The State of IPv6

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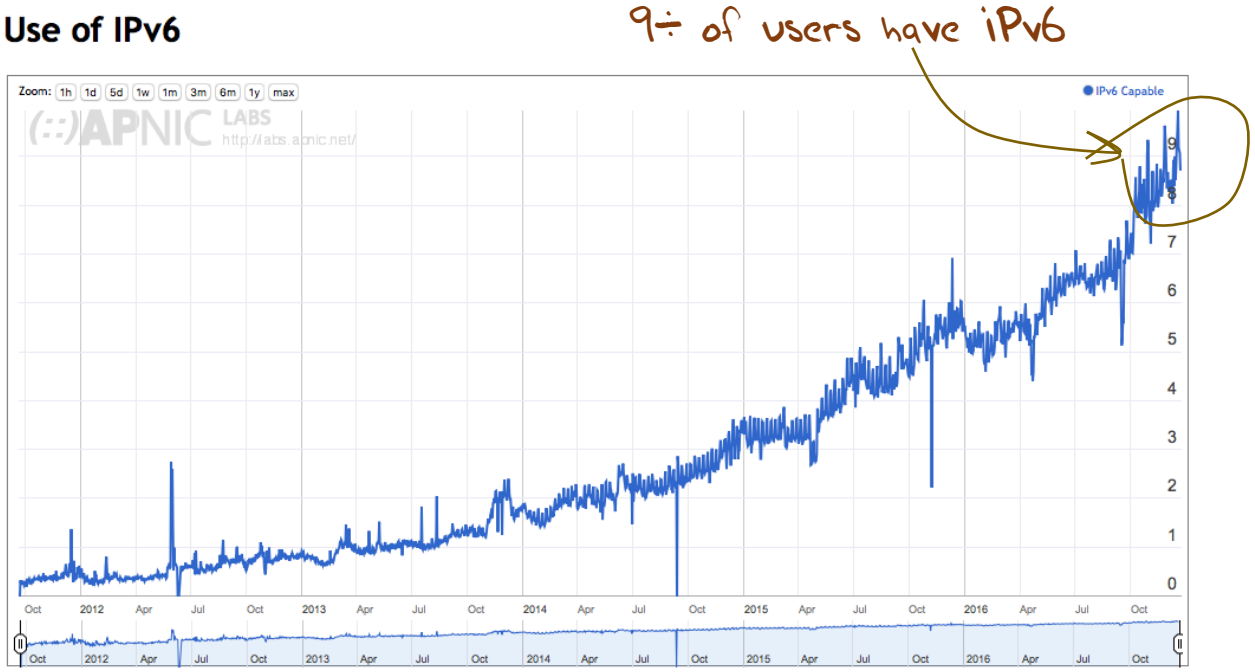
