

IPV6 THE WAY - FORWARD

**GLOBAL
FORUM**
Shaping the Future
2011



GETTING IT RIGHT!

US-EU: INTERNET NATIONS

THE BIG SHOW IS IN ASIA

World Regions	Population (2011 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2011	Users % of Table
Africa	1,037,524,058	4,514,400	118,609,620	11.4 %	2,527.4 %	5.7 %
Asia 	3,879,740,877	114,304,000	922,329,554	23.8 %	706.9 %	44.0 %
Europe	816,426,346	105,096,093	476,213,935	58.3 %	353.1 %	22.7 %
Middle East	216,258,843	3,284,800	68,553,666	31.7 %	1,987.0 %	3.3 %
North America	347,394,870	108,096,800	272,066,000	78.3 %	151.7 %	13.0 %
Latin America / Carib.	597,283,165	18,068,919	215,939,400	36.2 %	1,037.4 %	10.3 %
Oceania / Australia	35,426,995	7,620,480	21,293,830	60.1 %	179.4 %	1.0 %
WORLD TOTAL	6,930,055,154	360,985,492	2,095,006,005	30.2 %	480.4 %	100.0 %

TOP 10 INTERNET USAGE AND POPULATION

COUNTRIES	Population (Est. 2010)	Internet Users, Latest Data	% Population (Penetration)	User Growth (2000-2010)	% Users In region
1 China	1,330,141,295	477,000,000	35.70%	1766.70%	50.90%
2 United States	310,232,863	245,000,000	78.20%	151.60%	90.10%
3 India	1,173,108,018	100,000,000	8.40%	1520.00%	10.00%
4 Japan	126,804,433	99,143,700	78.20%	110.60%	12.00%
5 Brazil	201,103,330	75,943,600	37.80%	1418.90%	37.90%
6 Germany	82,282,988	65,123,800	79.10%	171.30%	13.70%
7 Russia	139,390,205	59,700,000	42.80%	1825.80%	12.60%
8 United Kingdom	62,348,447	51,442,100	82.50%	234.00%	10.80%
9 France	64,768,389	44,625,300	68.90%	425.00%	9.40%
10 Korea, S.	48,754,657	19,040,000	39,440,000	80.9 %	4.2 %



WIKIPEDIA
The Free Encyclopedia

Article [Discussion](#)

List of countries by number of mobile phones in use

From Wikipedia, the free encyclopedia

Rank ⌵	Country or region ⌵	Number of mobile phones ⌵	Population ⌵	% of population ⌵	Last updated ⌵
—	 World	5,000,000,001	6,901,400,000	72.6	2010 ^[1]
1	 China	853,400,000	1,342,470,000	62.8	Jan 2011 ^{[2] [3] [4] [5]}
2	 India	752,190,678	1,194,390,000	63.22	Dec. 2010 ^[6]
3	 United States	292,847,098	310,866,000	91.0	June. 2010 ^{[7] [8]}
4	 Russia	213,900,000	141,914,509	147.3	Jun. 2010 ^{[9] [10]}
5	 Brazil	205,100,000	190,732,694	107.53	Jan. 2011 ^[11]
6	 Indonesia	168,264,000	237,556,363	73.1	May. 2009 ^[12]
7	 Pakistan	101,641,122	171,901,000	60.32	Nov.2010 ^[13]
8	 Japan	107,490,000	127,370,000	84.1	Mar. 2009 ^[14]
9	 Germany	107,000,000	81,882,342	130.1	2009 ^[15]
10	 Mexico	88,797,186	112,322,757	79.8	Sep.2010 ^[16]
11	 Italy	88,580,000	60,090,400	147.4	Dec.2008 ^[17]
12	 Philippines	78,000,000	92,226,600	73.6	January 2010 ^[18]
13	 Nigeria	76,000,000	158,259,000	50.3	Dec. 2009 ^[19]
14	 United Kingdom	75,750,000	61,612,300	122.9	Dec. 2008 ^[20]
15	 Turkey	66,000,000	71,517,100	92.2	2009 ^[21]
16	 Bangladesh	65,142,000	150,093,000	40.2	Sep. 2010 ^[22]
17	 France	58,730,000	65,073,842	90.2	Dec. 2008 ^[23]
18	 Thailand	56,170,908	65,001,021	81.0	2009 ^[citation needed]
19	 Ukraine	54,377,000	46,143,700	117.9	April. 2009 ^[24]
20	 Iran	52,000,000	75,078,000	69.3	2010 ^{[25] [26]}

