

NETMET 03/14

BGP

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Zoom poll: What is your experience with BGP?

Autonomous systems

- Around how many are there?
 - IPv4? how many prefixes announced?
 - IPv6? howe many prefixes announced?
 - how can we know?

Google docs poll: How many IPv4 ASes are there?

Google docs poll: How many prefixes do they announce?

Google docs poll: How many IPv6 ASes are there?

Google docs poll: How many prefixes do they announce?

CIDR report

<http://bgp.potaroo.net/v6/v6rpt.html>

- As of 13 October 2020
 - 70k ASes announcing 847k IPv4 prefixes
 - 21k ASes announcing 98k IPv6 prefixes

BGP basics

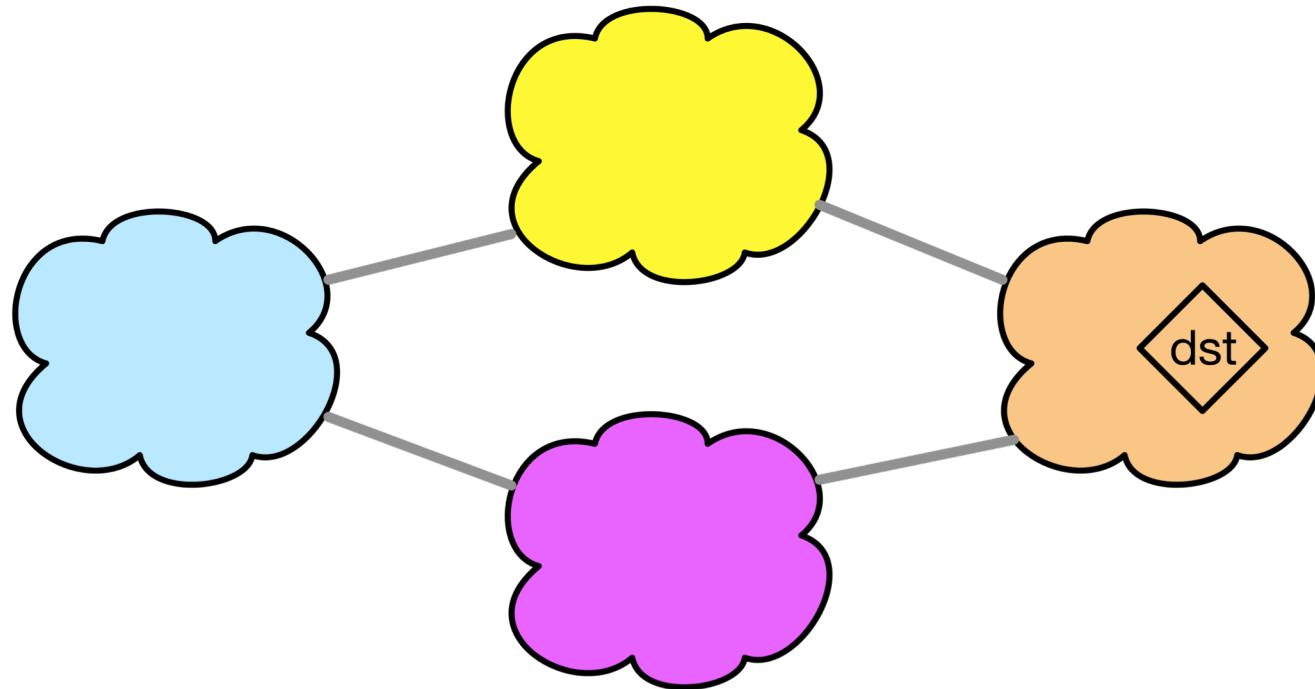
Google docs poll: What are some intra-domain routing protocols?

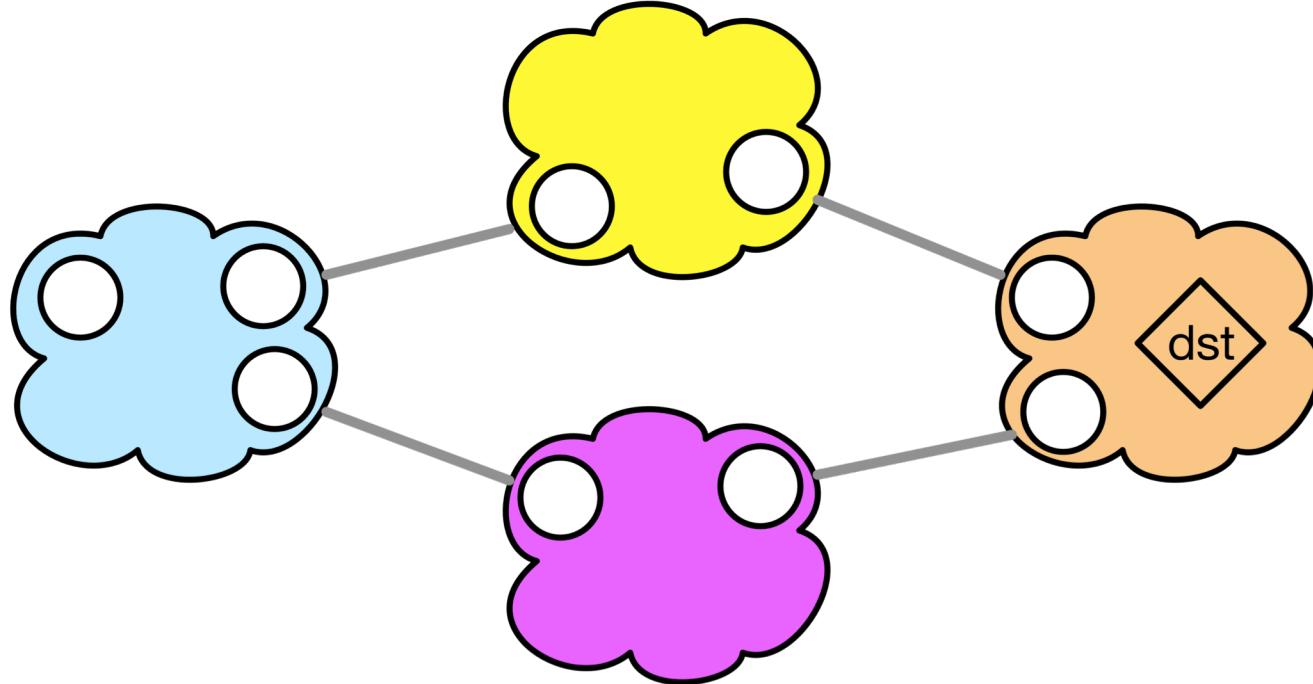
Google docs poll: What are some inter-domain routing protocols?

Google docs poll: Where can we find BGP feeds?

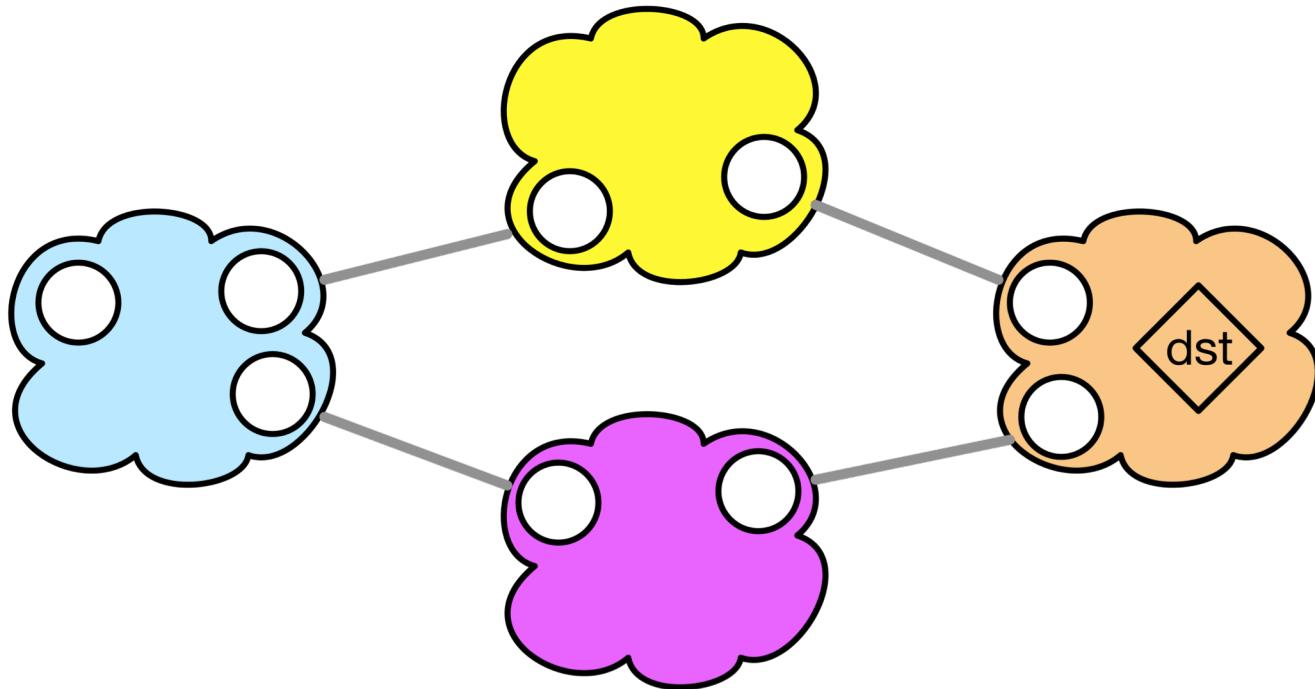
BGP updates - Basics

- Routing protocols
 - Intra-domain: OSPF, IS-IS, ...
 - Interdomain: only BGP
 - ✓ Spans the internet - global information
- BGP updates
 - Oregon Route Views, RIPE Routing Information Service
 - ✓ Peering with BGP routers worldwide
 - ✓ Nearly 500 sessions for Route Views
 - ✓ 30-40 sessions for RIPE RIS

