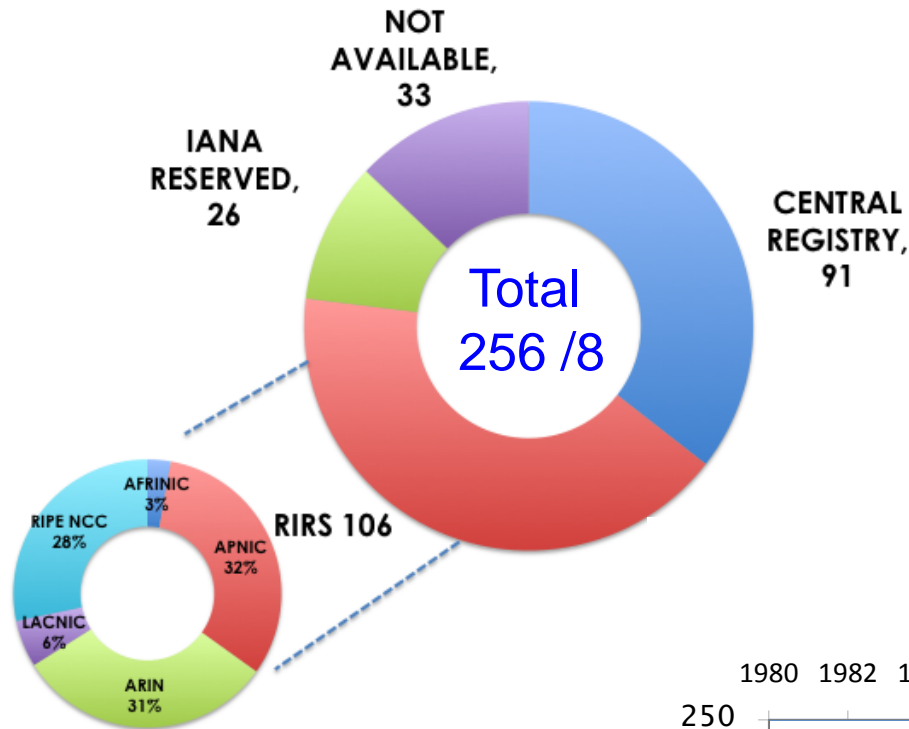


IPv4 to IPv6: Sustaining Internet development in Africa

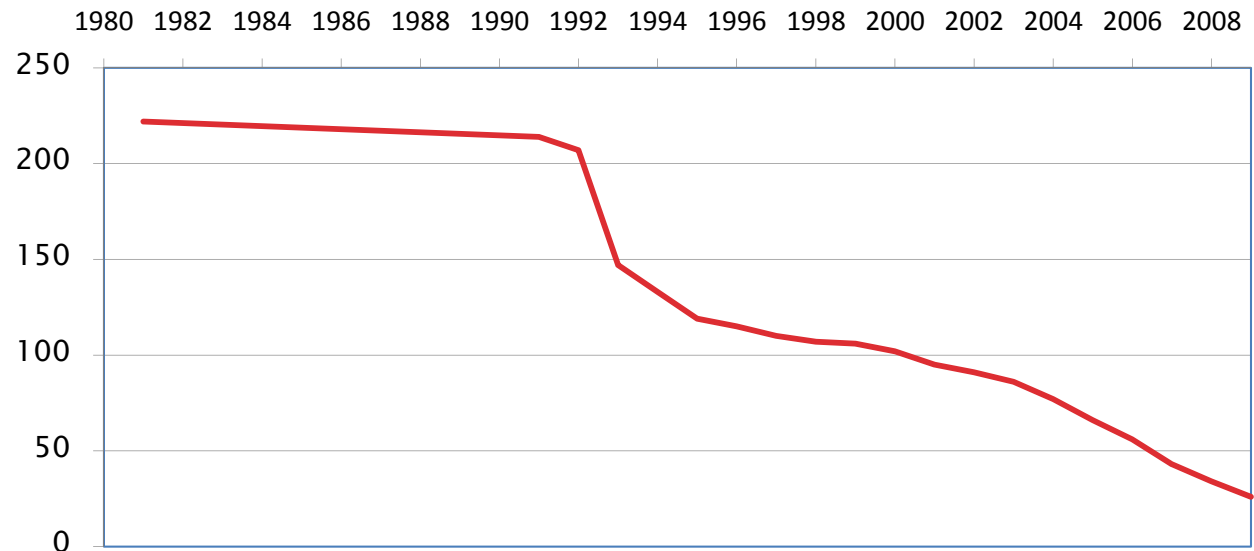
