

Internet Generations

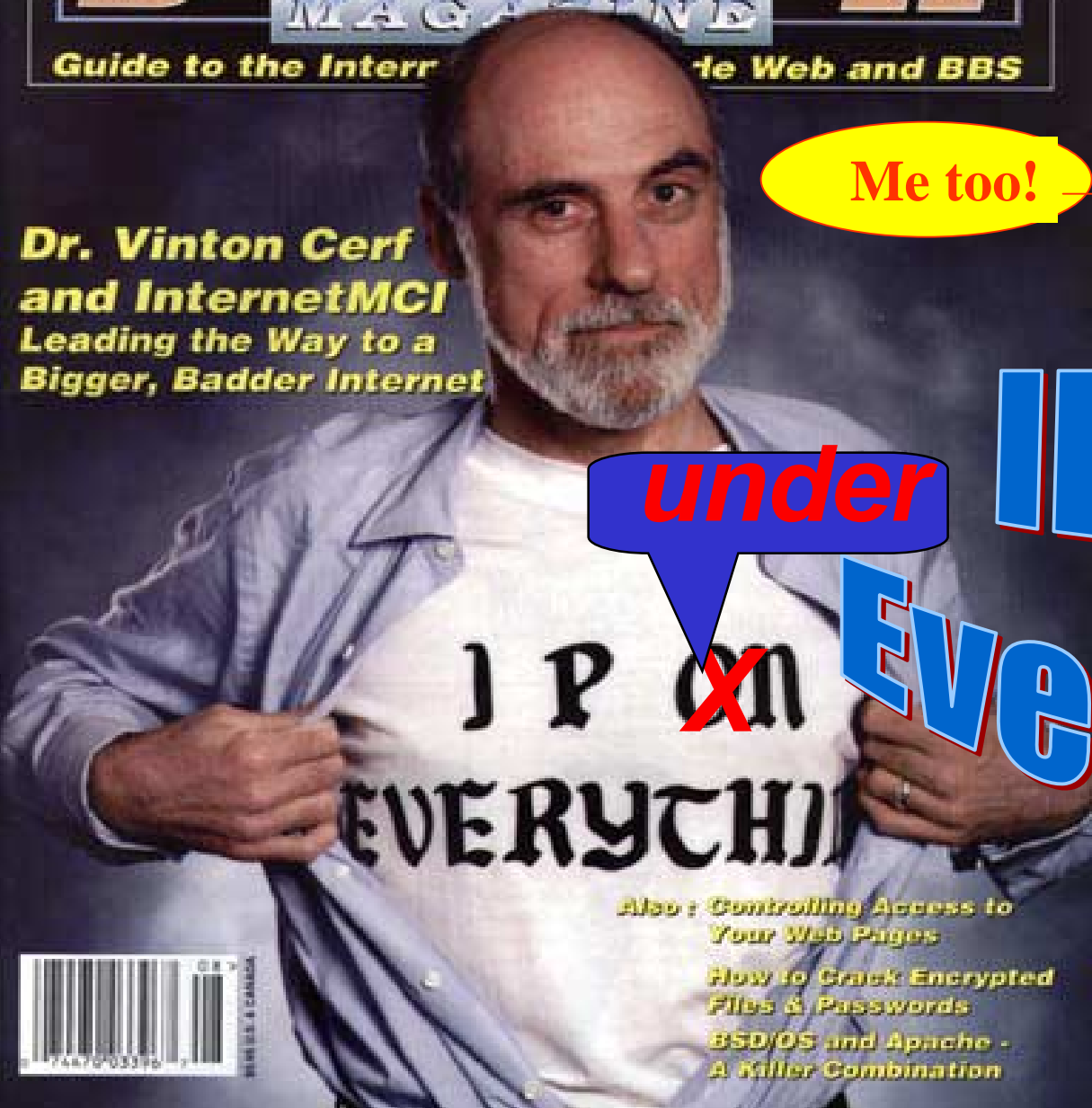
RFN

VISIONS
ILLUSTRATIONS

BOARDWATCH MAGAZINE

Guide to the Internet, the Web and BBS

**Dr. Vinton Cerf
and InternetMCI**
Leading the Way to a
Bigger, Badder Internet



Me too!

under

IPv6 on

Everything

1996



Also: Controlling Access to
Your Web Pages
How to Crack Encrypted
Files & Passwords
BSD/OS and Apache -
A Killer Combination

Internet Generations

1G

NCP

Pioneers

Email, FTP

Gov. Internet

ARPANET

2G

IPv4

Innovators

WWW

Public Internet

INTERNET

3G

IPv6

EveryOne
Everything

Wireless, Streaming
Media, Peer-2-Peer

Global Internet

NEW INTERNET

TOURISTS

RESIDENTS

UNEVEN DIFFUSION OF TECHNOLOGY

INTERNET USERS—STILL A GLOBAL ENCLAVE

The large circle represents world population.
Pie slices show regional shares
of world population.
Dark wedges show Internet users.