When Everyone is on the Internet!

I N T E R N E T U S E R S W O R L D M A P 2 0 1 5





- 1 **Google**
google.com
Enables users to search the world's information, including
★★★★★ Search Analytics ► Audience ►
- 2 **Facebook**
facebook.com
A social utility that connects people, to keep up with friends
★★★★★ Search Analytics ► Audience ►
- 3 **YouTube - Broadcast yourself**
youtube.com
YouTube is a way to get your videos to the people who matter
★★★★★ Search Analytics ► Audience ►
- 4 **Yahoo!**
yahoo.com
A major internet portal and service provider offering search
★★★★★ Search Analytics ► Audience ►
- 5 **Baidu.com**
baidu.com
The leading Chinese language search engine, provides "similarity"
★★★★★ Search Analytics ► Audience ►



- 6 **Wikipedia**
wikipedia.org
A free encyclopedia built collaboratively using wiki software
★★★★★ Search Analytics ► Audience ►
- 7 **Blogger.com**
blogspot.com
Free, automated weblog publishing tool that sends updates
★★★★★ Search Analytics ► Audience ►
- 8 **Windows Live**
live.com
Search engine from Microsoft.
★★★★★ Search Analytics ► Audience ►
- 9 **Twitter**
twitter.com
Social networking and microblogging service utilising instant messaging
★★★★★ Search Analytics ► Audience ►
- 10 **QQ.COM**
qq.com
China's largest and most used Internet service portal owned by Tencent
★★★★★ Search Analytics ► Audience ►



