



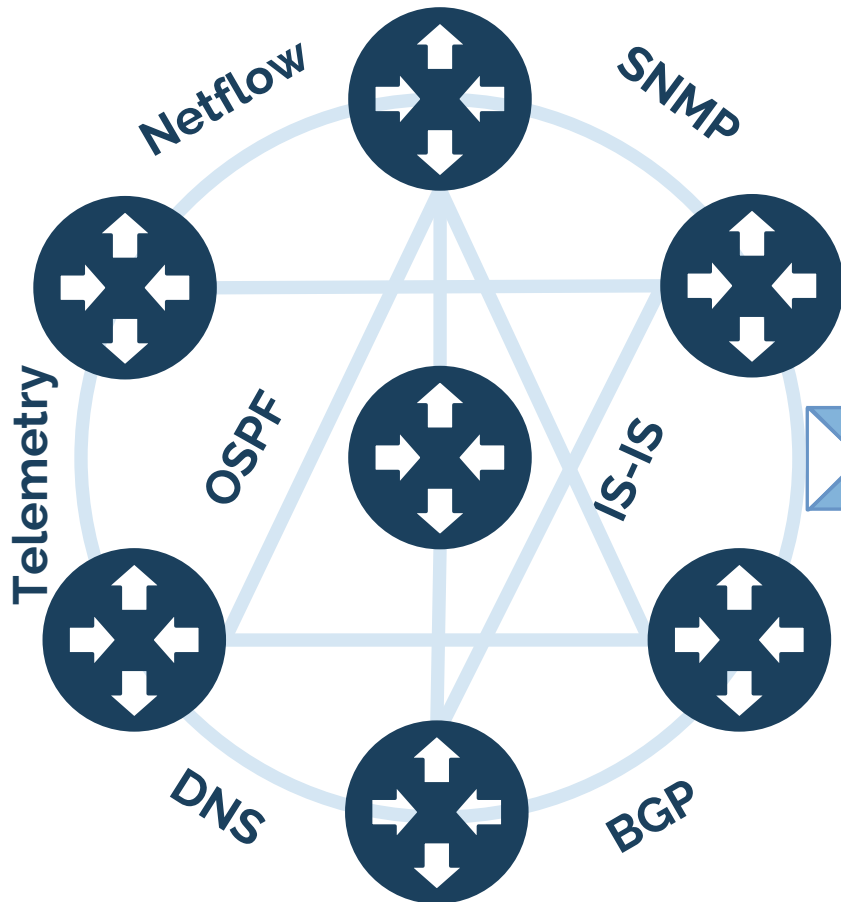
# BENOCS

## Forward Path

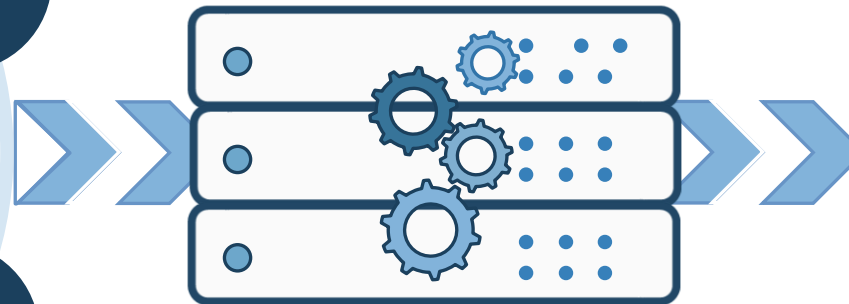
Matching routes to traffic  
levels

2025

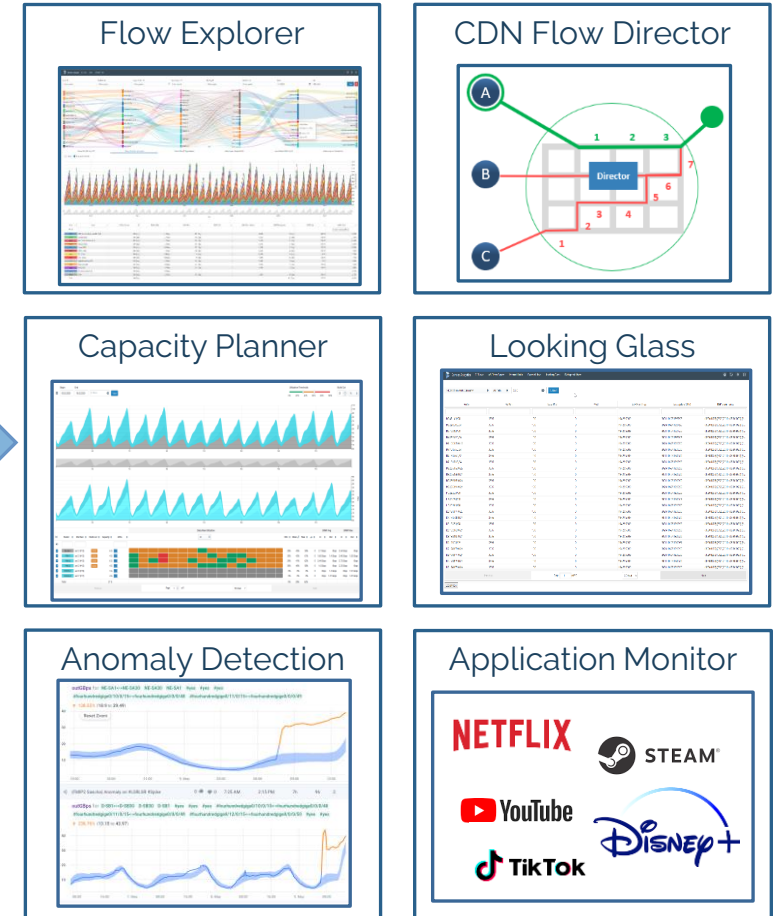
# What BENOCS does:



## BENOCs CORE ENGINE



Our proprietary aggregation and cross correlation process requires significantly less compute power compared to competitors



