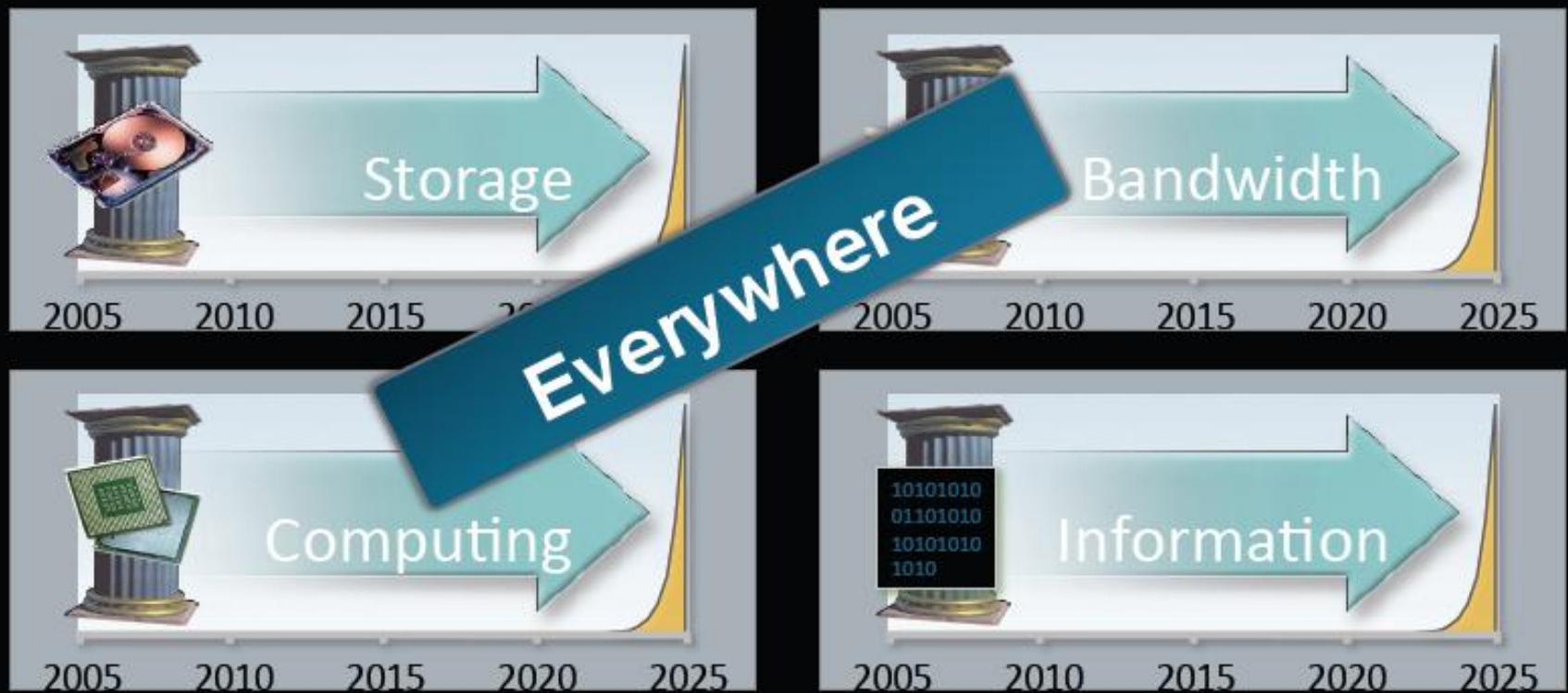




Internet of Things:

First Evolution of the Internet

Exponential Growth Is Occurring in the Four Pillars of Technology





2

The Internet of Things

The Web Has Gone Through Four Distinct Phases



Phase 1

Academia
(ARPANET)

.com
.net .org
.co.uk
.org.uk
.us. eu
.biz .info
.me.uk .name

Phase 2

Informational
(Brochureware)



Phase 3

Transactional
(E-commerce)



Phase 4

Social
(Web 2.0)

Internet Growth



**The Internet will
double in size
every 5.32 years**

Internet map as of January 16, 2009

Sources: Cisco IBSG, 2006–2011; *New Journal of Physics*, Guardian UK; Internet Mapping Project, Bell Labs/Lumeta Corporation, all 2009



