



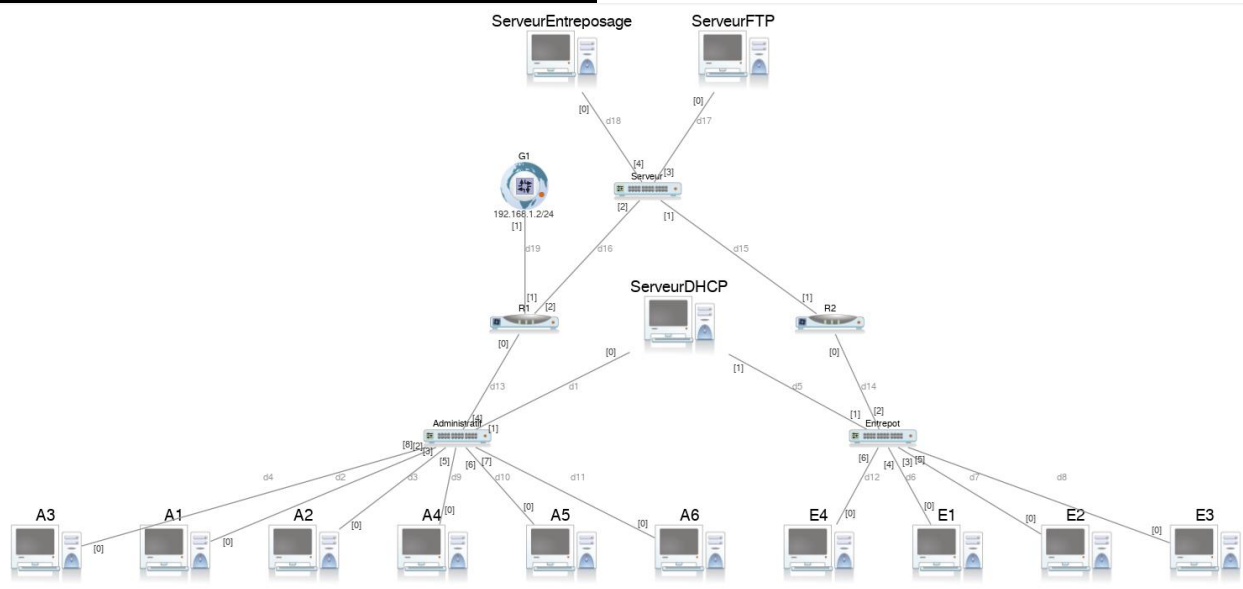
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Installation de service réseau

Description du plan d'adressage

Capture d'écran du réseau sous Marionnet :



Ce réseau a comme adresse IP 192.168.0.0 / 26.

Nous avons choisi un masque de 255.255.255.192 car ce réseau contient 3 sous-réseaux et un masque de 26 nous permet de découper les réseau en 4 sous-réseau occupant 64 bit chacun.

Dans chaque réseau les routeurs (R1 et R2) occupent les premières adresses du réseau.

Le serveur DHCP relié directement à « Administratif » et « Entrepôt » distribue les adresses IPV4 disponibles pour chaque machine

Répartition du réseau :

Nom du sous-réseau	Ipv4 du réseau	IPV4 R1	IPV4 R2	Espace machines	Ipv4 de broadcaste
Administratif	192.168.0.0	192.168.0.1	-	192.168.0.[1-62]	192.168.0.63
Entrepôt	192.168.0.64	-	192.168.0.65	192.168.0.[65-126]	192.168.0.127
Serveur	192.168.0.128	192.168.0.129	192.168.0.130	192.168.0.[129 - 190]	192.168.0.191

Paramétrage des Adresses :

▼ R1					
port0		02:04:06:23:da:00	1500	192.168.0.1/26	
port1		02:04:06:09:81:6d	1500	192.168.1.1/24	
port2		02:04:06:dd:ce:21	1500	192.138.0.129/26	
port3		02:04:06:37:5c:1a	1500		
▼ R2					
port0		02:04:06:7e:97:2c	1500	192.168.0.65/26	
port1		02:04:06:86:e8:d9	1500	192.168.0.130/26	
▼ ServeurDHCP					
eth0		02:04:06:5a:e3:05	1500	192.168.0.62/26	
eth1		02:04:06:8f:3b:bd	1500	192.168.0.126/26	
▼ ServeurFTP					
eth0		02:04:06:6d:3e:bc	1500	192.168.0.1/26	
▼ ServeurEntreposage					
eth0		02:04:06:ec:c1:3d	1500	192.168.0.2/26	

Le paramétrage des serveurs et routeurs a été fait manuellement via l'interface de Marionnet, comme on le voit si dessus.