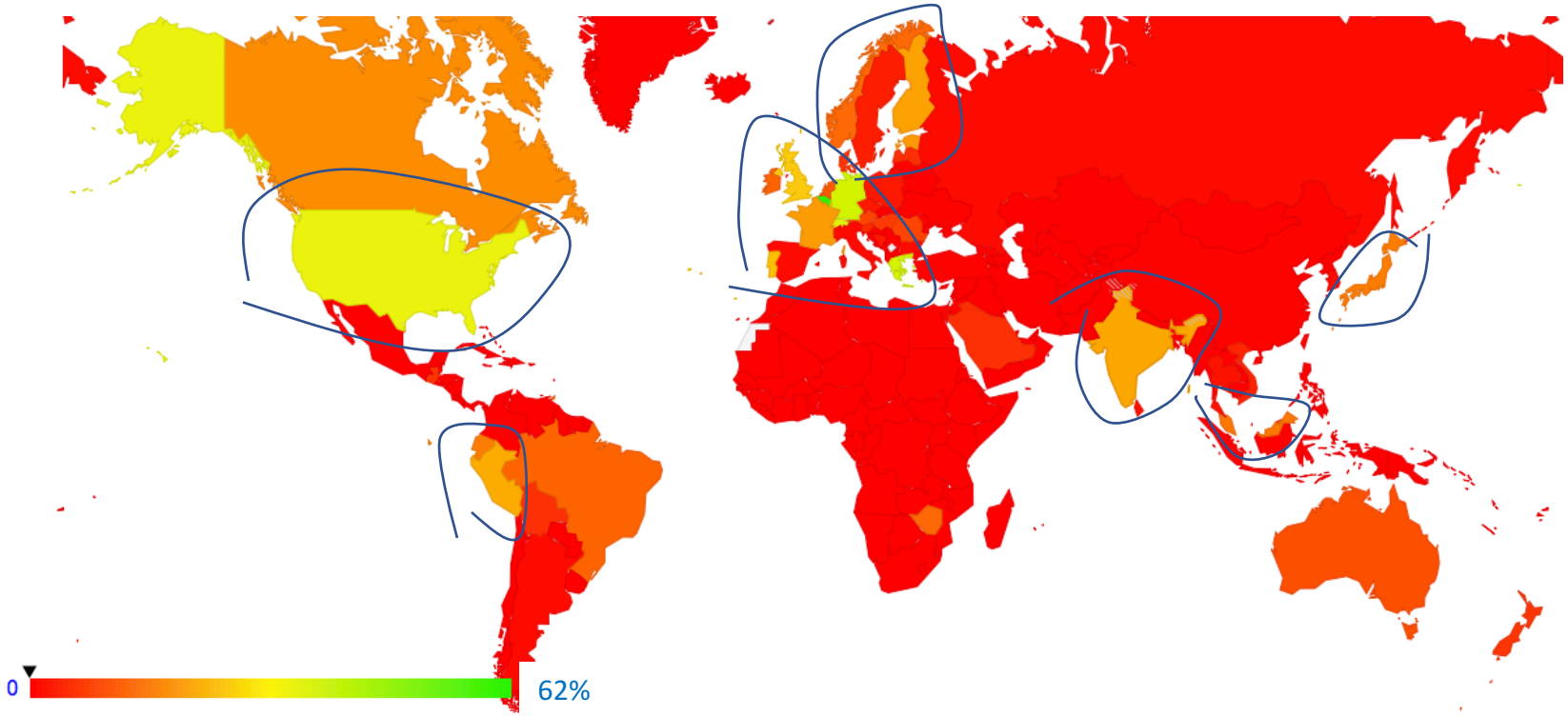
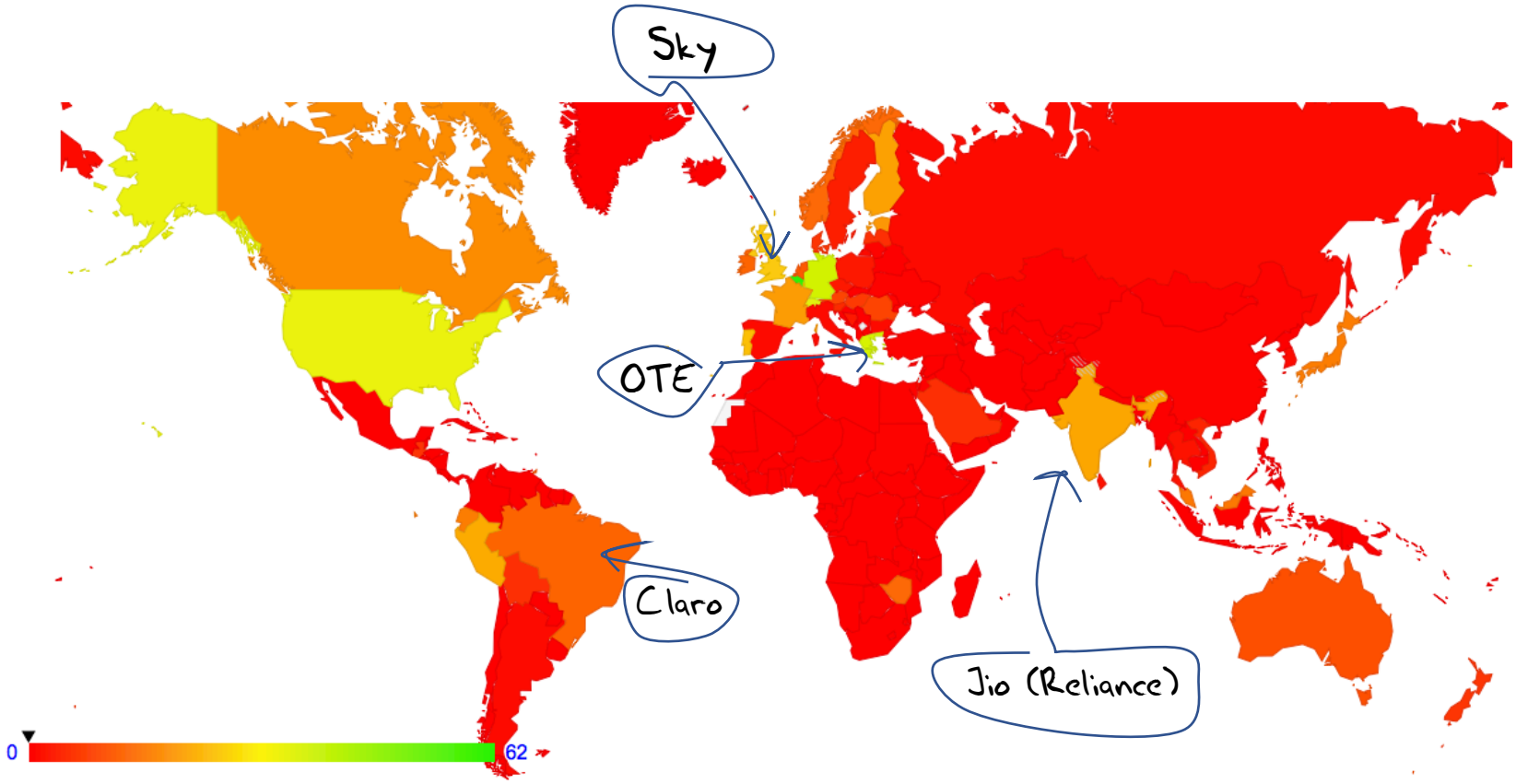
Up and to the Right…



