Establishing Internet Edge Connectivity Using BGP

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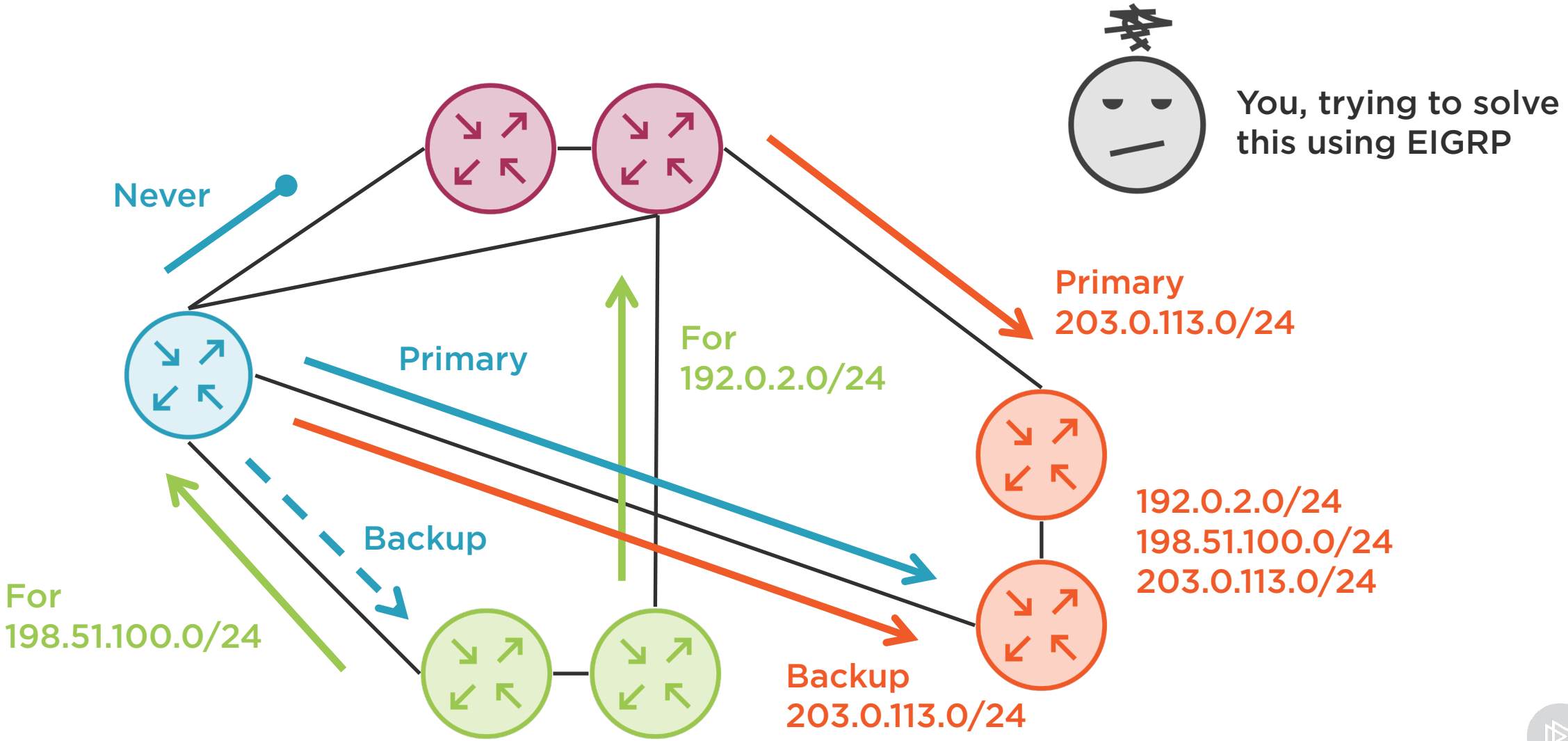
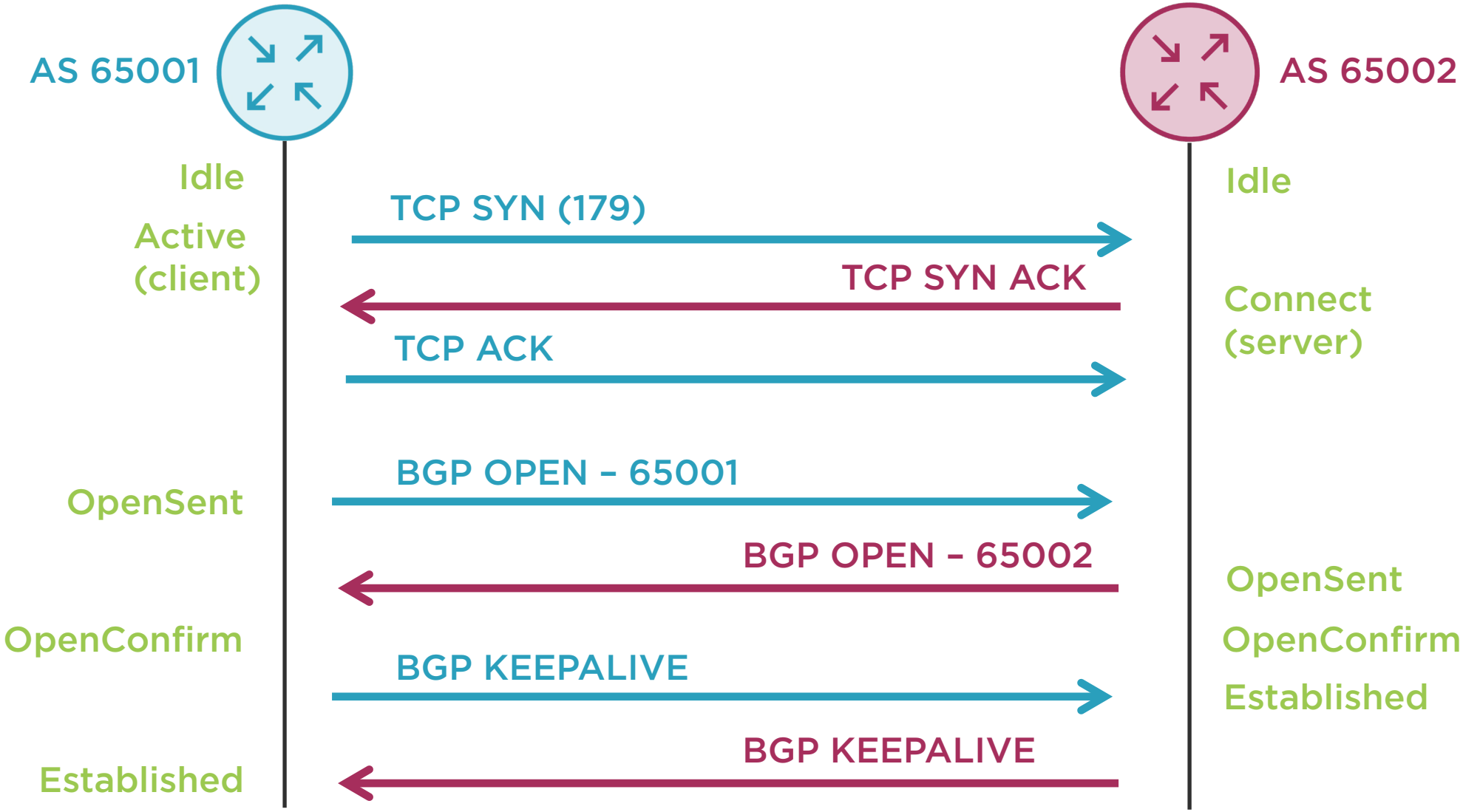
Agenda

