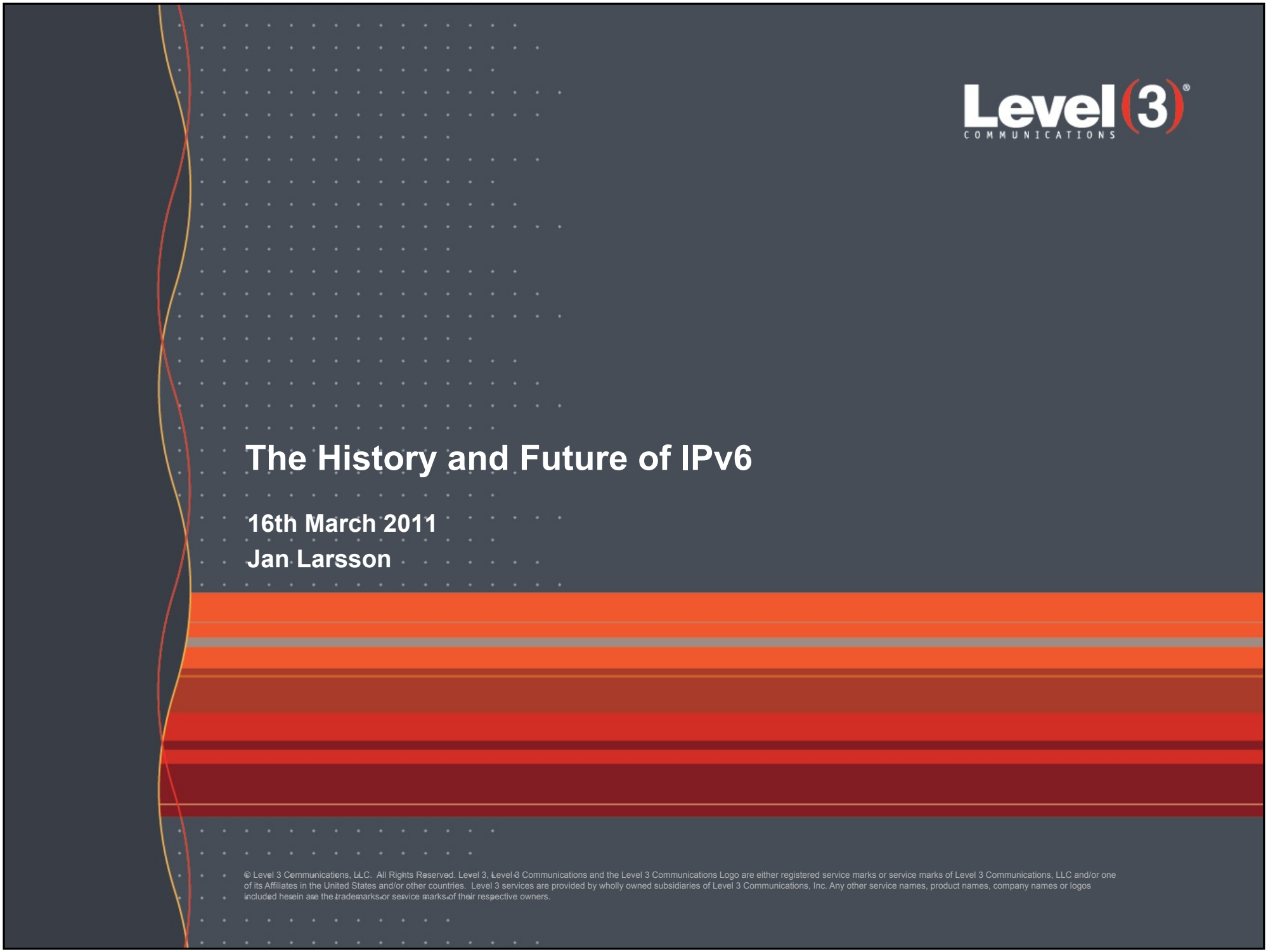


The History and Future of IPv6

16th March 2011

Jan Larsson

Agenda

- Level 3 IPv6 history
- IPv6 Design Goals and Implementation
- Issues and Observations
- Takeaways

History

- Started offering tunnelled IPv6 service in May 2005.
- 2005 - 2008 the solution grew and grew…
- 2009 started offering dual-stack services in EU.
- Today the network is now fully dual stack enabled, GA was July 1, 2010 and the routing ecosystem is ‘evolving’.

Goals and Decisions

“Thou shall not break the IPv4 network”

Supporting IPv6

- You can chose a number of ways to support IPv6 on your network:
  - Transition
  - Dual-stack
- Is your existing kit capable of supporting IPv6?
- You need to understand what your customers need from you before you can make this decision.

Platform Issues

- Most modern network hardware supports IPv6 in some way.
- Check that your software includes (full) IPv6 support.
- Check that your hardware supports IPv6, in hardware where appropriate.
- TCAM issues

Differentiating IPv4/IPv6 Traffic

- One common problem is how to create differentiated data sets and graphs for IPv4 and IPv6 traffic on your network.

- No easy solution, but here are two things commonly done:
  - On the ‘J’ vendor, have an inet6 traffic filter inbound and outbound to count IPv6 traffic in and out of interfaces.
  - On most vendors, you could have different VLANs on a physical interface for IPv4 and IPv6 traffic.