Adiel A. Akplogan, CEO, Afrinic
WAIGF

Accra, October 15th 2009

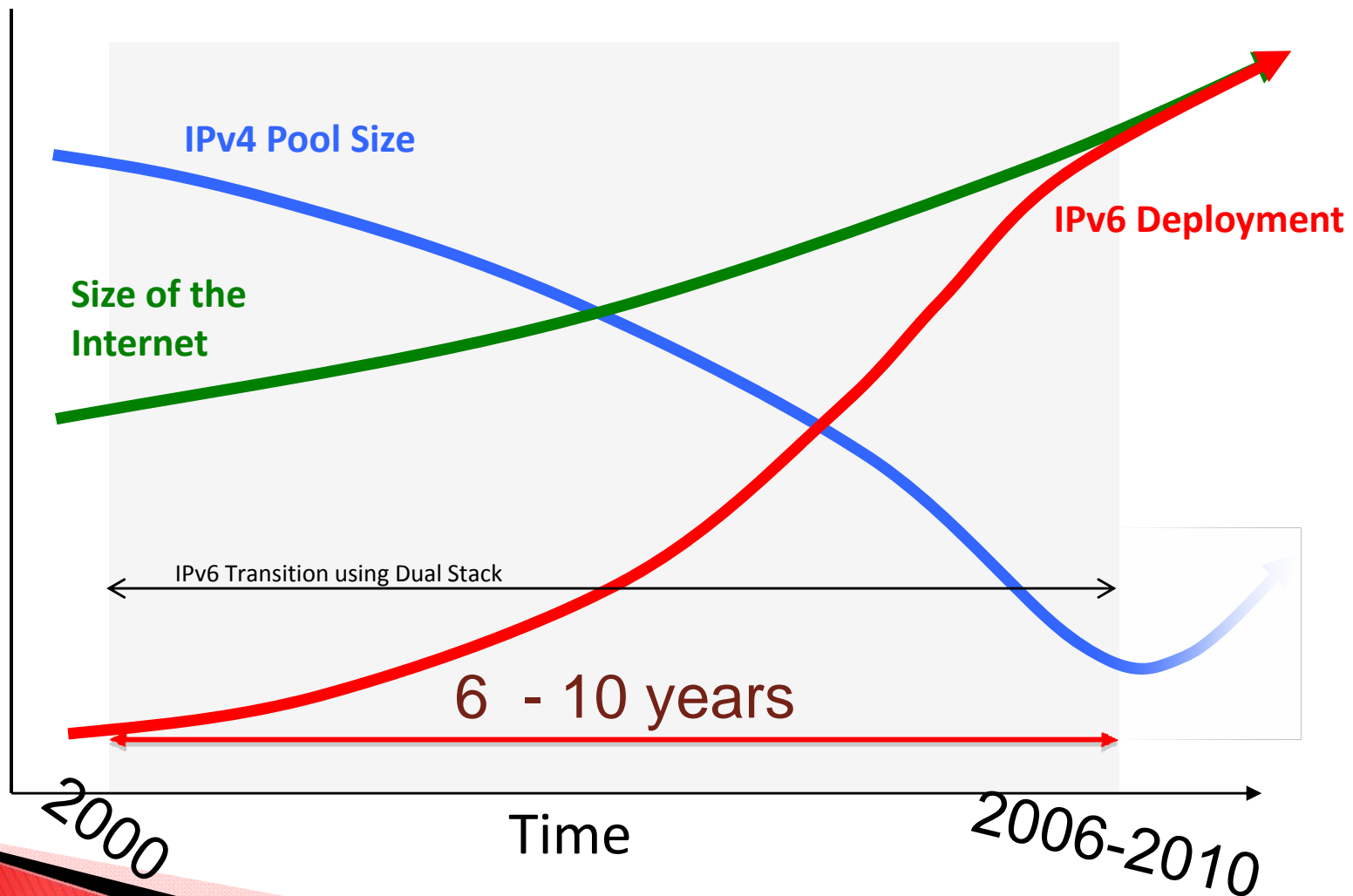
