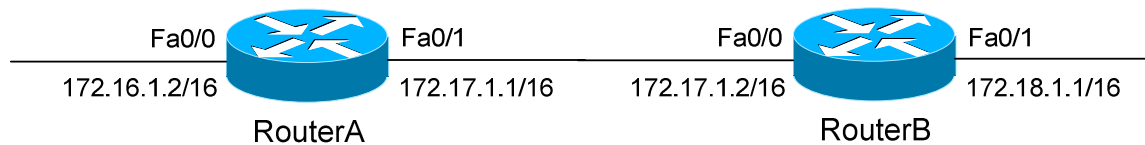# - Configuring Static Routes -

Configuring Static Routes

The basic syntax for a static route is as follows:

> **Router(config)#** *ip route [destination_network] [subnet_mask] [next-hop]*

Consider the following example:

Fa0/0	Fa0/1	Fa0/0	Fa0/1
172.16.1.2/16	172.17.1.1/16	172.17.1.2/16	172.18.1.1/16
RouterA		RouterB	

RouterA will have the 172.16.0.0/16 and 172.17.0.0/16 networks in its routing table as directly-connected routes. To add a static route on RouterA, pointing to the *172.18.0.0/16* network off of RouterB:

> **RouterA(config)#** *ip route 172.18.0.0 255.255.0.0 172.17.1.2*

Notice that we point to the IP address on RouterB's fa0/0 interface as the *next-hop* address. Likewise, to add a static route on RouterB, pointing to the *172.16.0.0/16* network off of RouterA:

> **RouterB(config)#** *ip route 172.16.0.0 255.255.0.0 172.17.1.1*

To remove a static route, simply type *no* in front of it:

> **RouterA(config)#** *no ip route 172.18.0.0 255.255.0.0 172.17.1.2*

On point-to-point links, an **exit-interface** can be specified instead of a next-hop address. Still using the previous diagram as an example:

> **RouterA(config)#** *ip route 172.18.0.0 255.255.0.0 fa0/1*

> **RouterB(config)#** *ip route 172.16.0.0 255.255.0.0 fa0/0*

A static route using an exit-interface has an Administrative Distance of **0,** as opposed to the default AD of **1** for static routes. An exit-interface is only functional on a point-to-point link, as there is only one possible next-hop device.

Advanced Static Routes Parameters

The Administrative Distance of a static route can be changed to form a **floating static route**, which will only be used if there are no other routes with a lesser AD in the routing table. A floating static route is often used as a *backup* route to a dynamic routing protocol.

To change the Administrative Distance of a static route to *250*:

> **RouterA(config)#** *ip route 172.18.0.0 255.255.0.0 172.17.1.2 250*

Static routes will only remain in the routing table as long as the interface connecting to the next-hop router is up. To ensure a static route remains *permant*ly in the routing table, even if the next-hop interface is down:

> **RouterA(config)#** *ip route 172.18.0.0 255.255.0.0 172.17.1.2 permanent*

Static routes can additionally be used to *discard* traffic to specific networks, by directing that traffic to a virtual *null* interface:

> **RouterA(config)#** *ip route 10.0.0.0 255.0.0.0 null0*

Default Routes

Normally, if a specific route to a particular network does not exist, a router will drop all traffic destined to that network.

A **default route,** or **gateway of last resort**, allows traffic to be forwarded, even without a specific route to a particular network.

The default route is identified by all zeros in both the network and subnet mask (*0.0.0.0 0.0.0.0).* It is the *least* specific route possible, and thus will *only* be used if a more specific route does not exist (hence "gateway of last resort").

To configure a default route:

> **RouterA(config)#** *ip route 0.0.0.0 0.0.0.0 172.17.1.2*

Advanced default routing is covered in great detail in another guide.