

MY Orange Cloud

Jimmy Halim jhalim@cloudflare.com MYIX Peering Forum 2016 Kuala Lumpur, 10 October 2016

Cloudflare in a glance

Protect and accelerate any website online

4+ million zones/domains

43+ billion DNS queries/day

How?

Orange cloud

 Global distributed network in 100+ locations
Still growing fast!

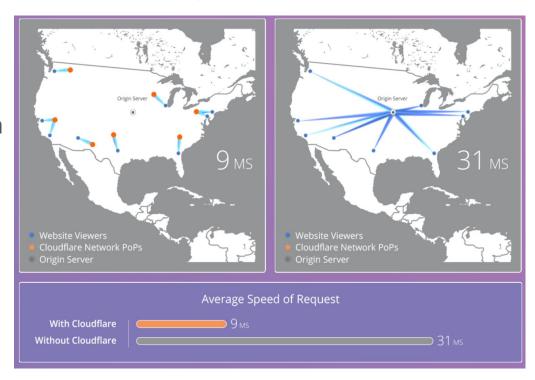
Anycast routing





Benefit of orange cloud

- Direct visitors to the nearest entry point
 - Fast!
 - Lesser hops
 - Reduced latency
- Save bandwidth!
 - Lesser requests to origin
 - Mitigate DDoS
- Resiliency
 - 100+ locations!





Orange cloud vs grey cloud

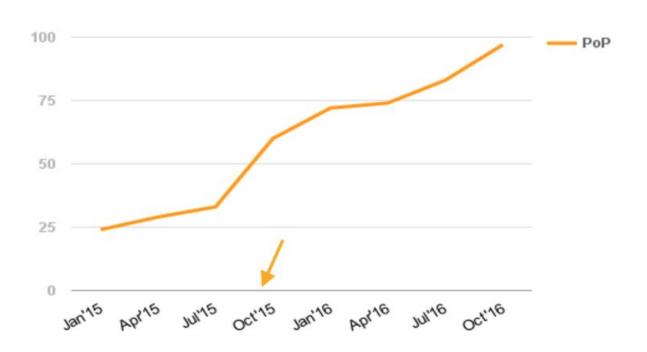
Probe +	ASN (IPv4) +	ASN (IPv6) +	•	•	Time (UTC) +	RTT +	Hops	Success	• •
3	3265	3265	=	4	2016-06-16 05:22	375.348	9	~	0
45	12322	12322	п	۵	2016-06-16 05:22	362.853	12	~	0
121	41164	41164	2	۵				No recen repor available	t
169	34244	34244	**	۵				No recen repor available	t
194	39309	39309	=	۵				No recen repor available	t
301	45345	45345	0-	۵	2016-06-16 05:23	249.124	15	~	0
380	25192	25192		۵	2016-06-16 05:22	376.504	19	~	0
436	3320	3320	=	۵	2016-06-16 05:22	373.611	22	~	0
437	29695	29695	÷	۵	2016-06-16 05:22	359.621	12	~	0
446	37708	37708	=	۵				No recen repor available	t
558	12628	12628	200	۵	2016-06-16 05:23	347.350	9	~	0
666	21263	21263		۵	2016-06-16 05:22	355.880	25	~	0
683	51182	51182	=	۵				No recen repor available	t
706	3320	8422	=	۵	2016-06-16 05:23	360.066	22	~	0
754	29208	29208	-	۵	2016-06-16 05:22	306.026	29	~	0
764	1955	1955	=	۵	2016-06-16 05:22	369.057	13	~	0
830	43382	43382	±	۵				No recen repor available	t
833	29422	29422	+	4	2016-06-16 05:22	372.207	23	~	0