Status of IPv4 Address Space



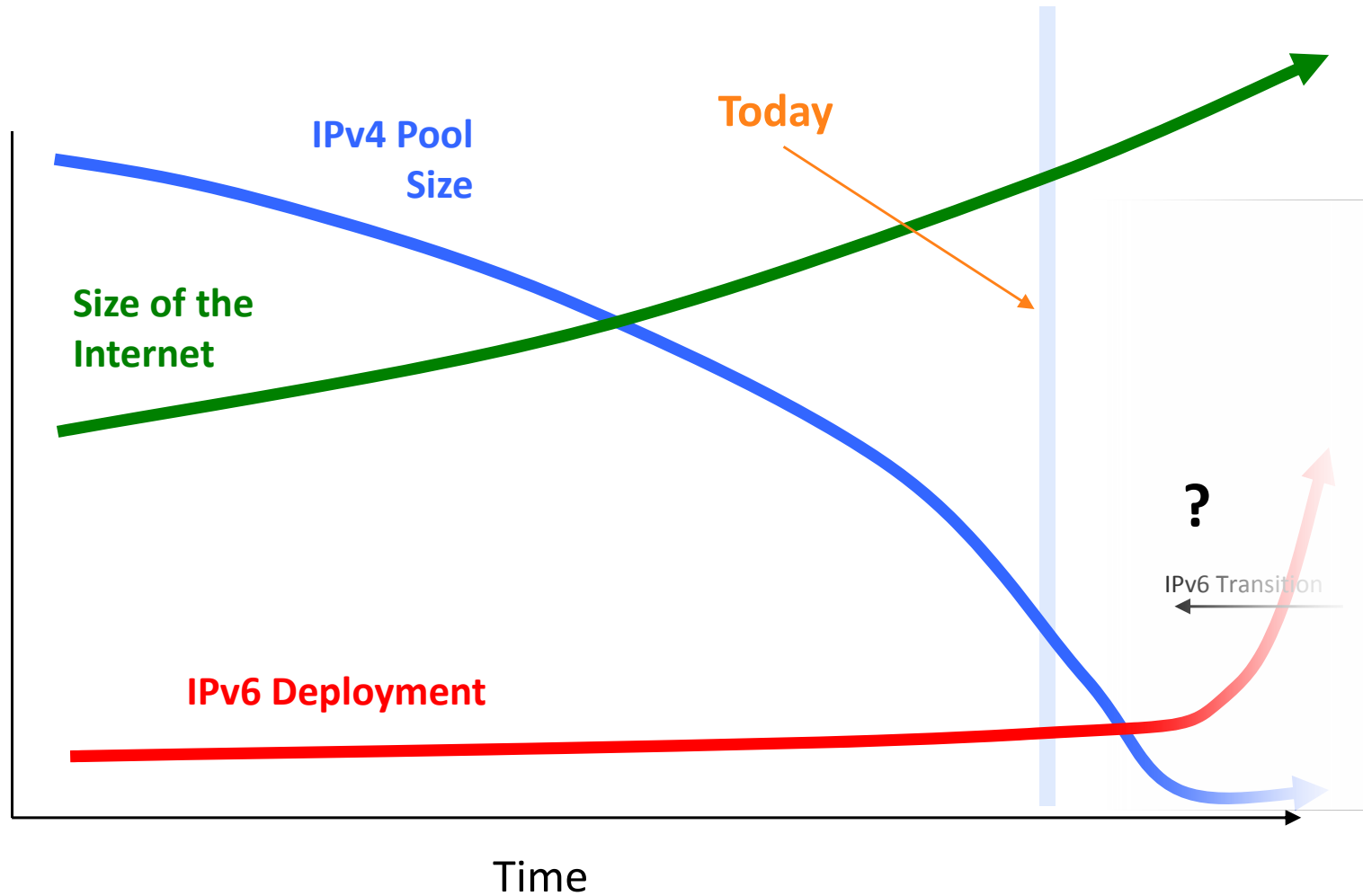
Central Pool Consumption



What was planned 10 years ago?