PROTOCOL POOL



PROCESSING



NETWORK INTELLIGENCE

# For context...

Network:  
European  
Incumbent

Peer:  
Major  
Hyperscaler

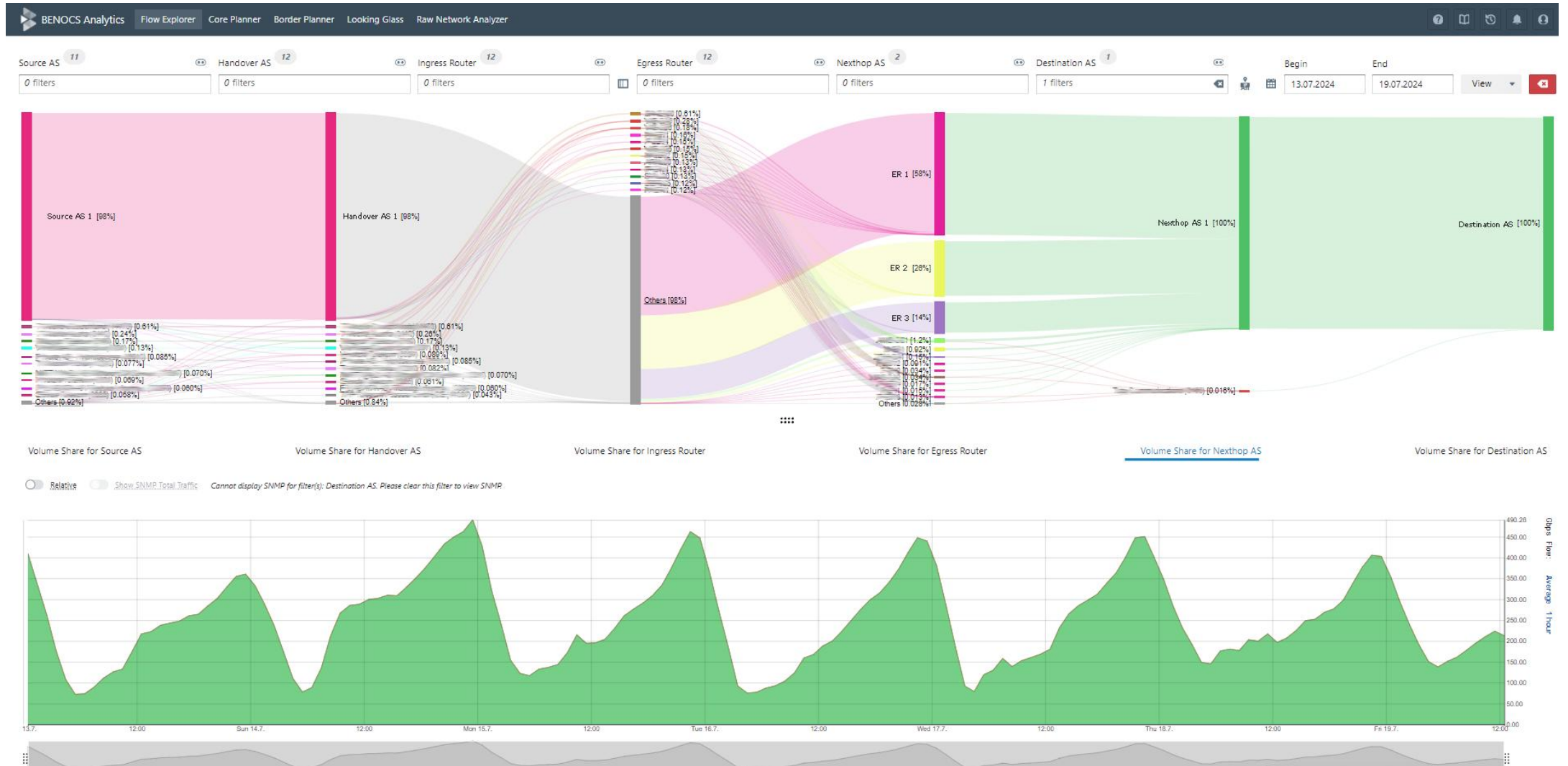
Graphs:  
BENOCS  
Analytics



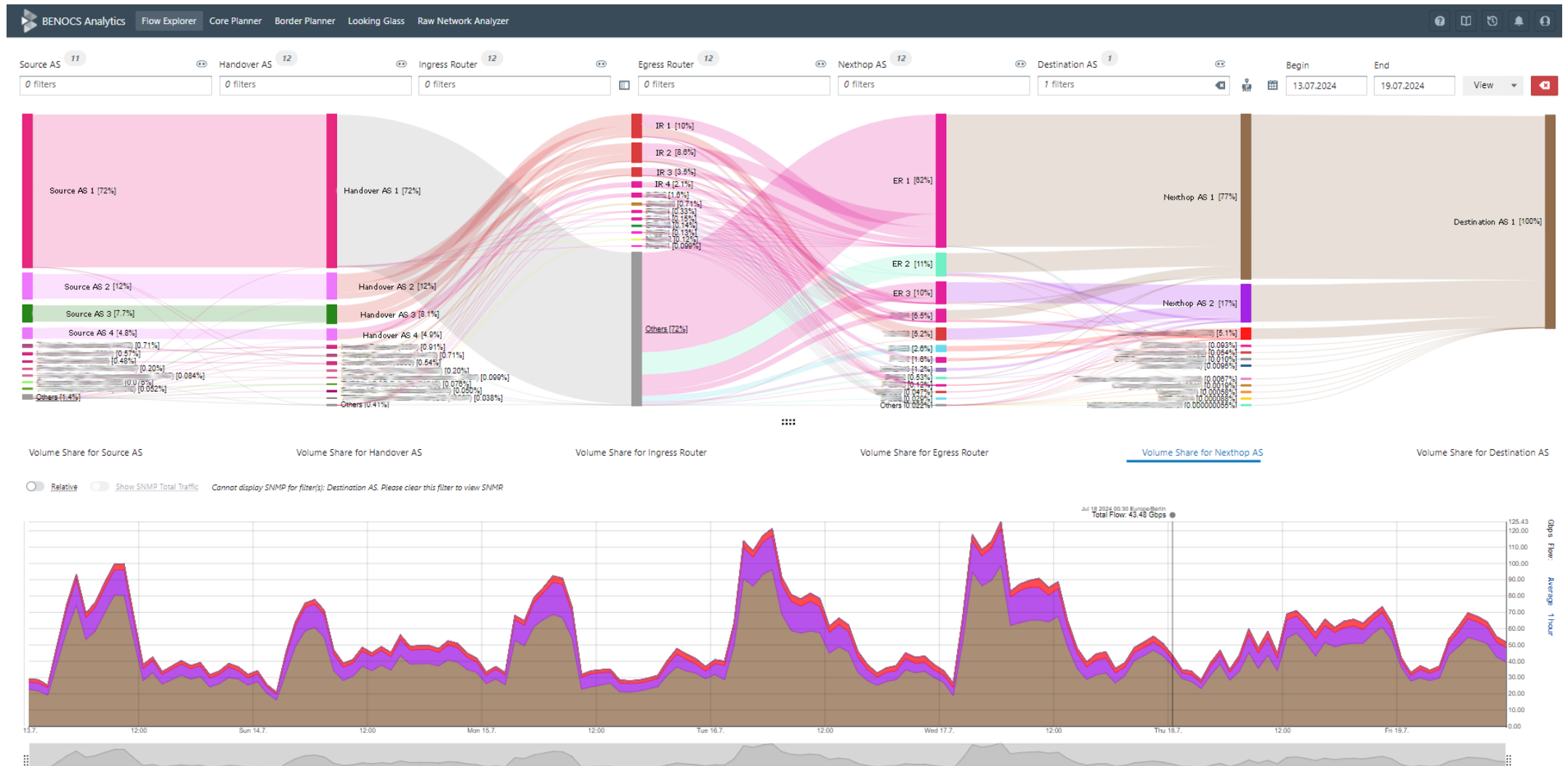
The background of the slide is a dark blue field filled with a complex network of glowing white nodes and thin, light blue lines connecting them. These nodes and lines are arranged in a way that suggests a global or distributed network, with clusters of nodes and lines forming a web-like structure across the entire frame.

