



# Business Opportunities and IPv6



These aren't the  
'Droids You're  
Looking For





# IPv6Now

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# IPv6

Where do new  
Business Models  
come from?



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# Inspiration from the Past - 1

Thomas J Watson Snr (IBM) 1943:

***“I think there is a world market for maybe five computers”***

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# Inspiration from the Past - 2

William Henry Gates III (Microsoft) 1972:

***"640kb ought to be enough for anybody."***



# Why were they Inspiring?

Both of their respective companies went on to:

- *dominate newly established industry sectors*
- *generated record profits from their new products*
- *spectacular growth rates*

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# Today's Statement...

Kevin John Karp (IPv6Now) 2012:

***"The world will never need more than 4.3billion IP addresses"***





# ... but Why?

- The typical Internet user knows and loves their IPv4
- Internet utilisation has peaked at current levels of utilisation and there is no growth
- Peer to peer is not an opportunity for new business models

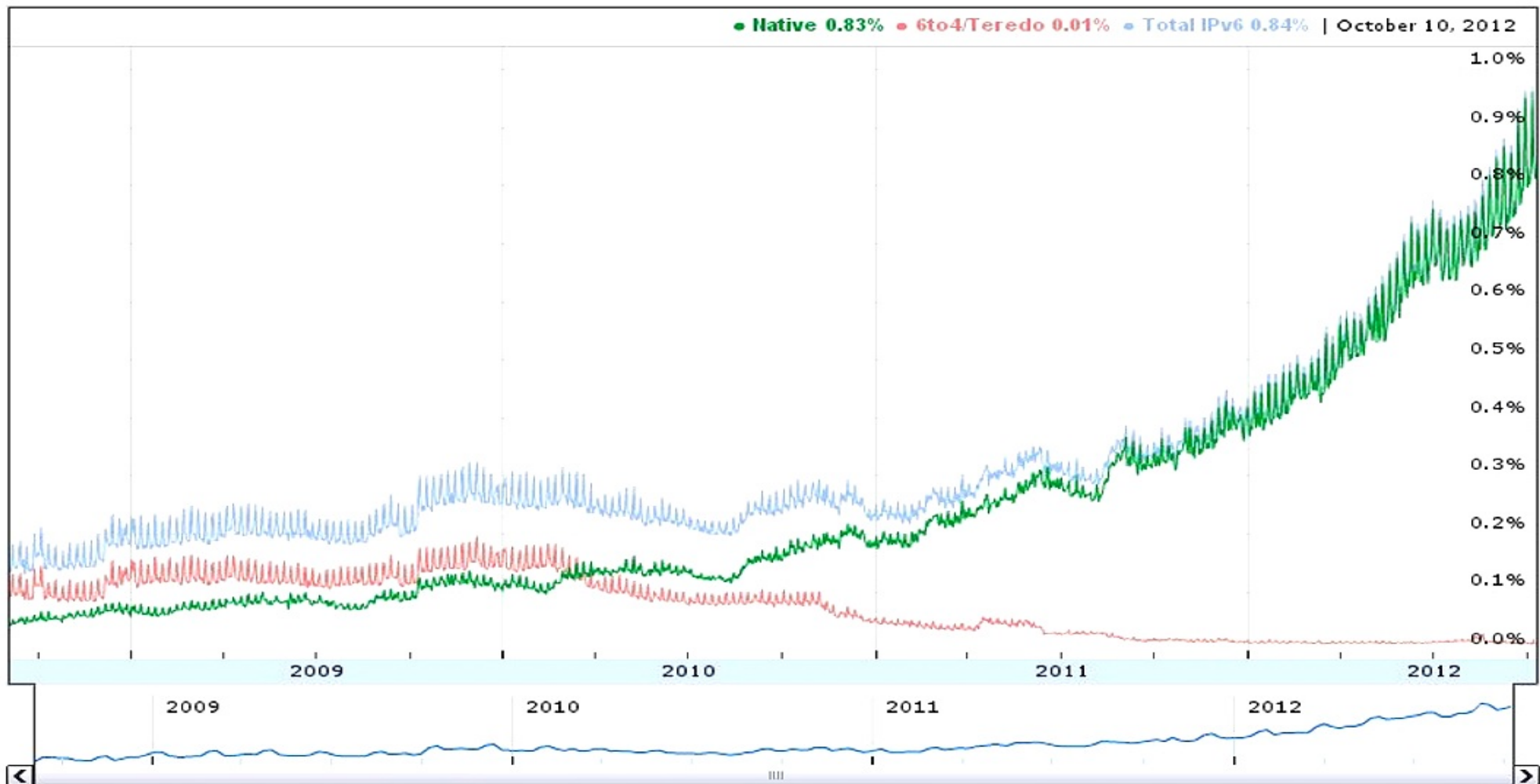


# V6 Utilisation - Now

## IPv6 Adoption

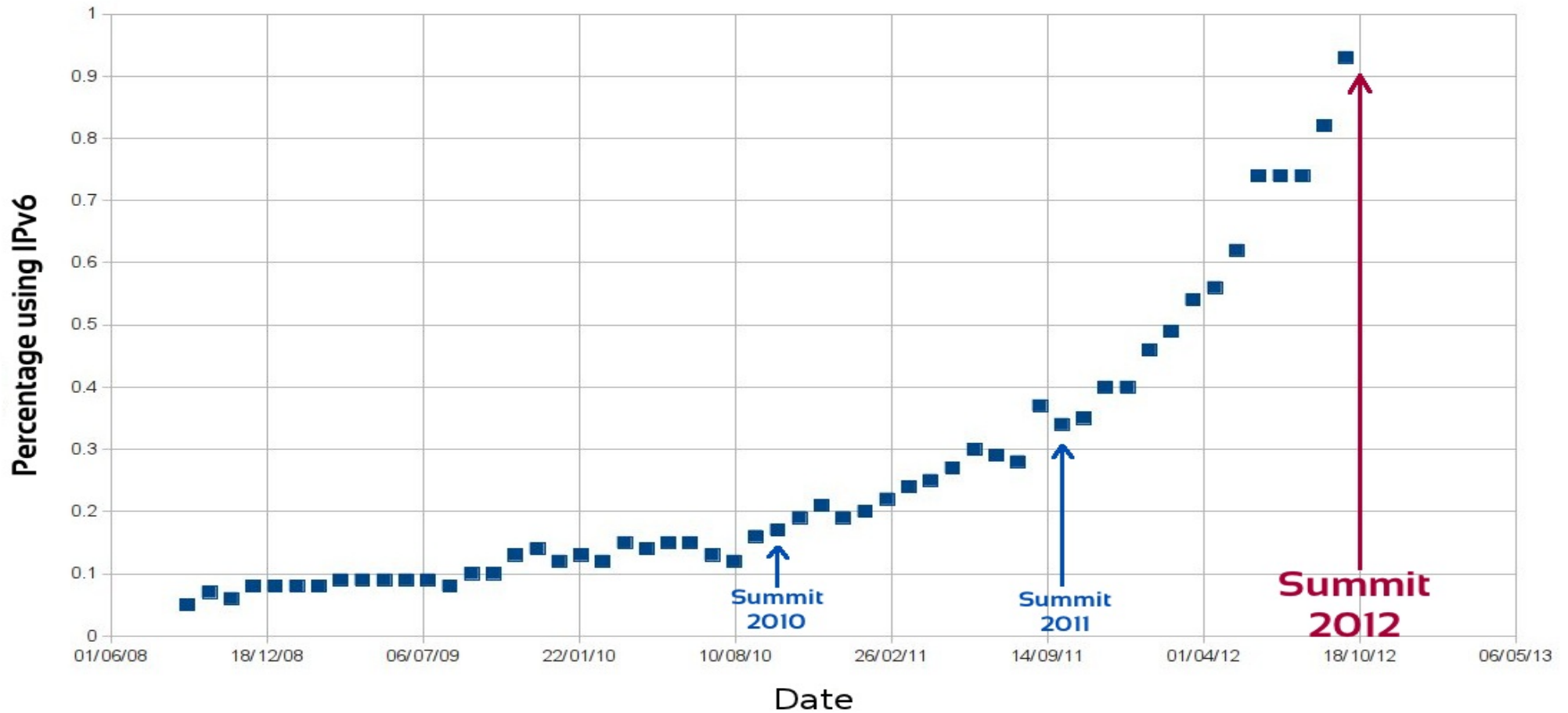
<http://www.google.com/ipv6/statistics.html>

We are continuously measuring the availability of IPv6 connectivity among Google users. The graph shows the percentage of users that access Google over IPv6.