**Which Country
is missing here?**

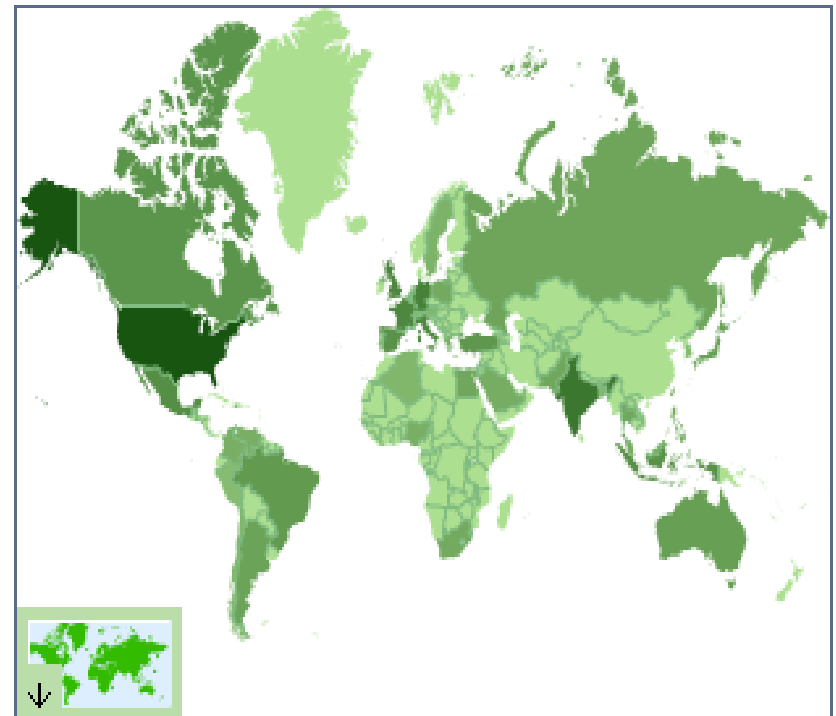
Facebook
facebook.com

Alexa Traffic Rank 2

Traffic Rank 2

Visitors by Country for Facebook.com

Country	Percentage of Site Traffic
 United States	25.1%
 India	6.8%
 Germany	4.5%
 United Kingdom	3.8%
 France	3.7%
 Italy	3.6%
 Mexico	2.9%
 Indonesia	2.5%
 Spain	2.4%
 Canada	2.3%



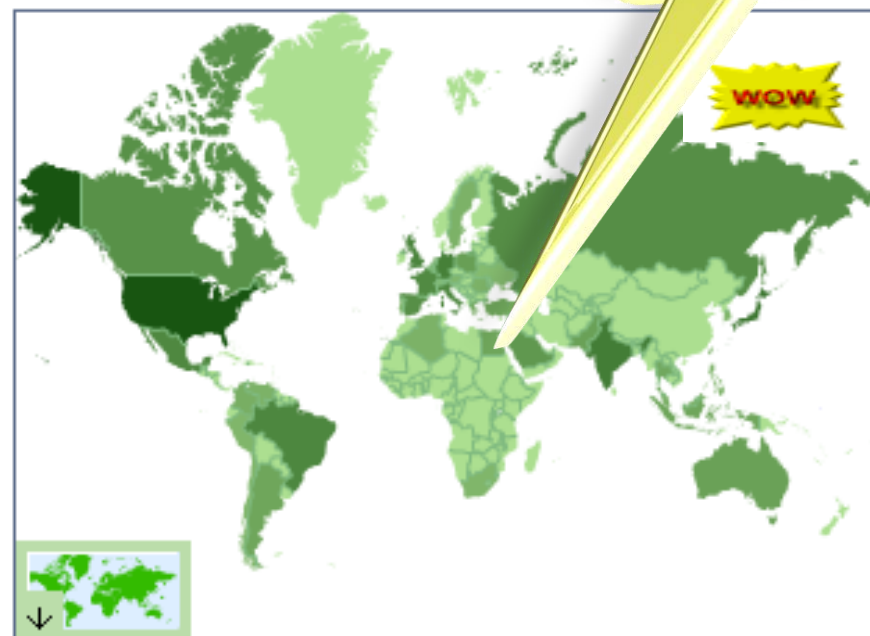
YouTube - Broadcast yourself
youtube.com

 3
Alexa Traffic Rank 

 4
Traffic Rank in US 

Visitors by Country for Youtube.com

Country	Percent of Site Traffic
 United States	22.2%
 Japan	6.1%
 India	5.0%
 Germany	4.5%
 United Kingdom	3.7%
 Brazil	3.5%
 Italy	3.4%
 Mexico	3.3%
 France	3.1%
 Russia	2.6%