Typically, when you have a direct interconnect  
with a peer in multiple locations...

# ...most traffic should exit via direct route.



# But with this hyperscaler...





7 vantage point(s)		AS Path	*714	Submit						
Vantage Point	Prefix	Route Distinguisher	AS Path	Local Pref	Med	BGP Next Hop	BGP Originator	BGP Community	Last update (UTC)	
AS-242 Berlin, Germany	17.248.201.0/24	-	3356	100	0	17.248.201.1	17.248.201.1	17.248.201.1	2024-07-16 00:19:26	:
AS-242 Berlin, Germany	17.69.104.0/23	-	714	100	150	17.69.104.1	17.69.104.1	17.69.104.1	2024-07-17 13:39:16	:
AS-242 Berlin, Germany	17.188.120.0/24	-	1299	100	-	17.188.120.1	17.188.120.1	17.188.120.1	2024-07-17 19:00:29	:
AS-242 Berlin, Germany	17.253.128.0/21	-		100	0	17.253.128.1	17.253.128.1	17.253.128.1	2024-06-28 07:52:34	:
AS-242 Berlin, Germany	17.191.144.0/21	-		100	3870	17.191.144.1	17.191.144.1	17.191.144.1	2024-07-18 05:09:58	:
AS-242 Berlin, Germany	17.45.206.0/23	-	3356	100	0	17.45.206.1	17.45.206.1	17.45.206.1	2024-07-16 00:19:27	:
AS-242 Berlin, Germany	17.77.0.0/17	-		100	250	17.77.0.1	17.77.0.1	17.77.0.1	2024-07-17 13:39:36	:
AS-242 Berlin, Germany	17.66.64.0/18	-		100	150	17.66.64.1	17.66.64.1	17.66.64.1	2024-07-17 13:38:16	:
AS-242 Berlin, Germany	17.252.48.0/20	-		100		17.252.48.1	17.252.48.1	17.252.48.1	2024-06-28 07:52:34	:
AS-242 Berlin, Germany	17.44.192.0/20	-		100	11880	17.44.192.1	17.44.192.1	17.44.192.1	2024-07-18 05:18:14	:
AS-242 Berlin, Germany	17.44.127.0/24	-	3356	100	0	17.44.127.1	17.44.127.1	17.44.127.1	2024-07-16 00:19:31	:
AS-242 Berlin, Germany	17.69.0.0/16	-		100	250	17.69.0.1	17.69.0.1	17.69.0.1	2024-07-17 13:39:36	:
AS-242 Berlin, Germany	17.56.9.0/24	-		100	20	17.56.9.1	17.56.9.1	17.56.9.1	2024-06-28 07:52:33	:
AS-242 Berlin, Germany	17.116.23.0/24	-	3356	100	0	17.116.23.1	17.116.23.1	17.116.23.1	2024-07-16 00:19:31	:
AS-242 Berlin, Germany	17.58.32.0/20	-		100	20	17.58.32.1	17.58.32.1	17.58.32.1	2024-07-17 19:00:29	:
AS-242 Berlin, Germany	17.160.0.0/16	-		100	20	17.160.0.1	17.160.0.1	17.160.0.1	2024-06-28 07:52:33	:
AS-242 Berlin, Germany	17.240.32.0/20	-		100	20	17.240.32.1	17.240.32.1	17.240.32.1	2024-06-28 07:52:33	:
AS-242 Berlin, Germany	17.15.0.0/16	-		100	0	17.15.0.1	17.15.0.1	17.15.0.1	2024-07-16 00:19:26	:
AS-242 Berlin, Germany	17.24.0.0/16	-		100	0	17.24.0.1	17.24.0.1	17.24.0.1	2024-07-16 00:19:21	:
AS-242 Berlin, Germany	17.43.112.0/21	-		100	12180	17.43.112.1	17.43.112.1	17.43.112.1	2024-07-10 21:13:31	:
AS-242 Berlin, Germany	17.61.0.0/17	-		100	0	17.61.0.1	17.61.0.1	17.61.0.1	2024-07-16 00:19:21	:
AS-242 Berlin, Germany	17.57.156.0/24	-	3356	100	0	17.57.156.1	17.57.156.1	17.57.156.1	2024-07-16 00:19:22	:
AS-242 Berlin, Germany	17.39.96.0/20	-		100	20	17.39.96.1	17.39.96.1	17.39.96.1	2024-06-28 07:52:33	:
AS-242 Berlin, Germany	17.39.128.0/19	-	3356	100	0	17.39.128.1	17.39.128.1	17.39.128.1	2024-07-16 00:19:26	:
AS-242 Berlin, Germany	17.33.90.0/24	-	3356 714	100	0	17.33.90.1	17.33.90.1	17.33.90.1	2024-07-16 00:19:20	:


Total prefixes advertised: 1667

Prefixes with direct route: 757

Prefixes with indirect route: 910

Begin


End


19.07.2024 13:45


MESZ

19.07.2024 14:45

MESZ
















































Destination AS= AND (Sampling Direction = 'i' OR Sampling Direction = 'u') AND (InInterface Type = 'edge-facing')

History 

Submit




<input checked="" type="checkbox"/>	Destination Subnet	Nexthop AS	Forward AS Path	Destination AS	Max Bps	Bytes	Average Bps	
<input checked="" type="checkbox"/>	 740.241.0/48 (1)				 bps	 TB	 Gbps	
					 bps	 TB	 Gbps	
<input checked="" type="checkbox"/>	 248.209.0/24 (3)				 Gbps	 TB	 Gbps	
		1299	1299 		 Gbps	 TB	 Gbps	
		3356	3356 		 Gbps	 GB	 Gbps	
		1299			 Mbps	 GB	 Mbps	
<input checked="" type="checkbox"/>	 248.236.0/24 (2)				 Gbps	 TB	 Gbps	
					 Gbps	 TB	 Gbps	
		714		714	7.51 Mbps	2.15 GB	4.79 Mbps	