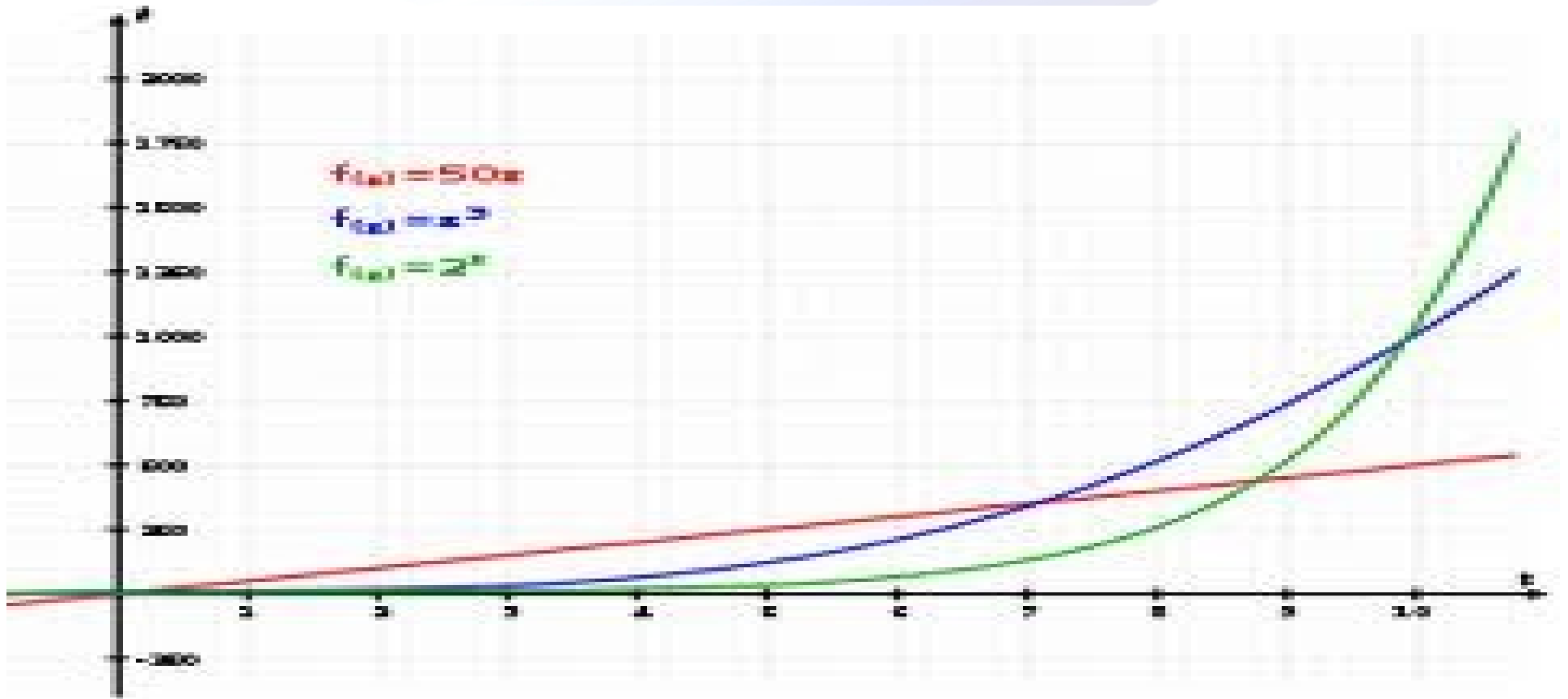


# V6 Utilisation - Now

Percentage of native IPv6 usage at Google sites globally



# V6 Utilisation - Now



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# Exponential growth

From Wikipedia, the free encyclopedia

**Exponential growth** (including [exponential decay](#) when the growth rate is negative) occurs when the growth rate of the value of a mathematical function is [proportional](#) to the function's current value. In the case of a discrete [domain](#) of definition with equal intervals it is also called **geometric growth** or **geometric decay** (the function values form a [geometric progression](#)). The exponential growth model is also known as the [Malthusian growth model](#).