- BGP operations
- Internet Edge design/implementation
- NAT for Internet connectivity
- Upstream/downstream routing

The Need for BGP



BGP Neighbor Formation



Types of BGP Peers

External BGP (eBGP)	Internal BGP (iBGP)
Peers in different AS	Peers in same AS
Next-hop changed to self (like EIGRP)	Next-hop unchanged by default
Interconnect different companies	Transport routes within a company
Default admin distance of 20	Default admin distance of 200
Can advertise eBGP/iBGP routes	Can only advertise eBGP routes by default

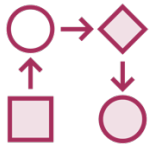
BGP Best-path Attributes: Part 1

Next-hop accessibility check

Cisco weight, higher is better

Local preference, higher is better (influences egress)

Locally originated (better) vs. BGP learned

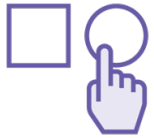


AS-path length, shorter is better (influences ingress)

BGP Best-path Attributes: Part 2

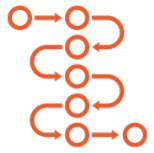
Origin: IGP (better), EGP, unknown

Multi Exit Discriminator (MED), lower is better (influences ingress)



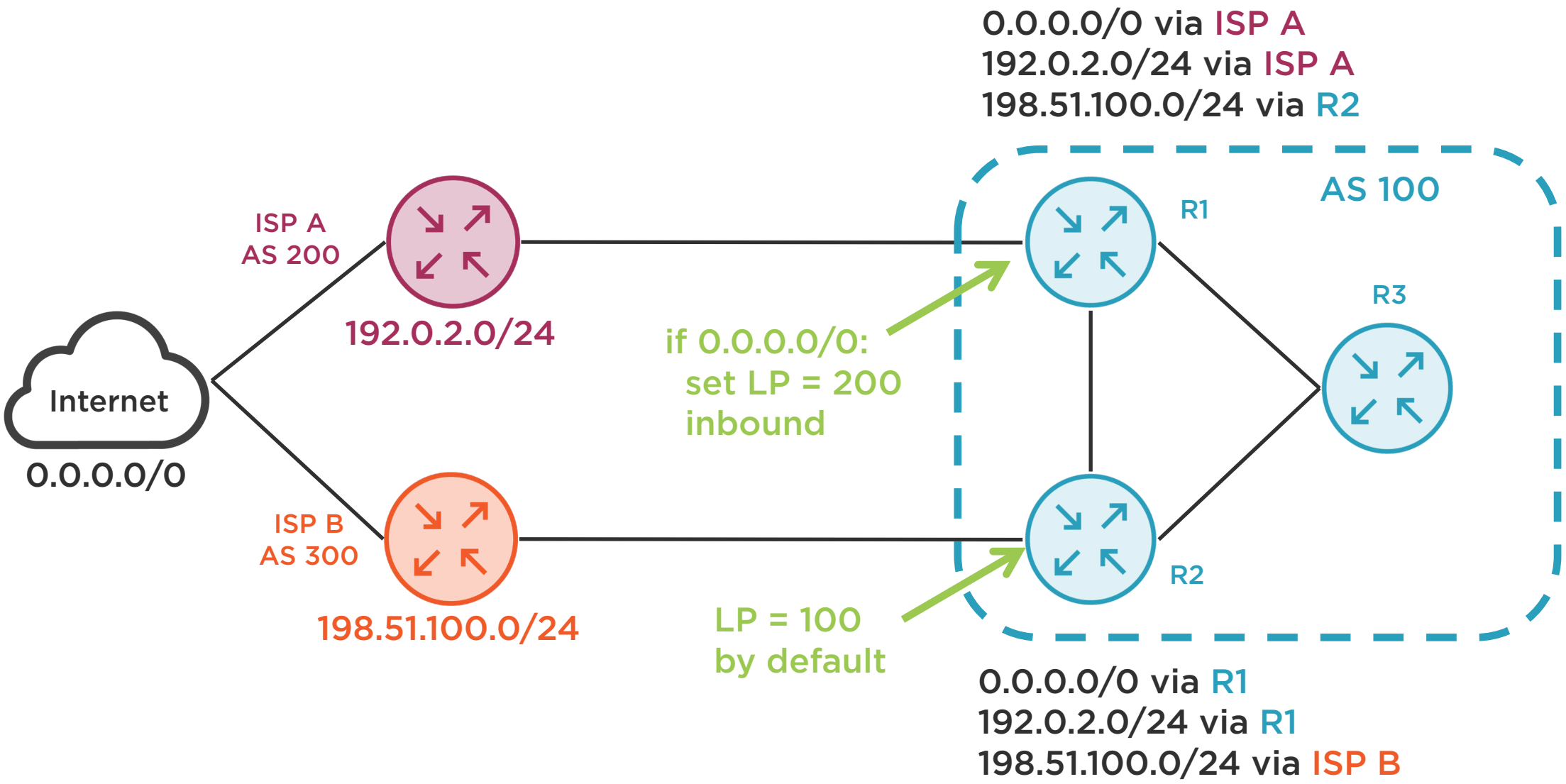
Neighbor type: eBGP (better) vs. iBGP

IGP metric to BGP next-hop, lower is better

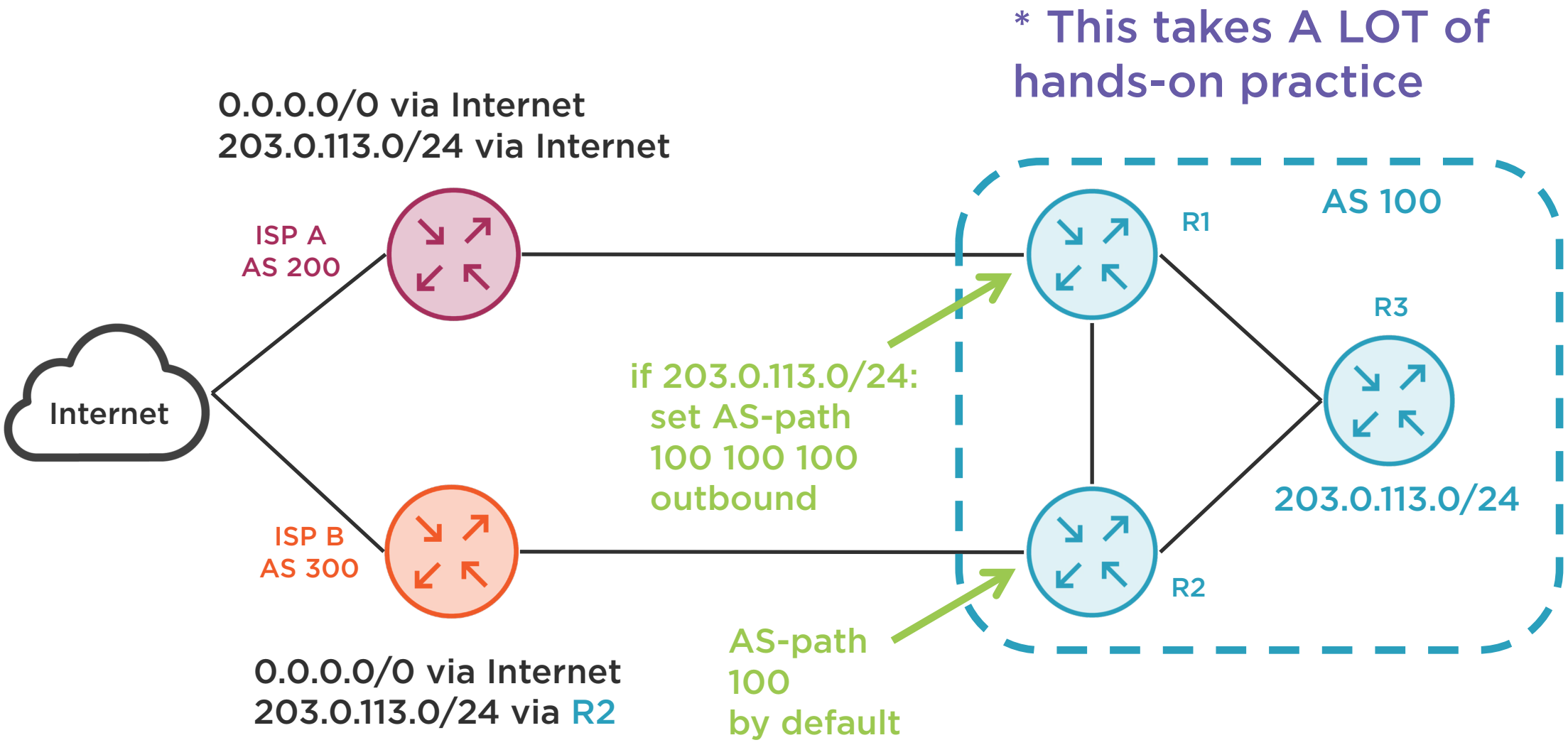


Many more tiebreakers; omitting for now

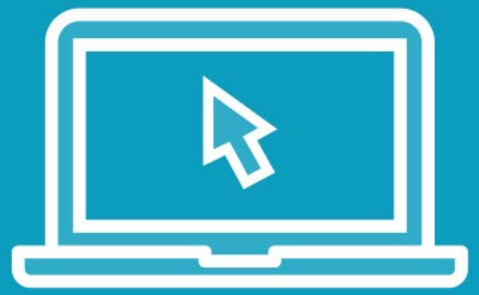
Conceptual Internet Edge Design - Egress



Conceptual Internet Edge Design - Ingress

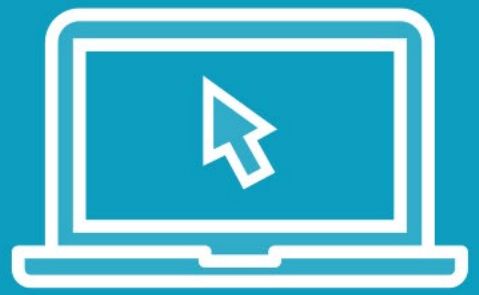


Demo



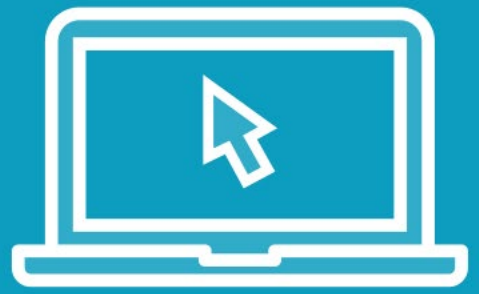
Globomantics Internet Edge setup

Demo



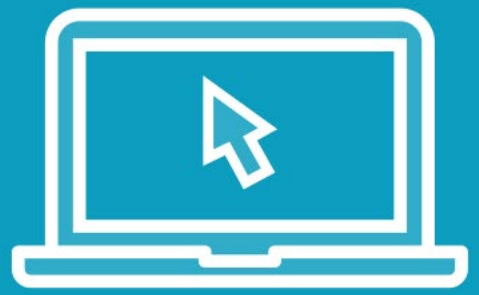
Building an active/standby policy

Demo



Connecting the campus to the Internet

Demo



How does NAT play into this?

Summary

Basic BGP operations

BGP best-path and Internet edge design

Integrating NAT and IGP