Begin


End


 19.07.2024 13:45


MESZ

19.07.2024 14:45

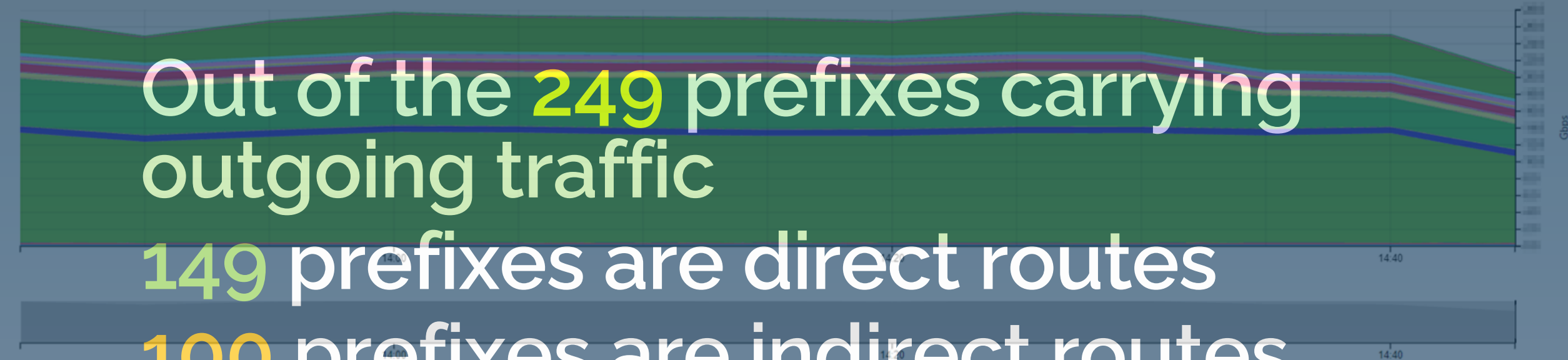
MESZ



Destination AS=  AND (Sampling Direction = 'i' OR Sampling Direction = 'u') AND (InInterface Type = 'edge-facing')

History 

Submit



<input checked="" type="checkbox"/>	Destination Subnet	Nexthop AS	Forward AS Path	Destination AS	Max Bps	Bytes	Average Bps	
<input checked="" type="checkbox"/>	740:a41::/48 (1)				11 bps	1 TB	1 Gbps	⋮
					11 bps	1 TB	1 Gbps	⋮
<input checked="" type="checkbox"/>	248:209.0/24 (3)				11 Gbps	1 TB	1 Gbps	⋮
		1299	1299		11 Gbps	1 TB	1 Gbps	⋮
		3356	3356		11 Gbps	1 GB	1 Gbps	⋮
		1299			11 Mbps	1 GB	1 Mbps	⋮
<input checked="" type="checkbox"/>	248:236.0/24 (2)				11 Gbps	1 TB	1 Gbps	⋮
					11 Gbps	1 TB	1 Gbps	⋮
		714	714		7.51 Mbps	2.15 GB	4.79 Mbps	⋮

207 out of 249 prefixes have only outgoing traffic and no incoming traffic

	Traffic in (Mbps)	Traffic out (Mbps)	No of Prefixes
Direct in/indirect out	26,098 (99.9%)	5,232.2 (22.3%)	36 (14.5%)
Only direct out	0.0 (0%)	13,202.5 (56.3%)	149 (59.8%)
Only indirect out	0.0 (0%)	5,012.8 (21.4%)	58 (23.3%)
Transit in/asymmetrical transit out	14.8 (0.1%)	3.9 (0%)	5 (2%)
Transit in/transit out	6.5 (0%)	4.8 (0%)	1 (0.4%)
<b>Total</b>	<b>26,120 (100%)</b>	<b>23,456 (100%)</b>	<b>249 (100%)</b>

# Adding location to the context

90% of the no incoming/only outgoing traffic is terminating in a different continent (US)

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# Our recommendation

- For US-terminating traffic (90% of outgoing traffic), consider establishing a PNI in the US and manage BGP configuration (cold-potato routing).
- For direct-in/indirect-out traffic, ensure symmetrical routes by reaching out to the BGP engineers of the Hyperscaler for potential corrections.



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