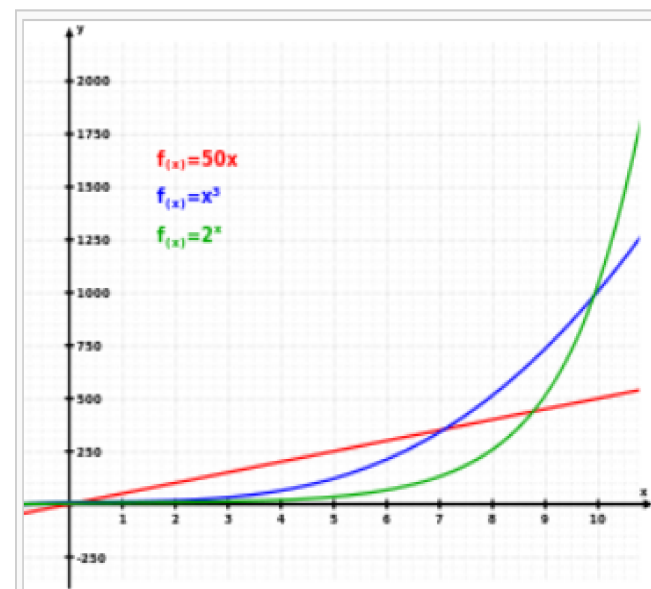
The formula for exponential growth of a variable  $x$  at the (positive or negative) growth rate  $r$ , as time  $t$  goes on in discrete intervals (that is, at integer times  $0, 1, 2, 3, \dots$ ), is

$$x_t = x_0(1 + r)^t$$

where  $x_0$  is the value of  $x$  at time 0. For example, with a growth rate of  $r = 5\% = 0.05$ , going from *any* integer value of time to the next integer causes  $x$  at the second time to be 1.05 times (i.e., 5% larger than) what it was at the previous time.

## Contents [\[hide\]](#)

- Applications
- Basic formula
- Reformulation as log-linear growth
- Differential equation
- Difference equation
- Other growth rates
  - 6.1 Comparison with convex growth
- Limitations of models

