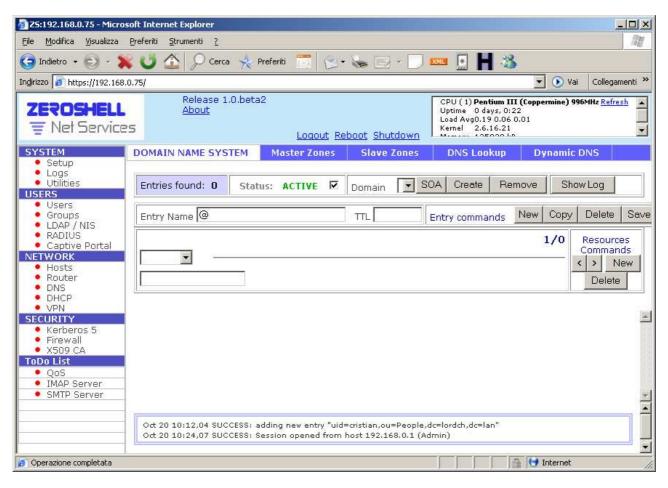


In GATEWAY tag you can see connected users and you can drop 'hem if necessary using DISCONNECT button:

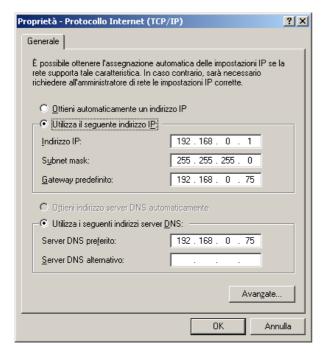


#### **DNS Service:**

Home xDSL lines use external DNS servers to resolve internet names. Sometimes these external DNS servers are down or not working for any reasons; Zeroshell can be also a DNS server! It's very easy to be used: click on left **DNS** voice..and flag **ACTIVATE**:

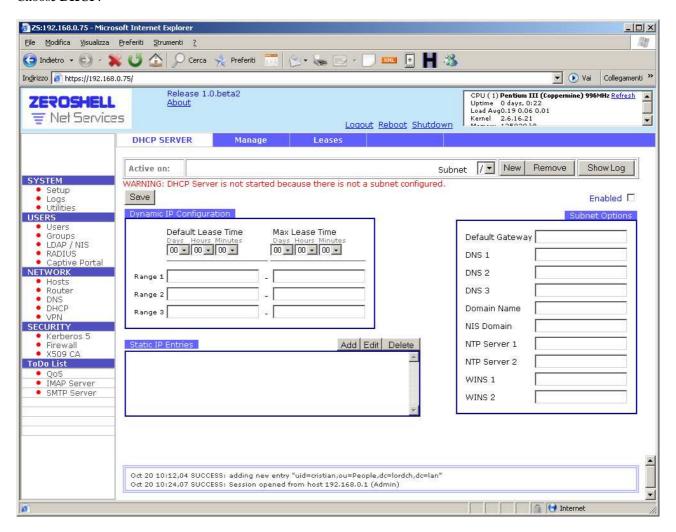


Done!...Now you can set your client in this way (192.168.0.75 is Zeroshell..):