Paramétrage du serveur DHCP :

Pour paramétrer le serveur DHCP on doit se rendre en premier lieux dans le fichier **/etc/default/isc-dhcp-server**, et rentrez les informations suivantes :

Il faut rajouter dans **INTERFACE = « eth0 eth1 »** pour pouvoir gérer le DHCP sur les deux cartes réseaux.



```
GNU nano 2.2.6 File: /etc/default/isc-dhcp-server

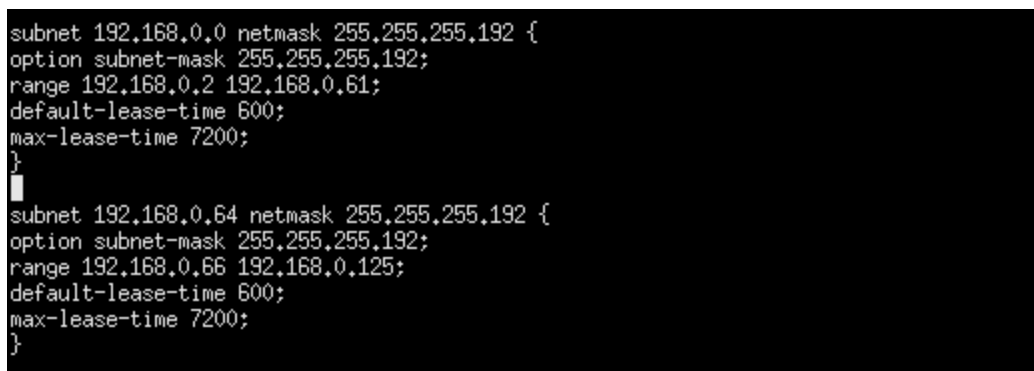
# Path to dhcpd's PID file (default: /var/run/dhcpd.pid).
#DHCPD_PID=/var/run/dhcpd.pid

# Additional options to start dhcpd with.
# Don't use options -cf or -pf here; use DHCPD_CONF/ DHCPD_PID instead
#OPTIONS=""

# On what interfaces should the DHCP server (dhcpd) serve DHCP requests?
# Separate multiple interfaces with spaces, e.g. "eth0 eth1".
INTERFACES="eth0 eth1"

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^U Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

Ensuite il faut se rendre dans le fichier **/etc/dhcp/dhcpd.conf/** et rentrer les informations suivantes :

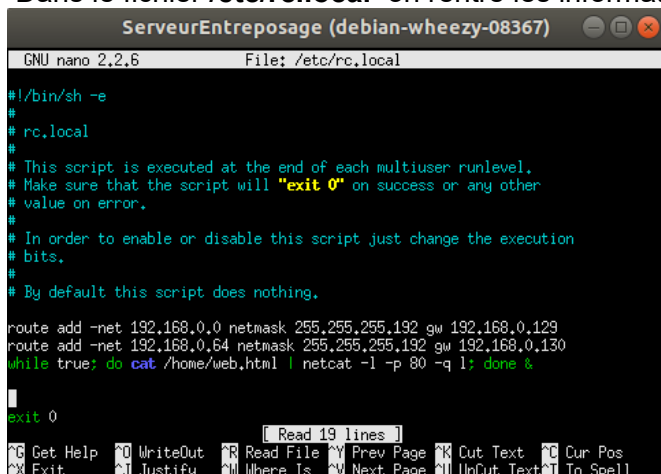


```
subnet 192.168.0.0 netmask 255.255.255.192 {
option subnet-mask 255.255.255.192;
range 192.168.0.2 192.168.0.61;
default-lease-time 600;
max-lease-time 7200;
}

subnet 192.168.0.64 netmask 255.255.255.192 {
option subnet-mask 255.255.255.192;
range 192.168.0.66 192.168.0.125;
default-lease-time 600;
max-lease-time 7200;
}
```

Serveur d'entreposage :

Dans le fichier **/etc/rc.local** on rentre les informations suivantes :



```
ServeurEntreposage (debian-wheezy-08367)
GNU nano 2.2.6 File: /etc/rc.local

#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.