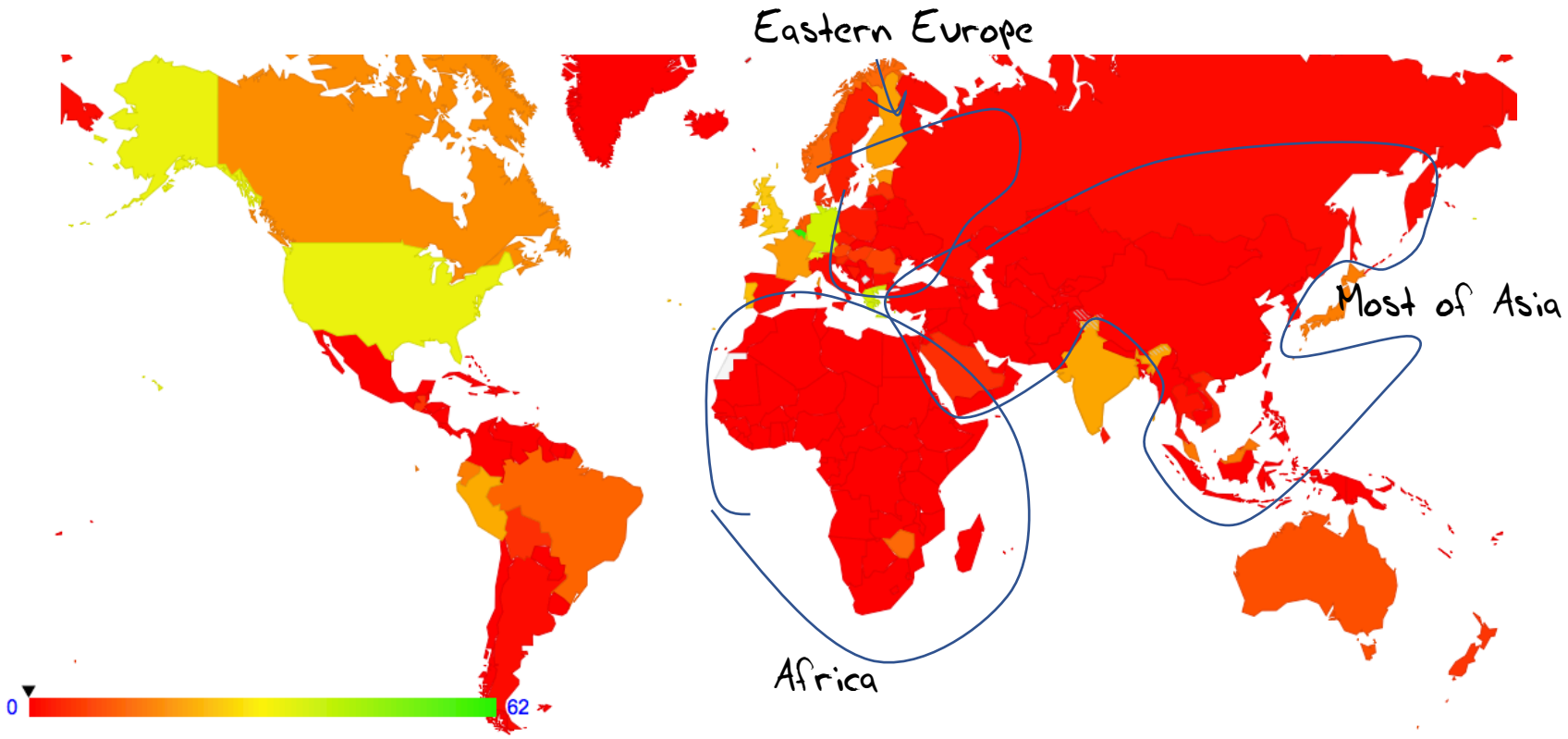
But not everywhere



IPv6 Deployments