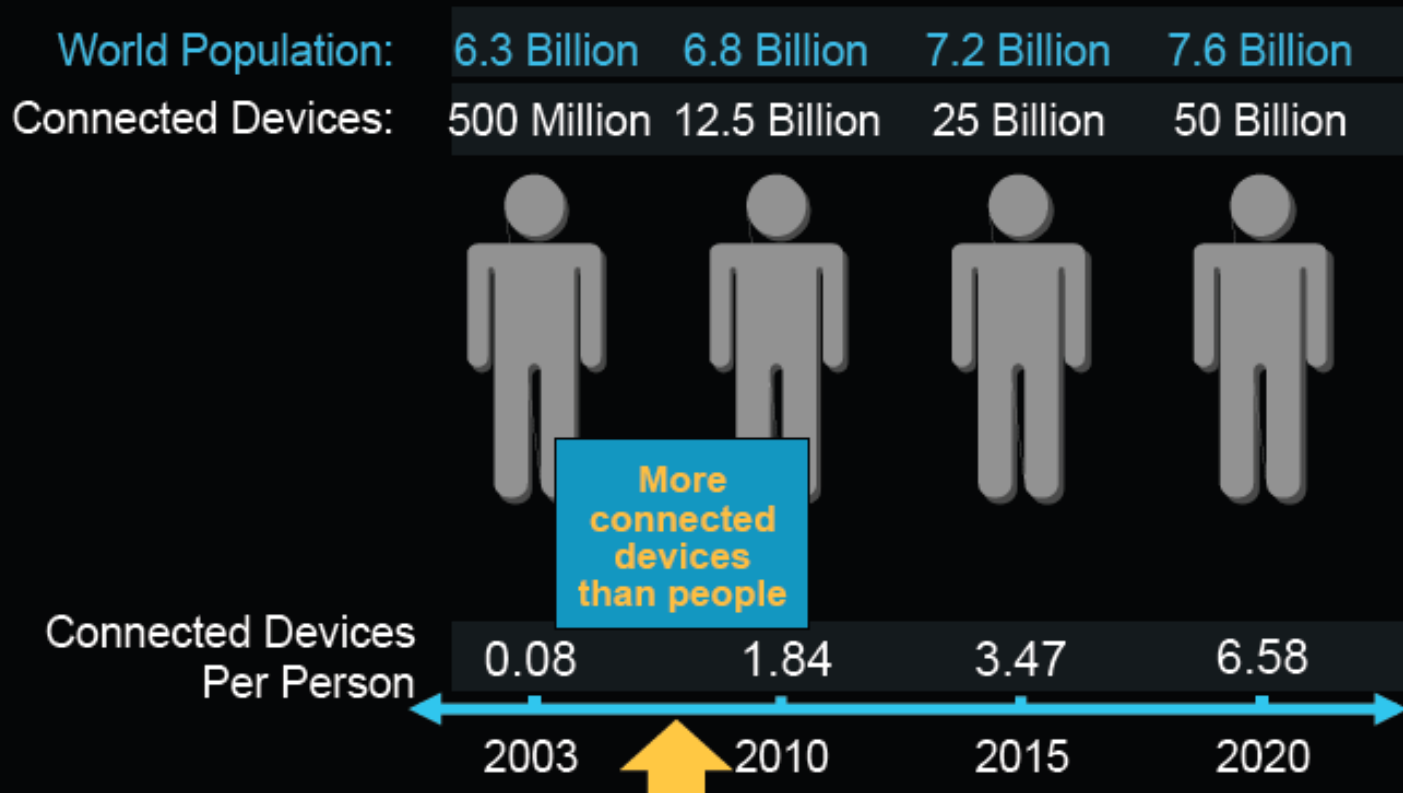
The Internet of Things is simply the point in time when more things were connected to the Internet than people.



— Dave Evans

Cisco's Chief Futurist and Chief Technologist for Cisco IBSG

The Internet of Things Is Already Here: The First True Evolution of the Internet



- More mobile than fixed
- New architecture models
- New protocol (IPv6)
- Sensor-laden
- More machines than people

New Internet Inhabitants: What do trees, cows, shoes, and your body have in common?



This **tree** has 3,000 followers...do you?



Cow transmits 200 MB per year



Connected **shoe**



Asthma inhaler cross-referenced with environmental / weather data



Proteus chip transmits data from your stomach

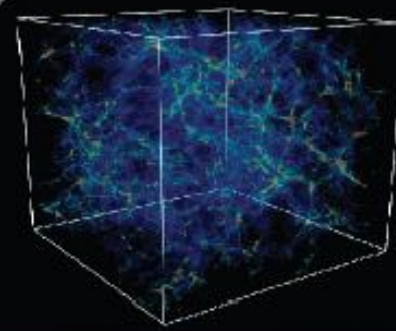
IPv6: Connectivity Without Meaningful Limits



52,000 trillion trillion
addresses
per person



100 addresses for
every atom on the
earth's surface



4.8 trillion addresses
for **every star** in the
known universe

IPv4 addresses:

4,294,967,296

IPv6 addresses: 340,282,366,920,938,463,463,374,607,431,768,211,456

Sources: Cisco IBSG, 2006–2011; Steve Leibson, Computer History Museum; CNN



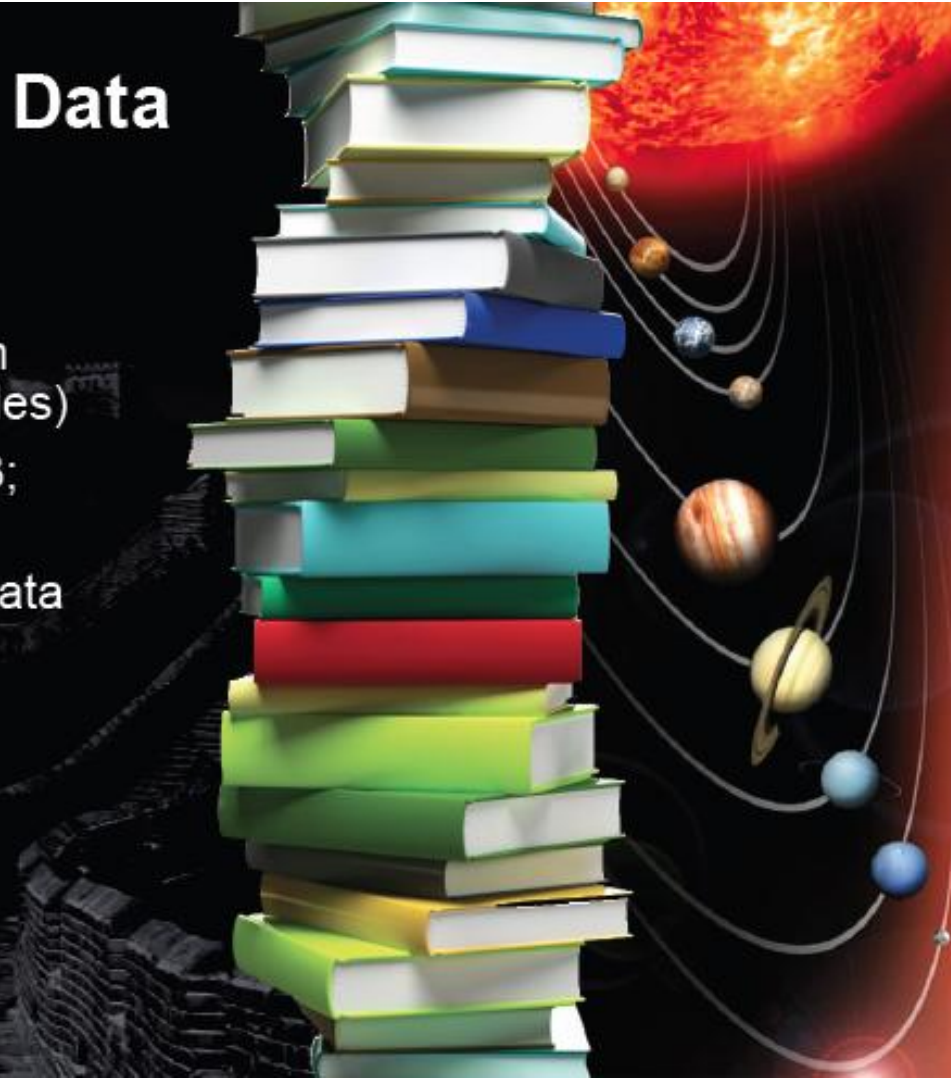
3

Information Explosion

By 2015, 1 Zettabyte of Data Will Flow over Internet

- **One zettabyte** = stack of books from Earth to Pluto 20 times (72 billion miles)
- Increase of 540,000 times from 2003; more than 90% from video
- By 2015, almost 1 zettabyte of this data will traverse the network annually
- If an 11 oz. cup of coffee equals 1 gigabyte, then 1 zettabyte would have the same volume of the Great Wall of China

Sources: Cisco Visual Networking Index (VNI), June 2011





CISCO

Key Takeaway

Device proliferation, security, and mobility demand a next-generation network



Internet of Things and IPv6 Resources

- **Cisco IPv6 site:** <http://www.cisco.com/web/solutions/netsys/ipv6/index.html>
- **Cisco IPv6 blogs:** <http://blogs.cisco.com/tag/ipv6/>
- Suite of **IPv6 services** offered to assist customers from all market segments in assessing their migration needs: http://www.cisco.com/en/US/products/ps6553/products_ios_technology_home.html#~svcs
- **IPSO Alliance** is the primary advocate for IP networked devices for use in energy, consumer, healthcare and industrial applications: <http://ipso-alliance.org/>
- **Cisco IBSG website:** www.cisco.com/go/ibsg