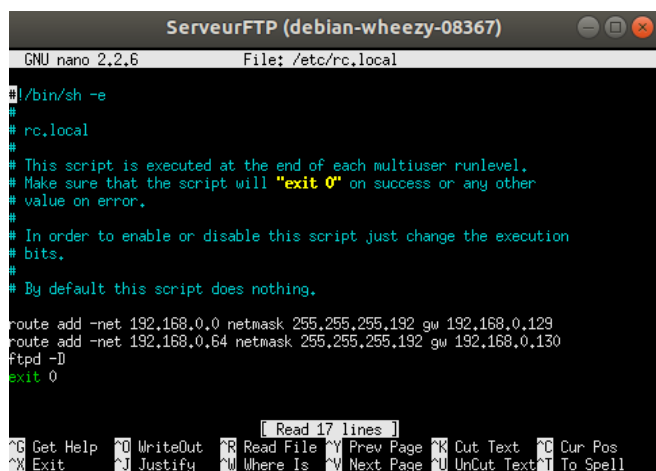
route add -net 192.168.0.0 netmask 255.255.255.192 gw 192.168.0.129
route add -net 192.168.0.64 netmask 255.255.255.192 gw 192.168.0.130
while true; do cat /home/web.html | netcat -l -p 80 -q 1; done &

exit 0

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^U Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

Serveur FTP :

Dans le fichier **etc/rc.local** on renter les informations suivantes.



```
GNU nano 2.2.6      File: /etc/rc.local
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.

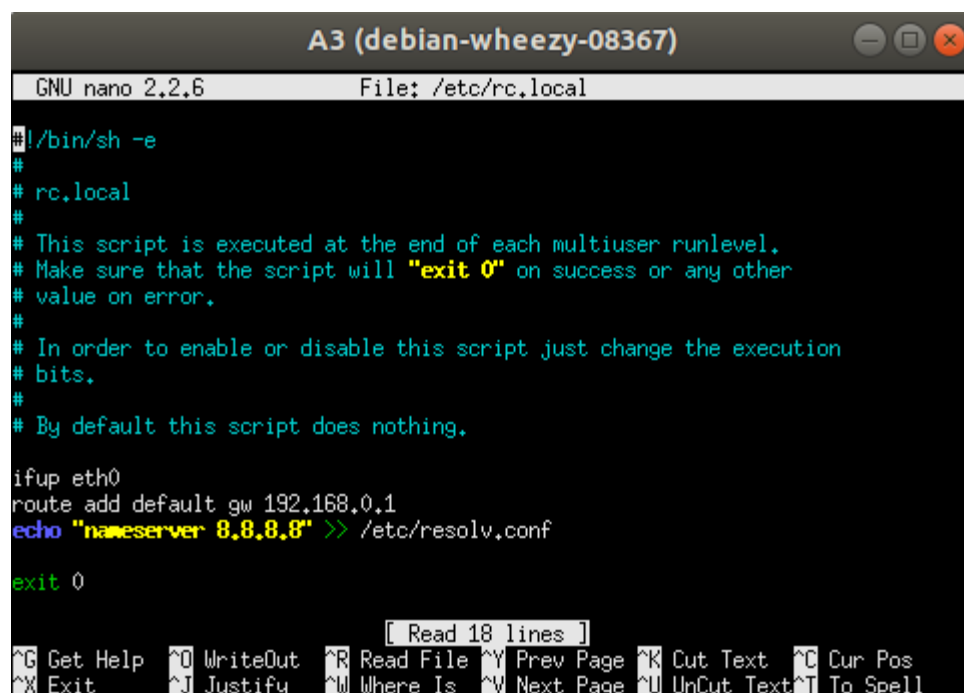
route add -net 192.168.0.0 netmask 255.255.255.192 gw 192.168.0.129
route add -net 192.168.0.64 netmask 255.255.255.192 gw 192.168.0.130
ftpd -D
exit 0
```

Paramétrage des machines et adressages :

Machines du sous-réseau administratif :

Paramétrage :