**Which Country
is missing here?**



twitter.com

Twitter

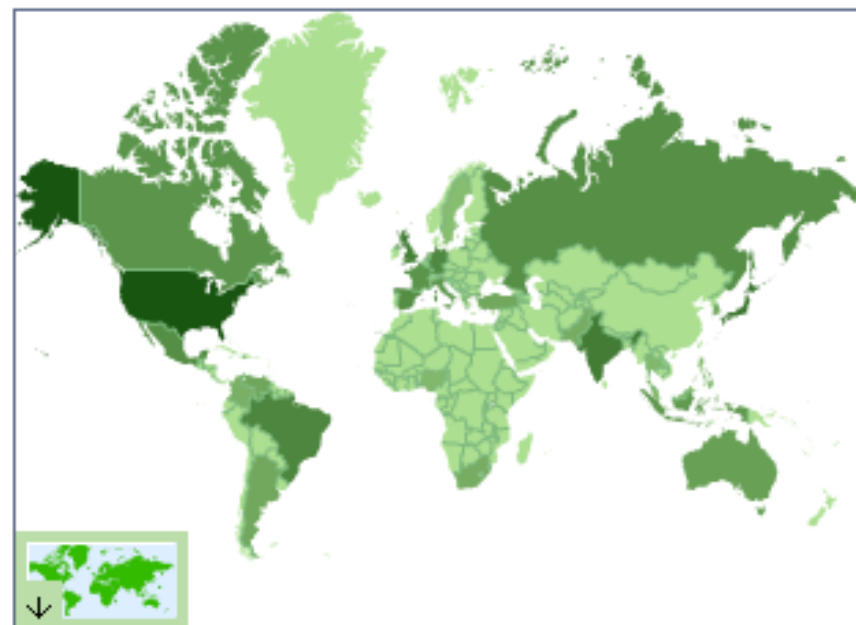
Alexa Traffic Rank

9

Global Rank

Visitors by Country for Twitter.com

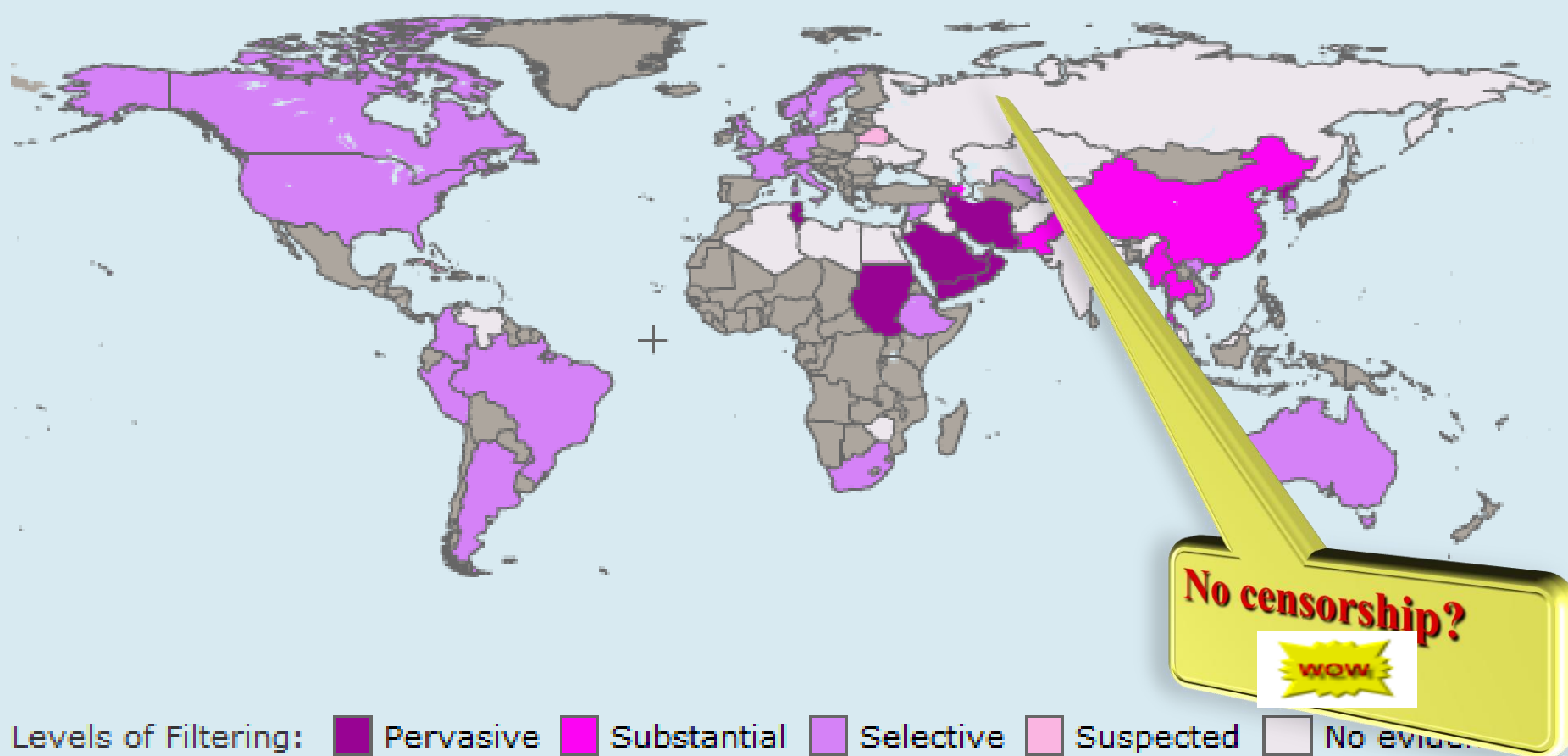
Country	Percent of Site Traffic
United States	27.6%
Japan	8.1%
India	6.1%
United Kingdom	5.4%
Brazil	4.1%
Germany	3.8%
Spain	3.2%
Mexico	3.0%
Russia	2.9%
France	2.4%





