IPv6 Deployment in a Global IT Service Company

Utrecht, 29 May 2013

Marco van der Pal

People matter, results count.

Agenda

- Introduction
- What would you need to deploy IPv6?
- Capgemini's approach
- The IPv6 Roadmap
- Next steps
- Conclusions and recommendations

Introduction

- Marco van der Pal
  - Network Consultant with Capgemini Netherlands
  - Datacenter network team
  - Network architecture, design and implementations
  - Working on IPv6 since 2010

- Capgemini Infrastructure Outsourcing Services
  - 800 employees
  - >60 clients
  - 3 Datacenter locations (>3000 m^2)
  - > 2500 systems, 12000 ports

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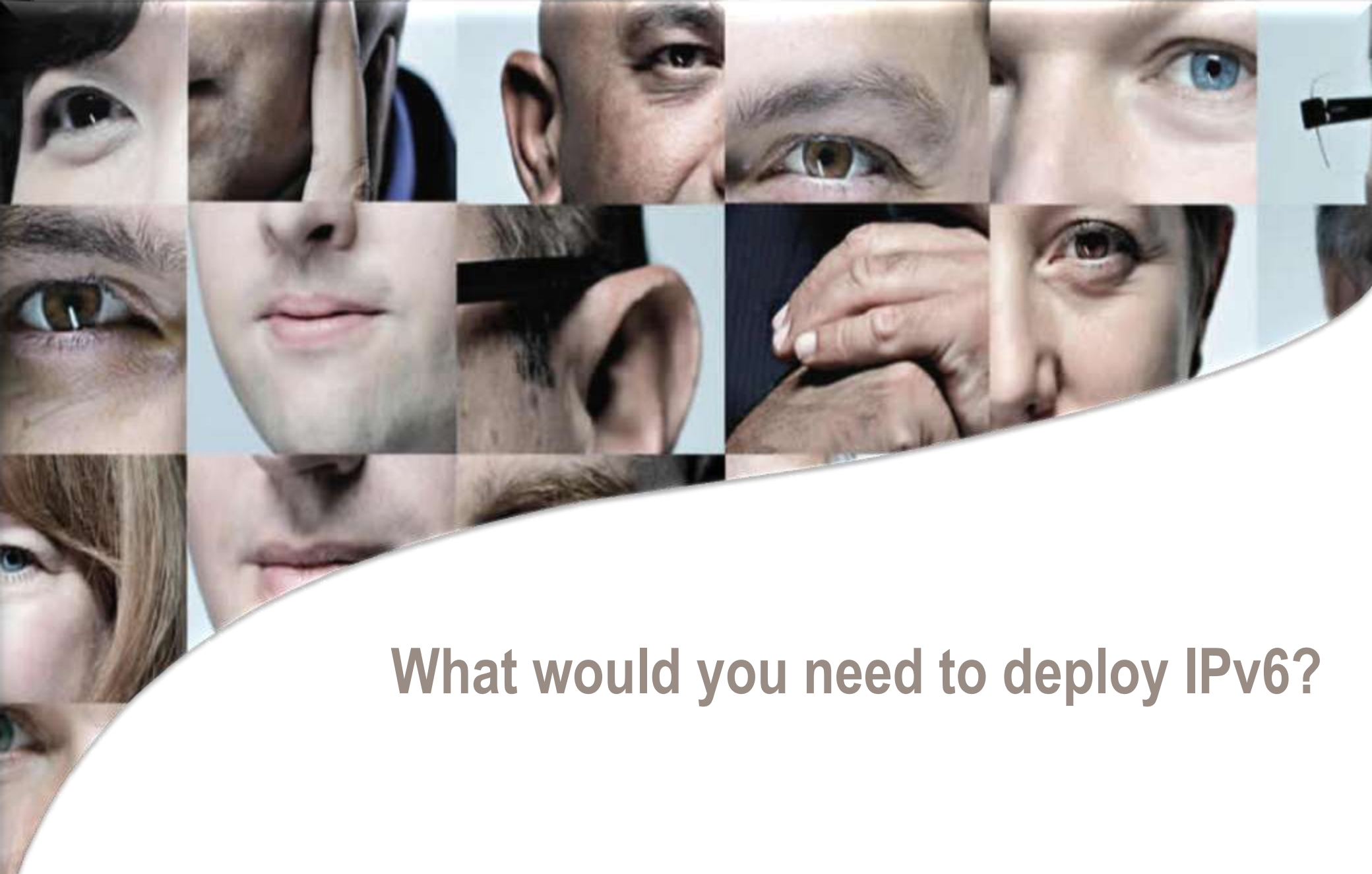
What would you need to deploy IPv6?

What would you need to deploy IPv6?