USA 54%

WORLD
8%

PHONE NETWORK: 1.2 Billion -> 20%

INTERNET USERS: 0.5 Billion -> 8%

INTERNET HOSTS: 200 M Hosts -> 2%

NO e2e : NOBODY KNOWS !

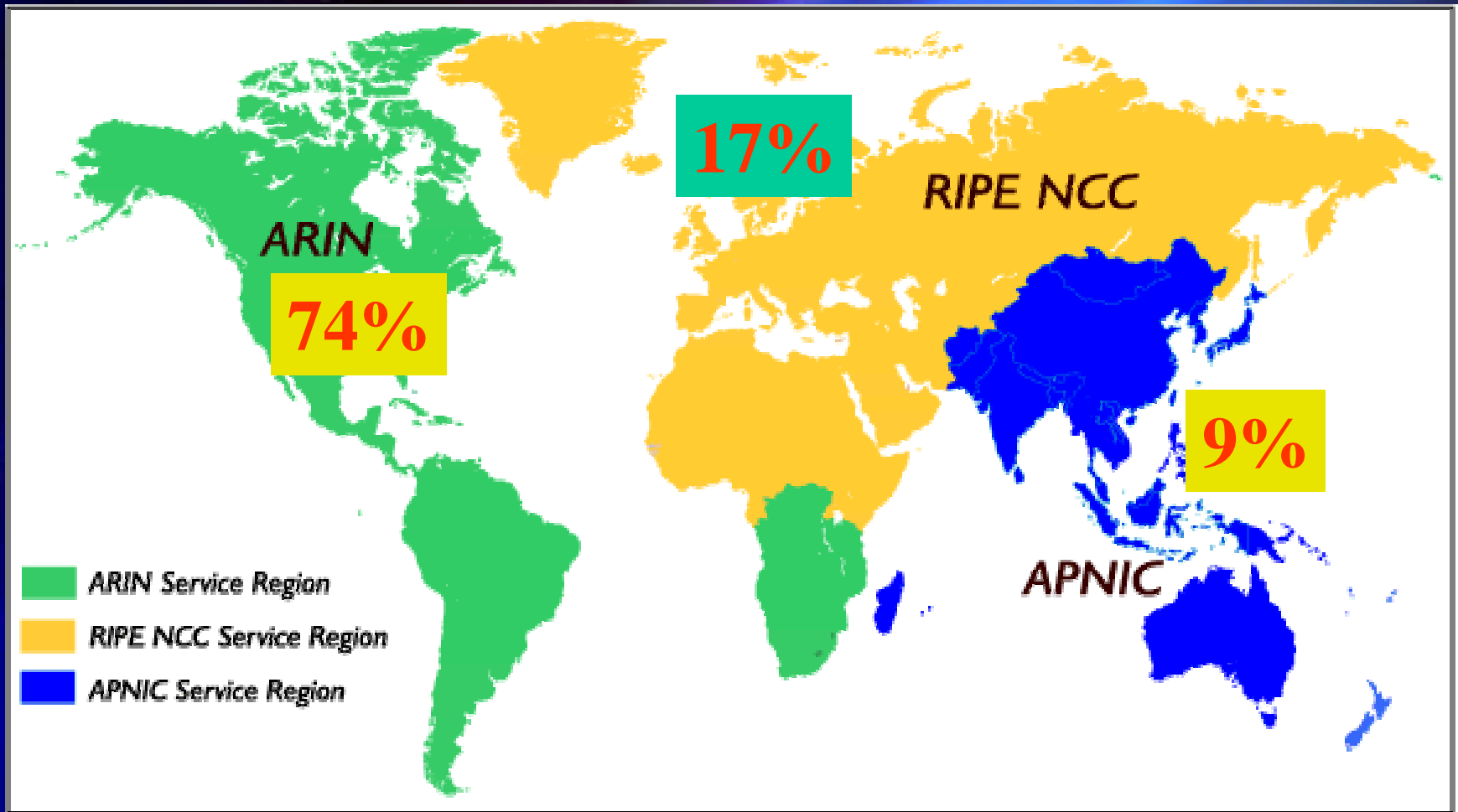
Perceived Digital Divide



CIA Factbook

BGP Table

Uneven Distribution of IPv4 Address Space

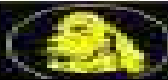


IPv4 Address

Space is Melting!

