



CLOUDFLARE

MY Orange Cloud

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Cloudflare in a glance

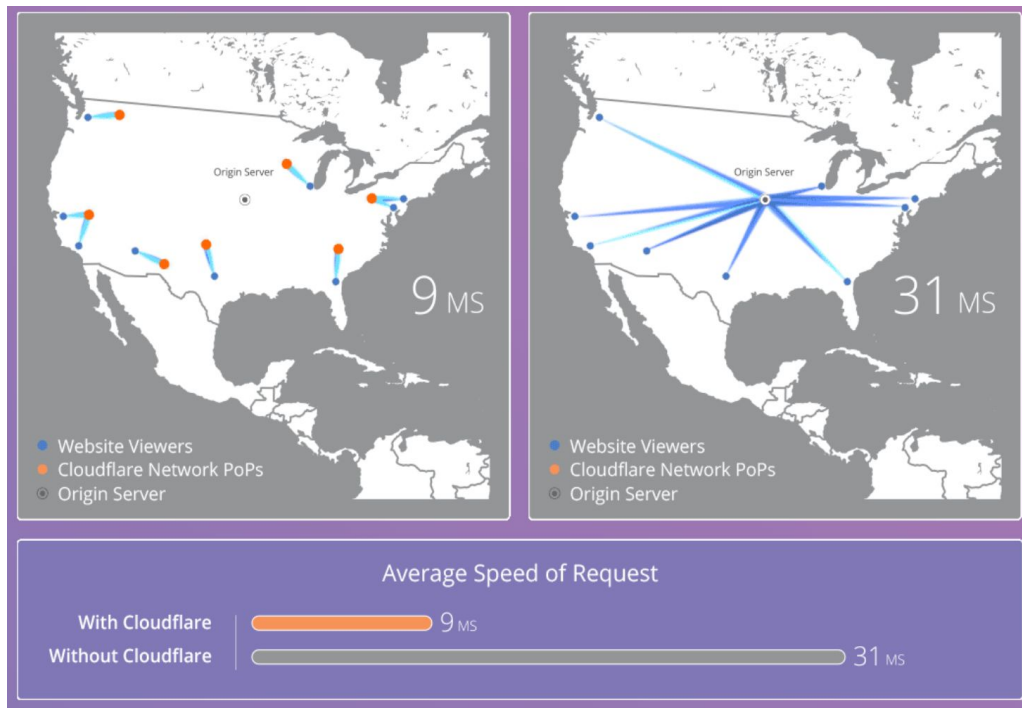
Protect and accelerate any website online

- 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!