Le paramétrage des machines est fait dans le fichier **/etc/rc.local**

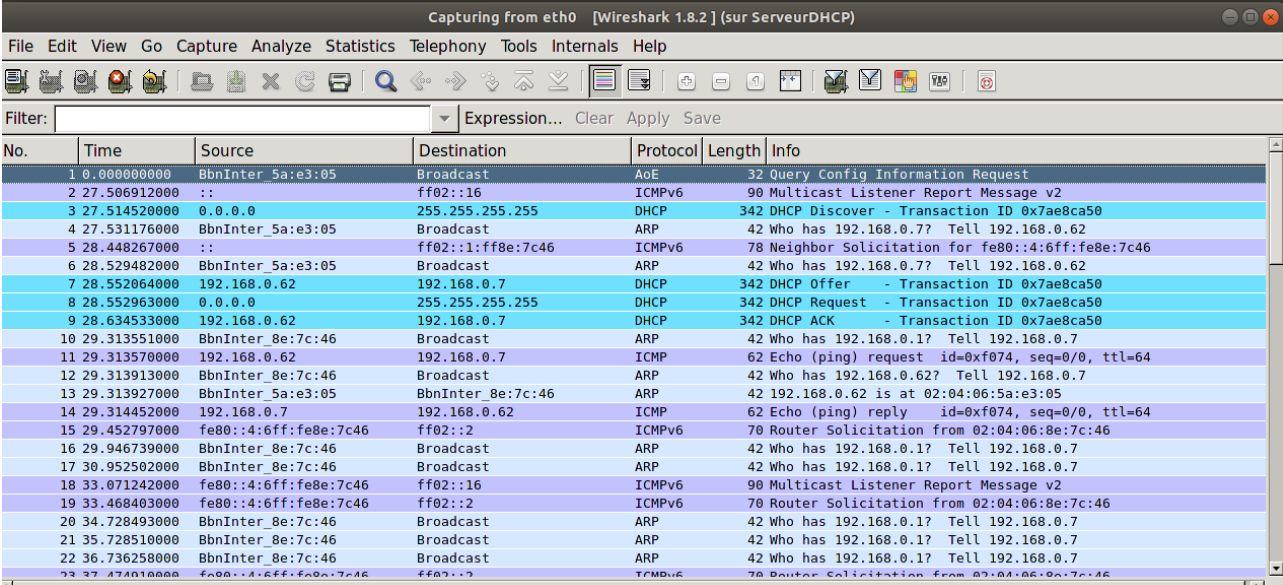


```
A3 (debian-wheezy-08367)
GNU nano 2.2.6      File: /etc/rc.local
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.

ifup eth0
route add default gw 192.168.0.1
echo "nameserver 8.8.8.8" >> /etc/resolv.conf
exit 0
```

Adressage:

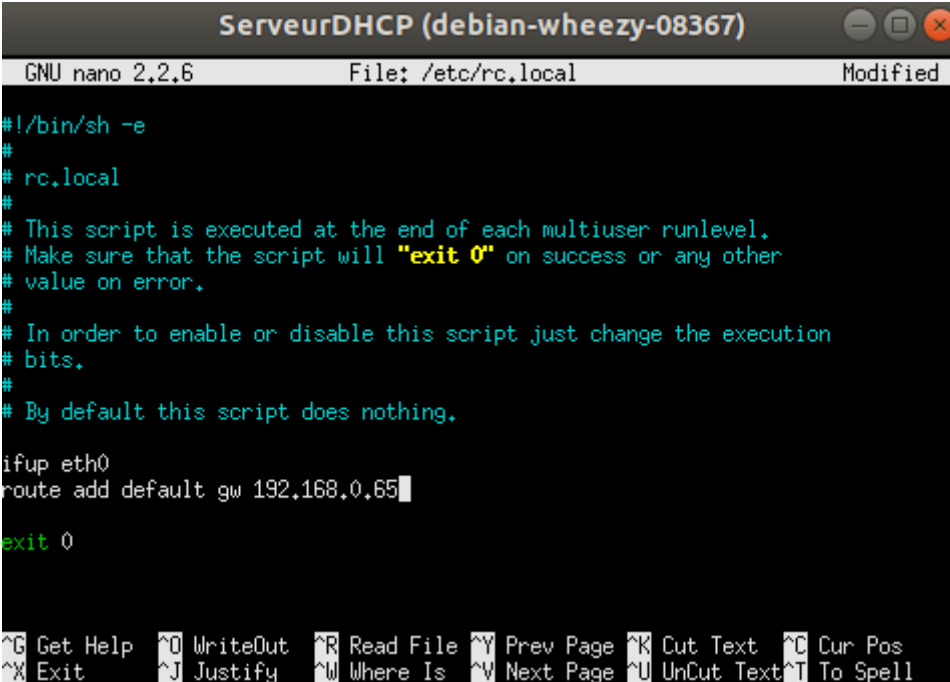
L'adressages des machines se fait automatiquement, grace au DHCP.