So, is identity and
therefore Security!

Current Future of the Internet !



<http://www.multimania.com/ydog/>

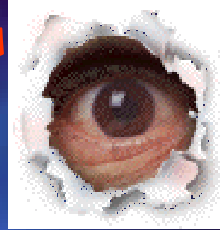
The Future of the Internet

NAT EXPERTS created the NAT Roulette

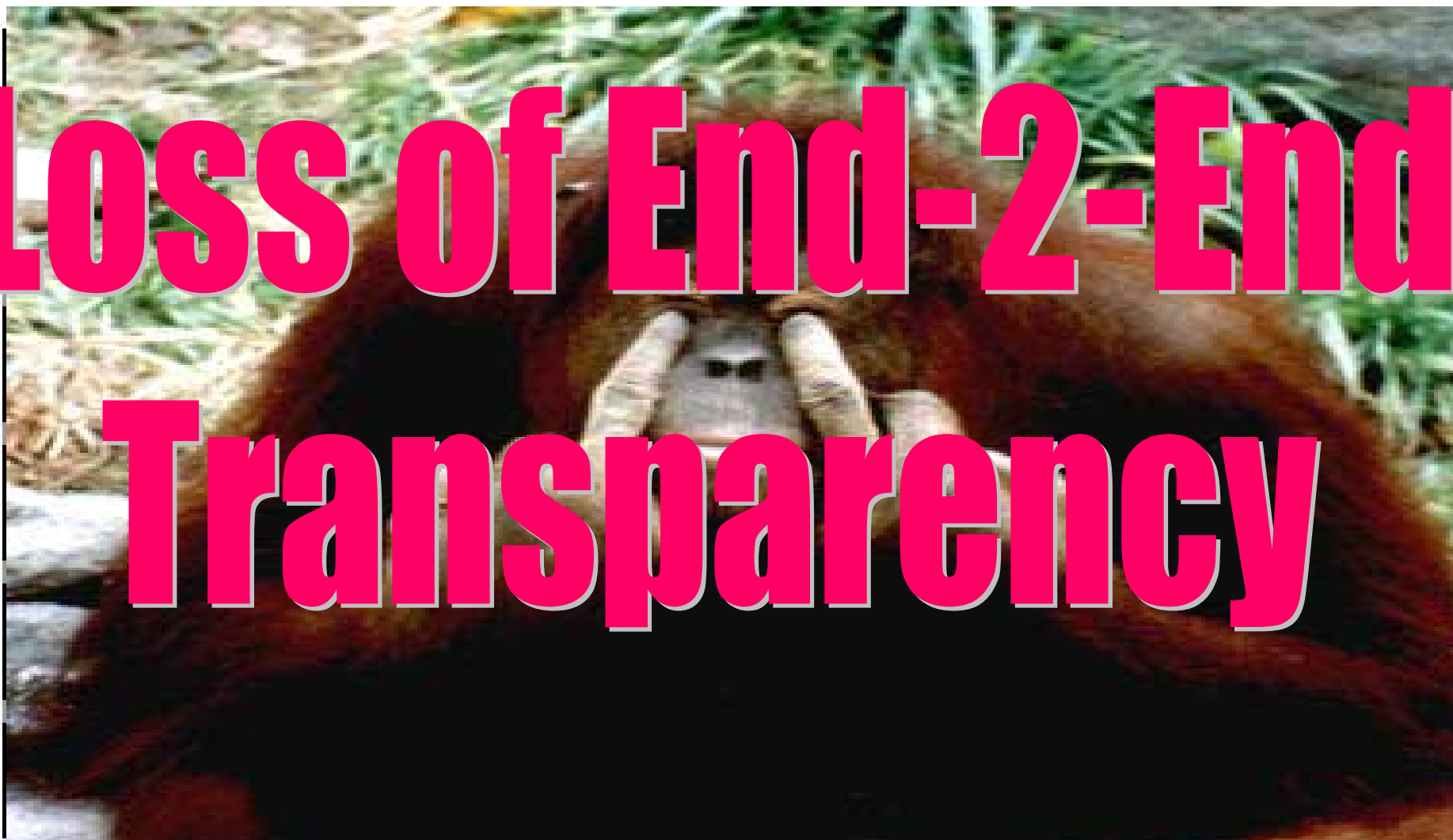
Digital Divide
Instead of
Digital Ubiquity

The Future of the Internet

NATs: Peeping Holes



**Loss of End-2-End
Transparency**



Peer-2-Peer Species work better together!



IMAGINE!

Imagine IPv4 had 128 bit Address Space

No second chance to fix the Internet!

Imagine NATs were Introduced in 1991

WWW

The WEB would have not been successful!