Probe	+ ASN (IPv4)	+ ASN (IPv6)	• •	•	Time (UTC)	RTT +		Норя	5	Succ	ess
3	3265	3265	=	0	2016-06-16 05:05	16.291		6		~	
45	12322	12322	11	۵	2016-06-16 05:05	32.556		13		~	
121	41164	41164	==	۵	2016-06-16 05:05	39.087		7		~	
169	34244	34244		۵	2016-06-16 05:05	2.647		4		~	
194	39309	39309	=	۵	2016-06-16 05:05	5.795		10		~	
301	45345	45345	0=	4	2016-06-16 05:06	24.816		8		~	
380	25192	25192	-	۵	2016-06-16 05:05	2.068		6		~	
436	3320	3320	=	4	2016-06-16 05:05	25.091		8		~	
437	29695	29695	+	۵	2016-06-16 05:05	16.409		5		~	
446	37708	37708	=	۵	2016-06-16 05:06	46.793		9		~	
558	12628	12628	910	0	2016-06-16 05:06	11.772		6		~	
666	21263	21263	=	۵	2016-06-16 05:05	29.932		6		~	
683	51182	51182	-	0	2016-06-16 05:05	10.297		13		~	
706	3320	8422	=	۵	2016-06-16 05:06	11.833		8		~	
754	29208	29208	-	0	2016-06-16 05:05	5.166		10		~	
764	1955	1955	=	۵	2016-06-16 05:05	6.013		6		~	
830	43382	43382	+	۵	2016-06-16 05:05	19.122		11		~	
833	29422	29422	+	4	2016-06-16 05:05	13.658		9		~	
867	25376	25376	210	۵	2016-06-16 05:05	2.421		4		~	
882	12502	12502	=	4	2016-06-16 05:05	31.561		9		~	
898	34019	34019		4	2016-06-16 05:05	5.623		6		~	
904	12322	12322	11	4	2016-06-16 05:05	29.157		12		~	
929	48954	48954	210	۵	2016-06-16 05:05	10.058		9		~	
938	6830	6830	=	4	2016-06-16 05:05	14.193		7		~	
951	20612	20612		۵	2016-06-16 05:05	2.731	•	3		~	
964	34612	34612	=	۵	2016-06-16 05:05	3.698		5		~	



Building so fast

1 new PoP per week!





Strategic planning

- Agreement/negotiation
- Location
 - Peering exchanges
 - Cost
 - Support
- Size
 - Traffic analysis
 - Number of Racks
 - Equipment types
 - Transits/Peering Exchanges
 - How many?
 - How big are the pipes?





Challenges

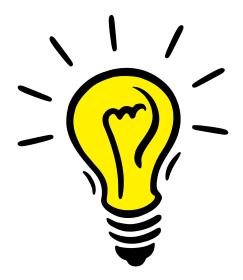
- Installation
 - Regulation
 - Import policy
 - Transits
 - Different carriers have different setup/policies
 - Language barriers
- Human factors
 - Configuration errors!
 - Anycast
- Traffic turnup
 - How to ensure it is not impacting
 - No outages please!





Solutions

- Out of band network is a must!
 - Acting as last resort
 - Upgrade/downgrade
 - Maintenances
- Configuration template
 - Auto configuration
 - Anycast!
 - Peer review
- Global Network Engineering
 - Round the clock deployment
 - Reduced bottleneck





Peer or not to peer?

What and why?

Peering is a process by which two Internet networks connect and exchange traffic voluntarily

- Reduce cost
 - No transit
- Improve performance
 - Faster
 - Lesser hop
 - Serve locally
- Greater control
 - Direct BGP policy control





Malaysia view under orange cloud

©	•	2016-08-23 07:20	4.741	7
(•	2016-08-23 07:20	5.818	12
C	4	2016-08-23 07:20	32.184	6
E .	4	2016-08-23 07:20	9.005	6
C*	4	2016-08-23 07:20	3.089	6
E#	4	2016-08-23 07:20	4.102	7
60	4	2016-08-23 07:20	1.102	6
60	۵	2016-08-23 07:20	22.831	10
60	۵	2016-08-23 07:20	23.785	12
E	۵	2016-08-23 07:20	7.363	6
60	4	2016-08-23 07:20	32.550	6
60	۵	2016-08-23 07:20	5.208	12
60	0	2016-08-23 07:20	5.739	12
(T	4	2016-08-23 07:20	9.888	8
CR	4	2016-08-23 07:20	8.940	7



Malaysia view under orange cloud

Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets 1 192.168.0.1 0.701ms 0.64ms 0.926ms 192.168.<u>1.1</u> 0.784ms 0.573ms 0.539ms 2 223.28.0.216 2.906ms 2.956ms ag-01-glsfb.ni.time.net.my 2.913ms AS9930 2 45.64.168.162 AS45352 0.99ms 0.75ms 0.749ms 3 223.28.26.41 ae2-er-01-glsfb.ni.time.net.my 2.69ms 2.539ms 2.767ms AS9930 103.10.156.73 0.757ms 0.706ms 0.688ms AS45352 4 223.28.2.1 5.879ms 6.279ms 6.569ms 4 218.100.44.185 1.553ms 1.727ms 4.17ms 5 223.28.26.142 Bundle-Ether1-br-01-csfcb.ni.time.net.my 4.56ms 4.738ms 4.532ms 104.16.255.89 1.522ms 1.429ms 1.524ms AS13335 6 218.100.44.185 4.775ms 4.887ms 4.894ms 7 104.16.255.89 4.989ms 4.741ms 4.741ms AS13335 Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets 1 192.168.1.254 0.836ms 1.534ms 0.931ms Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets 2 124.158.236.254 2.167ms 1.04ms fe-2-1.lan-gw-1-kul-pip.my.globaltransit.net AS24218 1.239ms 192.168.1.1 0.569ms 0.411ms 0.375ms 3 124.158.237.61 0.974ms 3.2ms ge-1-1-9-14.edge-gw-2-kul-pip.my.globaltransit.net AS24218 115.132.109.194 115.132.109.206 3.036ms 3.103ms 3.674ms AS4788 AS4788 0.978ms 3 115.132.109.205 21.709ms 1.817ms 1.739ms AS4788 4 61.11.211.172 1.653ms 1.433ms 1.471ms AS24218 10.55.37.16 4.259ms 3.683ms 3.437ms 5 124.158.228.70 1.914ms 1.106ms 2.273ms AS24218