Wireshark 1.8.2 interface showing a packet capture from eth0. The filter is set to 'Expression...'. The packet list shows 23 packets. The packet details pane shows the selected packet (No. 23) as a DHCP Request (Transaction ID 0x7ae8ca50) from 192.168.0.62 to 255.255.255.255.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	BbnInter_5a:e3:05	Broadcast	AoE	32	Query Config Information Request
2	27.506912000	::	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
3	27.514520000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0x7ae8ca50
4	27.531176000	BbnInter_5a:e3:05	Broadcast	ARP	42	Who has 192.168.0.7? Tell 192.168.0.62
5	28.448267000	::	ff02::1:ff8e:7c46	ICMPv6	78	Neighbor Solicitation for fe80::4:6ff:fe8e:7c46
6	28.529482000	BbnInter_5a:e3:05	Broadcast	ARP	42	Who has 192.168.0.7? Tell 192.168.0.62
7	28.552064000	192.168.0.62	192.168.0.7	DHCP	342	DHCP Offer - Transaction ID 0x7ae8ca50
8	28.552963000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x7ae8ca50
9	28.634533000	192.168.0.62	192.168.0.7	DHCP	342	DHCP ACK - Transaction ID 0x7ae8ca50
10	29.313551000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
11	29.313570000	192.168.0.62	192.168.0.7	ICMP	62	Echo (ping) request id=0xf074, seq=0/0, ttl=64
12	29.313913000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.62? Tell 192.168.0.7
13	29.313927000	BbnInter_5a:e3:05	BbnInter_8e:7c:46	ARP	42	192.168.0.62 is at 02:04:06:5a:e3:05
14	29.314452000	192.168.0.7	192.168.0.62	ICMP	62	Echo (ping) reply id=0xf074, seq=0/0, ttl=64
15	29.452797000	fe80::4:6ff:fe8e:7c46	ff02::2	ICMPv6	70	Router Solicitation from 02:04:06:8e:7c:46
16	29.946739000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
17	30.952502000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
18	33.071242000	fe80::4:6ff:fe8e:7c46	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
19	33.468403000	fe80::4:6ff:fe8e:7c46	ff02::2	ICMPv6	70	Router Solicitation from 02:04:06:8e:7c:46
20	34.728493000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
21	35.728510000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
22	36.736258000	BbnInter_8e:7c:46	Broadcast	ARP	42	Who has 192.168.0.1? Tell 192.168.0.7
23	37.474010000	fe80::4:6ff:fe8e:7c46	ff02::2	ICMPv6	70	Router Solicitation from 02:04:06:8e:7c:46

Machines du sous-réseau entrepôt :



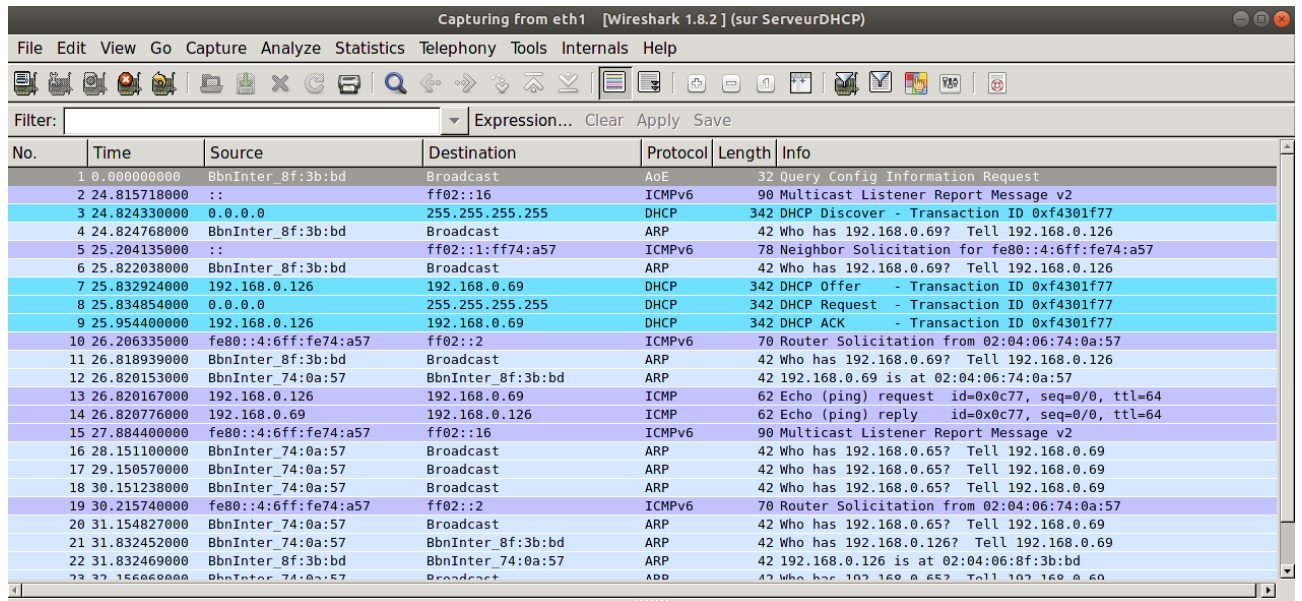
The terminal window shows the configuration of the /etc/rc.local file. The file content is as follows:

```
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.

ifup eth0
route add default gw 192.168.0.65
exit 0
```

Adressage:

L'adressages des machines se fait automatiquement, grace au DHCP.