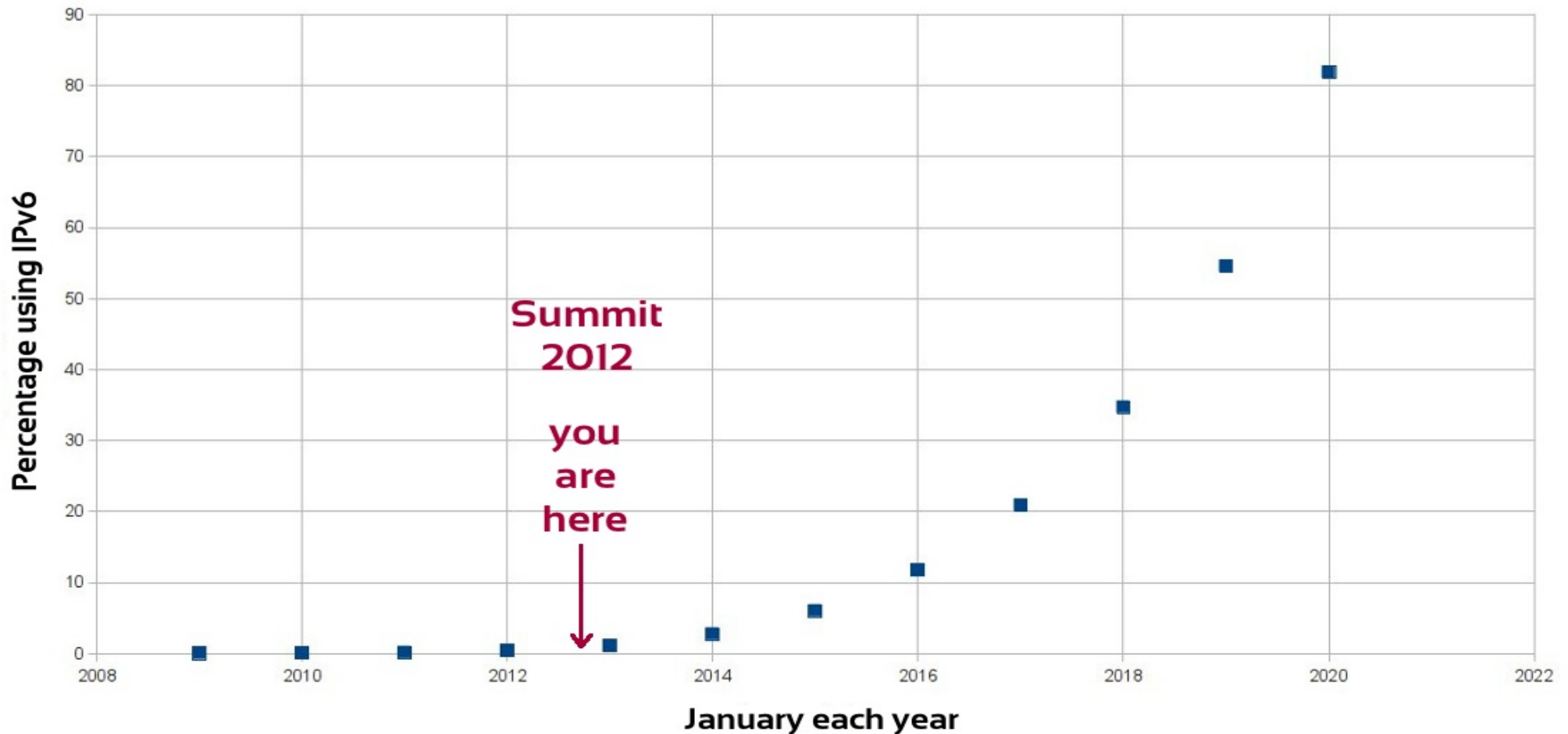


The graph illustrates how exponential growth (green) surpasses both linear (red) and cubic (blue) growth.

- Exponential growth
- Linear growth
- Cubic growth

# V6 Utilisation - Future

Extrapolated percentage of native IPv6 usage at Google sites globally



# There are no new IPv6 Business Models

***Bloomberg***  
***January 14, 2007***  
***Matthew Lynn***

<http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aReIVKWbMAv0>

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# There are no new IPv6 Business Models

Apple iPhone Will Fail in a Late, Defensive Move: Matthew Lynn

Commentary by Matthew Lynn - January 14, 2007 19:28 EST

Jan. 15 (Bloomberg) -- Few products have been launched with such a blizzard of publicity as [Apple Inc.](#)'s iPhone.

To its many fans, Apple is more of a religious cult than a company. An iToaster that downloads music while toasting bread would probably get the same kind of worldwide attention.

Don't let that fool you into thinking that it matters. The big competitors in the mobile-phone industry such as [Nokia Oyj](#) and [Motorola Inc.](#) won't be whispering nervously into their clamshells over a new threat to their business.

The iPhone is nothing more than a luxury bauble that will appeal to a few gadget freaks. In terms of its impact on the industry, the iPhone is less relevant.

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# There are no new IPv6 Business Models

## *Studentnet*

<b>2008</b>	<b>4,000 students/accounts</b>
<b>2009</b>	<b>6,000</b>
<b>2010</b>	<b>8,500</b>
<b>2011</b>	<b>12,000</b>
<b>2012</b>	<b>17,000</b>

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# Business Opportunity?



How do BYOD &  
Peer-Peer change the  
way a school works  
with its students?

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# What happens if we do nothing?



# Will the sky fall in?



# NO!

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# What will Happen?

- IPv4 address trading
- IPv4 address recovery
- NAT my NAT: Carrier grade NAT
- Lucky I've got those spare /24's!
- IPv4 will be with us for years to come

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# Phew – So we're safe!



## Almost...

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# We're Safe – Technology

- Limited number of session states for NAT operation
- Best case: 65,536 max number of sessions, for a single IPv4 address
- 2,000 users, for 30 sessions each

But Web2(AJAX) sites.....

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# We're Safe – Technology

Yahoo top page	10-20
Googleimage search	30-60
iTunes	230-270
iGoogle	80-100
Amazon	90
YouTube	90

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# We're Safe – Markets



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**These aren't the 'Droids  
You're Looking For...**

**To all my competitors in  
the room...**

**There are NO Business  
Opportunities in IPv6!**

**IPv6  
Now**



***Thank you***

Kevin Karp  
Managing Director  
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