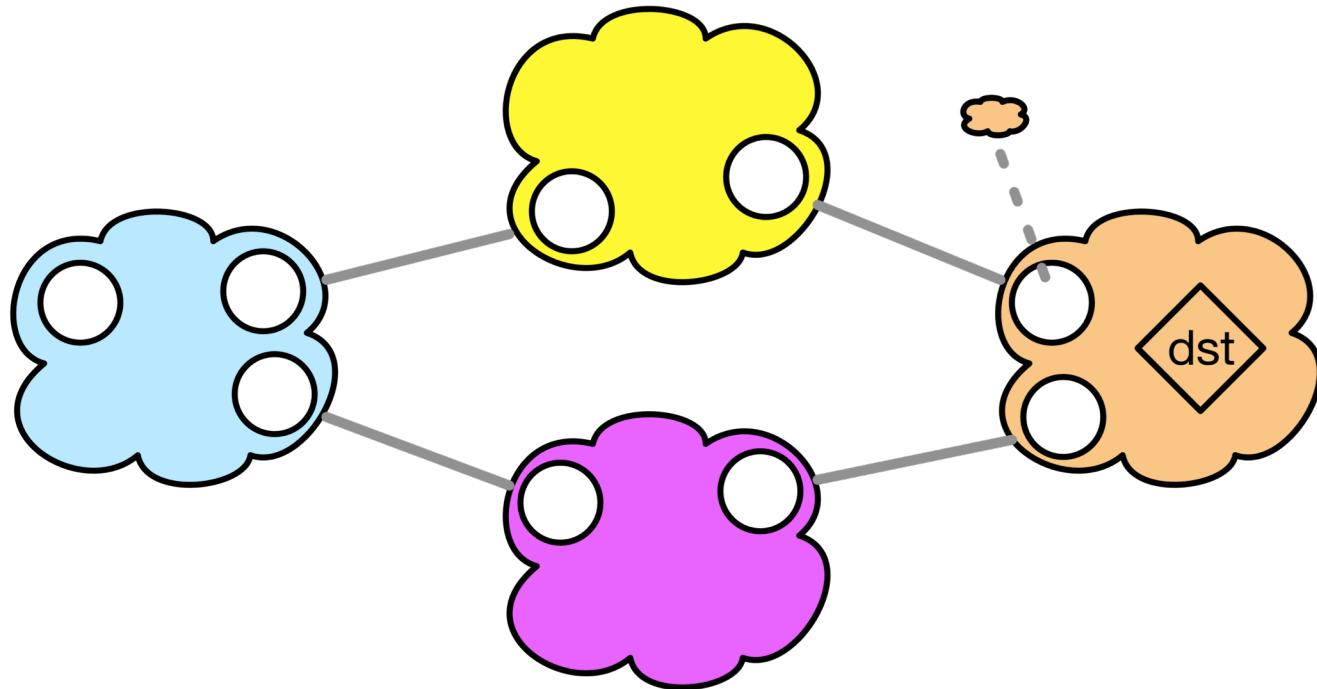




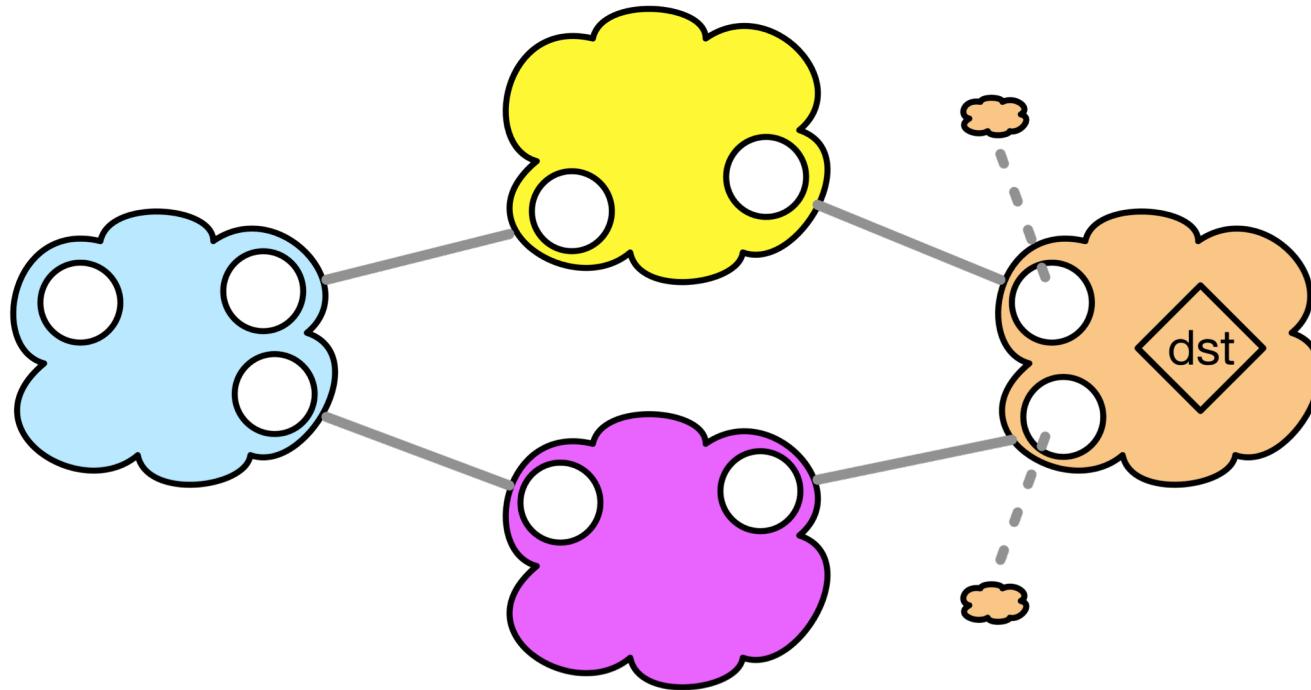
Google docs poll: Which variant of BGP is used to communicate between border routers of different ASes?



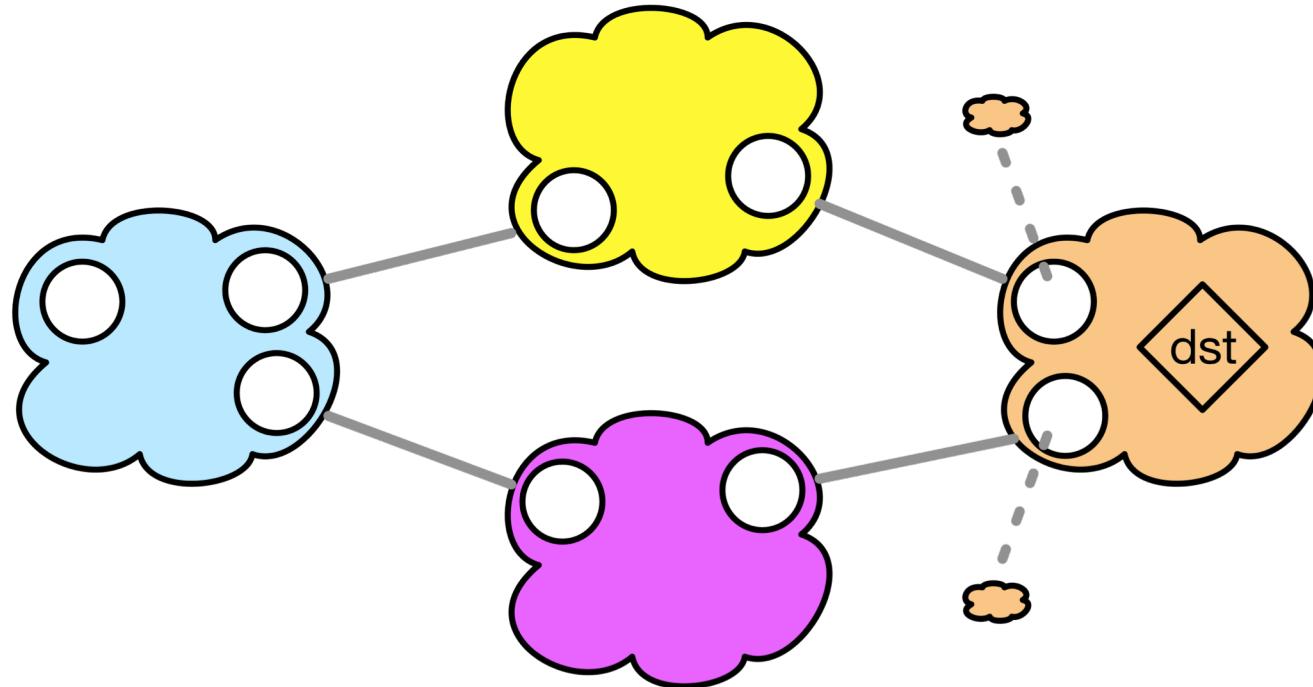
eBGP



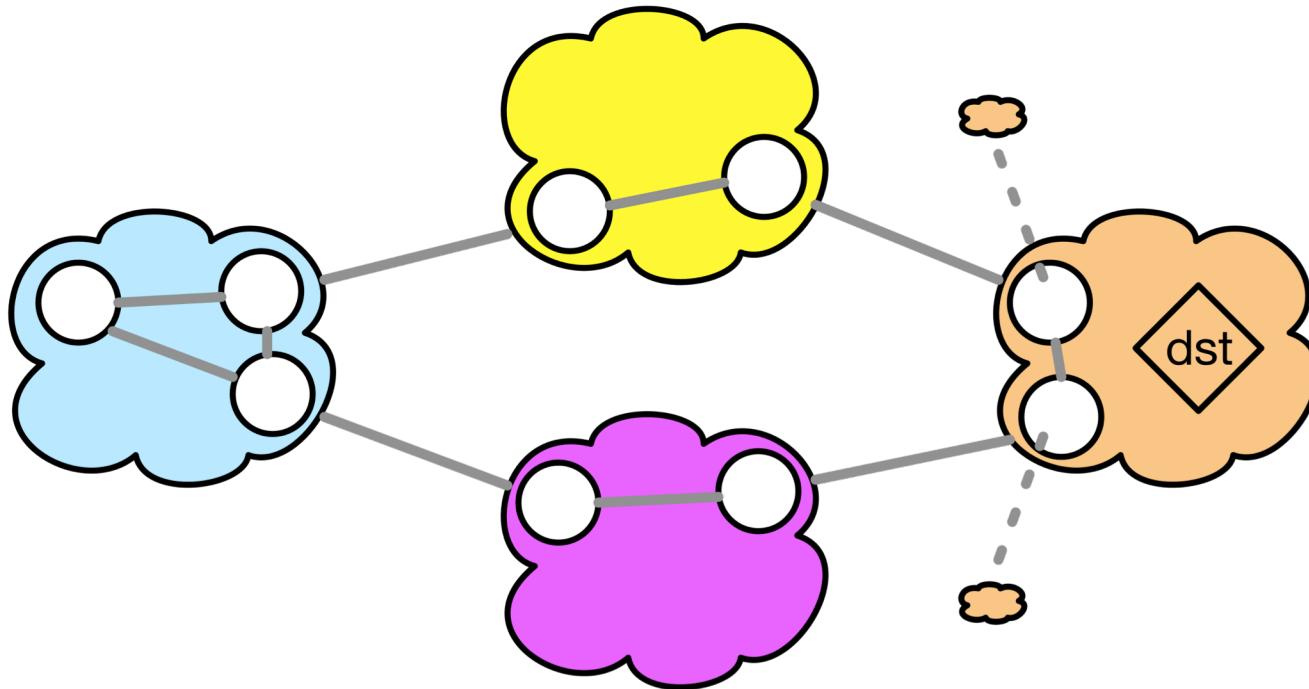
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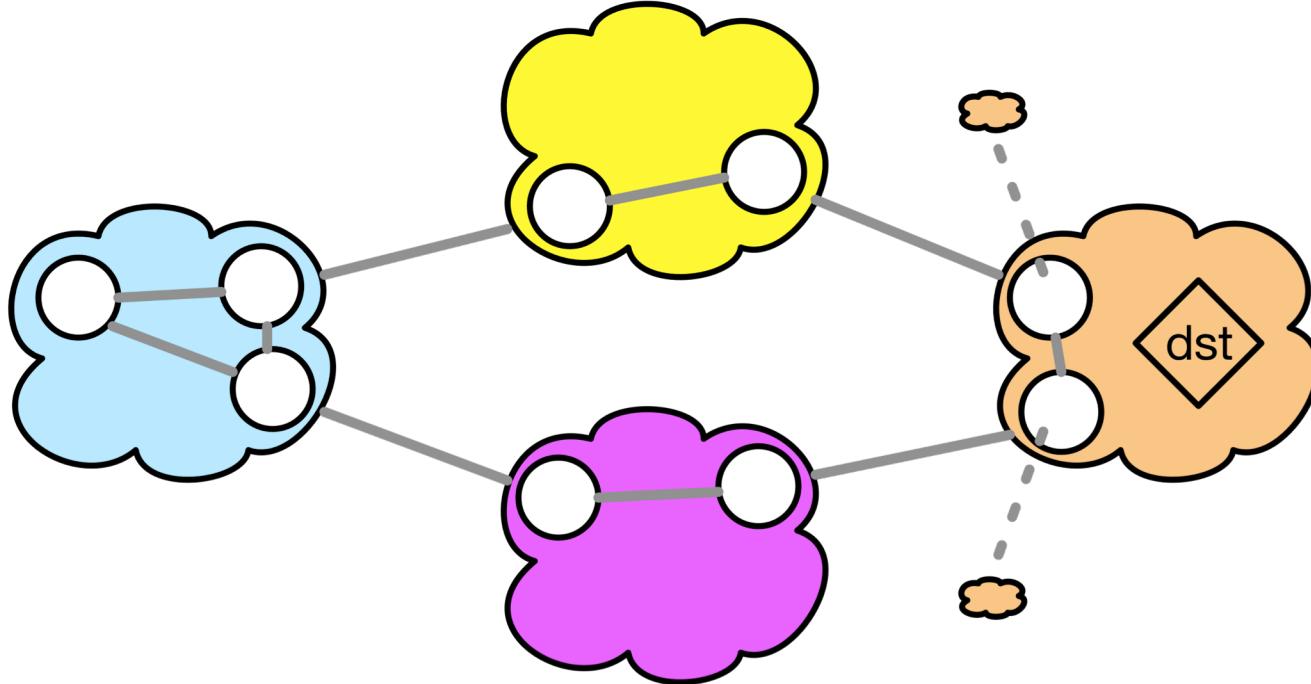
eBGP



Google docs poll: Which variant of BGP is used to convey announcements across an AS, from one border router to another?

