ICN – Examination date: 06-09-2013 – “Pinnacle”

Goals
- client must be able to display the web page served by ipv6-web using this command: lynx http://ipv6.site.com/
- client must be able to display the web page served by ipv4-web using this command: lynx http://ipv4.site.com/

IP
- Only the last byte of the address is specified next to the interfaces.
- All the nodes are IPv4-only, except ipv6-web, which is IPv6-only, and as1r1, as2r1, and client, which are dual stack.
- Nodes that act as IPv6 routers must be enabled to do so by using the command specified in the box alongside.
- IPv6 routing is implemented statically.

IGP and BGP
- AS1’s internal network runs RIP.
- BGP peering LANs and networks internal to each AS (indicated in gray) must be announced in BGP.
- BGP policies must be such that traffic is routed as specified in Figure 1.
- No routers announce the default route 0/0. apply customer-provider policies, or filter BGP announcements.
- IPv6 subnets must not be announced by any routers, either in RIP or in BGP.

USEFUL COMMANDS (parts in square brackets are optional):
- To assign the IPv6 address ipv6addr/mask to interface interface:
  ifconfig interface up
  ifconfig interface add ipv6addr/mask
- To enable a network node to behave as an IPv6 router:
  echo 1 >>/proc/sys/net/ipv6/conf/all/forwarding
- To add a static route towards ipv6addr[/mask]:
  route -A inet6 add ipv6addr[/mask] [gw nexthop] [dev interface]
- To display the IPv6 routing table (which is different from the IPv4 one):
  ip -6 route or, alternatively, route -A inet6
- To set up an IPv6-in-IPv4 tunnel called tunnelName between ipv4LocalAddr and ipv4RemoteAddr (note: the same configuration must be applied to both endpoints):
  ip tunnel add tunnelName mode sit remote ipv4RemoteAddr local ipv4LocalAddr ttl 10
  ifconfig tunnelName up
  ifconfig tunnelName add ipv4LocalAddr
  route -A inet6 add ipv4RemoteAddr dev tunnelName

Services
- ns1, ns2, ns3, and ns4 are name servers. ns1 is the local name server for client, ns2 is root, ns3 is authority for com, ns4 is authority for site.com.
- The configuration of ns4 must include the following DNS record:
  ipv6.site.com. IN AAAA 2001:f::2
- Add this line at the beginning of file /etc/bind/named.conf on ns1:
  options { allow-recursion { any; } }