162.158.24.253

104.16.255.89

AS13335

AS13335

3.649ms 4.169ms

2.637ms

5.589ms

2.988ms

3.089ms



AS13335

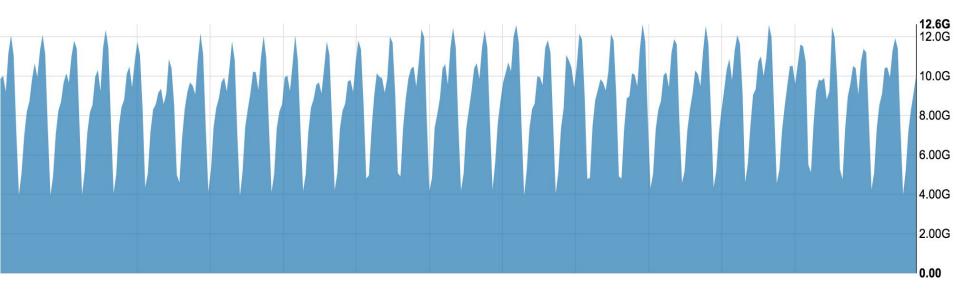
1.788ms

1.072ms

1.102ms

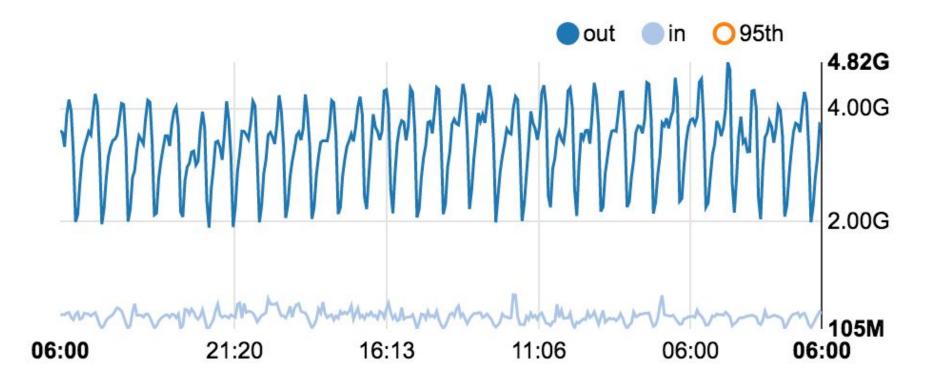
6 104.16.255.89

Malaysia view under orange cloud





MYIX traffic in a glance





Peering Update in Asia

In August 2015

- AKL-IX (Auckland)
- APE (Auckland)
- BBIX (Tokyo, Osaka, Singapore)
- Equinix (Hong Kong, Osaka, Singapore, Sydney, Tokyo)
- HKIX (Hong Kong)
- JPIX (Tokyo, Osaka)
- JPNAP (Tokyo, Osaka)
- Megaport (Auckland, Singapore, Sydney)
- PIPE (Sydney)



Addition of Peering Exchange as for now

- KINX (Incheon)
- MYIX (Kuala Lumpur)
- NSW-IX (Sydney)
- SGIX (Singapore)
- WAIX (Perth)



Globally

- Registered in 150 public peering exchange points
- About 120 of them are up and running!
- More details: https://www.peeringdb.com/asn/13335
- Peering Contact: peering@cloudflare.com



Statistics









BainCapital









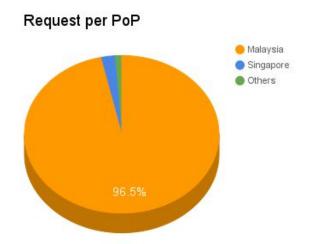


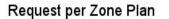


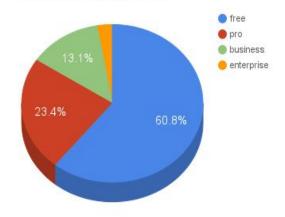




Malaysian' statistics









Q&A