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	BbnInter_8f:3b:bd	Broadcast	AoE	32	Query Config Information Request
2	24.815718000	::	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
3	24.824330000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover - Transaction ID 0xf4301f77
4	24.824768000	BbnInter_8f:3b:bd	Broadcast	ARP	42	Who has 192.168.0.69? Tell 192.168.0.126
5	25.204135000	::	ff02::1:ff74:a57	ICMPv6	78	Neighbor Solicitation for fe80::4:6ff:fe74:a57
6	25.822038000	BbnInter_8f:3b:bd	Broadcast	ARP	42	Who has 192.168.0.69? Tell 192.168.0.126
7	25.832924000	192.168.0.126	192.168.0.69	DHCP	342	DHCP Offer - Transaction ID 0xf4301f77
8	25.834854000	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0xf4301f77
9	25.954400000	192.168.0.126	192.168.0.69	DHCP	342	DHCP ACK - Transaction ID 0xf4301f77
10	26.206335000	fe80::4:6ff:fe74:a57	ff02::2	ICMPv6	70	Router Solicitation from 02:04:06:74:0a:57
11	26.818939000	BbnInter_8f:3b:bd	Broadcast	ARP	42	Who has 192.168.0.69? Tell 192.168.0.126
12	26.820153000	BbnInter_74:0a:57	BbnInter_8f:3b:bd	ARP	42	192.168.0.69 is at 02:04:06:74:0a:57
13	26.820167000	192.168.0.126	192.168.0.69	ICMP	62	Echo (ping) request id=0x0c77, seq=0/0, ttl=64
14	26.820776000	192.168.0.69	192.168.0.126	ICMP	62	Echo (ping) reply id=0x0c77, seq=0/0, ttl=64
15	27.884400000	fe80::4:6ff:fe74:a57	ff02::16	ICMPv6	90	Multicast Listener Report Message v2
16	28.151100000	BbnInter_74:0a:57	Broadcast	ARP	42	Who has 192.168.0.65? Tell 192.168.0.69
17	29.150570000	BbnInter_74:0a:57	Broadcast	ARP	42	Who has 192.168.0.65? Tell 192.168.0.69
18	30.151238000	BbnInter_74:0a:57	Broadcast	ARP	42	Who has 192.168.0.65? Tell 192.168.0.69
19	30.215740000	fe80::4:6ff:fe74:a57	ff02::2	ICMPv6	70	Router Solicitation from 02:04:06:74:0a:57
20	31.154827000	BbnInter_74:0a:57	Broadcast	ARP	42	Who has 192.168.0.65? Tell 192.168.0.69
21	31.832452000	BbnInter_74:0a:57	BbnInter_8f:3b:bd	ARP	42	Who has 192.168.0.126? Tell 192.168.0.69
22	31.832469000	BbnInter_8f:3b:bd	BbnInter_74:0a:57	ARP	42	192.168.0.126 is at 02:04:06:8f:3b:bd
23	32.156069000	BbnInter_74:0a:57	Broadcast	ARP	42	Who has 192.168.0.65? Tell 192.168.0.69

Test à réalisés à partir des machines:

N°	source	destination	Résultat attendu	Test validé
1	entrepôt	serveurs	Message reçu	oui
2	administratif	serveurs	Message reçu	oui
3	administratif	entrepôt	Connexion impossible	oui
4	entrepôt	administratif	Connexion impossible	oui

Premier test Entrepôt – Serveurs :