IPv6 Is Not Only Unlimited Address Space

QoS

Flow Bits?

Reliability
Simplicity

Flexible

Renumbering

Transition

Tool Box

Dynamic Routing

Multicast v6

e2e Security

Mobile IPv6

Autoconfiguration

End-2-end

Plug & Ping

Transparency

STRINGS
of Technology
PERLS

New End-user Boost!
Everyone is On!



v6 Roadmap Scenarios

	Scenario 1	Scenario 2	
IPv6 Deployment	Successful	Complete Failure	
Address Transparency	Restored e-2-e	Recycling IP Addresses	Exhaustion NAT-over-NAT
IPsec	e-2-e works	Limited	Broken
FOG	Clears!	Noticeable Fog	Permanet Thick Fog
Issues	Intranet, Proxies & Firewalls may remain	Generalised use of NAT, RSIP?	NATs between even ISPs

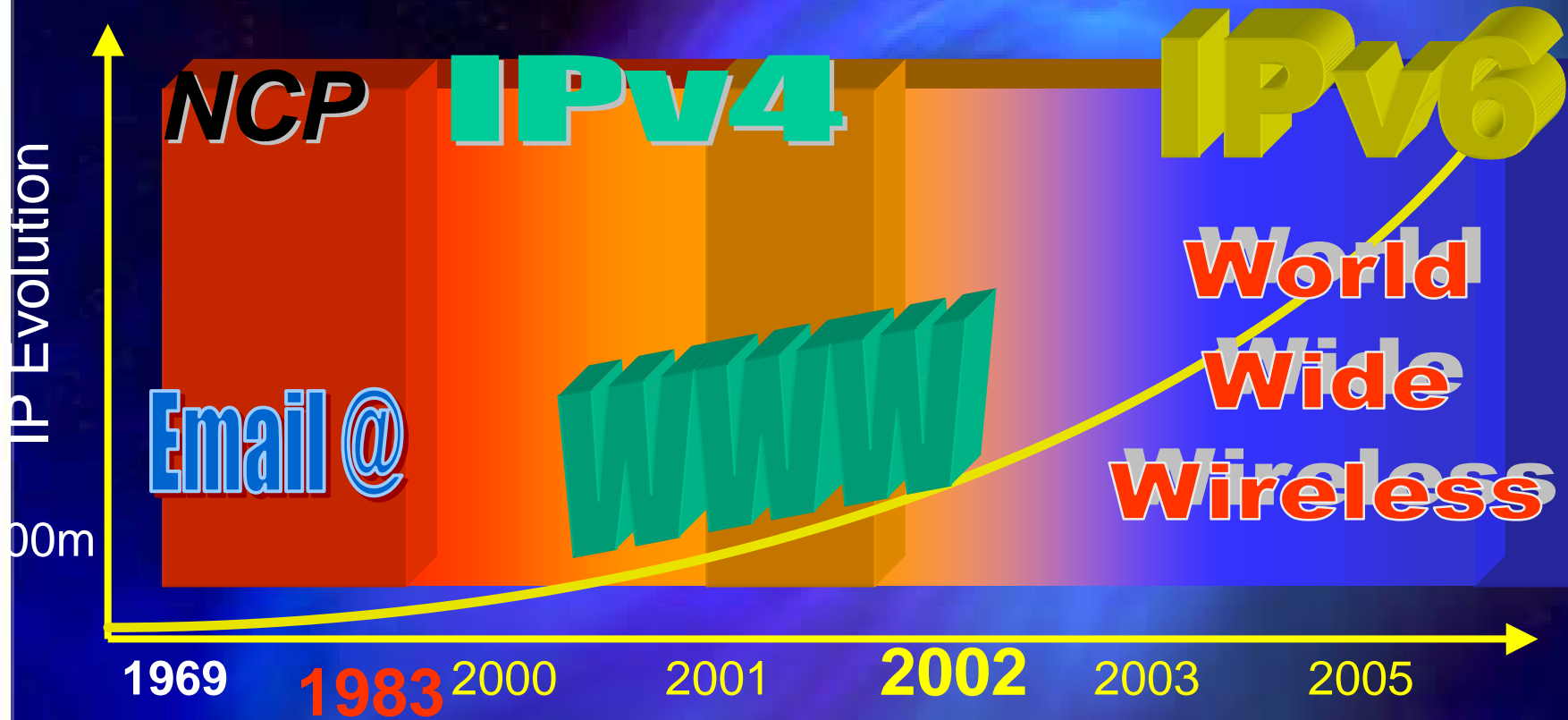
Yv4: The Y2K for Apps!



The New Internet



1 billion +
Connected Devices





VENTING THE FUTURE