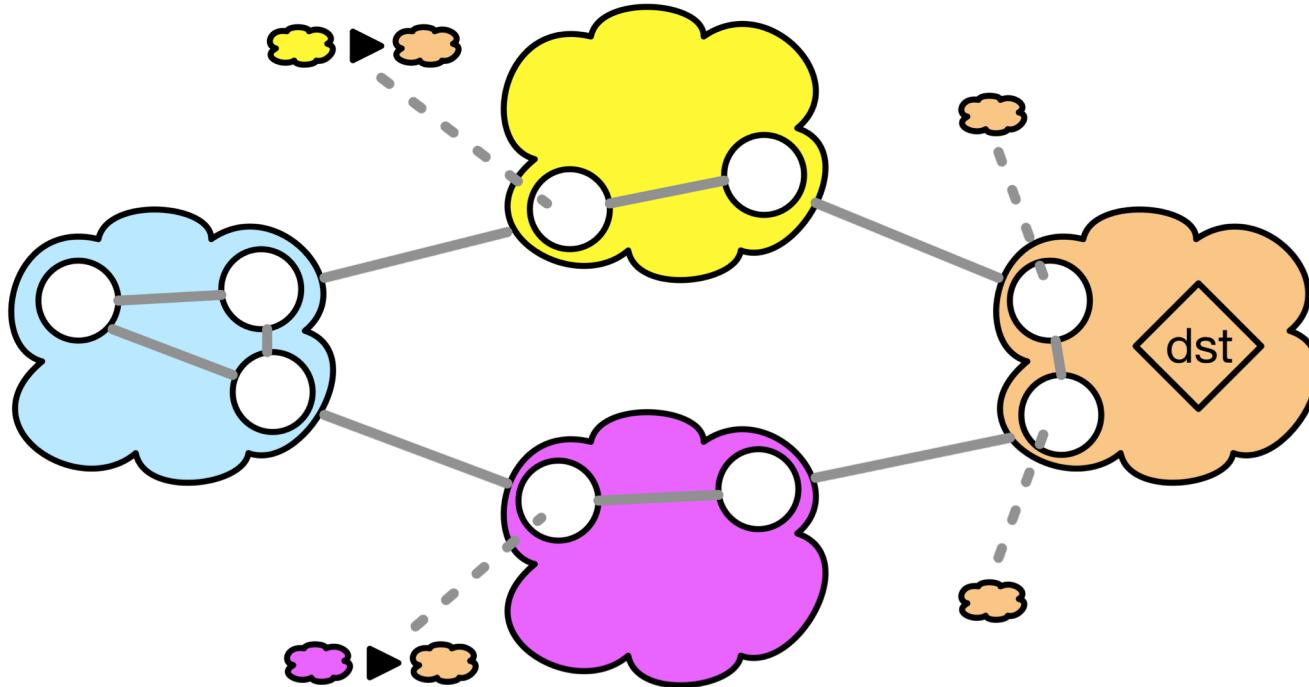


eBGP
iBGP

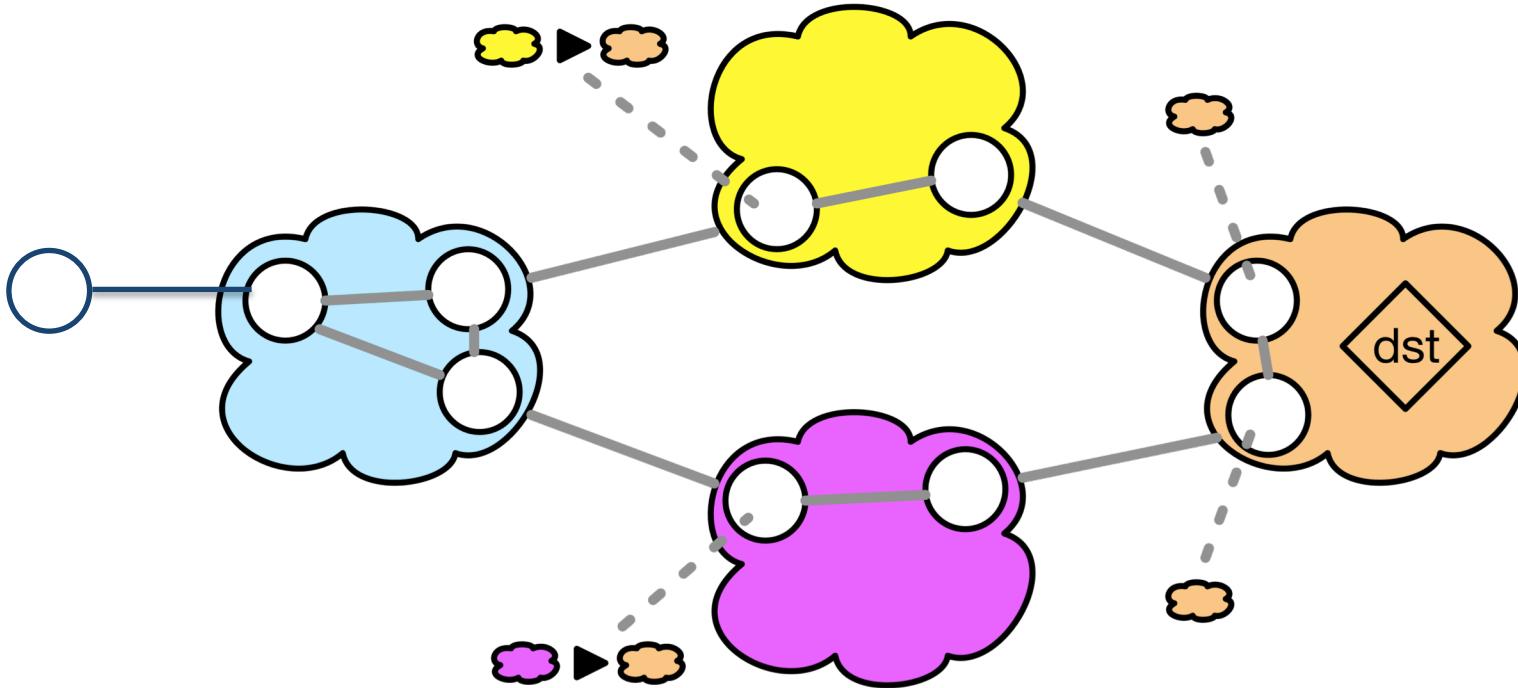


Google docs poll: What route to dst will the top AS announce to the left AS?

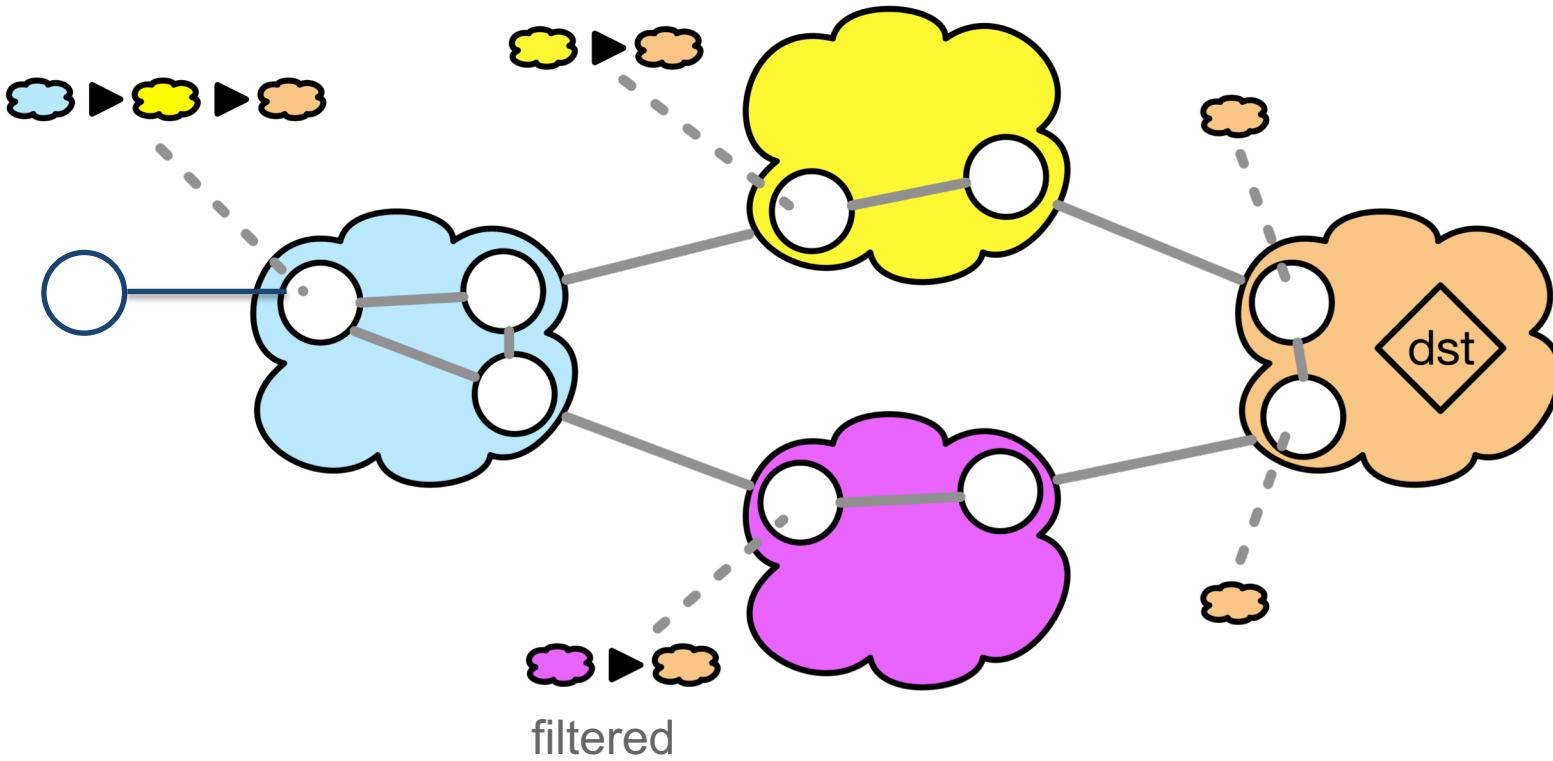
Google docs poll: What route to dst will the bottom AS announce to the left AS?