in 2016

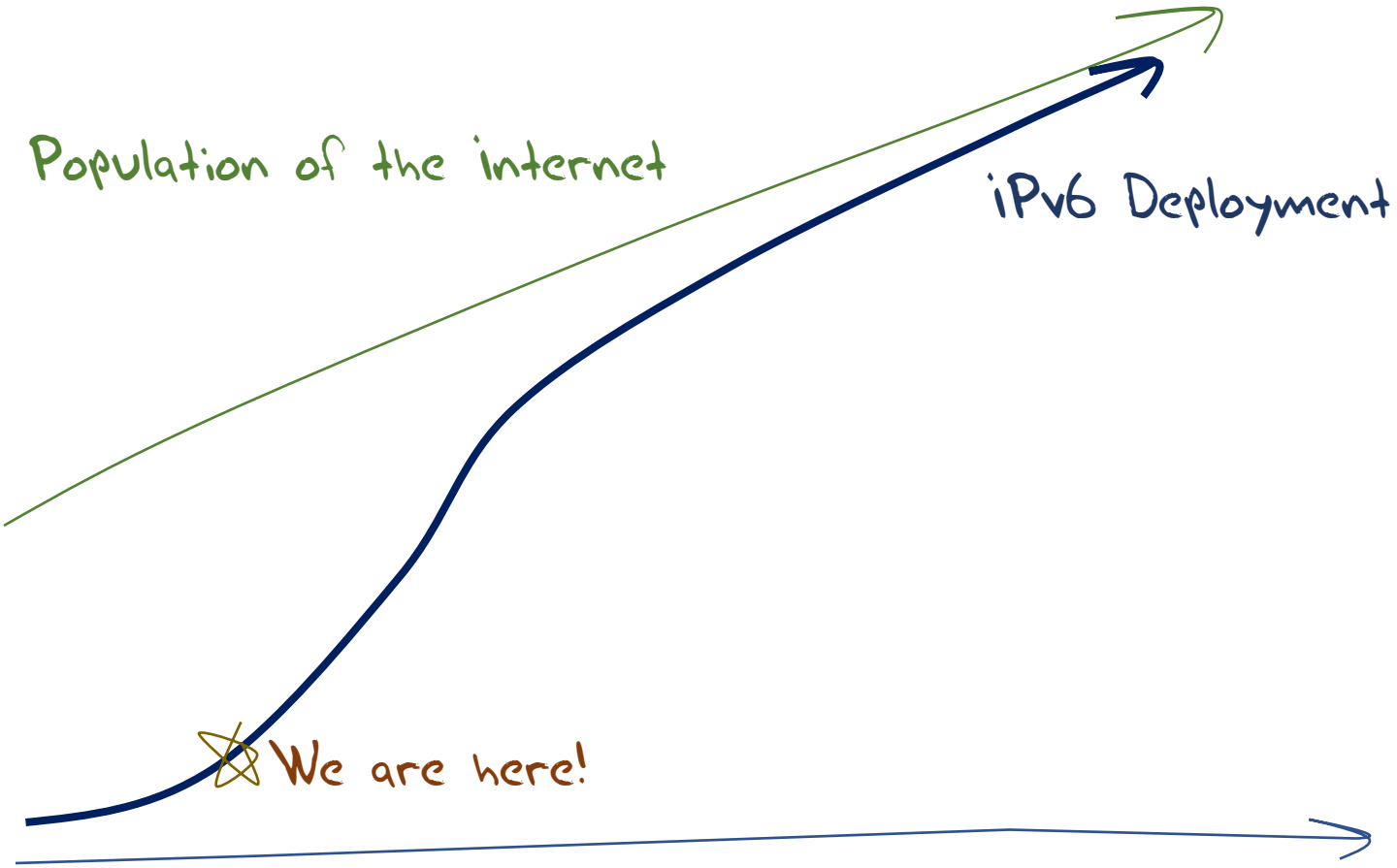


Where are the IPv6 Gaps?

