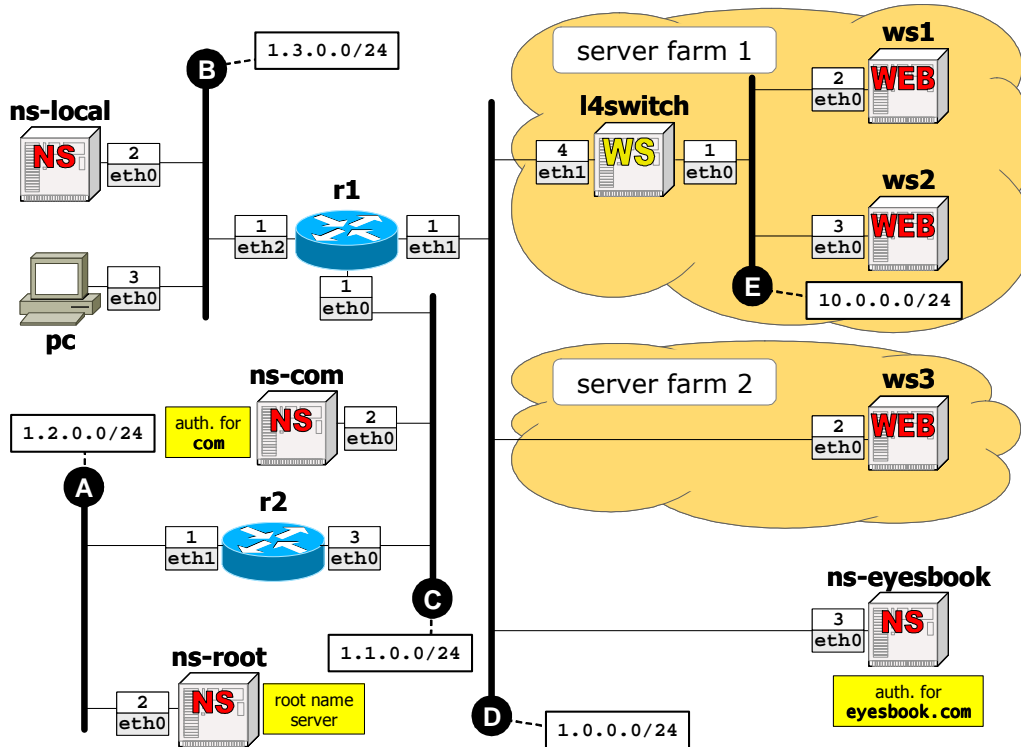




Available time: 90 minutes.



Using Netkit, implement the network depicted in the figure and described below (you can use the following as a checklist).

- Routing is implemented by using statically configured routes.
  - Remember to set a default route on all network nodes that do *not* act as routers (including **l4switch**; pay special attention to **ns-com** because a default route alone is not enough on that machine).
- ws1**, **ws2**, and **ws3** are web servers running apache2; they serve a single default page, which is different for each server.
- l4switch** is a layer 4 web switch that implements a round robin load balancing policy. Use the following commands to properly set it up:

On a single line! `iptables -t nat -A PREROUTING -d 1.0.0.4 -m statistic --mode nth --every 2 -j DNAT --to-destination 10.0.0.2`  
`iptables -t nat -A PREROUTING -d 1.0.0.4 -j DNAT --to-destination 10.0.0.3`