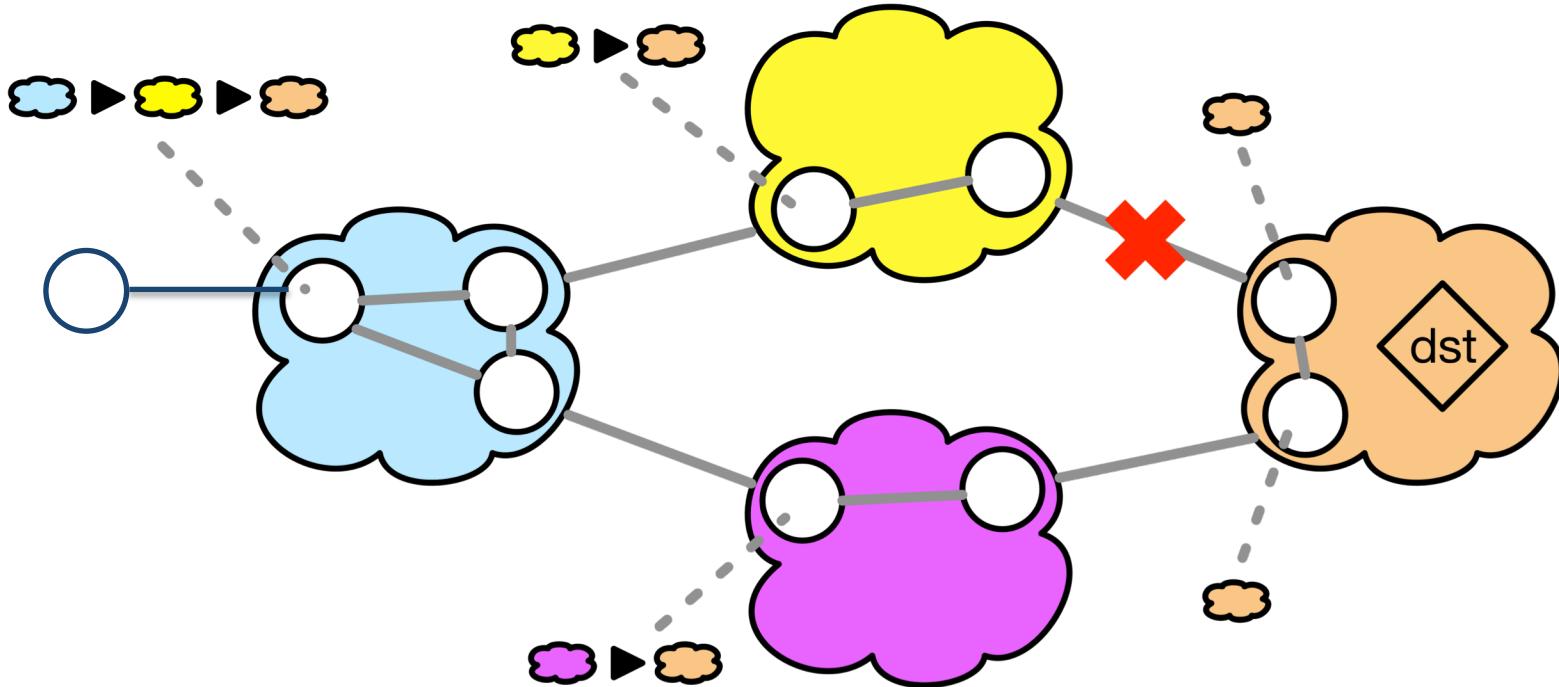
eBGP
iBGP



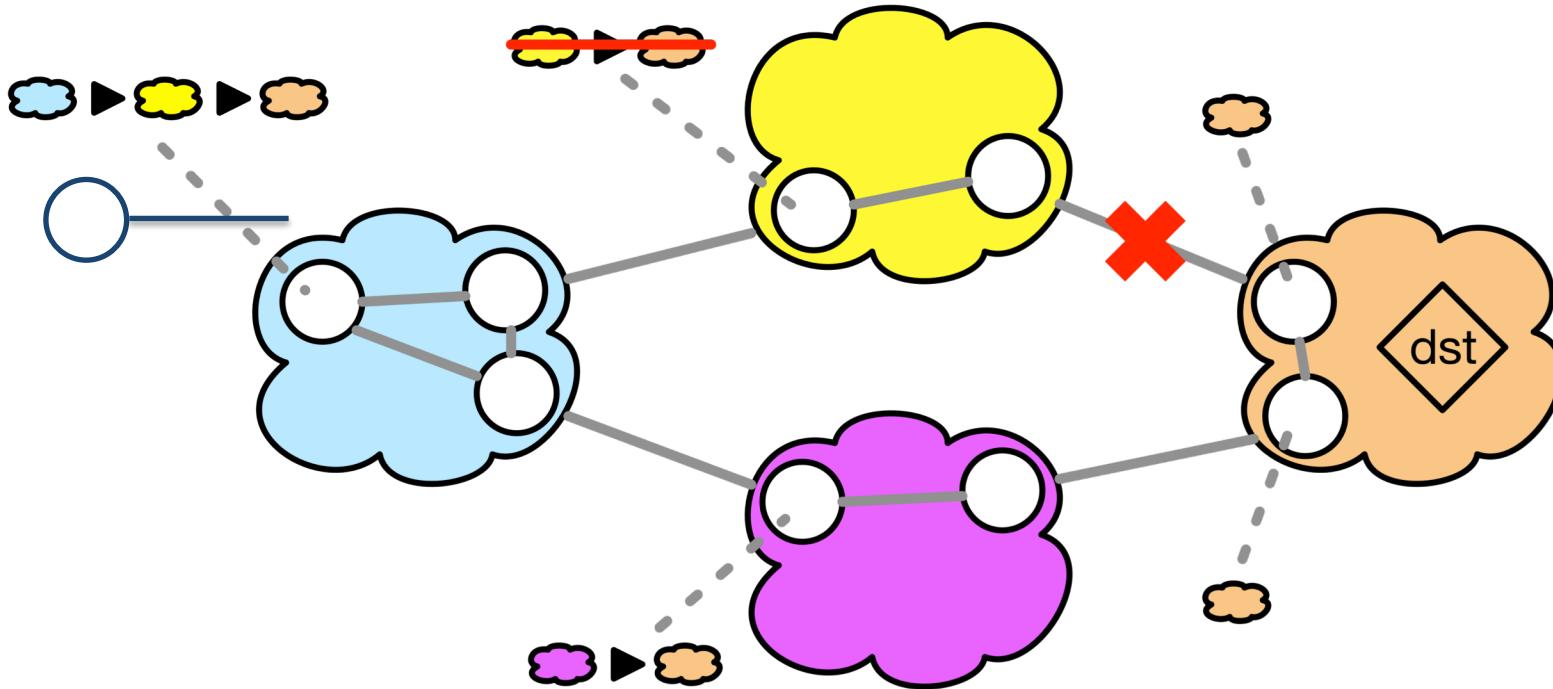
Google docs poll: What route to dst will the left AS announce to RouteViews?



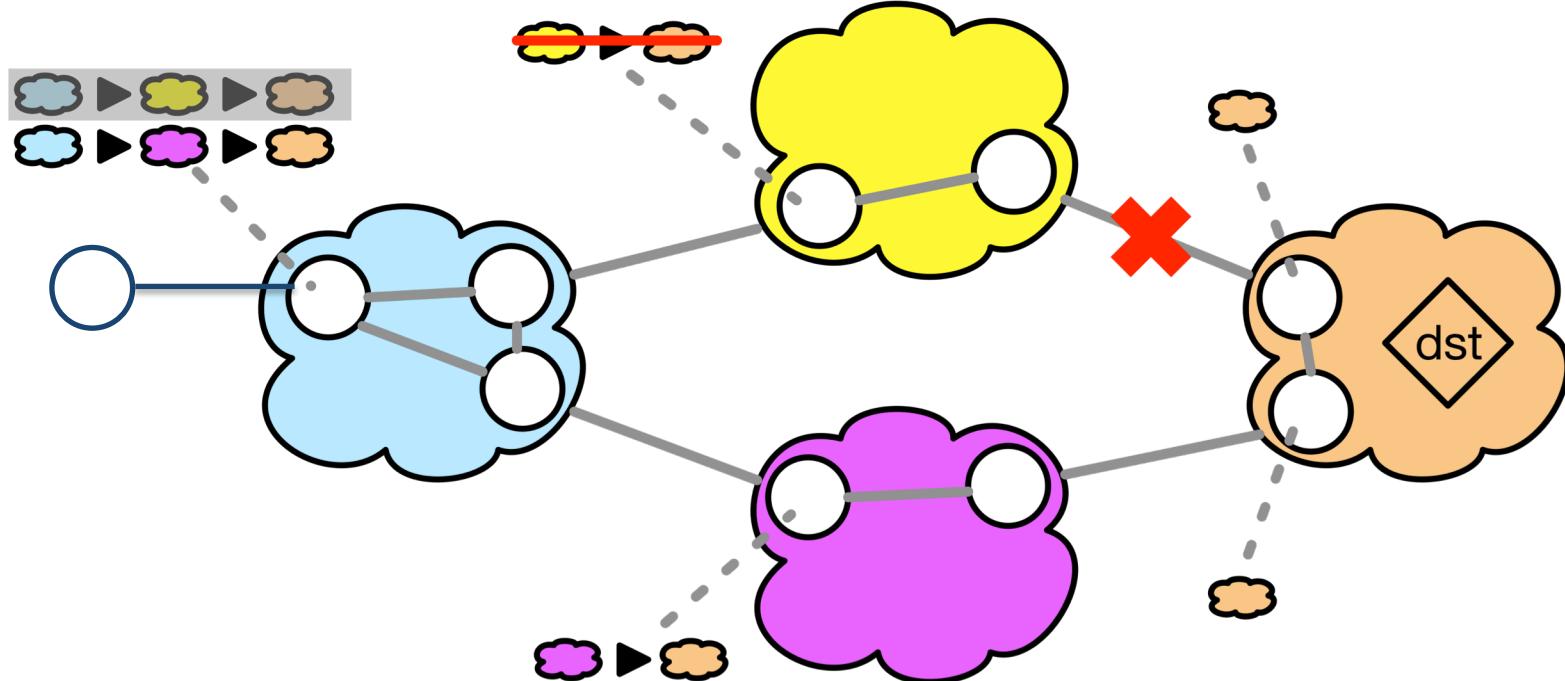
eBGP
iBGP



Google docs poll: What will the top AS announce to the left AS?



Google docs poll: What route to dst will the left AS announce to RouteViews?

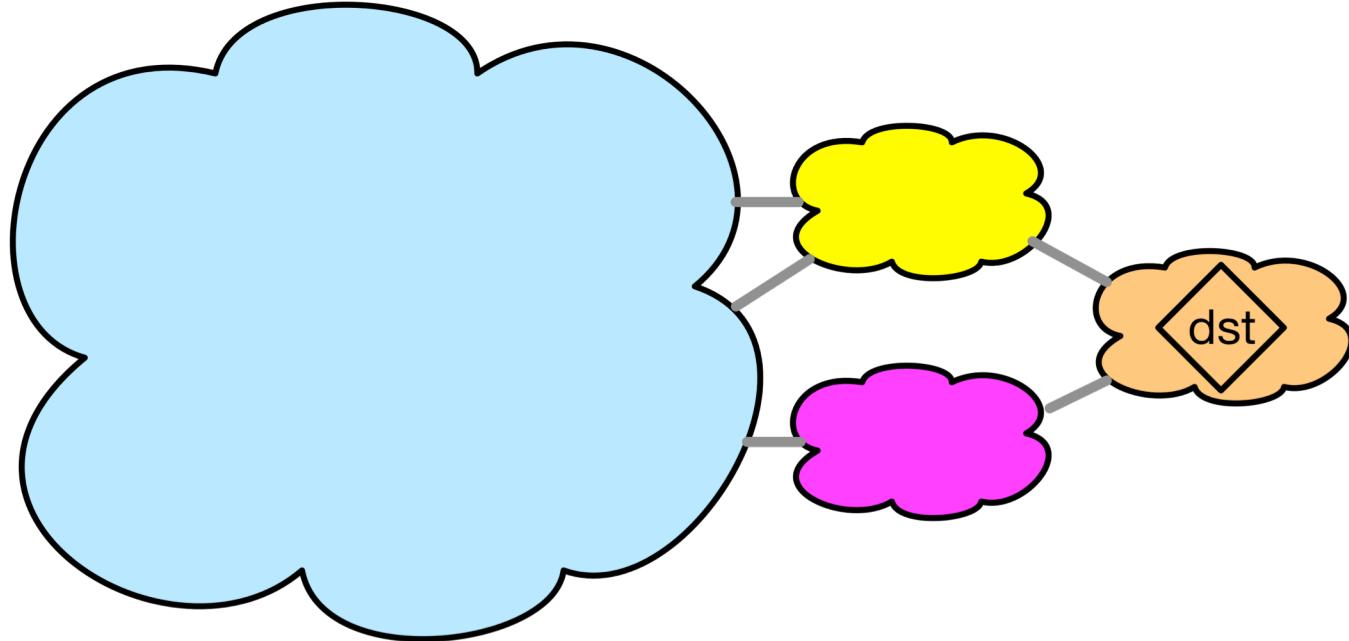


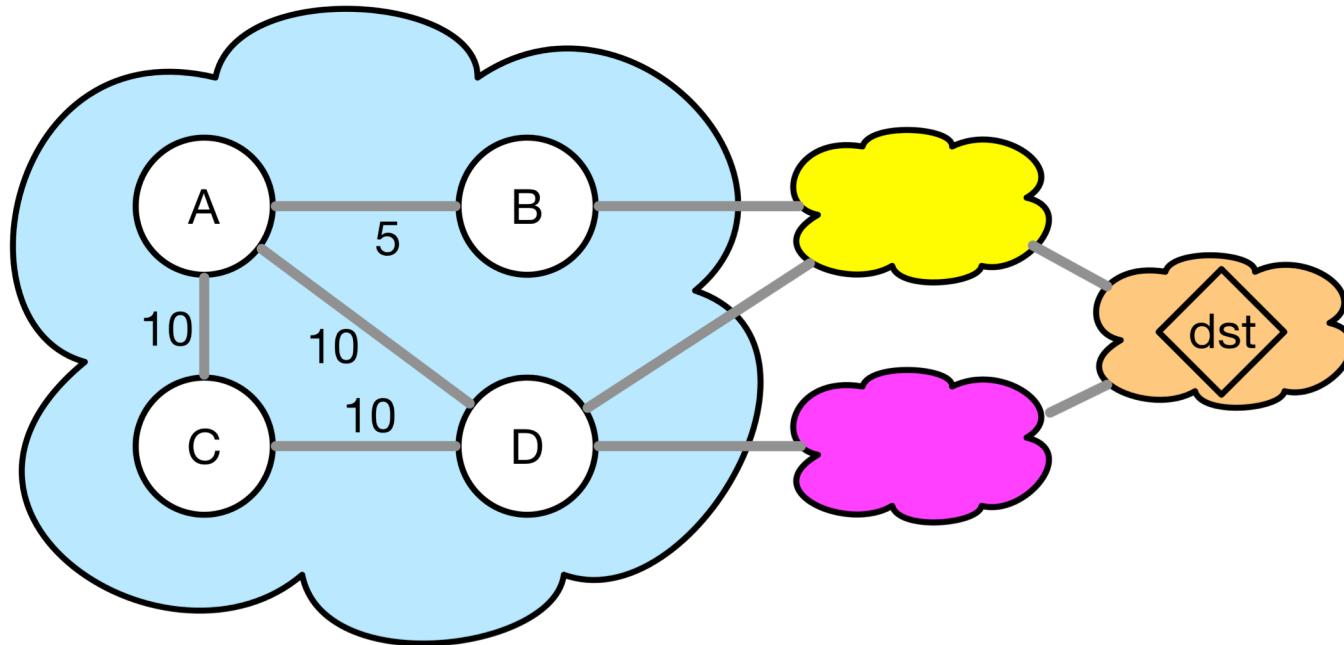
BGP updates - Basics

- BGP updates
 - How they propagate
 - What we learn
 - What we don't learn
 - ✓ Filtering
 - ✓ More...