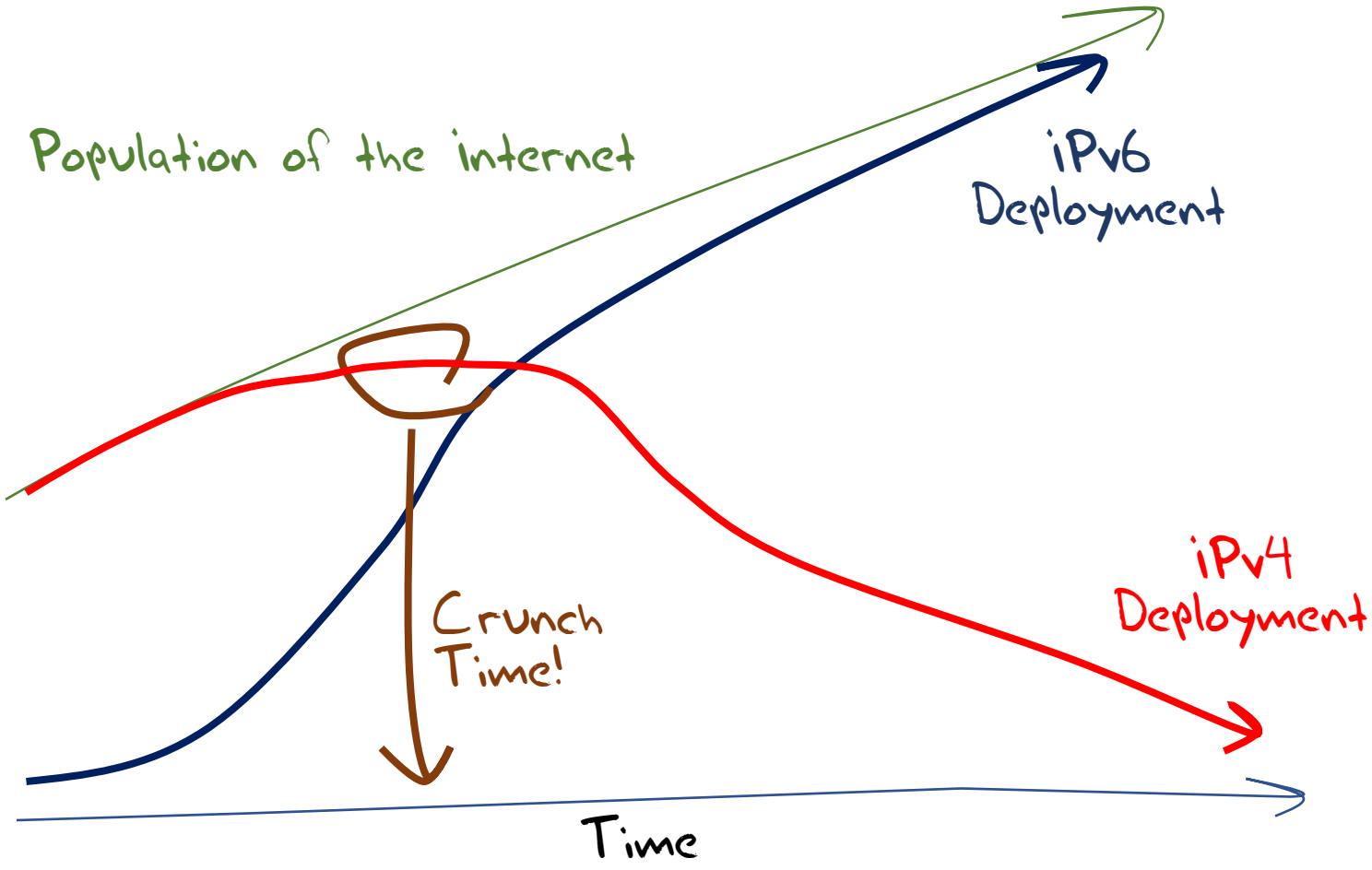


Where are the IPv6 Gaps?