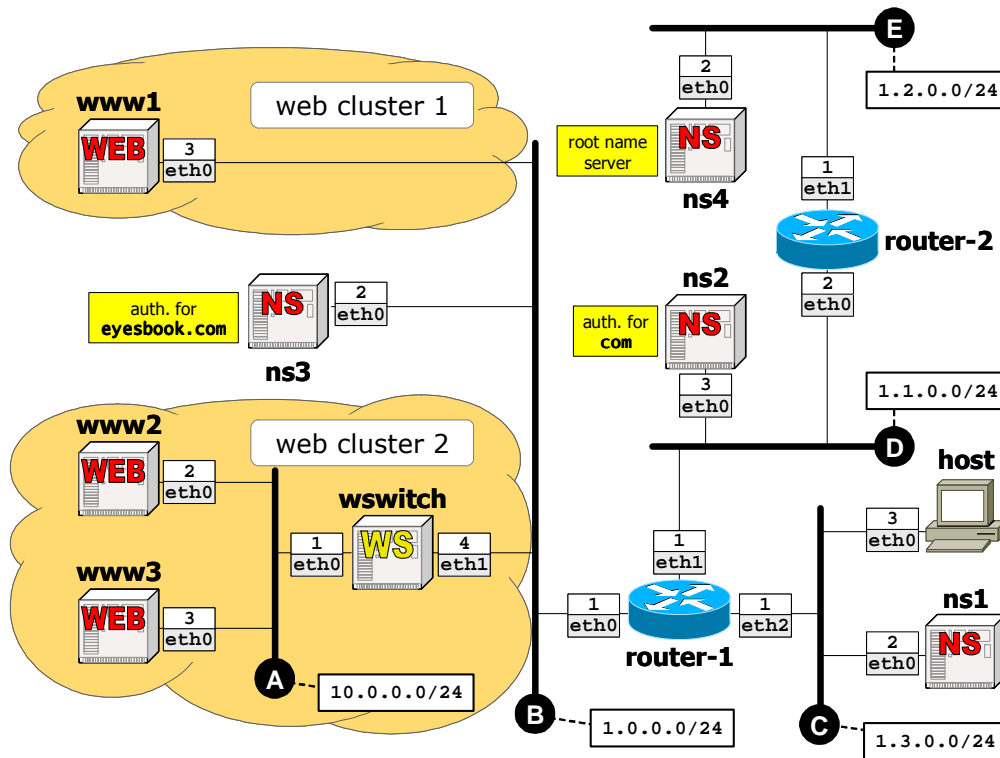
- ns-local**, **ns-root**, **ns-com**, and **ns-eyesbook** are name servers running bind.
  - ns-local** is a local name server on its own LAN; **ns-root** is the root name server; **ns-com** is the authority for zone **com**; **ns-eyesbook** is the authority for zone **eyesbook.com**.
  - The only meaningful DNS name is **www.eyesbook.com**, corresponding to the web service offered by the two server farms.
  - ns-eyesbook** implements a round robin load balancing policy on name **www.eyesbook.com** (note: do not use location-based load balancing).

**Goals:**

- **pc** must be able to access web page **http://www.eyesbook.com/** using the **links** web browser.
- The load balancing mechanisms implemented by the DNS and the web switch must be observable (using **ping**, **dig**, or **links**).



Available time: 90 minutes.



Using Netkit, implement the network depicted in the figure and described below (you can use the following as a checklist).

- Routing is implemented by using statically configured routes.
  - Remember to set a default route on all network nodes that do *not* act as routers (including **wswitch**; pay special attention to **ns2** because a default route alone is not enough on that machine).
- www1**, **www2**, and **www3** are web servers running apache2; they serve a single default page, which is different for each server.
- wswitch** is a layer 4 web switch that implements a round robin load balancing policy. Use the following commands to properly set it up:

On a single line! `{ iptables -t nat -A PREROUTING -d 1.0.0.4 -m statistic --mode nth --every 2 -j DNAT --to-destination 10.0.0.2  
iptables -t nat -A PREROUTING -d 1.0.0.4 -j DNAT --to-destination 10.0.0.3`