- You could use NetFlow, but this requires v9 and a good support.

Other Important Factors to Consider

- Supporting IPv6 on your network is **NOT** the biggest issue you'll encounter.

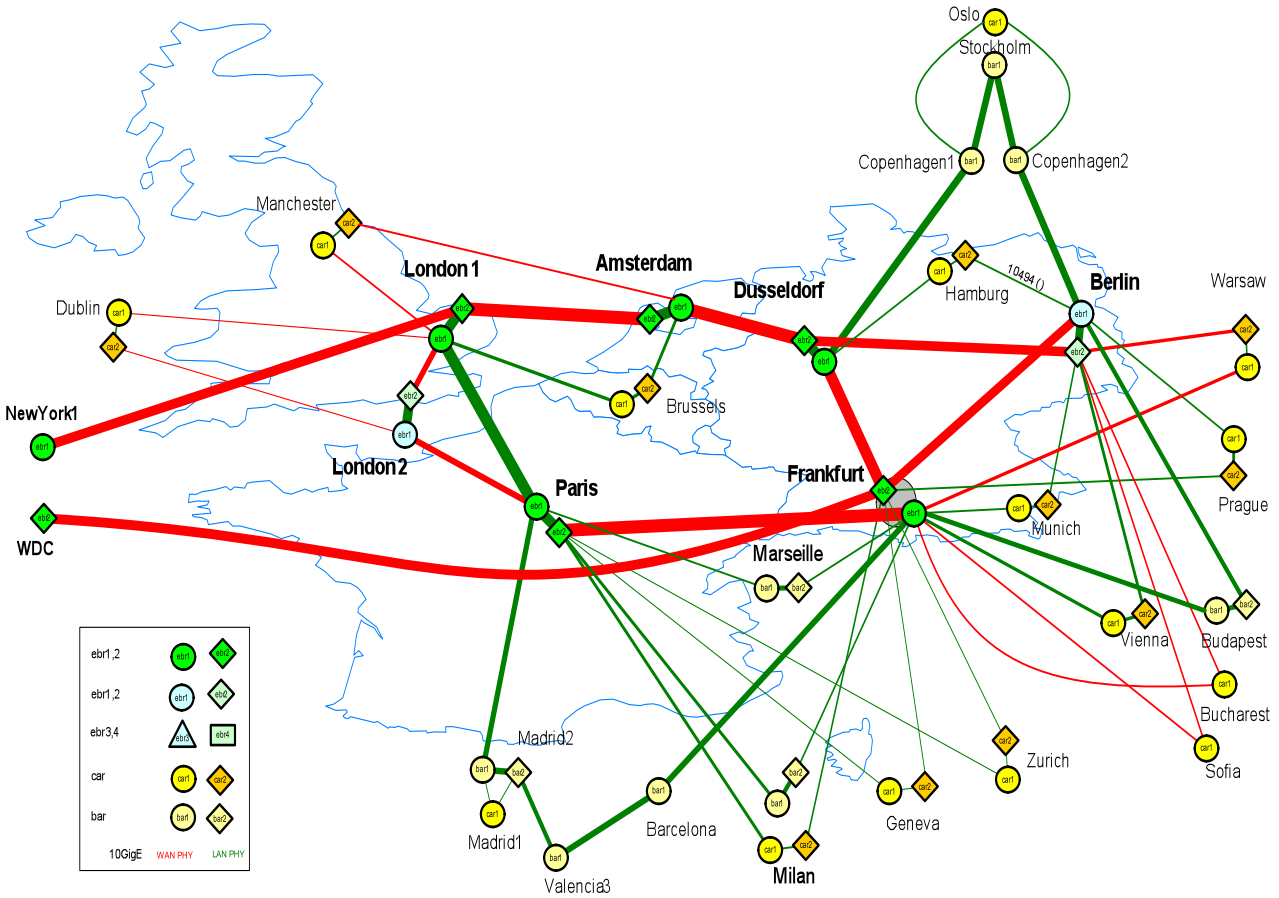
- Much bigger issues include:
  - Training your staff
  - Supporting your back-office systems
  - Supporting your network management platform(s)

Takeaways

- The most modern router and server kits do support IPv6…BUT code still has bugs.
- Many monitoring systems etc. do not support IPv6, at least not as well as IPv4.
- Security is likely to be problematic. How many of the firewalls, AV, load balancers, VPN and such support IPv6 properly?
- Skill base for IPv6 is still VERY low.
- If you don't already, you really need to have a plan in place for IPv6.
- Don't assume that activating IPv6 on your network is the only task. You may be pulling along other organizations!

Level 3 European Network Status

Huge backbone links with significant growth into Eastern Europe.



All sites in Eastern Europe are activated for native IPv6 service

IPv6 With Level 3

- Level 3 already has hundreds of native IPv6 customer links in EU.

- Activation:
  - If you are an existing Level 3 customer, submit a support request for IPv6 service and it will be carried out where possible.
  - If you are a new Level 3 customer, ensure you ask for IPv6 service when speaking to your account manager.

Thank you

Jan Larsson