IPv6 Lab - Customer Connections

Background

This series of small labs is going to focus on how to deploy IPv6 into
technologies will be examined, including:

- static conß guration with static route
- DHCPv6-PD
- 6rd

The lab has been set up to include a sample Customer router connecte
Autonomous System. We will use this extended lab network to explore
lab topology is shown in the following diagram:

Static Conûguration

This ßrst lab looks at how to set up a static conßguration between net
This is the traditional method the industry has used for years for IPv4
case of a dual-stack connection from operator to customer and within

Conûguring the Customer Router

Before we start, each group needs to conßgure their customer router,
conßguration. We do exactly as we did at the start of these labs. To h
are listed here. Check the Lab Access Instructions to find out how to get to the console
Customer Router.

Name the router

```
Router> enable
Router# config terminal
Router(config)# hostname CustX
```

Conûgure Authentication

```
aaa new-model
aaa authentication login default local
aaa authentication enable default enable
username seclab secret lab-PW
enable secret lab-EN
service password-encryption
line vty 0 4
 transport preferred none
line console 0
 transport preferred none
```

Conûgure logging

```
no logging console
logging buffered 8192 debugging
```

Disable DNS resolution

```
no ip domain-lookup
```

Activate IPv6 routing

Turn on IPv6 Routing and activate IPv6 CEF (not on by default in Cisc

```
ipv6 unicast-routing
ipv6 cef
```

Disable source routing for IPv4 and IPv6

```
no ip source-route
no ipv6 source-route
```

Path MTU Discovery

Enable Path MTU Discovery on the router - this is not enabled by defa
plane (but it is enabled by default now for BGP).

```
ip tcp path-mtu-discovery
```

Exit conß guration mode and save

```
end
write memory
```

Conû guring Interfaces on Customer Router

Now that the basic conß guration is in place, we need to conß gure the
router to our Access router. Refer to the lab to ß nd out the point-to
addresses for both IPv4 and IPv6.

Here is a conß guration example:

```
interface FastEthernet0/1
 description P2P Link to ASX0
 ip address 100.68.X.34 255.255.255.252
 no ip directed-broadcast
 no ip redirects
 no ip proxy-arp
 ipv6 address 2001:DB8:X:20::1/127
 ipv6 nd prefix default no-advertise
 ipv6 nd ra suppress all
 no shutdown
!
```

Conû guring Interfaces on Access Router

We also need to conß gure the interface on the Access router which co
Again, referring to the address plan, here is a possible conß guration e

```
interface FastEthernet0/1
 description P2P Link to CustX
 ip address 100.68.X.33 255.255.255.252
 no ip directed-broadcast
 no ip redirects
 no ip proxy-arp
 ipv6 address 2001:DB8:X:20::0/127
 ipv6 nd prefix default no-advertise
 ipv6 nd ra suppress all
 no shutdown
!
```

Once the interfaces on both the Customer and Access routers have be
other end - check both IPv4 and IPv6.

Adding a customer route

We previously set up simulated customer connection on the Access Ro
that rather than pointing the static route at the Null0 interface, we ca
router we have just conß gured.

First we delete the static routes we set up earlier:

```
no ip route 100.68.X.64 255.255.255.192 null0
!
no ipv6 route 2001:DB8:X:4000::/52 null0
!
```

And then we add the static routes on the Access router to point to the
the Customer router:

```
ip route 100.68.X.64 255.255.255.192 100.68.X.34
!
ipv6 route 2001:DB8:X:4000::/52 2001:DB8:X:20::1
!
```

Once this has been conß gured, check that you can still see the custom
in the iBGP for the AS. Check on the Border, Peering and Core routers
visible. Use these commands:

```
show ip bgp
show bgp ipv6 unicast
```

Default route on Customer Router

To complete the connectivity we need to set up a static default route
router pointing to the Access router. We also need to create a source
space we have assigned to the customer. The simplest way to do this
interface on the Customer router with a single IP address from IPv4 ar
question, and point the entire IPv4 and IPv6 blocks to the Null0 interf
to test connectivity to, as well as following best practices by Null rou
not in use.

Here is an example for the Customer router:

```
interface Loopback0
 description Address anchor for Customer X
 ip address 100.68.X.64 255.255.255.255
 ipv6 address 2001:DB8:X:4000::0/128
!
ip route 0.0.0.0 0.0.0.0 100.68.X.33
ip route 100.68.X.64 255.255.255.192 Null0
!
ipv6 route ::/0 2001:DB8:X:20::
ipv6 route 2001:DB8:X:4000::/52 Null0
!
```

With this in place it should be possible to reach the Internet from the
connectivity from:

- your AS towards the Customer router too, using the newly created
  target.
- our Customer router, using the newly created Loopback interface a
  Internet, eg to 8.8.8.8.

Note: Can you explain why, in the latter case, we are running the tracer
interface, and not using the default (which would be the point-to-point
Access router)?

Once complete, make sure you save a copy of the conß guration on the
simple copy and paste into a text document is easiest. We will need to
future stage in the lab.