No.	Time	Source	Destination	Protocol	Length	Info
28	187.485767000	BbnInter_dd:ce:21	Broadcast	AoE	32	Query Config Information Request
29	206.207818000	BbnInter_dd:ce:21	Broadcast	ARP	42	Who has 192.168.0.132? Tell 192.168.0.129
30	206.207842000	BbnInter_ec:c1:3d	BbnInter_dd:ce:21	ARP	42	192.168.0.132 is at 02:04:06:ec:c1:3d
31	206.209061000	192.168.0.7	192.168.0.132	ICMP	98	Echo (ping) request id=0x06fe, seq=1/256, ttl=63
32	206.209111000	192.168.0.132	192.168.0.7	ICMP	98	Echo (ping) reply id=0x06fe, seq=1/256, ttl=64
33	207.215234000	192.168.0.7	192.168.0.132	ICMP	98	Echo (ping) request id=0x06fe, seq=2/512, ttl=63
34	207.215265000	192.168.0.132	192.168.0.7	ICMP	98	Echo (ping) reply id=0x06fe, seq=2/512, ttl=64
35	208.216548000	192.168.0.7	192.168.0.132	ICMP	98	Echo (ping) request id=0x06fe, seq=3/768, ttl=63
36	208.216577000	192.168.0.132	192.168.0.7	ICMP	98	Echo (ping) reply id=0x06fe, seq=3/768, ttl=64
37	209.218729000	192.168.0.7	192.168.0.132	ICMP	98	Echo (ping) request id=0x06fe, seq=4/1024, ttl=63
38	209.218758000	192.168.0.132	192.168.0.7	ICMP	98	Echo (ping) reply id=0x06fe, seq=4/1024, ttl=64
39	211.228686000	BbnInter_ec:c1:3d	BbnInter_dd:ce:21	ARP	42	Who has 192.168.0.129? Tell 192.168.0.132
40	211.230530000	BbnInter_dd:ce:21	BbnInter_ec:c1:3d	ARP	42	192.168.0.129 is at 02:04:06:dd:ce:21

Les pings passent bien le message est bien reçu le test est donc validé

Second test Administratif – Serveurs :

No.	Time	Source	Destination	Protocol	Length	Info
3	4.295853000	BbnInter_86:e8:d9	Broadcast	AoE	32	Query Config Information Request
4	7.003497000	BbnInter_dd:ce:21	Broadcast	AoE	32	Query Config Information Request
5	43.038919000	BbnInter_86:e8:d9	Broadcast	ARP	42	Who has 192.168.0.132? Tell 192.168.0.130
6	43.038990000	BbnInter_ec:c1:3d	BbnInter_86:e8:d9	ARP	42	192.168.0.132 is at 02:04:06:ec:c1:3d
7	43.040402000	192.168.0.69	192.168.0.132	ICMP	98	Echo (ping) request id=0x06f7, seq=1/256, ttl=63
8	43.040452000	192.168.0.132	192.168.0.69	ICMP	98	Echo (ping) reply id=0x06f7, seq=1/256, ttl=64
9	44.044703000	192.168.0.69	192.168.0.132	ICMP	98	Echo (ping) request id=0x06f7, seq=2/512, ttl=63
10	44.044730000	192.168.0.132	192.168.0.69	ICMP	98	Echo (ping) reply id=0x06f7, seq=2/512, ttl=64
11	45.055706000	192.168.0.69	192.168.0.132	ICMP	98	Echo (ping) request id=0x06f7, seq=3/768, ttl=63
12	45.055738000	192.168.0.132	192.168.0.69	ICMP	98	Echo (ping) reply id=0x06f7, seq=3/768, ttl=64
13	46.065237000	192.168.0.69	192.168.0.132	ICMP	98	Echo (ping) request id=0x06f7, seq=4/1024, ttl=63
14	46.065269000	192.168.0.132	192.168.0.69	ICMP	98	Echo (ping) reply id=0x06f7, seq=4/1024, ttl=64
15	48.071544000	BbnInter_ec:c1:3d	BbnInter_86:e8:d9	ARP	42	Who has 192.168.0.130? Tell 192.168.0.132

Les pings passent bien le message est bien reçu le test est donc validé

Troisième test Administratif – Entrepot :

Filter:		▼	Expression...	Clear	Apply	Save
No.	Time	Source	Destination	Protocol	Length	
1	0.000000000	BbnInter_8f:3b:bd	Broadcast	AoE	32	
2	14.179266000	BbnInter_74:0a:57	Broadcast	AoE	32	
3	31.983546000	BbnInter_7e:97:2c	Broadcast	AoE	32	

Lors du ping de Administratif vers Entrepot aucun message ne part, le test est validé.

Quatrième test Entrepot – Administratif :

Filter:		▼	Expression...	Clear	Apply	Save
No.	Time	Source	Destination	Protocol	Length	
1	0.000000000	BbnInter_5a:e3:05	Broadcast	AoE	32	
2	17.313330000	BbnInter_8e:7c:46	Broadcast	AoE	32	
3	35.002885000	BbnInter_23:da:00	Broadcast	AoE	32	
4	35.763000000	BbnInter_92:e3:c3	Broadcast	AoE	32	
5	36.726947000	BbnInter_7f:8c:41	Broadcast	AoE	32	
6	37.820254000	BbnInter_69:ff:b7	Broadcast	AoE	32	
7	38.702361000	BbnInter_ef:a6:2a	Broadcast	AoE	32	
8	39.810665000	BbnInter_02:33:c1	Broadcast	AoE	32	

Lors du ping de Entrepot vers Administratif aucun message ne part, le test est validé.