Social content: Content related to sexuality, gambling, and illegal drugs and alcohol, as well as other topics that may be socially sensitive or perceived as offensive.

"No data" sections display in grey. "No data" does not necessarily indicate absence of filtering practices. Please refer to regional summaries for more information.



Internet Generations

ArpaNET

InterNET
InterNAT

New InterNET

NCP

IPv4/NAT

IPv6

Pioneers

Innovators
NAT engineers

EveryOne
Everything

Email, FTP

WWW- Client/Server

Wireless, Streaming
Media, P2P, GRID

TOURISTS

RESIDENTS

Gov. Internet

Public Internet

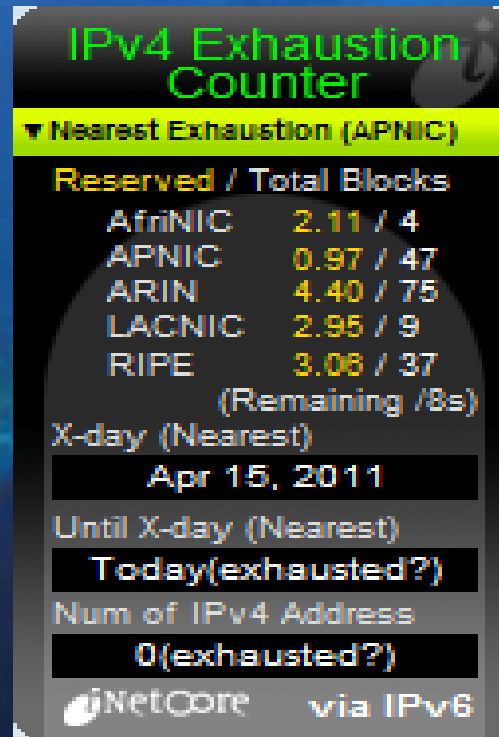
Global Internet

The IPv4 Address Exhausting Debate ☺

Central IANA Pool



Registry Pool



In Blissful Ignorance:
IPv6 Networking is tottaly different
from IPv4 Networking.
It's a whole new world.

Nicolas **Fischbach**, Director, Network Strategy
and Architecture, Infrastructure Services

Unit, COLT



All ISPs will have to take off like this!”