- **Awareness**
  - Realize impact
  - Who is involved?
- **Commitment**
  - Business drivers
  - Dependencies
- **Knowledge and expertise**
  - Training
  - Test environment
- **Perseverance or drive**
  - Not a single project
  - When ready?

Capgemini's approach

Creating Awareness and Commitment

- **IPv6 is inevitable!**
  - Networking, Operating Systems, applications: it's all there!
  - Client demands and RFPs
  - Can we safely ignore IPv6 for the next 5 years?
- **IPv6 is a 'new' and complex technology**
  - IPv4 and IPv6 run simultaneously
  - Are HW and SW compliant?
  - Security implications
- **IPv6 is an emerging technology**
  - Technological advantages
 - New IPv6 features 'under construction'

Acquiring Knowledge and Expertise

- Set up multidisciplinary IPv6 team
  - Networking, Operating Systems, applications: it's all there!
- External IPv6 training
  - Knowledge base line
- Building a test environment
  - Identify key topics
  - Define show cases
  - Document setup, scheduled tests and results
- Develop (training) materials for internal use
  - Input for Reference Architecture
  - Best practices and 'dos and don'ts'
  - Knowledge transfers

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Building a test environment
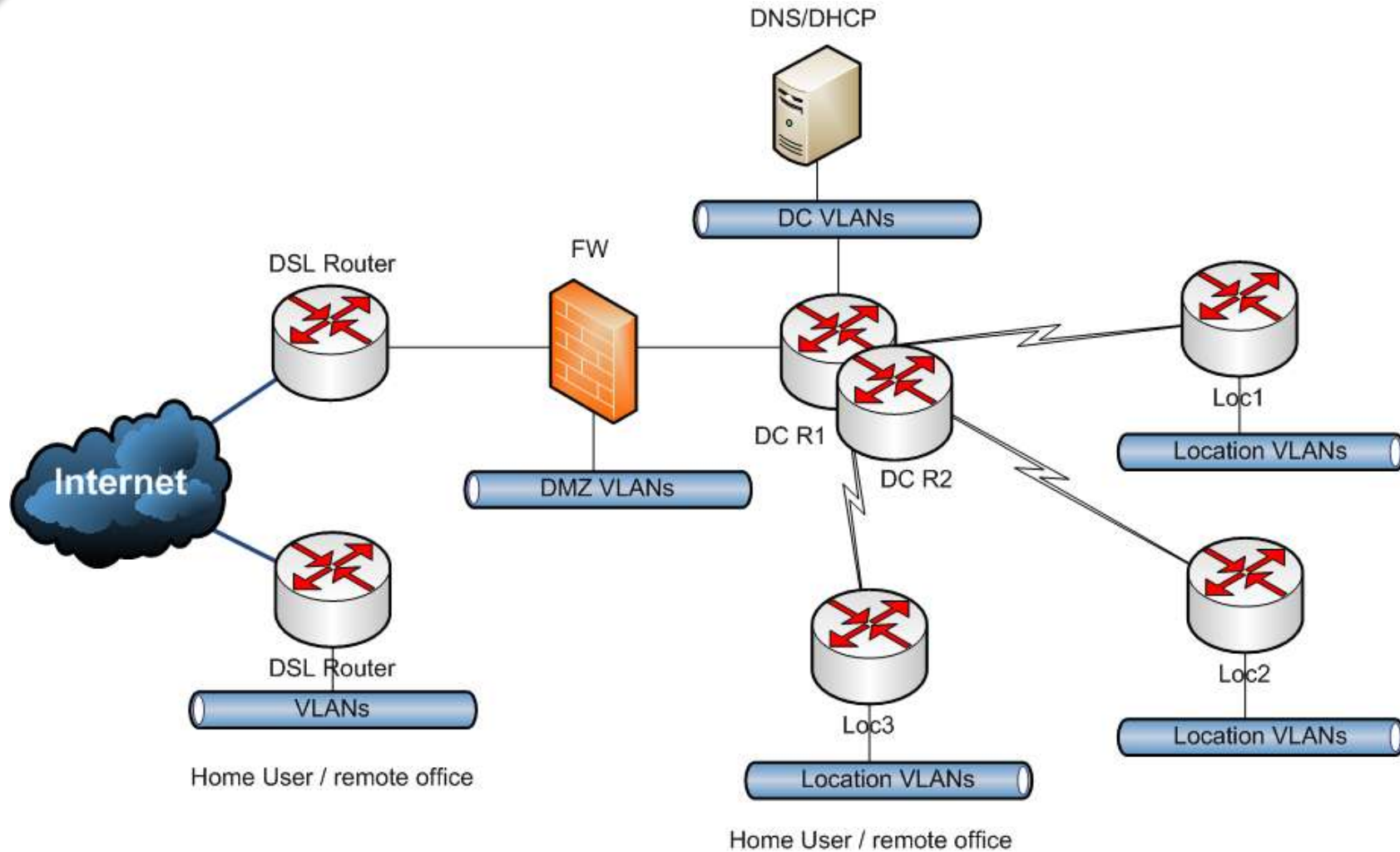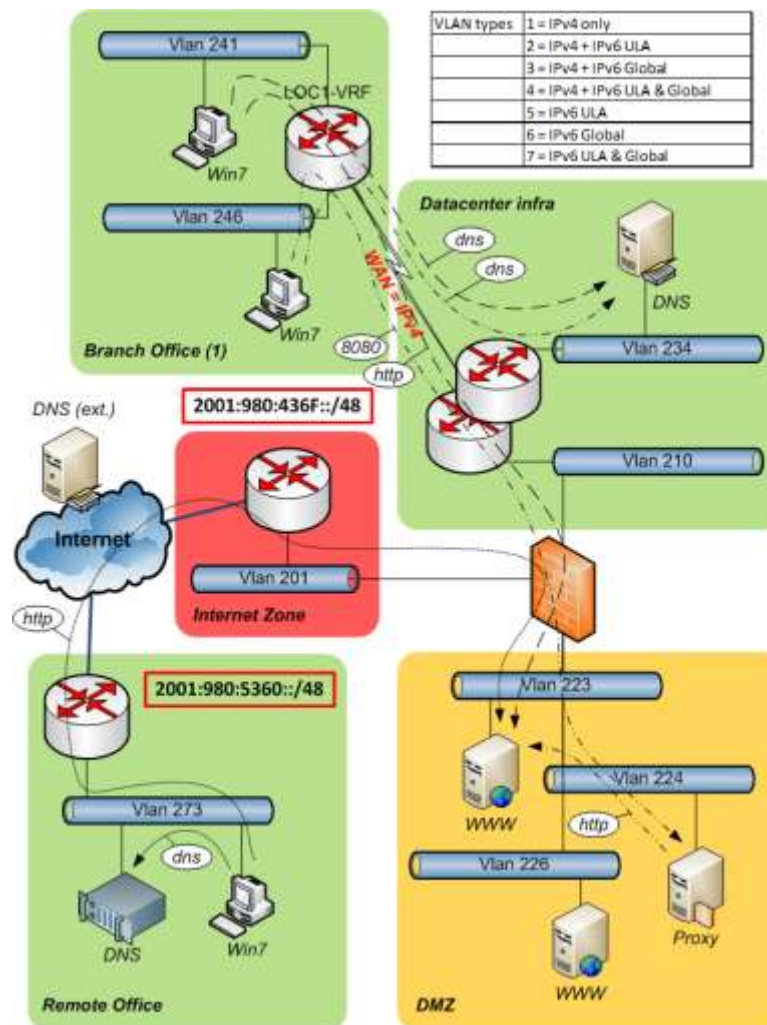
Showcases examples