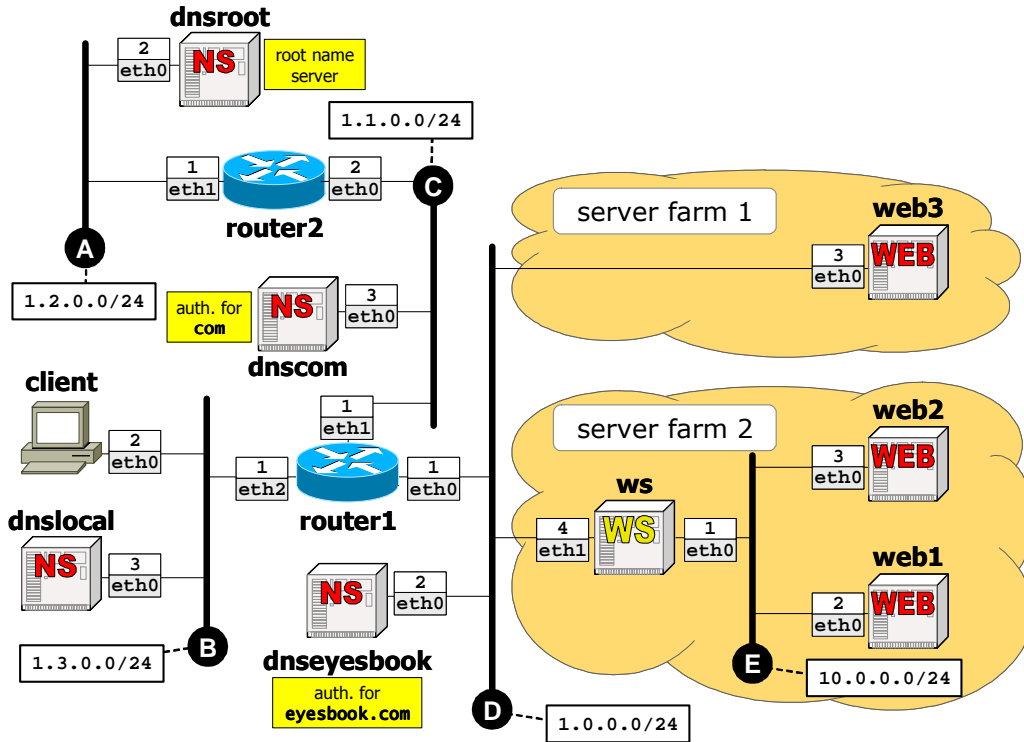
- ns1**, **ns2**, **ns3**, and **ns4** are name servers running bind.
  - ns1** is a local name server on its own LAN; **ns4** is the root name server; **ns2** is the authority for zone **com**; **ns3** is the authority for zone **eyesbook.com**.
  - The only meaningful DNS name is **www.eyesbook.com**, corresponding to the web service offered by the two web clusters.
  - ns3** implements a round robin load balancing policy on name **www.eyesbook.com** (note: do not use location-based load balancing).

**Goals:**

- **host** must be able to access web page **http://www.eyesbook.com/** using the **links** web browser.
- The load balancing mechanisms implemented by the DNS and the web switch must be observable (using **ping**, **dig**, or **links**).



Available time: 90 minutes.



Using Netkit, implement the network depicted in the figure and described below (you can use the following as a checklist).

- Routing is implemented by using statically configured routes.
  - Remember to set a default route on all network nodes that do *not* act as routers (including **ws**; pay special attention to **dnscom** because a default route alone is not enough on that machine).
- web1**, **web2**, and **web3** are web servers running apache2; they serve a single default page, which is different for each server.
- ws** is a layer 4 web switch that implements a round robin load balancing policy. Use the following commands to properly set it up:

```
On a single line! { iptables -t nat -A PREROUTING -d 1.0.0.4 -m statistic --mode nth --every 2 -j DNAT
                    --to-destination 10.0.0.3
                    iptables -t nat -A PREROUTING -d 1.0.0.4 -j DNAT --to-destination 10.0.0.2
```

- dnslocal**, **dnsroot**, **dnscom**, and **dnseyesbook** are name servers running bind.
  - dnslocal** is a local name server on its own LAN; **dnsroot** is the root name server; **dnscom** is the authority for zone **com**; **dnseyesbook** is the authority for zone **eyesbook.com**.
  - The only meaningful DNS name is **www.eyesbook.com**, corresponding to the web service offered by the two server farms.
  - dnseyesbook** implements a round robin load balancing policy on name **www.eyesbook.com** (note: do not use location-based load balancing).

**Obiettivi:**

- **client** must be able to access web page <http://www.eyesbook.com/> using the **links** web browser.
- The load balancing mechanisms implemented by the DNS and the web switch must be observable (using **ping**, **dig**, or **links**).