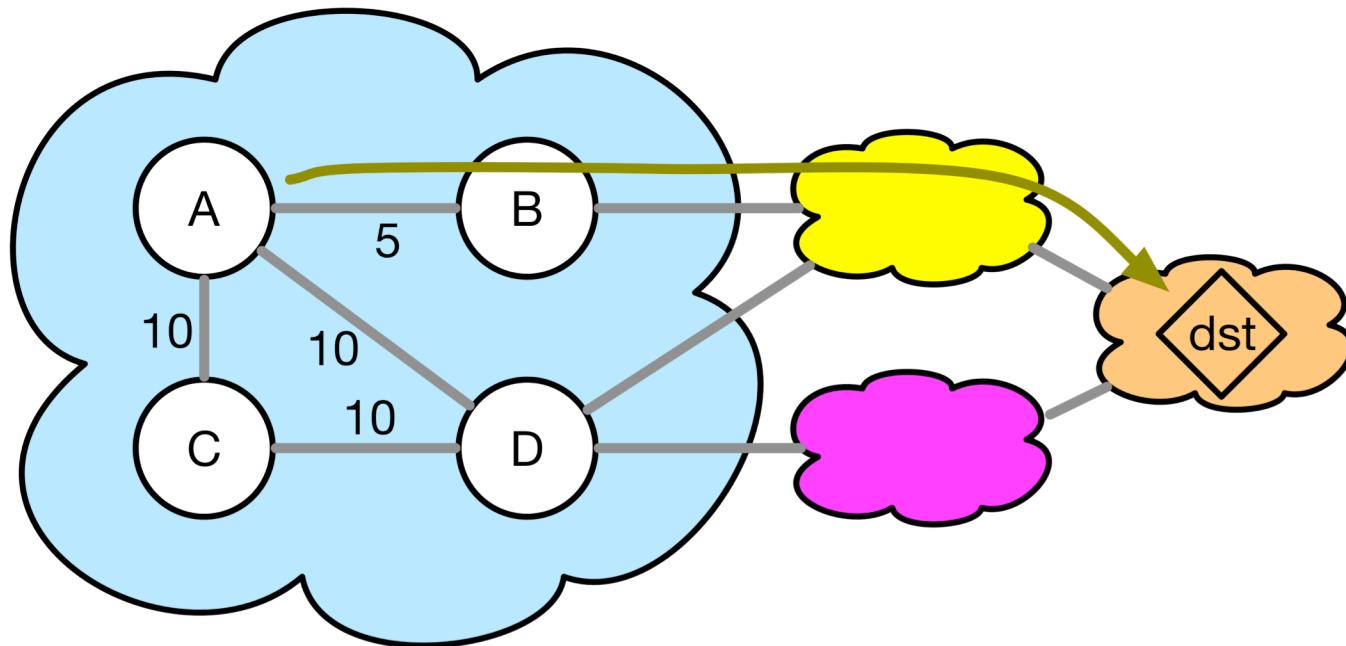
BGP updates - Limits

- **Router representativeness**
 - Router speaking for AS or just itself?
 - Internal changes
 - Aggregation