Internal Win 7 client:
- DNS
- Proxy WWW
- WWW

Internal Win 7 client:
- DNS
- WWW

External Win 7 client:
- DNS
- WWW

Major conclusions (1)

1. IPv6 training programme needed

- Generic awareness
  - IPv6 and IPv4 together will be more complex
  - Do (new) HW/SW support IPv6?
- Modular technical training
  - Only relevant IPv6 topics per discipline and level

2. IPv6 is evolving

- RFCs renew rapidly
- New perceptions and features
- New migration technologies

Major conclusions (2)

3. Philosophy on IPv6 addressing very different from IPv4

- IPv6 addressing structure: ULA, Link-Local, Global
- Multiple IP's per NIC
- Importance DNS, DHCPv6 and IPAM

4. So many topics!

- Security
- Tooling and monitoring
- Legacy applications and non-standard devices
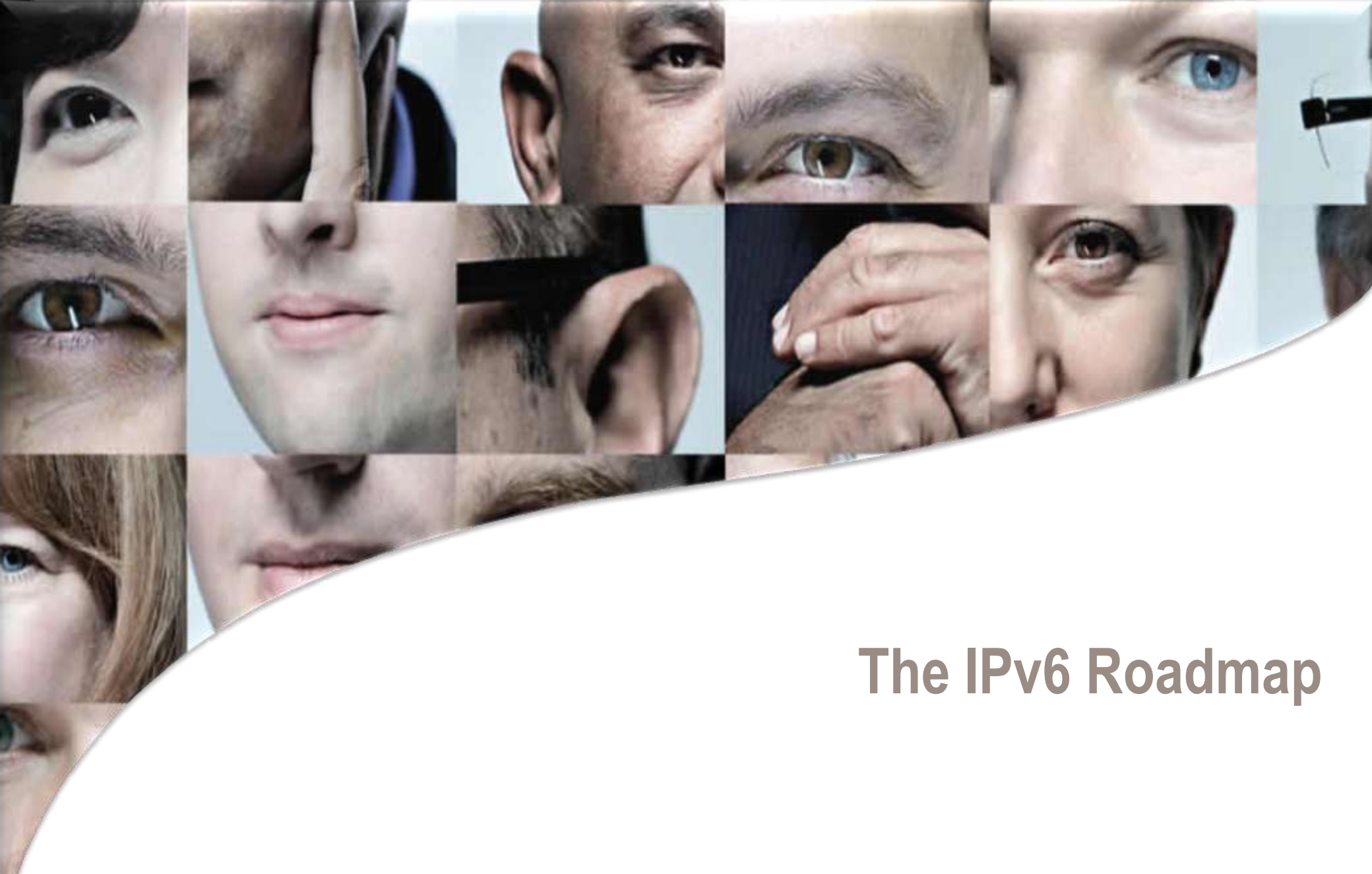- Migration options
- Compatibility

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Major conclusions (3)