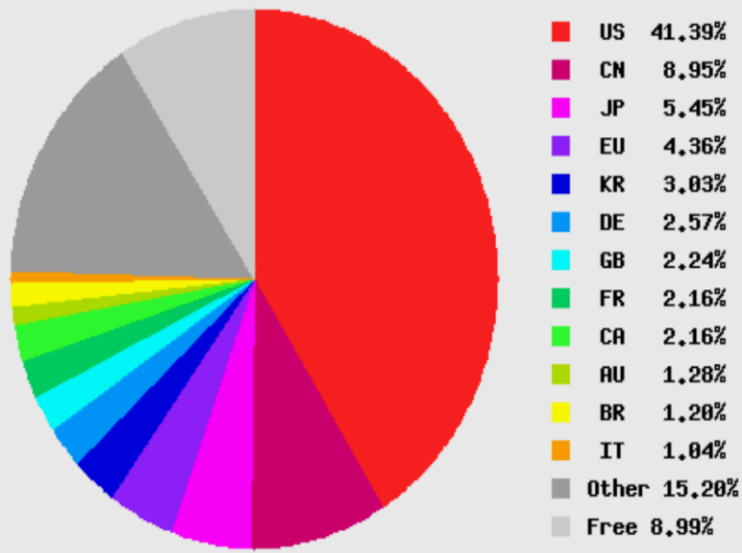
Anonymous 2010



US has 1530 M IPv4 addresses, with 5.5 IP addresses per citizen

Total number of IPv4 addresses:

2 ³² :	4294967296	4294.97 million
Class D+E:	536870912 -	536.87 million -
Nets 0 and 127:	33554432 -	33.55 million -
RFC 1918:	17891328 -	17.89 million -
	-----	-----
Usable:	3706650624	3706.65 million



IPv4 addresses per country:

Country	Country code	Addresses	Per capita
United States	US	1534.03 million	5.51
China	CN	331.63 million	0.26
Japan	JP	202.08 million	1.59
Europe, country unspecified	EU	161.49 million	
South Korea	KR	112.21 million	2.40
Germany	DE	95.34 million	1.16
United Kingdom	GB	82.90 million	1.39
France	FR	80.09 million	1.35
Canada	CA	79.97 million	2.57
Australia	AU	47.55 million	2.52
Brazil	BR	44.43 million	0.26
Italy	IT	38.38 million	0.67
Russian Federation	RU	36.03 million	0.25
Taiwan	TW	35.38 million	1.59
India	IN	34.65 million	0.03
Spain	ES	25.26 million	0.64
Netherlands	NL	24.98 million	1.57
Mexico	MX	23.46 million	0.24
Sweden	SE	22.90 million	2.58
South Africa	ZA	20.31 million	0.50
Poland	PL	17.72 million	0.46
Indonesia	ID	17.32 million	0.08
Vietnam	VN	15.51 million	0.19
Turkey	TR	13.07 million	0.20
Argentina	AR	12.30 million	0.33
Denmark	DK	11.23 million	2.11
Switzerland	CH	10.75 million	1.50
Norway	NO	10.34 million	2.31

Number of IPv6 Prefixes

IPv6 DFP's per country

Total number of countries: 173

Pos	Flag	Country	V	A	VP
1		United States 	928	2322	9.36%
2		Germany	353	564	3.56%
3		Brazil	106	530	1.07%
4		United Kingdom (Great Britain)	217	441	2.19%
5		Australia	123	414	1.24%
6		Russia	183	354	1.85%
7		Netherlands, The	216	336	2.18%
8		Japan	139	319	1.40%
9		France	124	254	1.25%
10		Canada	113	226	1.14%
11		Sweden	104	193	1.05%
12		Switzerland	114	182	1.15%
13		Italy	76	169	0.77%
14		Czech Republic	111	157	1.12%
15		China	29	155	0.29%
16		Poland	95	149	0.96%
17		Indonesia	63	146	0.64%
18		Austria	105	140	1.06%
19		New Zealand	42	135	0.42%
20		India	24	125	0.24%

There is now a flurry of IPv6 SIGNALS and Initiatives !

