Troubleshooting: ASBR Not Advertising a Default Route in OSPF

When configuring an Autonomous System Boundary Router (ASBR) to inject a default route into OSPF, you typically use:

Code
```
router ospf <process-id>
 default-information originate
```

However, there are cases where the ASBR **fails to advertise the default route**, even though the command is present. This often results in routers within the OSPF area **dropping packets destined for networks not found in their routing table**, since they never receive a `0.0.0.0/0` route.

A common cause is a misconfigured or missing static default route on the ASBR. OSPF will not originate a default route unless one exists (unless you use the `always` keyword) where the option is possible.

Below is a reliable troubleshooting workflow that has consistently resolved this issue in lab and production environments.

Why This Happens

OSPF only advertises a default route when:

- A valid static default route exists on the ASBR, **and**
- `default-information originate` is configured.
- And the default route was first configured before the default route advertising command is used.

If the static route is missing, incorrect, or was added *after* OSPF initialization, the ASBR may fail to inject the default route.

Troubleshooting Steps

Step 1: Remove the Existing Default Route

Start by removing the current static default route. This clears any stale or incorrect configuration.

Code
```
R1(config)# no ip route 0.0.0.0 0.0.0.0 <next-hop>
```

Example:

Code
```
R1(config)# no ip route 0.0.0.0 0.0.0.0 203.0.113.2
```

To verify it was removed:

Code
```
R1# show ip route static
```

You should no longer see a `S* 0.0.0.0/0` entry.

Step 2: Reconfigure the Default Route

Re-add the correct static default route:

Code
```
R1(config)# ip route 0.0.0.0 0.0.0.0 <next-hop>
```

Example:

Code
```
R1(config)# ip route 0.0.0.0 0.0.0.0 203.0.113.2
```

Step 3: Reapply OSPF Default Route Origination

Now re-enable default route injection:

Code
```
R1(config-router)# default-information originate
```

If you want the ASBR to advertise a default route **even if the static route is missing**, use:

Code
```
R1(config-router)# default-information originate always
```

Step 4: Verify OSPF Is Advertising the Default Route

On the ASBR:

Code
```
R1# show ip ospf database external
```

You should see an entry for `0.0.0.0`.

On another router in the OSPF domain:

Code
```
R2# show ip route ospf
```

Look for:

Code
```
O*E2 0.0.0.0/0 [110/1] via <next-hop>
```

Conclusion

When an ASBR fails to advertise a default route, the issue is often tied to the static default route itself. Removing and reconfiguring the route forces OSPF to re-evaluate and correctly originate the default route. This simple reset has proven to be one of the most effective fixes in real-world troubleshooting.

I hope this information has helped you to resolve similar problem you are facing.