5. IPv6 deployment will be a long way

- Incompatibilities IPv4/IPv6
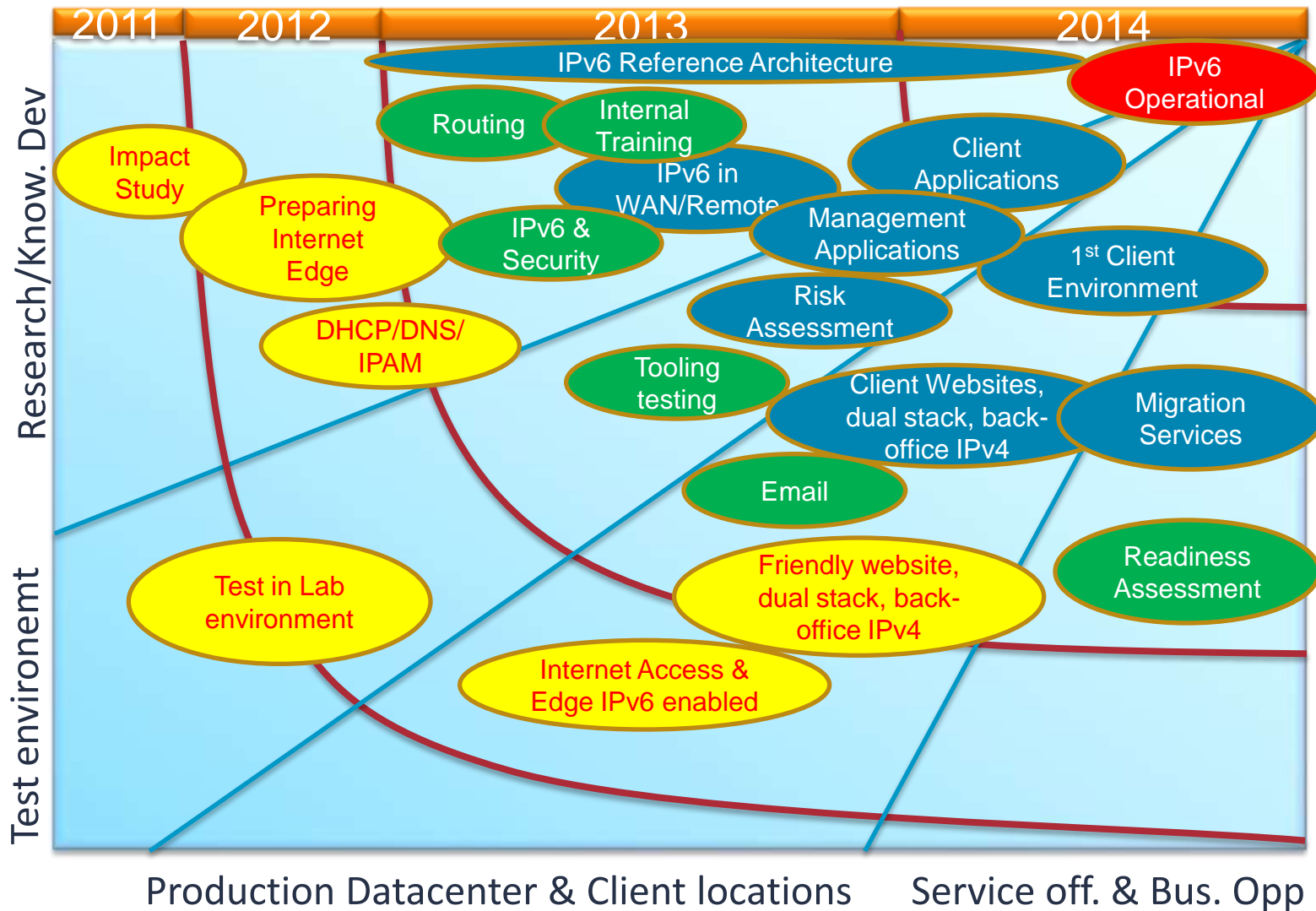- Hidden