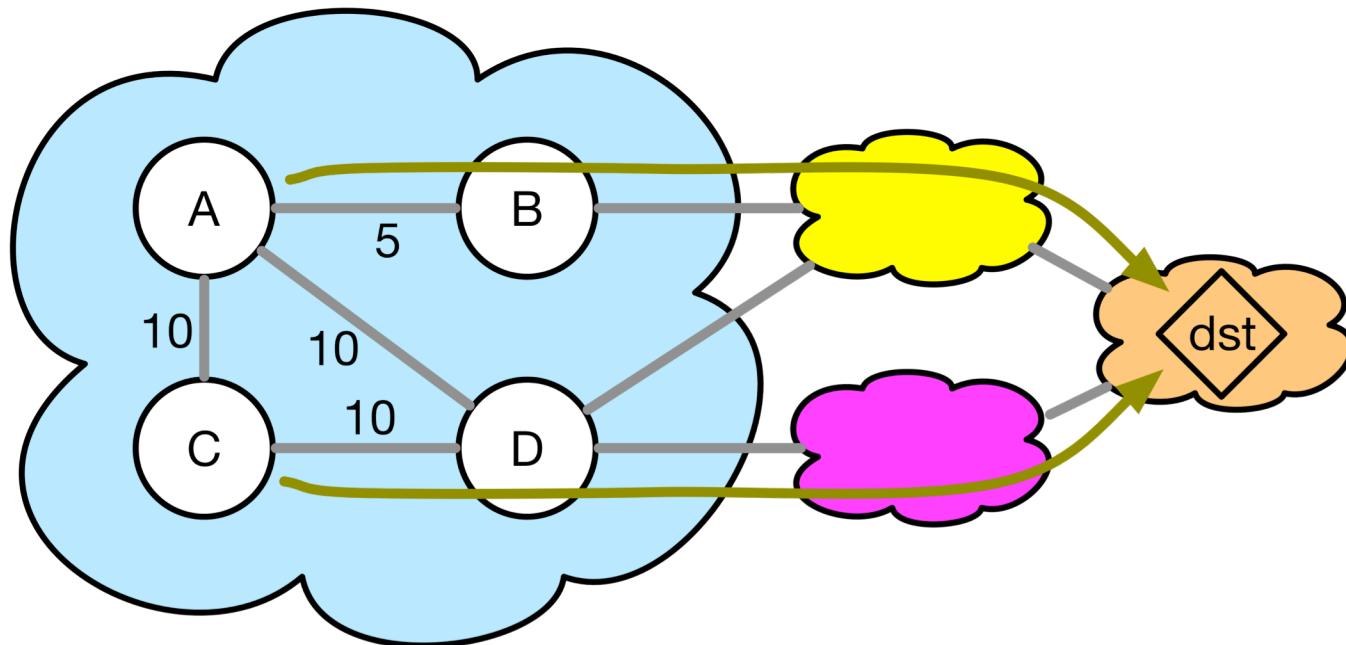


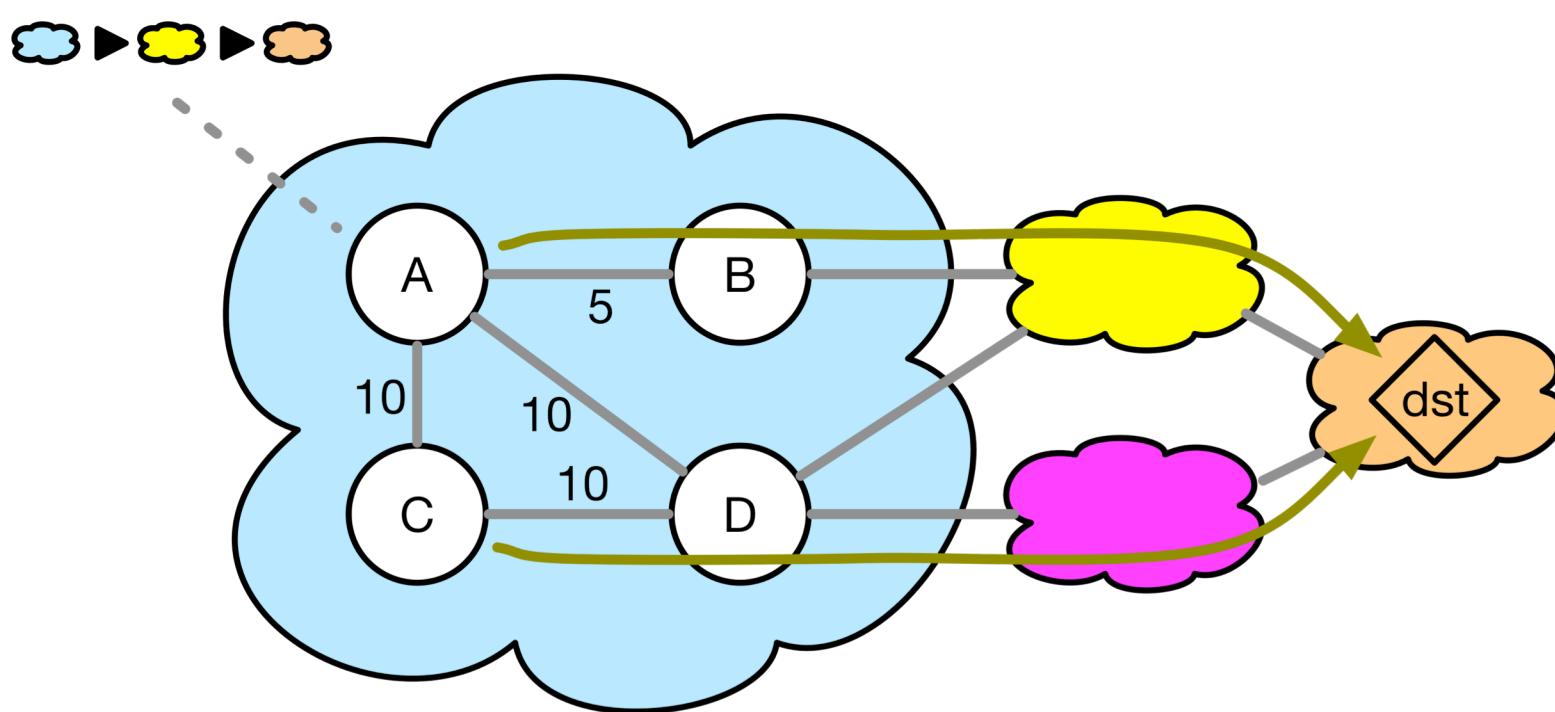


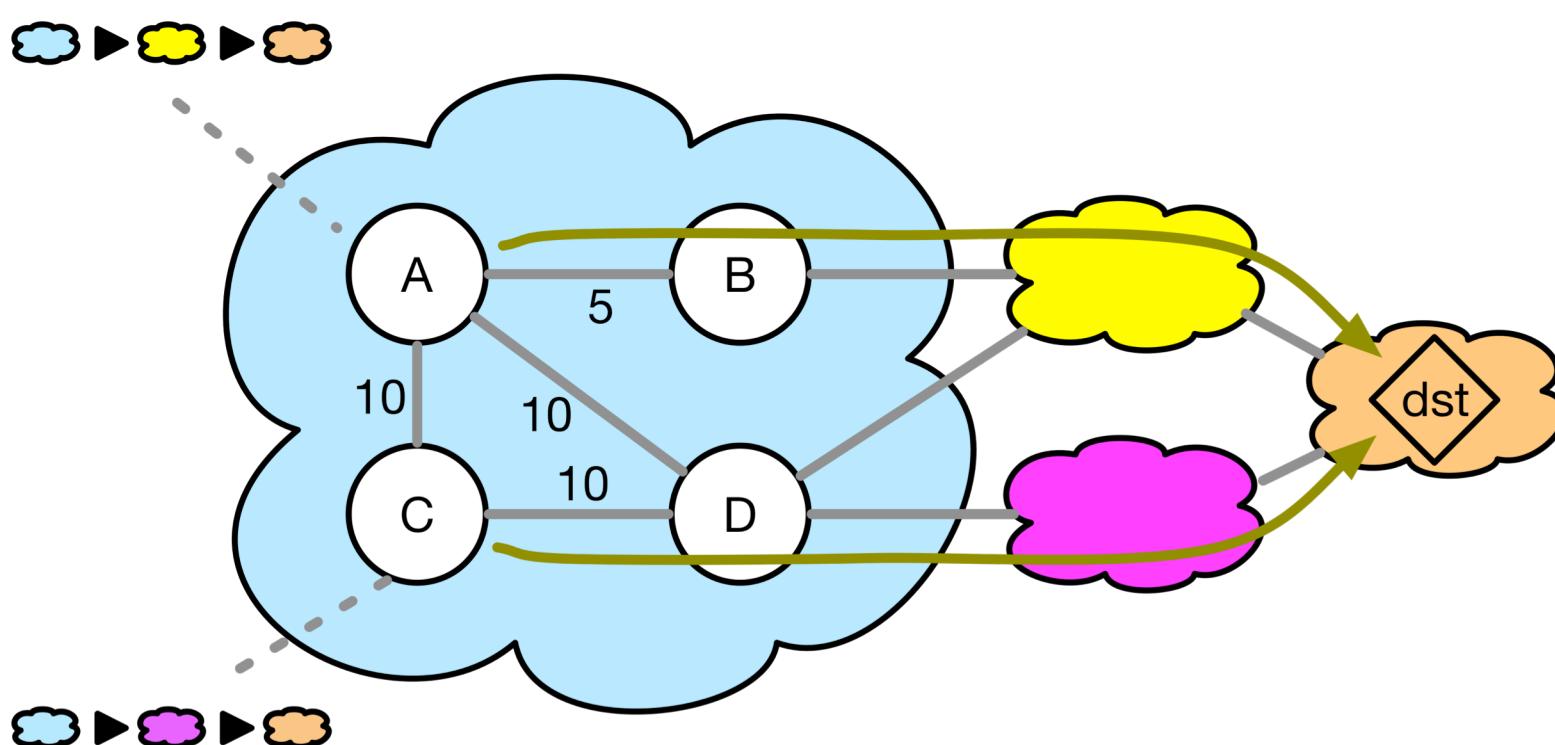
Google docs poll: What route will be taken from A to dst?



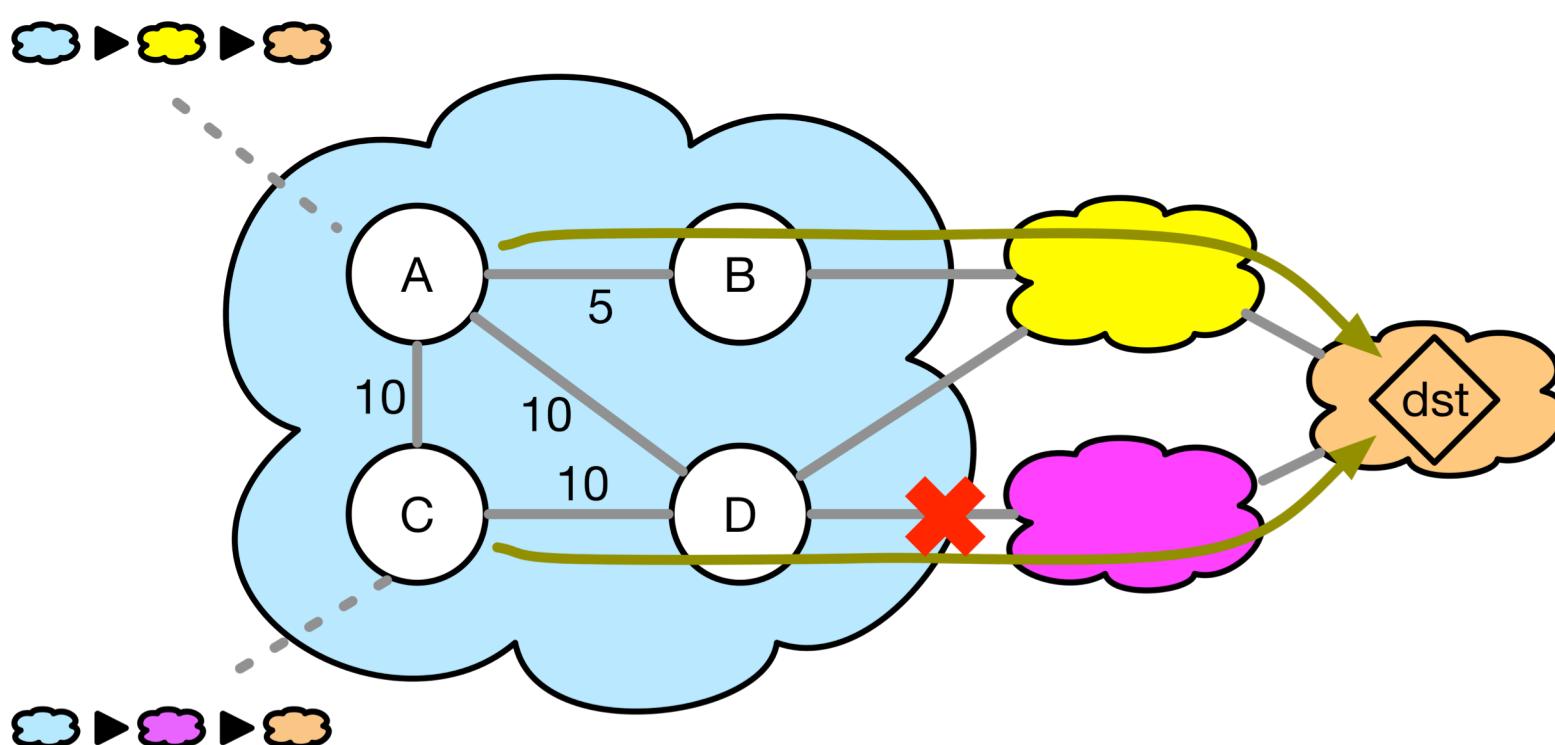
Google docs poll: What route will be taken from C to dst?





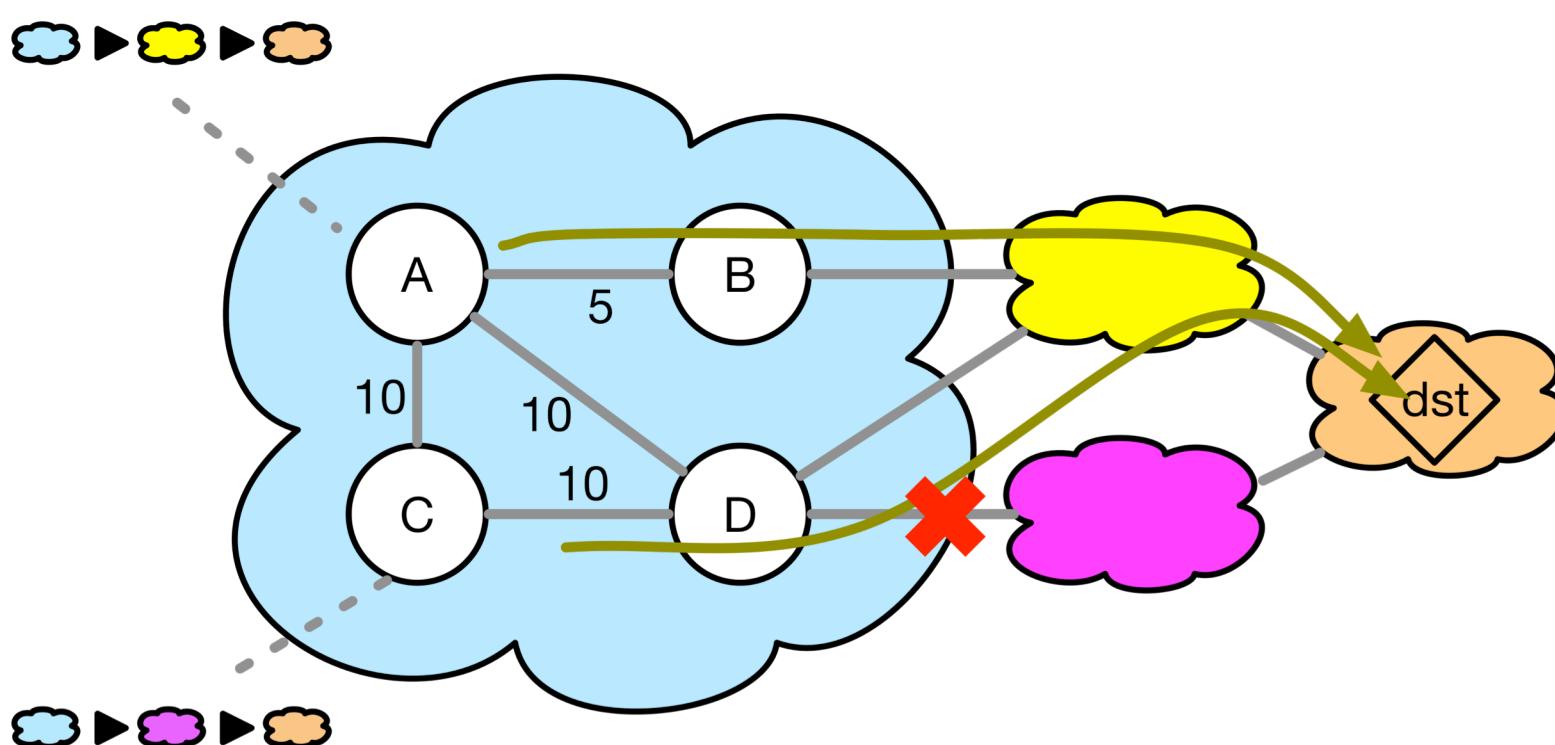


not learned via A

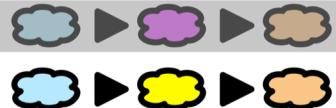
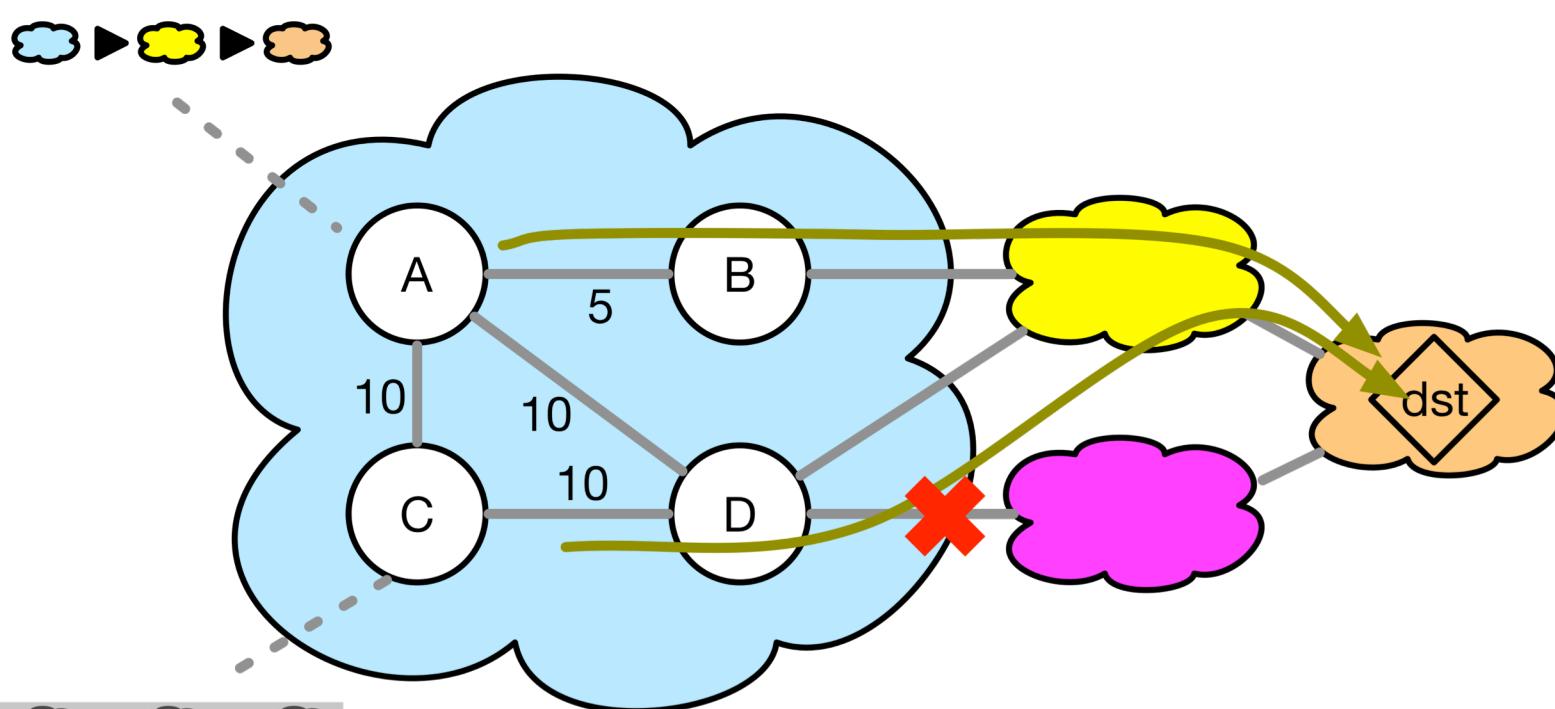


not learned via A

Google docs poll: What new route will be taken from C to dst?



