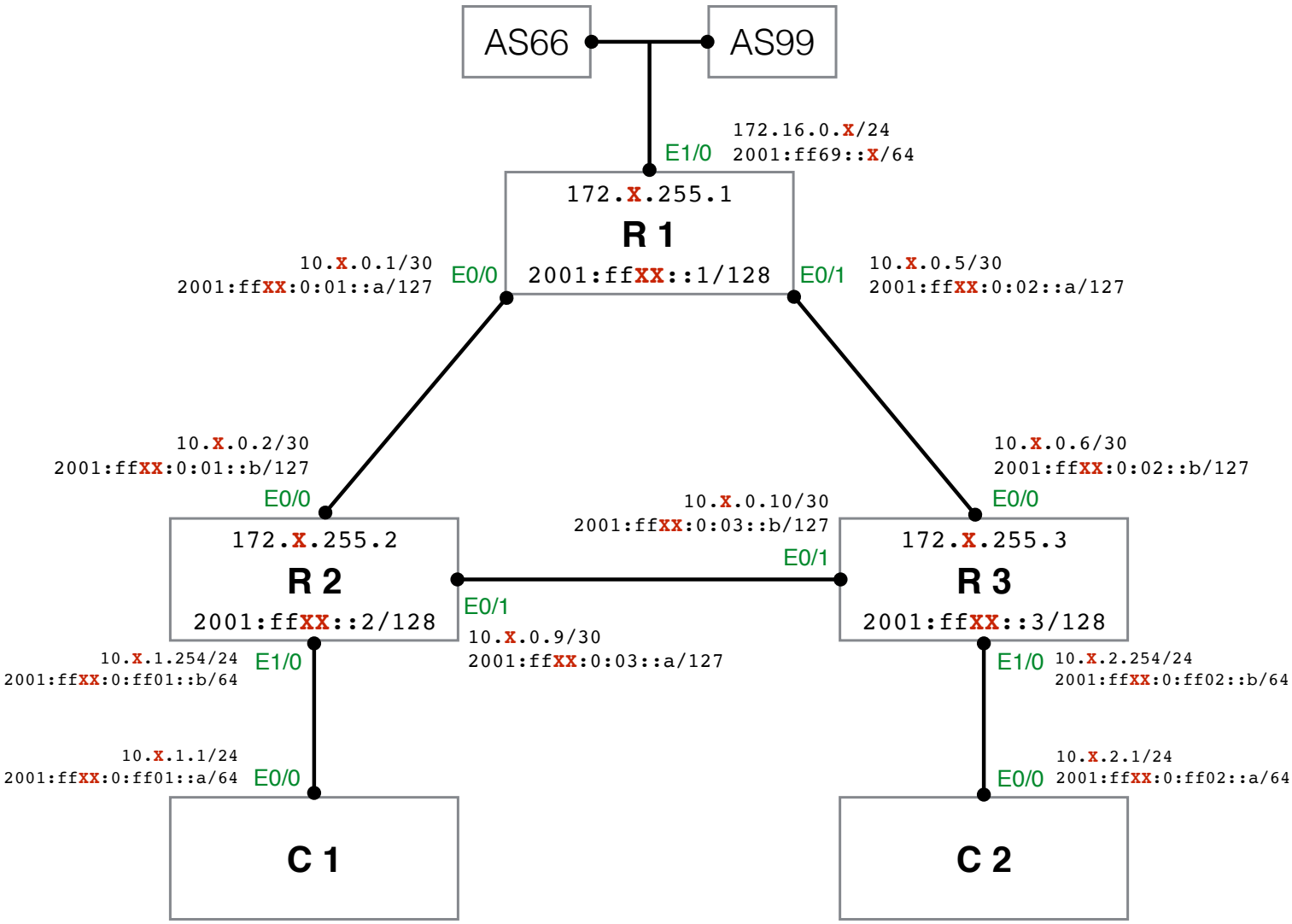
RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Advanced IPv6 Training Course