security aspects
- Not so IPv6 Ready of HW/SW
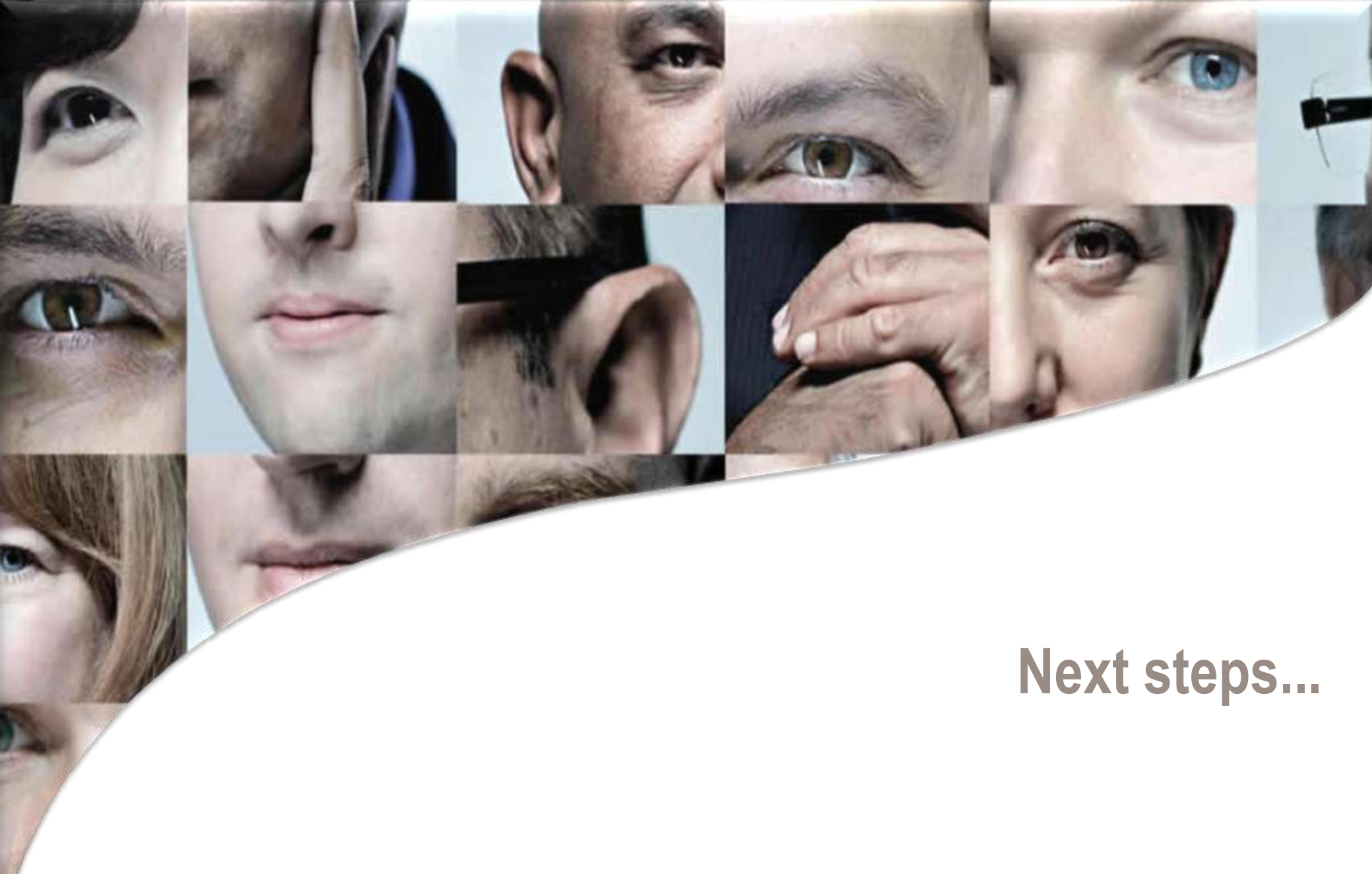
→IPv6 Roadmap needed!