not learned via A

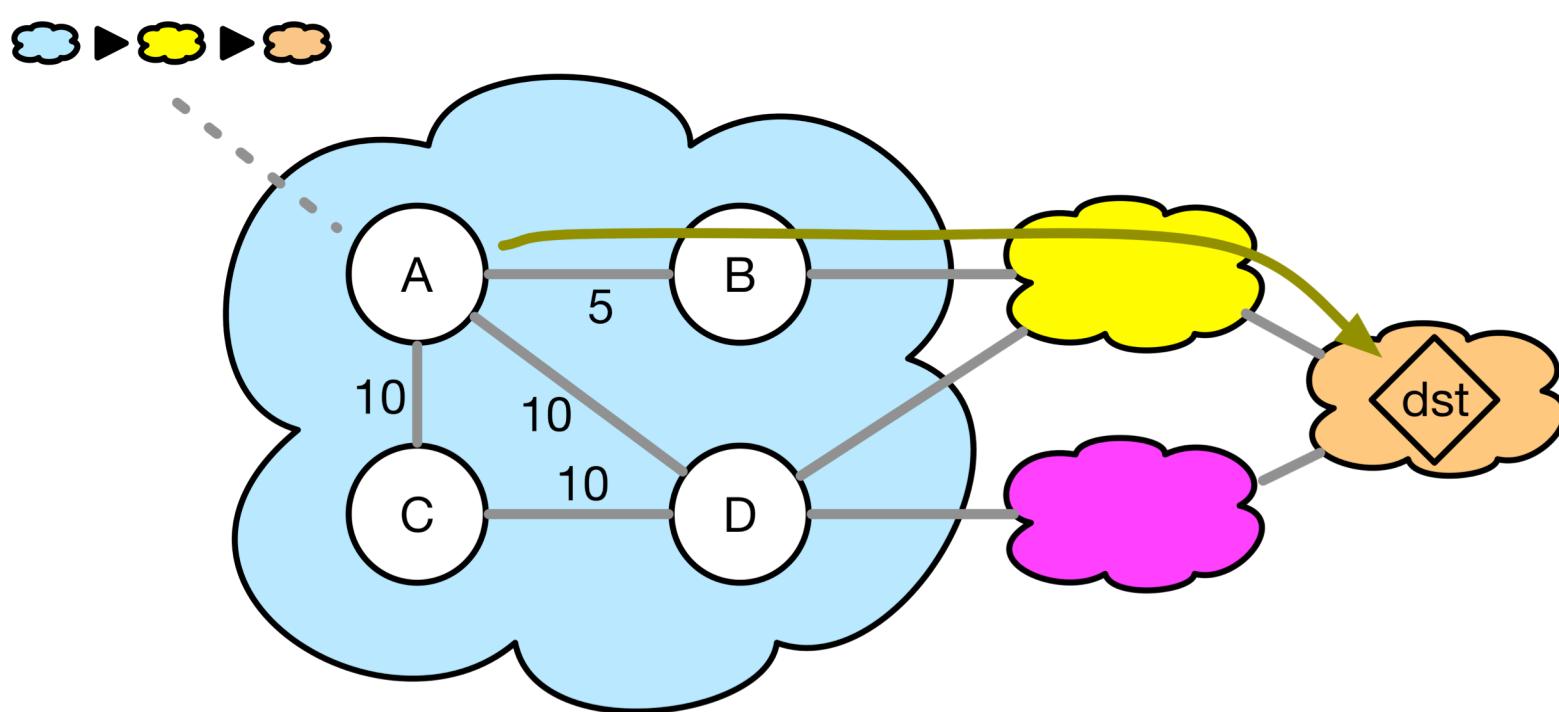


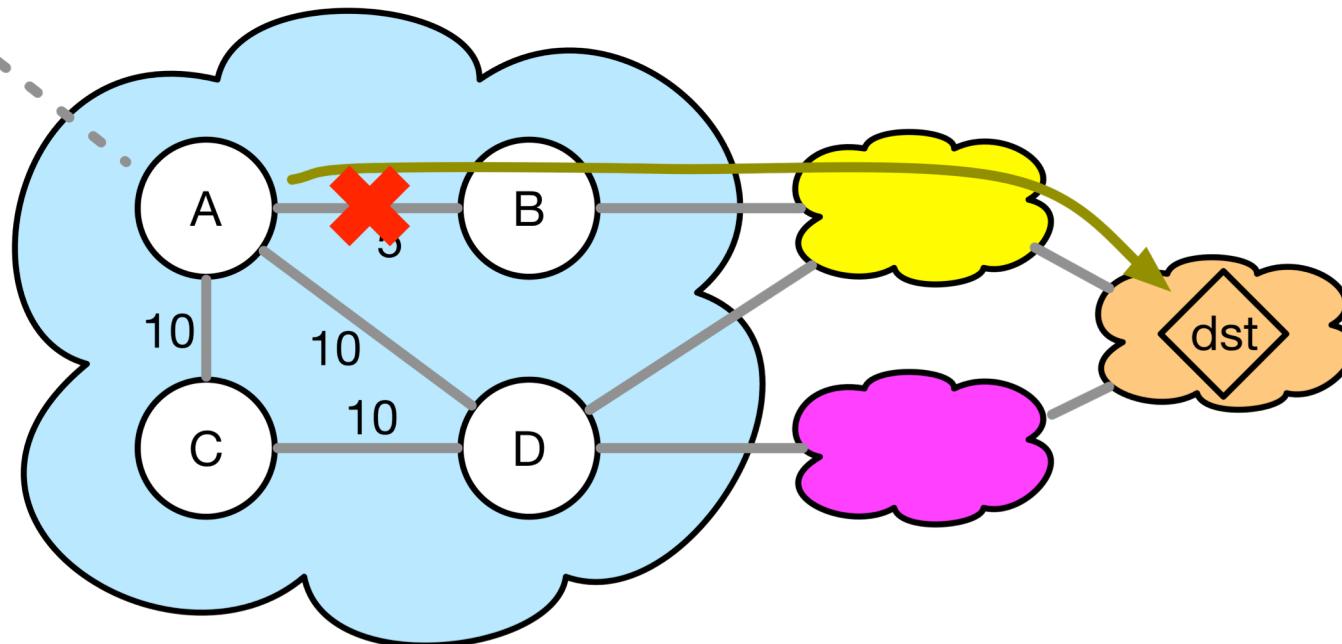
not learned via A

Google docs poll: Has A's announcement changed?