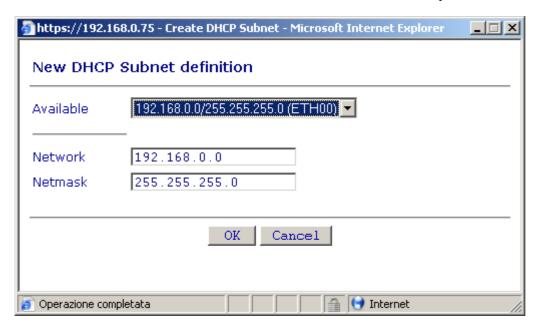


#### **DHCP Service:**

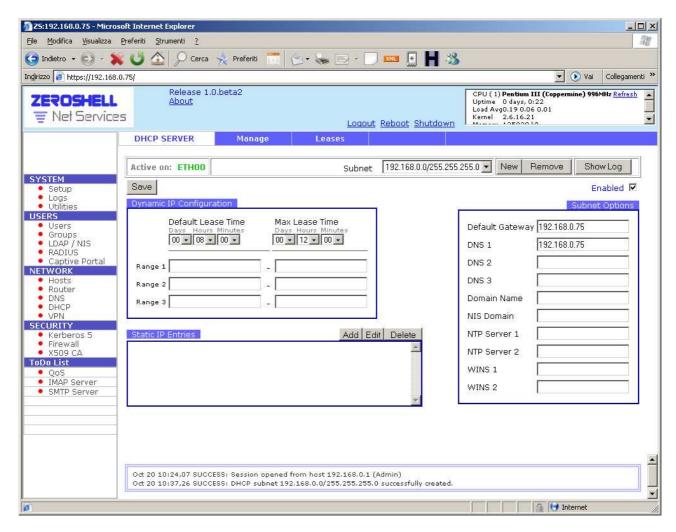
Zeroshell can be also a DHCP server; in this way the clients of our internal network don't need static ip addressing. Choose **DHCP**:



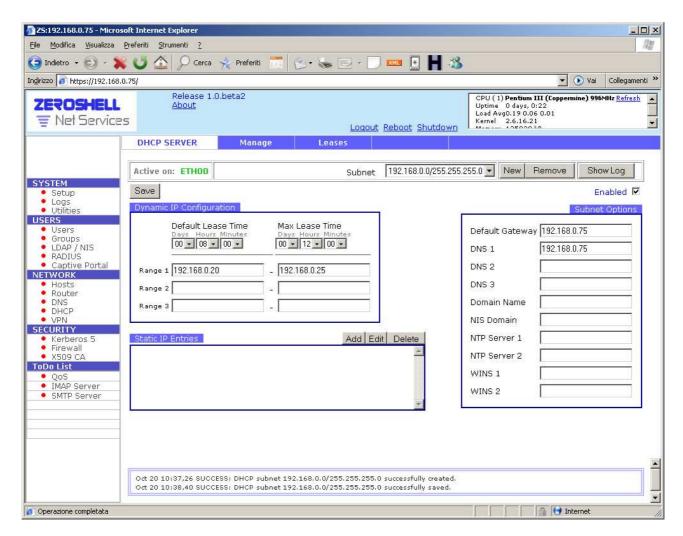
create **NEW** and choose the network interface where Zeroshell will distribute ip addresses:



and so:

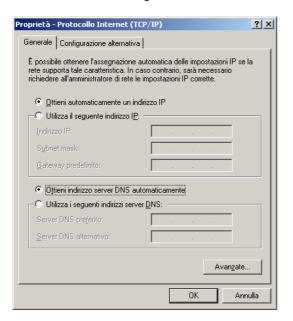


Now we choose the range of ip addresses available to be distributed:



and save.

Zeroshell is also our default gateway and DNS server! Our client network configuration:



few seconds and we can verify that:

### C:\Documents and Settings\Administrator>ipconfig /all

### Configurazione IP di Windows

Nome host . . . . . : PIZZA
Suffisso DNS primario . . . . :
Tipo nodo . . . . : Sconosciuto
Routing IP abilitato . . . : No
Proxy WINS abilitato . . . : No

Scheda Ethernet Connessione alla rete locale (LAN):

Suffisso DNS specifico per connessione:

Descrizione . . . . . . . . . . . . . . . . 3Com 3C920B-EMB Integrated Fast

Ethernet Controller

Indirizzo fisico. . . . . . . : 00-26-54-0B-31-CA

DHCP abilitato.....Sì

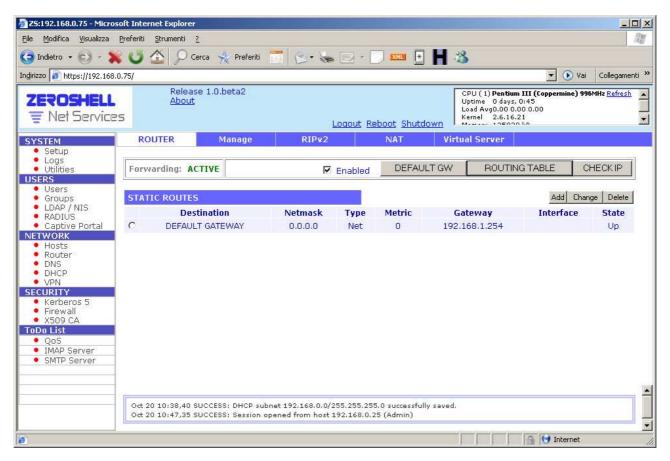
Lease ottenuto....: venerdì 20 ottobre 2006 10.41.59