The IPv6 Roadmap

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Roadmap IPv6

KIVI NIRIA

2011 **2012** **2013** **2014**

Research/Know. Dev

IPv6 Reference Architecture

IPv6 Operational

Impact Study

Routing

Internal Training

Client Applications

Preparing Internet Edge

IPv6 in WAN/Remote

IPv6 & Security

Management Applications

1st Client Environment

DHCP/DNS/ IPAM

Risk Assessment

Tooling testing

Client Websites, dual stack, back-office IPv4

Migration Services

Email

Test environemt

Test in Lab environment

Friendly website, dual stack, back-office IPv4

Readiness Assessment

Internet Access & Edge IPv6 enabled

Production Datacenter & Client locations   Service off. & Bus. Opp

Next steps...

Roadmap item: Preparing Internet Edge

- **Project proposal:**
  - Enable IPv6 on (client) public services
- **Functional benefits:**
  - Reservation IPv6 address space
  - Internet connection ready for IPv6
  - Internet edge ready for IPv6
- **Additional benefits:**
  - Training on the job
  - Real-life experience with IPv6
  - Capgemini (IOS) global IPv6 address plan
- **Development IPv6 services:**
  - Readiness Scan / IPv6 Audit
 - Migration services
  - IPv6 security scan

Preparing Internet Edge
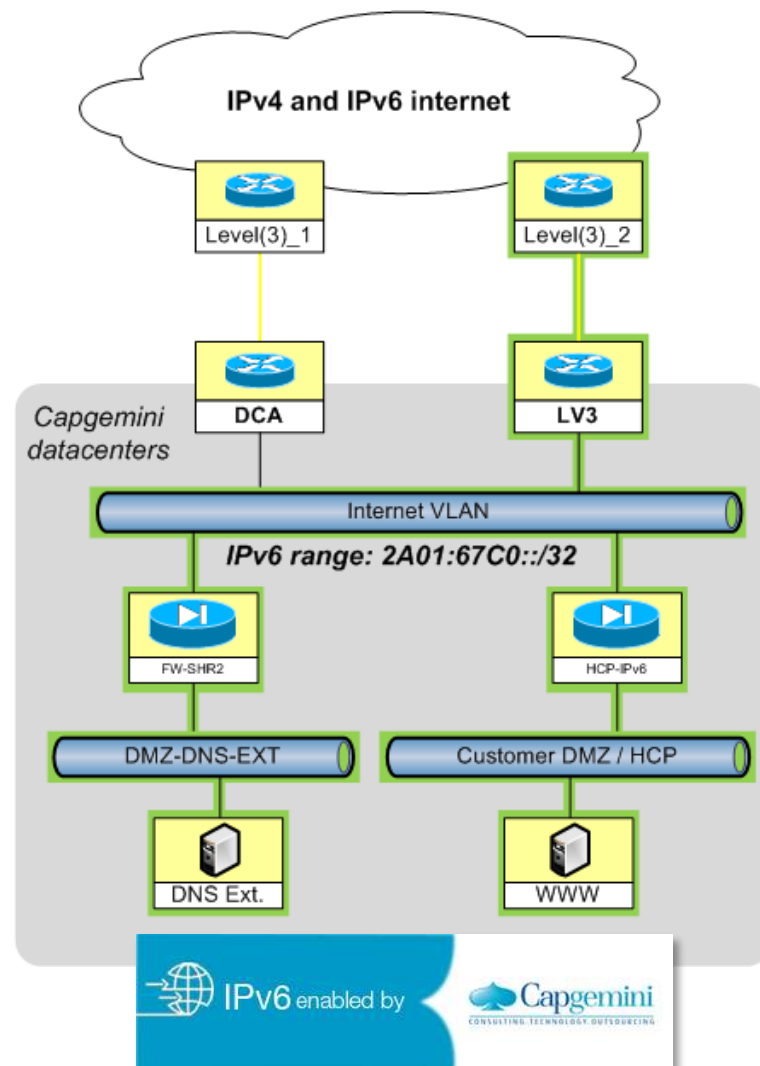
Capgemini's approach:

- **Selecting ISP**
  - Native IPv6 support
- **Acquiring IPv6 address space**
  - RIPE membership
- **Assess existing environment**
  - HW and SW
  - Combined features
- **IPv6 deployment experience**
  - Dual-stack deployment
  - IPv6 address plan
  - DNSv6
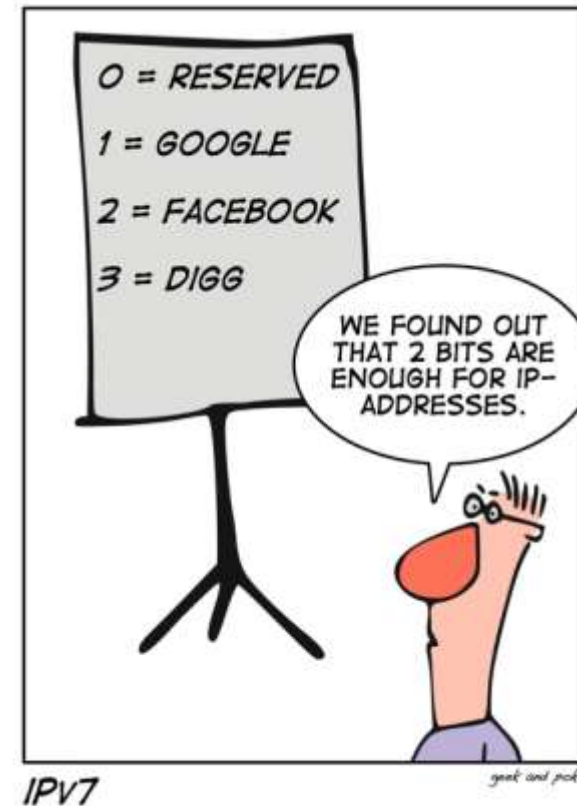
Roadmap item: Mail as a Service

- **Project proposal:**
  - Enable IPv6 on (client) public services
- **Functional benefits:**
  - 'Shared' mail service IPv6 enabled
  - Mail protocol experience
  - Including SLB64 migration
- **Additional benefits:**
  - Training on the job
  - Knowledge transfer included
  - Including IronPort mail-security