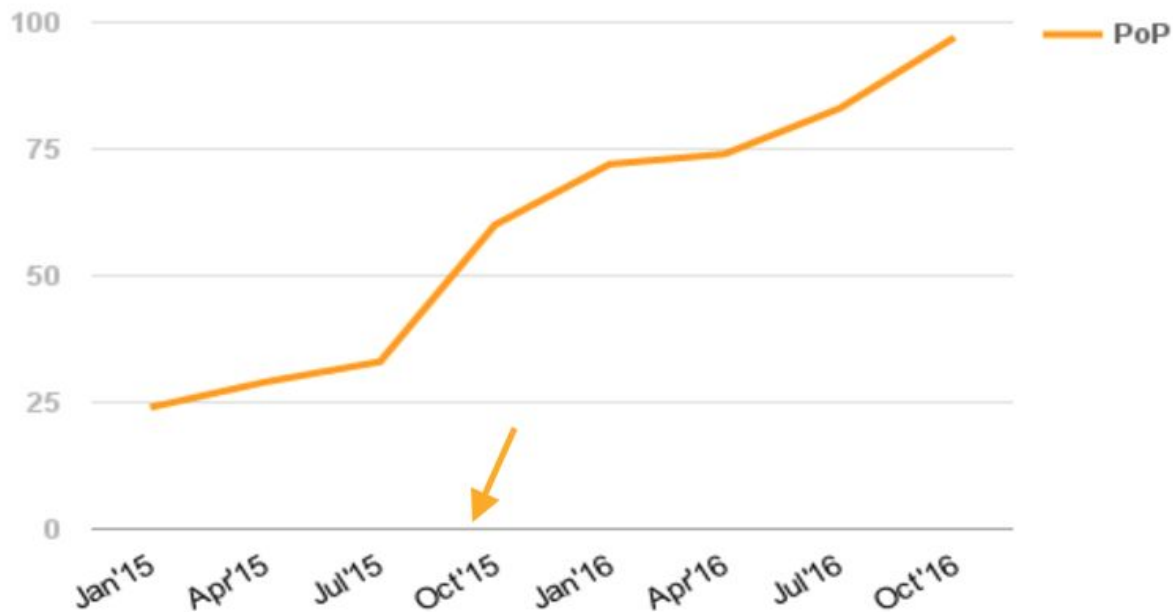
Orange cloud vs grey cloud

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

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

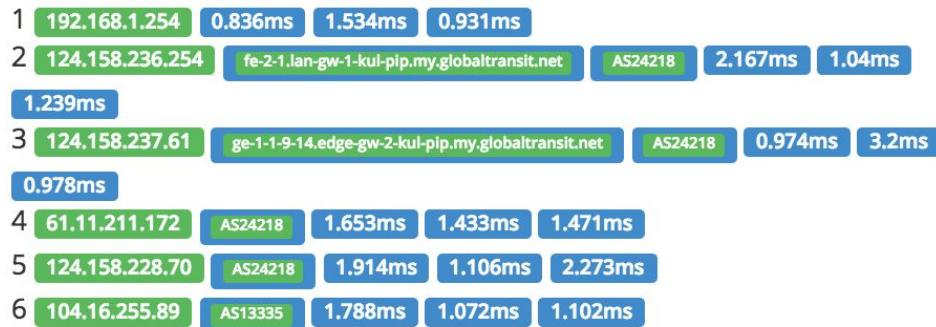
		2016-08-23 07:20	4.741		7
		2016-08-23 07:20	5.818		12
		2016-08-23 07:20	32.184		6
		2016-08-23 07:20	9.005		6
		2016-08-23 07:20	3.089		6
		2016-08-23 07:20	4.102		7
		2016-08-23 07:20	1.102		6
		2016-08-23 07:20	22.831		10
		2016-08-23 07:20	23.785		12
		2016-08-23 07:20	7.363		6
		2016-08-23 07:20	32.550		6
		2016-08-23 07:20	5.208		12
		2016-08-23 07:20	5.739		12
		2016-08-23 07:20	9.888		8
		2016-08-23 07:20	8.940		7

Malaysia view under orange cloud

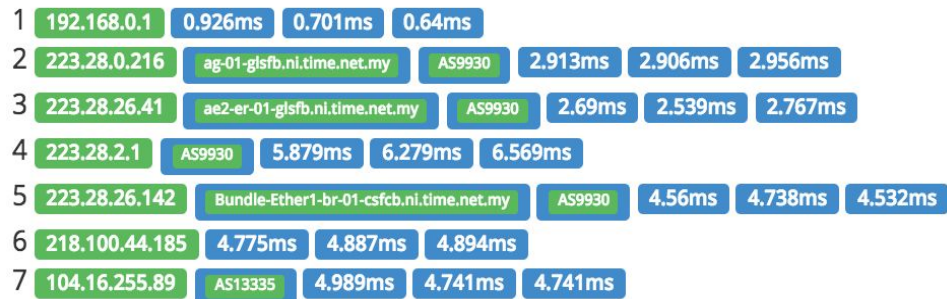
Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets



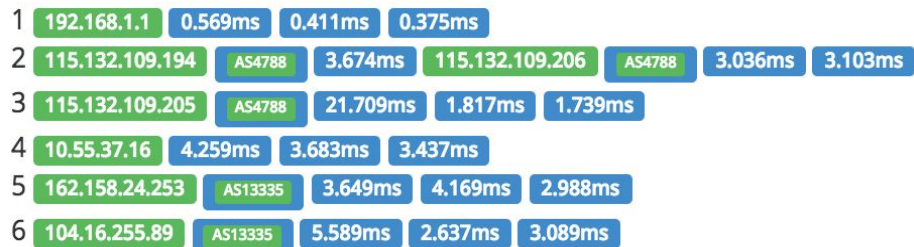
Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets



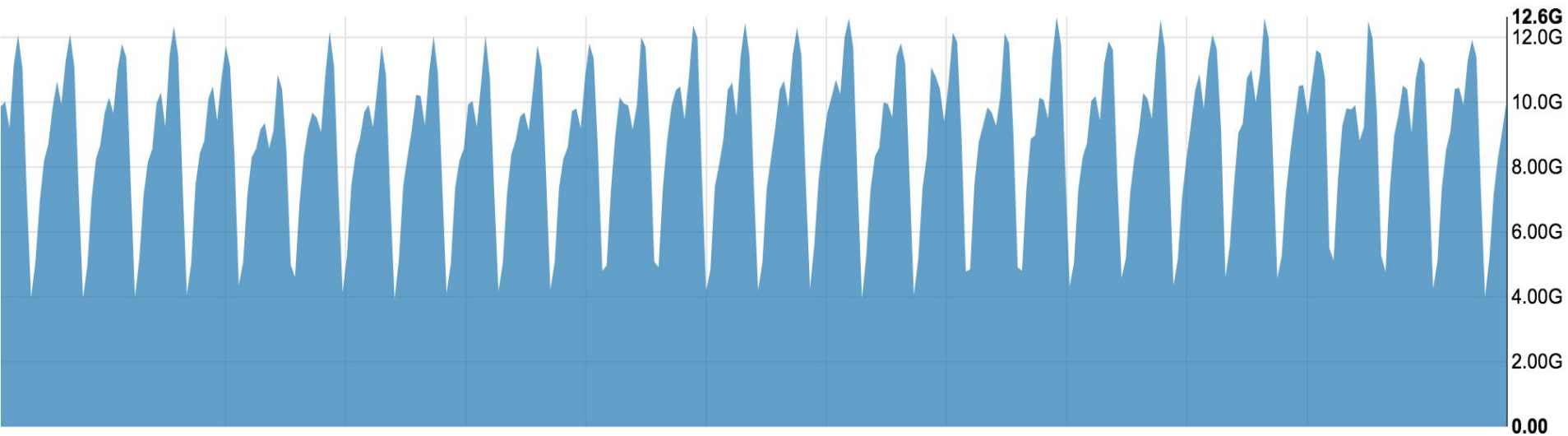
Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets



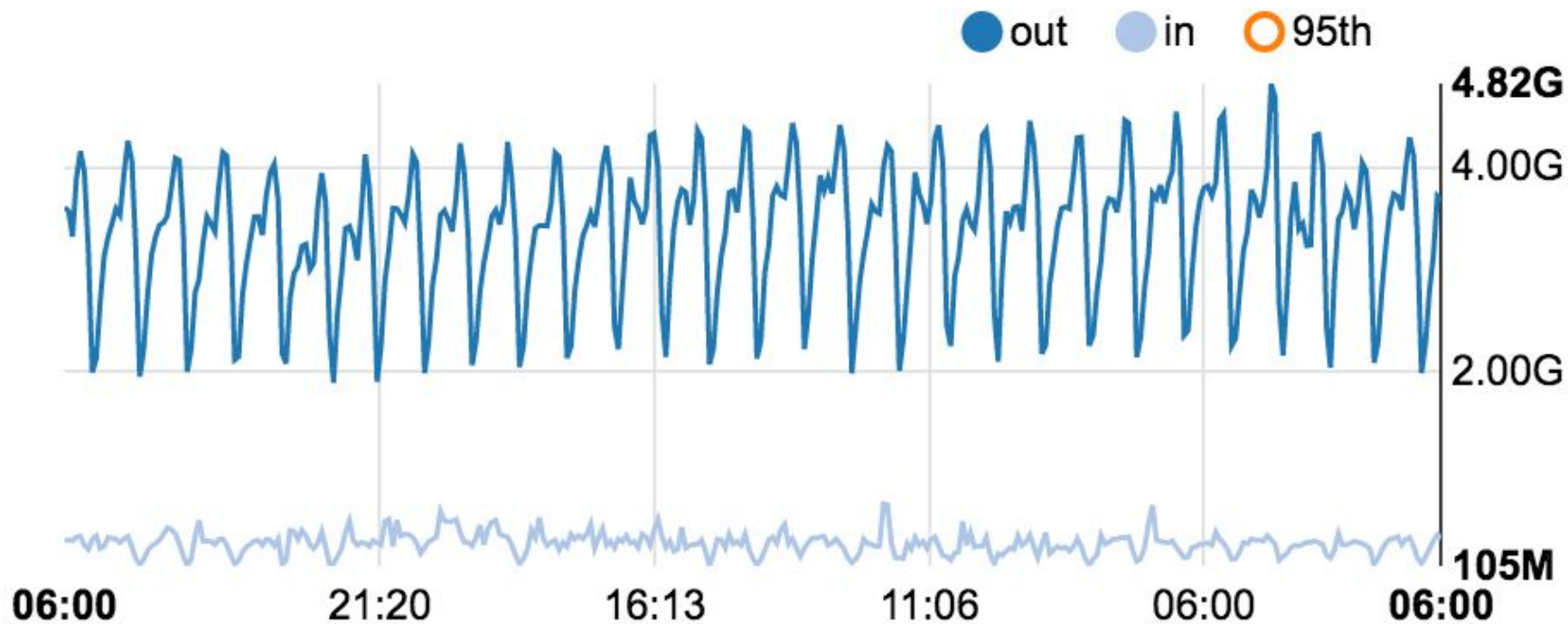
Traceroute to 104.16.255.89 (104.16.255.89), 48 byte packets



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



okcupid

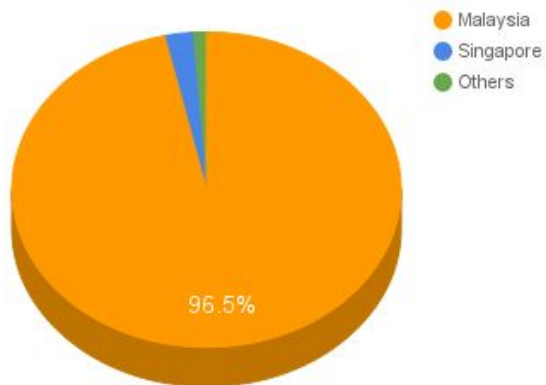


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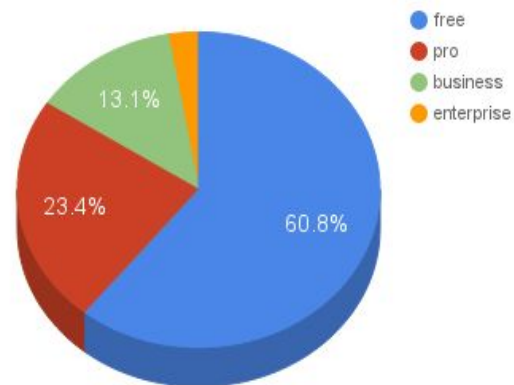


Malaysian' statistics

Request per PoP



Request per Zone Plan



Q&A

THANK
YOU!