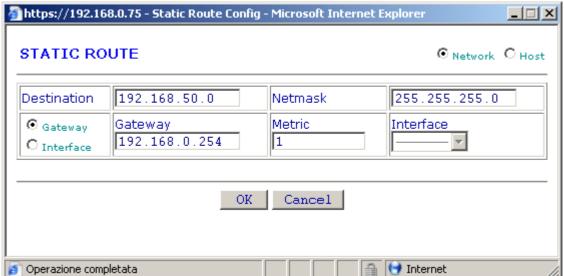
Scadenza lease . . . . . . : venerdì 20 ottobre 2006 18.41.59

#### Static routes to remote networks:

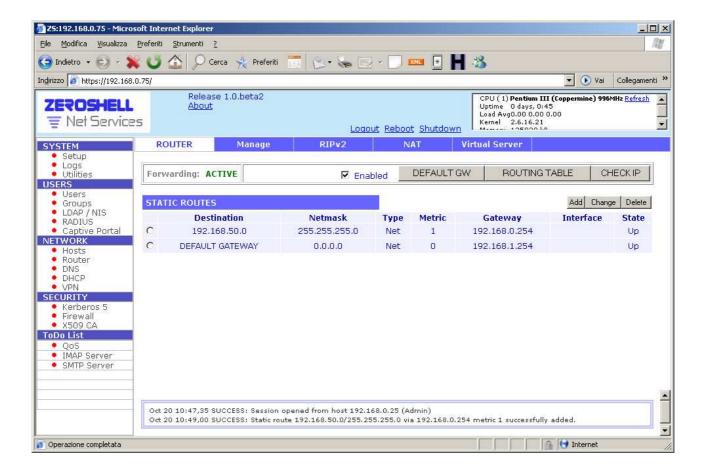
If we have any remote networks connected through a router, we can set static routes.

For example if we must reach remote network: 192.168.50.0/24 through the router 192.168.0.254, we can set this using **ROUTER** and **ADD**:





'Metric' is the cost, the priority to follow if many different routes exists for the same destination network.

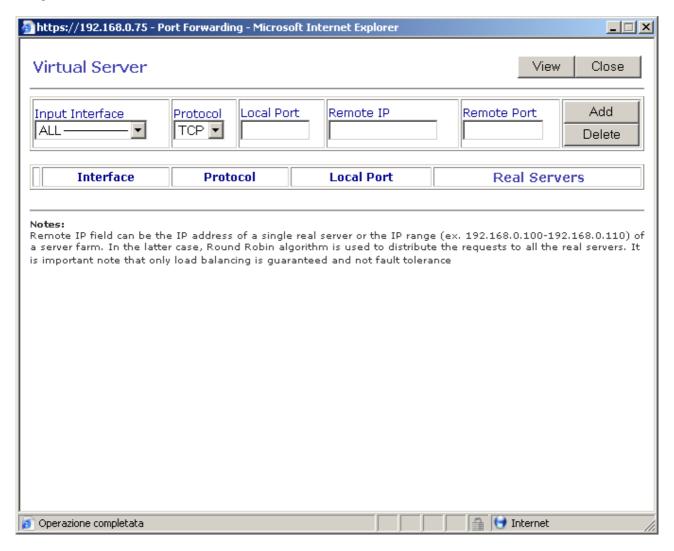


We can activate also RIP v2 protocol. It is used to let more existing routers dynamically share infromations about known remote networks.

#### **Virtual Servers:**

It is possible to share internal network services with external network (internet). We can for example choose to publish a website

Using **ROUTER**, choose **VIRTUAL SERVER**:

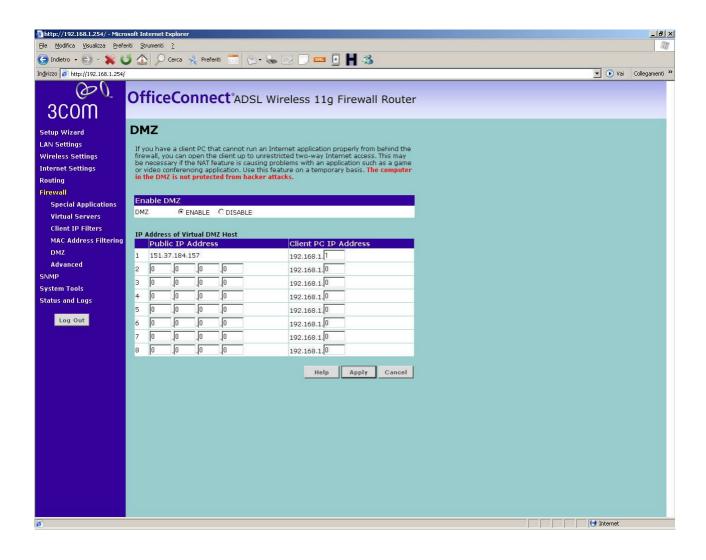


We must chose the interface, the protocol and the port listening for this service on Zeroshell system. Then we must set where is the service in our secure network: 192.168.0.100. It's the webserver publishing our homepage on port 80 TCP.



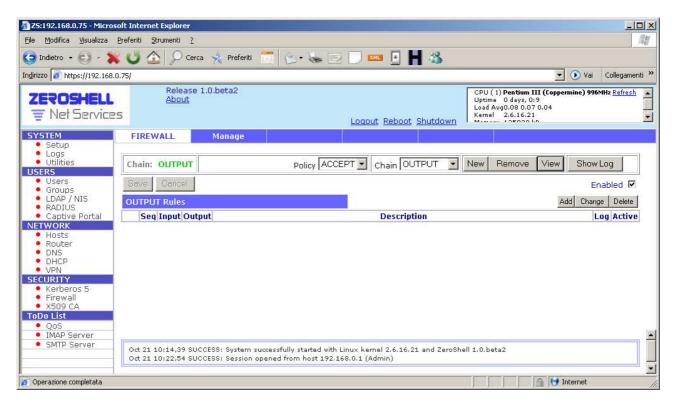


We must be sure that xDSL router has not NAT enabled. If NAT is enabled we must be sure that requests on port 80 tcp arrive Zeroshell ETH01. For example in my 3com router I have set that every kind of request from internet must reach my Zeroshell External Interface:

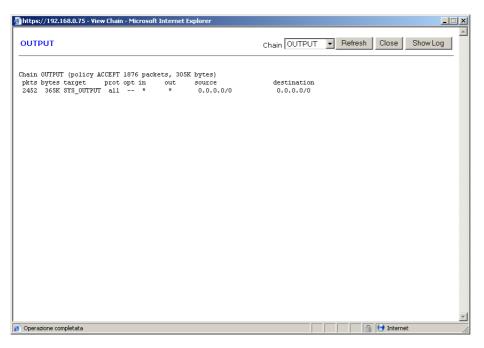


### Security: check default policies

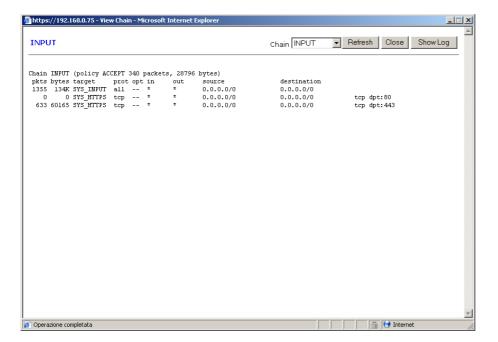
Using **FIREWALL** we can check the default network policies on our firewall. Choose **CHAIN OUTPUT** and click **VIEW**:



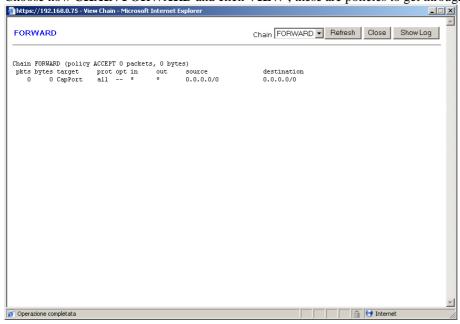
These are output policies:



Choose now CHAIN INPUT and click VIEW, these are the default incoming policies:



Choose now CHAIN FORWARD and click VIEW, these are policies to get through the firewall:



We can see that requests from internal ETH00 to external ETH01 are allowed; Nothing is set from ETH01 to ETH00 so nothing will pass through.