The Dual Stack Transition



The Dual Stack Transition



The next few years…

So far we have been converting single stack IPv4 to Dual Stack (adding IPv6)

At some point in the near future some providers will stop supporting IPv4 and offer IPv6 only services

> Noone will wait until the last IPv4-only user has shifted to Dual Stack – this will happen well before that

When will remaining IPv4-only users, networks and services will be left stranded in a visibly smaller subset of the Internet?

> This “Crunch Time” will be determined by market forces and economic pressures

A GDP-based Market Valuation of IPv4 and IPv6 Service Providers

	ASN	Name	CC	Users	V4 Value ($B)	V6 Users	V6 Value ($B)
1	AS7922	COMCAST-7922 - Comcast Cable Communications, Inc.	US	53,000,000	2,900	34,000,000	1,867
2	AS4134	CHINANET-BACKBONE No.31,Jin-rong Street	CN	311,000,000	2,334	1,000,000	11
3	AS7018	ATT-INTERNET4 - ATT Services, Inc.	US	29,000,000	1,616	24,000,000	1,307
4	AS4837	CHINA169-BACKBONE CNCGROUP China169 Backbone	CN	159,000,000	1,196	0	3
5	AS3320	DTAG Deutsche Telekom AG	DE	21,000,000	1,020	10,000,000	523
6	AS701	UUNET - MCI Communications Services, Inc. dba Verizon Business	US	15,000,000	856	0	5
7	AS3215	AS3215 Orange S.A.	FR	18,000,000	817	4,000,000	182
8	AS17676	GIGAINFRA Softbank BB Corp.	JP	20,000,000	728	5,000,000	213
9	AS4713	OCN NTT Communications Corporation	JP	18,000,000	689	1,000,000	41
10	AS20115	CHARTER-NET-HKY-NC - Charter Communications	US	12,000,000	677	0	1
11	AS22773	ASN-CXA-ALL-CCI-22773-RDC - Cox Communications Inc.	US	11,000,000	634	4,000,000	224
12	AS2516	KDDI KDDI CORPORATION	JP	17,000,000	623	8,000,000	293
13	AS5607	BSKYB-BROADBAND-AS Sky UK Limited	GB	13,000,000	623	11,000,000	523
14	AS2856	BT-UK-AS British Telecommunications PLC	GB	13,000,000	609	1,000,000	48
15	AS5089	NTL Virgin Media Limited	GB	12,000,000	560	0	0
16	AS12322	PROXAD Free SAS	FR	12,000,000	552	3,000,000	153
17	AS1221	ASN-TELSTRA Telstra Pty Ltd	AU	9,000,000	546	1,000,000	96
18	AS3269	ASN-IBSNAZ Telecom Italia S.p.a.	IT	12,000,000	447	0	0
19	AS22394	CELLCO - Cellco Partnership DBA Verizon Wireless	US	8,000,000	442	7,000,000	400
20	AS3209	VODANET Vodafone GmbH	DE	9,000,000	432	0	0

		TOTAL		**3,275,934,751**	**51,797**	**263,017,762**	**9,496**
							18%

Market Dynamics

At the end of 2016, the Dual Stack user population represents a total GDP-based value of $9.4T, or 18% of the total value of the Internet's IPv4 user base

- If we used ARPU or similar metrics relating to revenue and margins, the recent mobile-based Dual Stack networks would carry a far higher relative value per user than older wireline networks, so this is a low bound estimate of the IPv6 value base

What is the threshold value that would allow a service provider to operate a IPv6-only service and write off the residual IPv4-only loss?

- "Crunch Time" happens when we reach that threshold!

It's possible that we could start to see this shift in the coming 12 months

- Its very likely that this will happen within 24 months

Thanks!