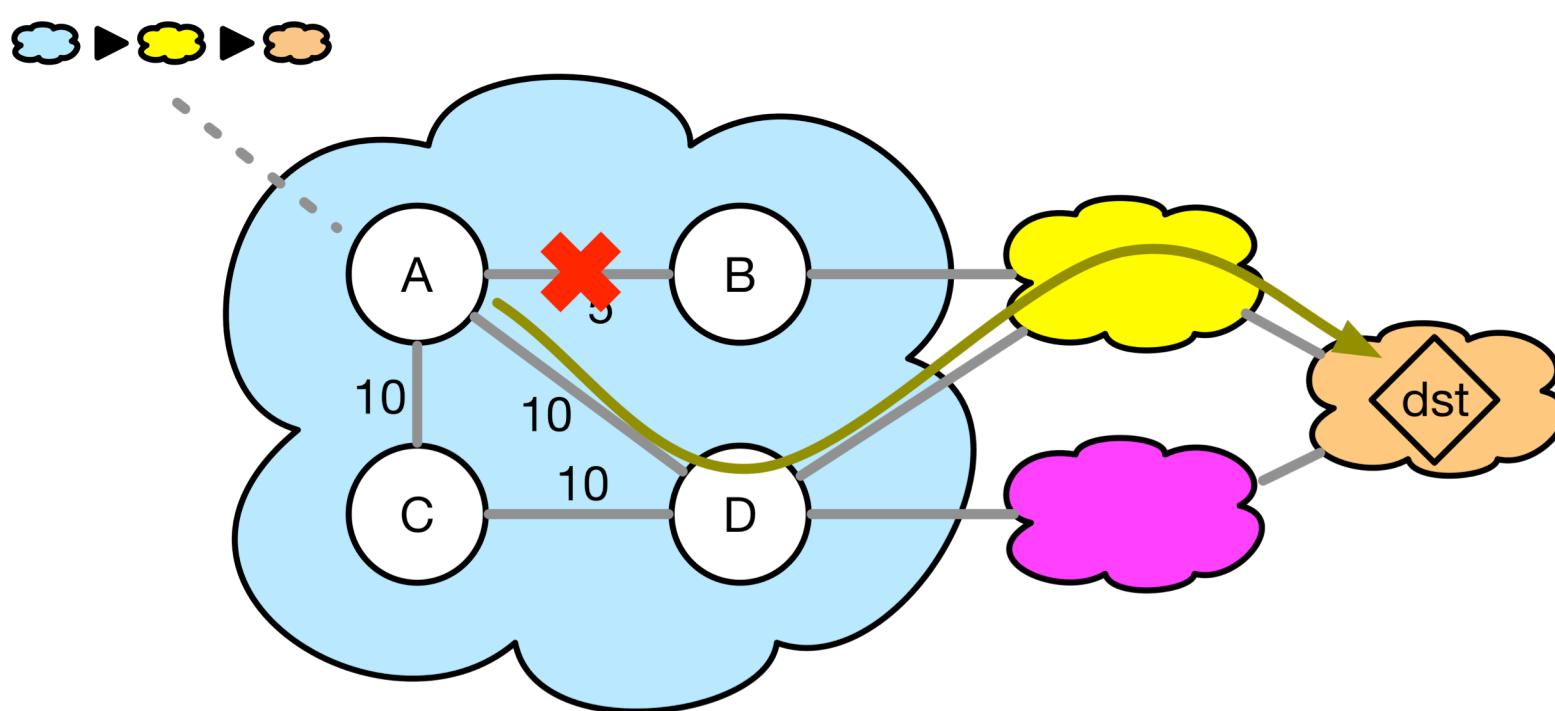
BGP updates - Limits

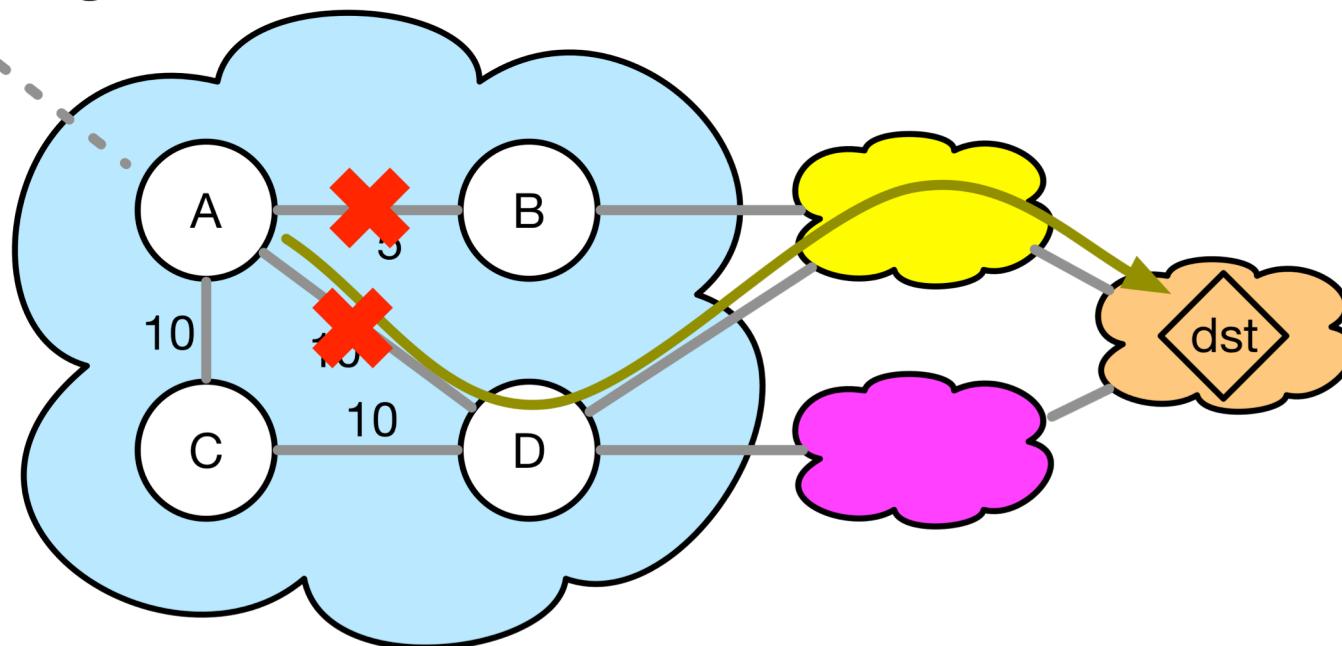
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 - Router speaking for AS or just itself?
- **Internal changes**
 - Changes not visible unless they affect inter-domain routing
- Aggregation
 - Changes to small prefixes get filtered



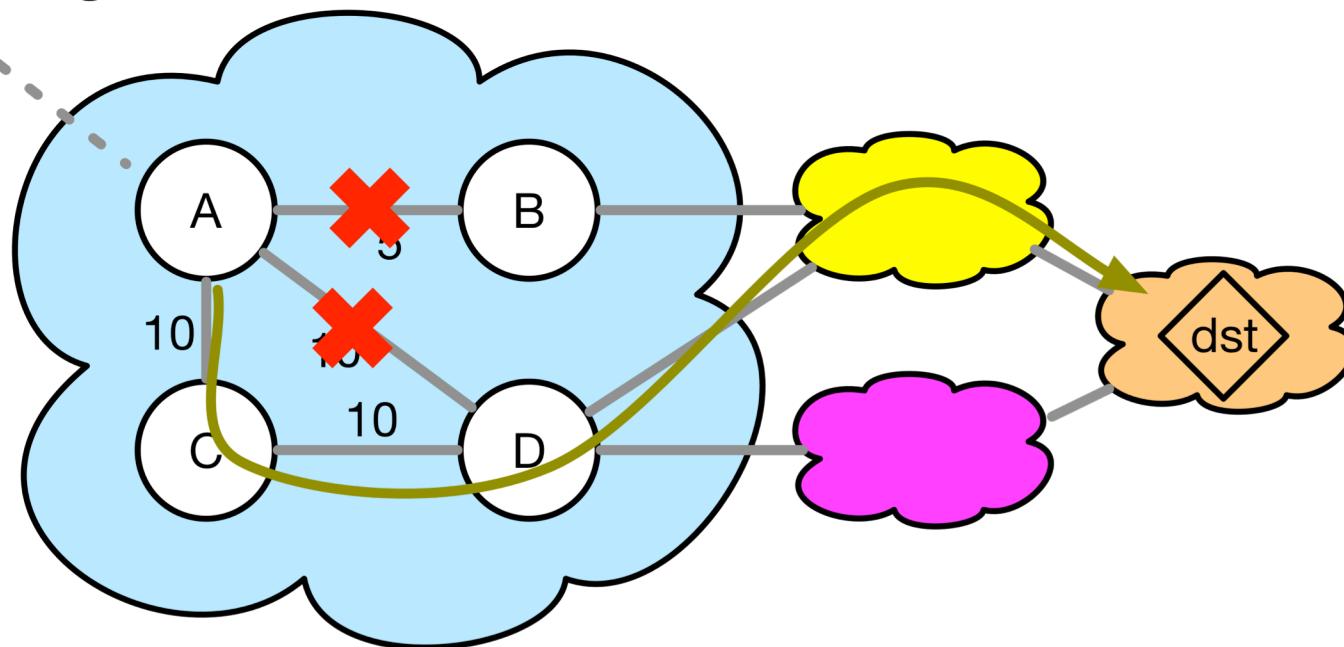


Google docs poll: What new route will be taken from A to dst?





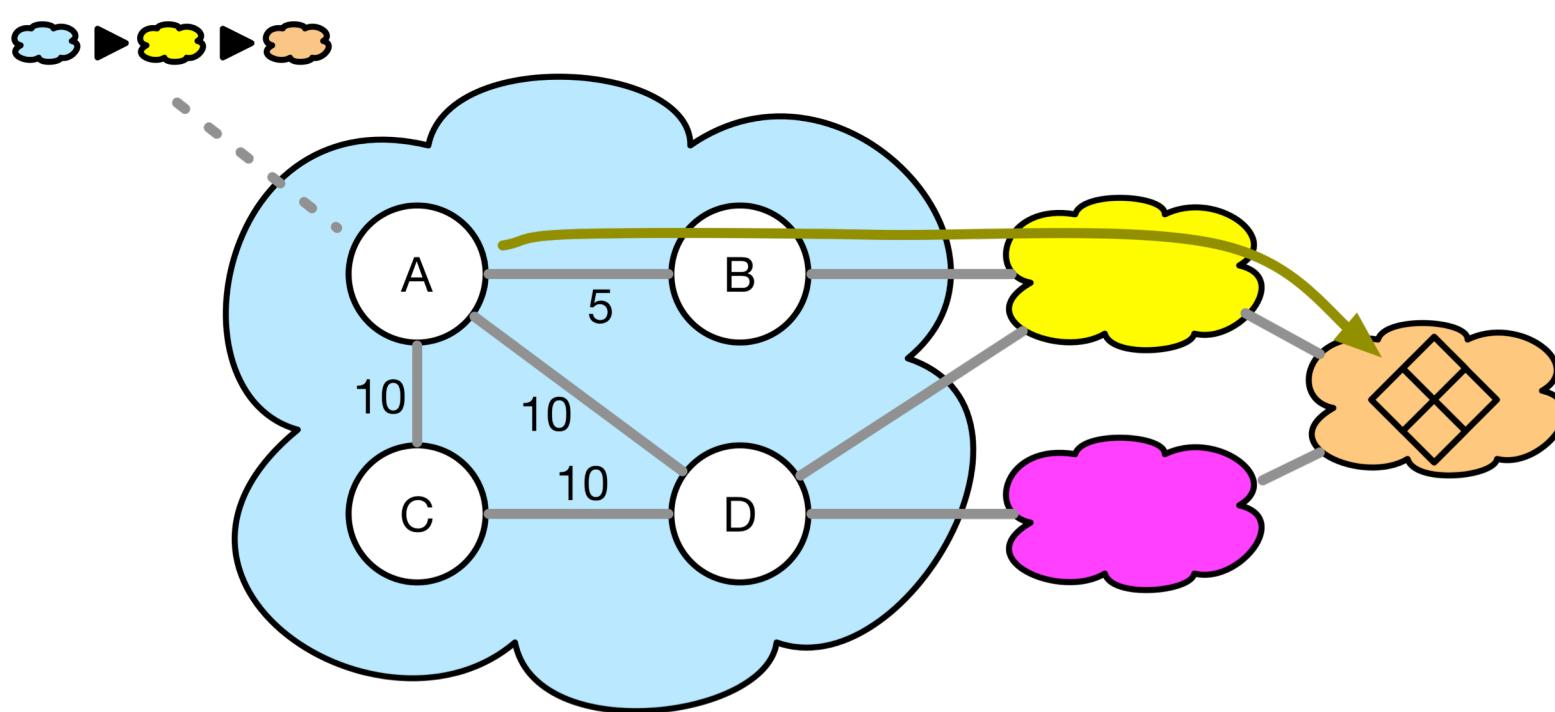
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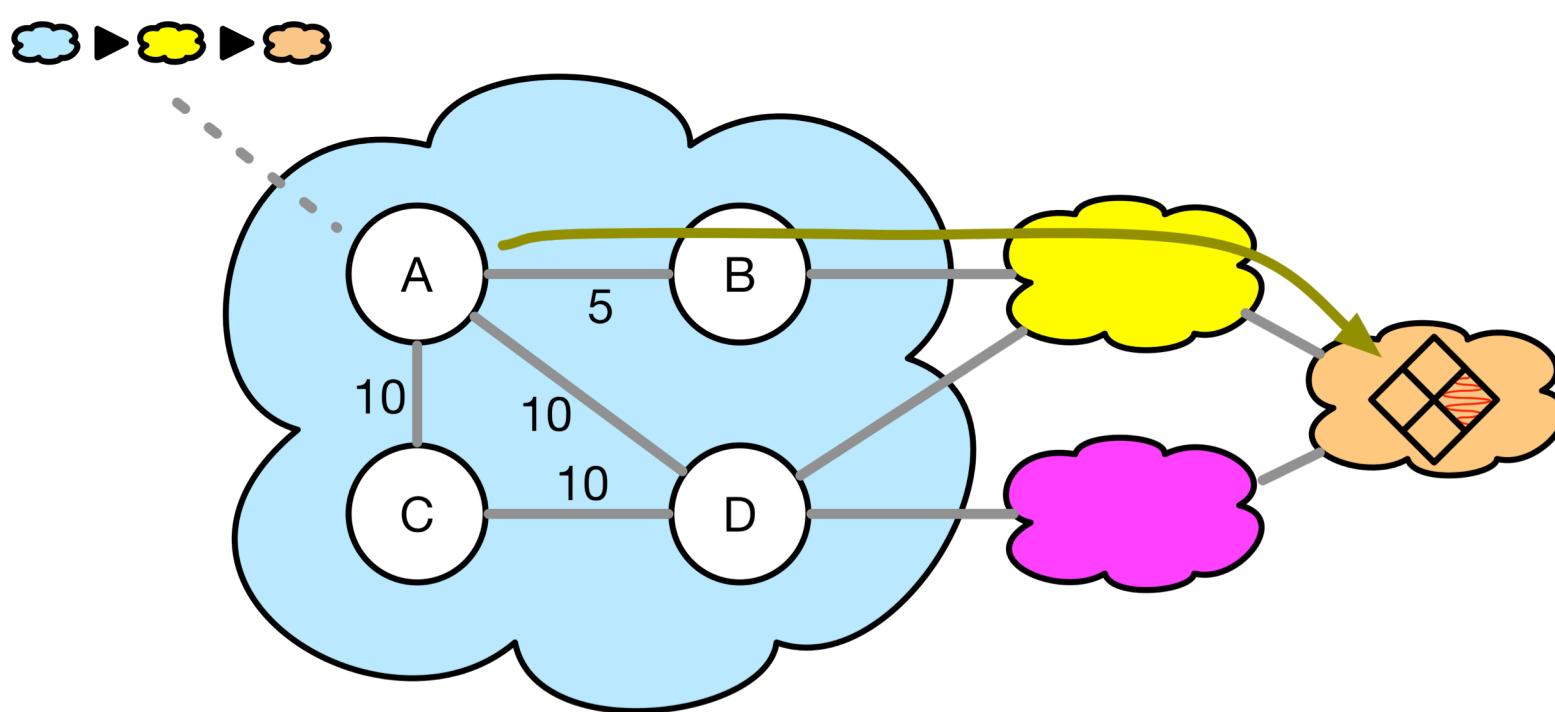


Google docs poll: Has A's announcement changed?

BGP updates - Limits

- Router representativeness
- Internal changes
- **Aggregation**
 - Changes to small prefixes get filtered





Google docs poll: Does A's announcement change?

BGP updates - Limits

- Router representativeness
 - Router speaking for AS or just itself?
- Internal changes
 - Changes not visible unless they affect inter-domain routing
- Aggregation
 - Changes to small prefixes get filtered