Lab Manual

Network Diagram



Addressing Plan

	R1	R2	R3	C1	C2
lo0	172.X.255.1 2001:ffXX::1/128	172.X.255.2 2001:ffXX::2/128	172.X.255.3 2001:ffXX::3/128		
e0/0	10.X.0.1/30 2001:ffXX:0:01::a/127	10.X.0.2/30 2001:ffXX:0:01::b/127	10.X.0.6/30 2001:ffXX:0:02::b/127	10.X.1.1/24 2001:ffXX:0:ff01::a/64	10.X.2.1/24 2001:ffXX:0:ff02::a/64
e0/1	10.X.0.5/30 2001:ffXX:0:02::a/127	10.X.0.9/30 2001:ffXX:0:03::a/127	10.X.0.10/30 2001:ffXX:0:03::b/127		
e1/0	172.16.0.X/24 2001:ff69::X/64	10.X.1.254/24 2001:ffXX:0:ff01::b/64	10.X.2.254/24 2001:ffXX:0:ff02::b/64		
e1/1					

Command Overview
Routing

ping	ping ipv6

You can use the ping command to check the destination IP address you want to reach and record the results. The ping command displays whether the destination responded and how long it took to receive a reply

traceroute	traceroute ipv6

The traceroute command is used to discover the route that packets actually take when traveling to their destination

show ip route	show ipv6 route

This command displays the current contents of the routing table

show interfaces [summary]	show interfaces [summary]

This command displays statistics for all interfaces configured on the router

show ip interface [brief]	show ipv6 interface [brief]

This command displays a brief summary of the interfaces on a device. It's useful for quickly checking the status of the device

show ip router	show ipv6 router

This command shows the IP routing table for a router

Command Overview
OSPF

show ip route [ospf]	show ipv6 route [ospf]

This command displays the current state of the routing table

show ip ospf interface [brief]	show ipv6 ospf interface [brief]

This command gives a brief summary of what interface is currently configured with OSPF on the router, as well as the IP address and subnet mask of that interface.

show ip ospf database	show ipv6 ospf database

This command displays the lists of information related to the Open Shortest Path First (OSPF) database for a specific router

show ip ospf neighbor	show ipv6 ospf neighbour

This command displays the neighbor data structure and OSPF-related neighbor information

Command Overview
BGP

show ip bgp	**show bgp ipv6 unicast**

Shows entries in the BGP routing table.

show ip bgp neighbors	**sh bgp ipv6 unicast neighbors**

Shows information about BGP and TCP connections to neighbors.

show ip bgp summary	**sh bgp ipv6 unicast summary**

Shows the status of all BGP connections.

show ip bgp neighbors *peer-ip* advertised-routes	**show bgp ipv6 neighbors *peer-ip* advertised-routes**

Shows prefixes advertised by particular BGP peer. Variable ***peer-ip*** should be replaced with the IP of the neighbor.

show ip bgp prefix-list *name*	**show bgp ipv6 prefix-list *name***

Shows information about a prefix list or prefix list entries. Variable ***name*** should point to a existing named list.

clear ip bgp *	**clear bgp ipv6 unicast ***

Resets all (asterisk implies all neighbors) BGP connections using hard or soft reconfiguration for address family sessions.

Command Overview
dhcpv6

show ipv6 dhcp

The show ipv6 dhcp command shows the DUID of the device.

show ipv6 dhcp binding

The show ipv6 dhcp binding command shows information about two clients, including their DUIDs, IAPDs, prefixes, and preferred and valid lifetimes.

show ipv6 dhcp database

The show ipv6 dhcp database command provides information on the binding database agents TFTP, NVRAM, and flash

show ipv6 dhcp pool

The show ipv6 dhcp pool command provides information on the configuration pool, including the static bindings, prefix information, the DNS server, and the domain names.

show ipv6 dhcp interface

The show ipv6 dhcp interface command provides informations about interface status regarding server or client configuration.

Command Overview
NAT64

show nat64 translations

With The show nat64 translations command we are able to see the active translations on the router. It shows the protocols that are translated and the mapped IP addresses

show nat64 adjacency ipv6

The show nat64 adjacency ipv6 command displays the information about the NAT64 managed adjacencies

show nat64 statistics

The show nat64 statistics displays NAT64 packet count statistics. It also displays the amount of sessions and expired translations