What is happening today



Global issue with IPv4!

- IPv4 address space will be fully allocated by
 - **13-Oct-2011** (as per 08.09.2009 data)
- ▶ RIRs will globally continue to allocate up to
 - **24-Dec-2012/2013**
 - See <http://ipv4.potaroo.net/>
- **Internet will not stop:** Existing IPv4 allocations will continue to be routed and used around the world
 - IPv4 Internet **growth will slow down significantly.**
 - ‘IPv4-only’ solutions being deployed now will have increasingly limited connectivity to the network.

The Bottom Line

- ▶ We're running out of IPv4 address space
- ▶ IPv6 must be adopted for continued Internet growth
- ▶ IPv6 is not backwards compatible with IPv4
- ▶ **IPv6 provide a very large address space !!!!!**
 - *If the IPv4 address space is a 1.6-inch square. Proportionally the IPv6 address space would be represented by a square the size of the solar system (Impossible to represent)! – **but still not infinite***

About IPv4 and IPv6

	Internet Protocol version 4 (IPv4)	Internet Protocol version 6 (IPv6)
Deployed	1981	1999
Address Size	32-bit number	128-bit number
Address Format	Dotted Decimal Notation: 192.149.252.76	Hexadecimal Notation: 3FFE:F200:0234:AB00: 0123:4567:8901:ABCD
Prefix Notation	192.149.0.0/24	3FFE:F200:0234::/48
Number of Addresses	$2^{32} = 4,294,967,296$	$2^{128} = 340,282,366,920,938,463,463,374,607,431,768,211,456$

Why is IPv6 important?

1. Continue to grow your network business
 - Business case for IPv6 deployment? **Stay in business!**
2. Restore the end-to-end paradigm for Internet communication
 - P2P technology is well-established as an efficient and popular solution for many different applications (e.g. VoIP, file sharing, IPTV)

Instead of Killer application for IPv6 we should be looking for killer constraints of current IP?

Cost of deploying IPv6?

- ▶ The largest cost for most network managers will be training.
 - ***It is the same packet based Network, but other than that it is a different protocol.***
- ▶ Another major cost may be retooling custom apps and scripts.
 - **Frequent shortcuts assuming an address will always be 32 bits.**
- ▶ But it is fundamental to note that IPv6 does not, in the majority of cases, need new Infrastructure or equipment (transition mechanisms allow the two protocol to run on the same infrastructure).

Each organization's decision regarding timeline & investment level will vary

Planning is critical

- ▶ IPv6 will become a business necessity in the medium term.
 - Initiating deployment now reduces business risk.
- ▶ It takes time to audit existing systems, bring vendors on board, plan IPv6 network, raise awareness among software developers and end-users etc.
 - Starting early will reduce the cost of the transition

Our collective responsibility

- ▶ We need to (Business)
 - Push for more action from Operators (Train, Plan and implement Dual-stack, allow user to access v6 network, IPv6 considerations when making purchases)
 - Be innovative and explore the opportunity of developing applications that can directly benefit from IPv6 and its “features” .
 - Don't accept '**nobody else is asking for this**' as an answer!
 - Involve Research and Education community into the game.

- ▶ Governments need to lead by making sure:
 - their own Internet-based services are IPv6-ready (early adopters)
 - The public is aware and educated on the transition (coordination with Industry)
 - Appropriate policies are developed to foster national transition to IPv6

Conclusion

- ▶ **Internet number resources are critical for Internet growth and its development.**
- ▶ IPv6 is designed to provide the necessary number.
- ▶ We have to act now while thinking for the future of the Information society in Africa.

We are part of the next connected Billion! Hence IPv6 should be seen as an opportunity for Africa in terms of growth and innovation.

Questions?

Questions?

Question?

Questions?

Questions?

Questions

Questions

Questions?

Thank you

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