Oct 7, 2011: Organisations must prepare for switch to IPv6, warns Ovum

ovum



The Society of Cable Telecommunications Engineers (SCTE) this week formed the IPv6 Deployment Working Group

NETWORKWORLD®

Startup promotes simultaneous upgrades to IPv6 & Cloud

"What we have realised is that for IPv6 and cloud, the adoption processes are very much aligned," says Ciprian Popoviciu, president and CEO of Nephos6 and a 13-year veteran of Cisco. "They're aligned, and they are interdependent....We see a lot of value in companies pursuing both goals in a more cost-effective way."

nephos6

Business Transformation One Step at a Time

Way Forward





**NAT
SHACKS**

The New Internet Tornadoes

Causing the Tornadoes

IPv4 Internet

IPv6 Internet

10 Killer Apps bigger than the Web!!!

WEB/Email

Broadband
IPTV
VoIP

P2P
Ad Hoc

LTE
3G

IoT

HN

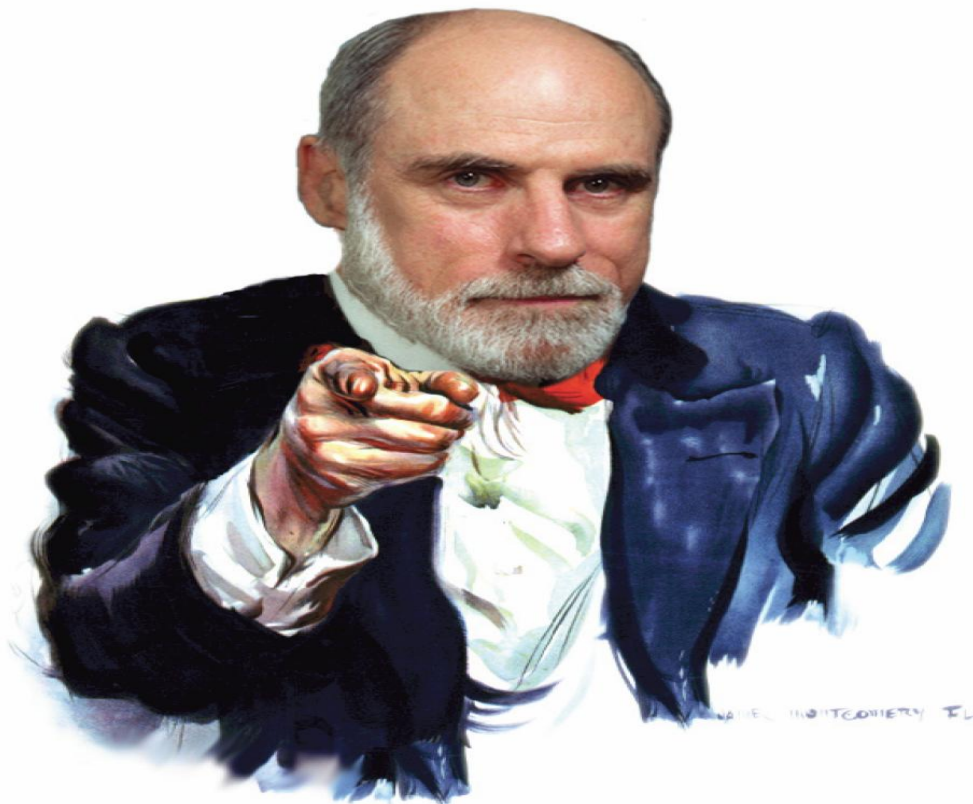
ITS

Deployment
Rate



**Don't Wait For Killer Apps!
Cause Them To Happen!**

Go Forward



**I WANT YOU
TO USE IPv6**

— VINT CERF

It's about Job and Wealth Creation!



<http://www.youtube.com/watch?v=jbkSRLYSojo>

Hans Rosling's 200 Countries, 200 Years, 4 Minutes - The Joy of Statistics

BBC

9,776 videos

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