Conclusions and recommendations
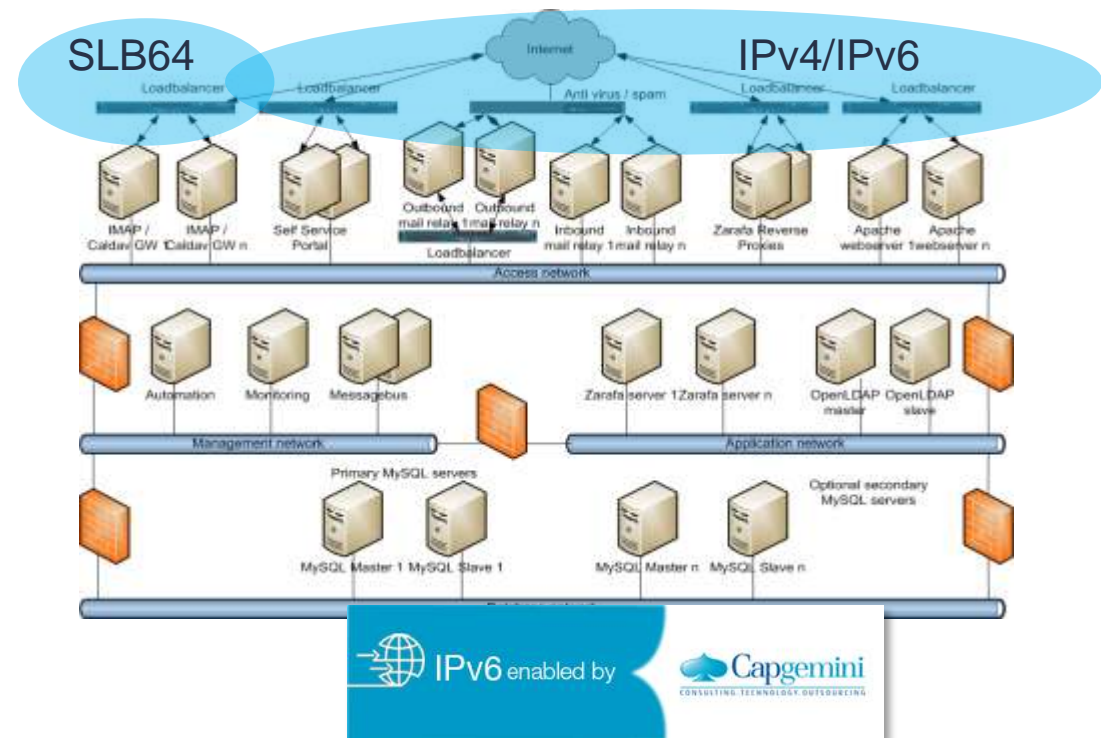
- *Determine objectives*
  - *Create an IPv6 Roadmap*
- *Start with training and research*
  - *Build a flexible test environment*
- Deployment
  - *Multidisciplinary team*
  - *Use a phased approach*
  - *Test and document!*
- *Do not forget your legacy HW/SW*
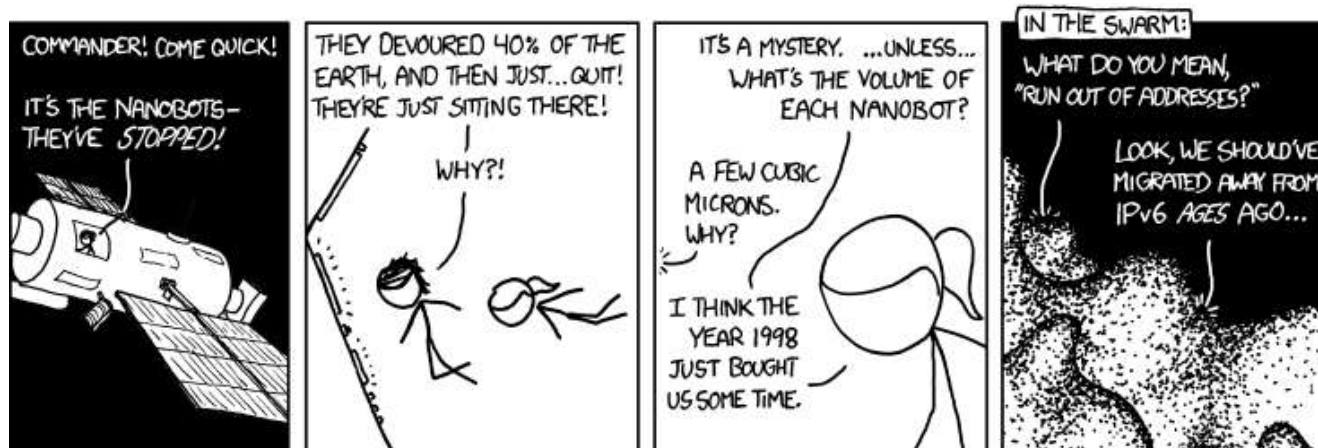- *Take your time…*

I WANT **YOU**
TO USE IPv6
- Vint Cert

Contact information

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Capgemini Netherlands

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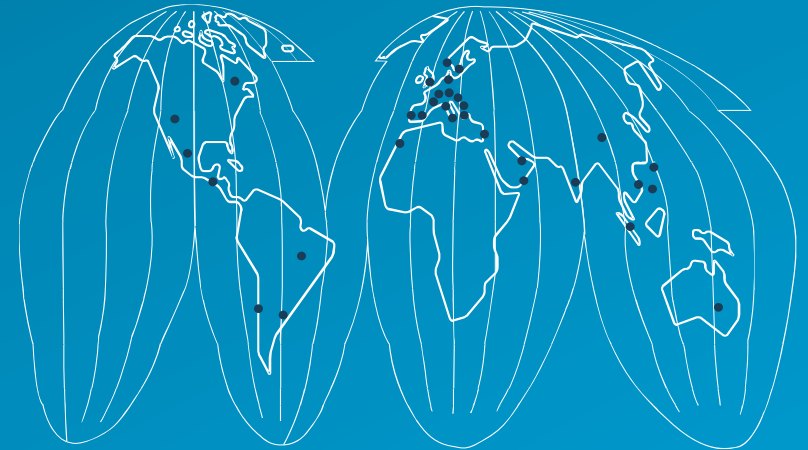# People matter, results count.

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Master slide

- Level 1
  - Level 2
    - Level 3
      - Level 4