V4 vs V6 RTT to ccTLD

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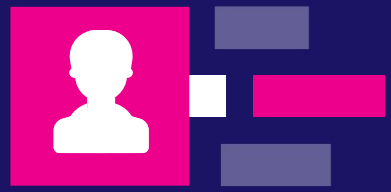
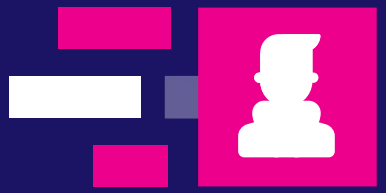


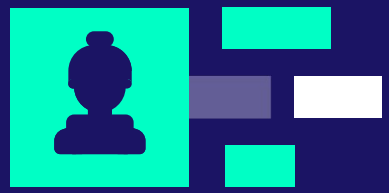


JOSEPH

ARINO

NINJA

TADIFA



CHALLENGE

Is there route symmetry between IPv4 & IPv6?

RESOLUTION

Analyzing route latencies
from selected Probes which
IPv4 & IPv6 capable
to ccTLDs of selected
APAC economies

RESOLUTION PROCESS

Step 1

Get the list of ccTLDs in Asia Pacific

Step 2

.PH is the selected as POC of the tests

Step 3

Extract the .PH NS list authoritative records

Step 4

Get the probes list located in PH which are capable for IPv4 & IPv6 via RIPE ATLAS

Step 5

Create measurement (ping & traceroute) via RIP ATLAS UI between probes and target NS via IPv4 & IPv6

Step 6

Import the measurement results into HTML table and compare the results

.PH

Target ccTLD

3 PH PROBES

Source

???

Conclusion

TEST RESULT

Philippines

Measurement ID	Probe	Src Address	Dst Address	FQDN	Hop Count	Latency
50251861	19160	2402:cb40:1000:503::2	2405:3000:3:6::15		13	
50251861	6887	2402:cb40:1000:509::a	2405:3000:3:6::15		15	
50251861	7032	2400:8800:e004::4	2405:3000:3:6::15		9	
50243986	19160	2402:cb40:1000:503::2	2405:3000:3:6::15			40.4860956667
50243986	6887	2402:cb40:1000:509::a	2405:3000:3:6::15			164.9624303333
50243986	7032	2400:8800:e004::4	2405:3000:3:6::15			54.754072
50251835	7032	63.222.187.5	137.189.6.21	ovis.itsc.cuhk.edu.hk.	10	
50251835	19160	27.111.84.18	137.189.6.21	ovis.itsc.cuhk.edu.hk.	12	
50251835	6887	27.111.84.21	137.189.6.21	ovis.itsc.cuhk.edu.hk.	13	
50243985	19160	27.111.84.18	137.189.6.21	ovis.itsc.cuhk.edu.hk.		55.7463566667
50243985	6887	27.111.84.21	137.189.6.21	ovis.itsc.cuhk.edu.hk.		83.2748163333
50243985	7032	63.222.187.5	137.189.6.21	ovis.itsc.cuhk.edu.hk.		29.877595

PROBE 19160 TEST RESULT

	Hop Count	Latency
IPv4	12	55.75ms
IPv6	13	40.47ms

PROBE 6887 TEST RESULT

	Hop Count	Latency
IPv4	13	83.27ms
IPv6	15	164.96ms

PROBE 7032 TEST RESULT

	Hop Count	Latency
IPv4	10	29.88ms
IPv6	9	54.75ms

.PH

Target Destination

3 PH PROBES

Source

ASSYMETRIC

Conclusion

Use case

Technical

Routing Concern, Adaptability of IPv6

Commercial

Quality vs Cost, Upgrade Concern

CHALLENGES

AFTER

CHALLENGES AFTER

ANYCAST

The test result may vary depending on the nearest anycast server.

Where

… did the test results exactly routed?

What

… is the exact AS numbers that the test result routed?

How

… many AS hops on the test result?

Cannot

… force the preferred path

THANK YOU

KAJEN