Routing Hints, Top Tips, and FAQs

Here are some of the Routing hints and documentation that seems to be woefully lacking or just mis-leading on the greater wider Internet.

Propagating default using IS-IS rather than IBGP

It is often desirable on multihoming end-sites to propagate the default route learned from external peers using IS-IS rather than using IBGP itself.

The typical set up would be an organisation having two border routers (BR1 and BR2) and two core routers (CR1 and CR2). And these would be linked together in the typical cross-fashion, so:

- BR1 connects to CR1 and CR2
- BR2 connects to CR2 and CR1
- CR1 connects to CR2

There isn't any need for BR1 and BR2 to interconnect, usually.

How do we inject the default route into IS-IS if it is heard from an EBGP neighbour? The following configuration example uses Cisco IOS syntax but can be easily adapted for your own favourite vendor (unless your favourite vendor has an easy mechanism to do this).

The way to make this work is to use the `default-information originate` command in IS-IS. However, without any options applied to it, this command will unconditionally originate the default route. Even if the router has no path to the default. Which can be somewhat problematic if the default route learned from the EBGP speaker disappears.

To remedy this we need to use the `route-map` option for the `default-information originate` command. The route-map we are going to add needs to look for the default route appearing in the router's global RIB and, if it exists, inject it into the IS-IS RIB so that it is then propagated to IS-IS speaking routers in the network. But left like this, the default route seen in the RIB could be created by the IS-IS process on a neighbouring internal router. So we need to add another condition to make sure that the default we are seeing in the RIB is learned from the EBGP neighbour. Our resulting configuration is below:

```
ip access-list standard BGP-NH
 remark External BGP speaker
 permit 10.10.10.1
!
ip prefix-list DEFAULT permit 0.0.0.0/0
!
route-map DEFAULT-ORIG permit 5
 match ip address prefix-list DEFAULT
 match ip next-hop BGP-NH
!
```

We can now apply this route-map to the Border Router IS-IS process:

```
router isis ISP
 ...configuration...
 default-information originate route-map DEFAULT-ORIG
!
```

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