Connexions aux serveurs :

Tests à réalisés

N°	source	destination	Résultat attendu	Test validé
1	entrepôt	Serveur Entreposage	Connexion possible	oui
2	administratif	Serveur Entreposage	Connexion possible	oui
3	entrepôt	Serveur FTP	Connexion possible	oui
4	administratif	Serveur FTP	Connexion possible	oui

Premier test Entrepot – Serveur entreposage :

Une fois la commande **lynx 192.168.0.132** tapé on reçoit bien la page web, le test est donc validé.

```
Page de connexion A l'Application Application d'entrepotage

Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<-' to go back.
Arrow keys: Up and Down to move, Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

Second test Administratif – Serveur entreposage :

Une fois la commande **lynx 192.168.0.132** tapé on reçoit bien la page web, le test est donc validé.

```
Page de connexion A l'Application Application d'entrepotage

Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<-' to go back.
Arrow keys: Up and Down to move, Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

Troisième test Entrepôt – Serveur FTP :

La machine se connecte bien au serveur FTP en anonyme, le test est validé.

```
E3 (debian-wheezy-08367)
[1 root@E3 ~]$ lynx 192.168.0.132
Looking up '192.168.0.132' first
[0 root@E3 ~]$ ftp
ftp> open 192.168.0.132
ftp: connect: Connection refused
ftp> open 192.168.0.131
Connected to 192.168.0.131.
220 localhost FTP server (GNU inetutils 1.9) ready.
Name (192.168.0.131:root): ftp
531 Guest login ok, type your name as password.
Password:
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for '/bin/ls'.
total 8
drwxr-xr-x 2 1000 1000 4096 May 31 10:34 ralonzo
drwxr-xr-x 3 1000 1000 4096 Jun 29 2014 student
226 Transfer complete.
ftp>
```


Quatrième test Administratif – Serveur FTP :

La machine se connecte bien au serveur FTP en anonyme, le test est validé.

```
[0 root@46 ~]$ lynx 192.168.0.132
Looking up '192.168.0.132' first

Exiting via interrupt: 2

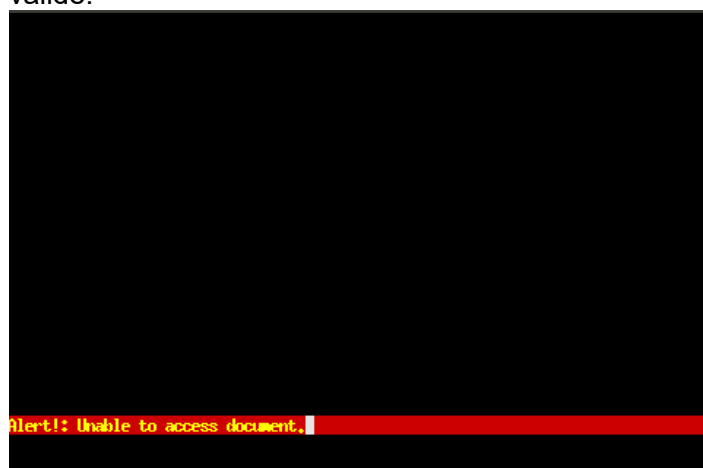
[0 root@46 ~]$ ftp
ftp> open 192.168.0.131
Connected to 192.168.0.131.
220 localhost FTP server (GNU inetutils 1.9) ready.
Name (192.168.0.131:root): ftp
331 Guest login ok, type your name as password.
Password:
230 Guest login ok, access restrictions apply.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for '/bin/ls'.
total 8
drwxr-xr-x  2 1000  1000 4096 May 31 10:34 ralonzo
drwxr-xr-x  3 1000  1000 4096 Jun 29  2014 student
226 Transfer complete.
ftp>
```

Connexion internet :

N°	source	destination	Résultat attendu	Test validé
1	entrepôt	Gateway	Connexion impossible	oui
2	administratif	Gateway	Connexion possible	oui

Premier test Entrepôt – Gateway :

Lorsque la commande **lynx google.com** est utilisé la machine n'accède pas à internet, le test est validé.



Second test Administratif – Gateway :

Lorsque la commande **lynx google.com** est utilisé la machine accède à internet, le test est validé.

