

IPv6 ISP Technical and Business Case Study

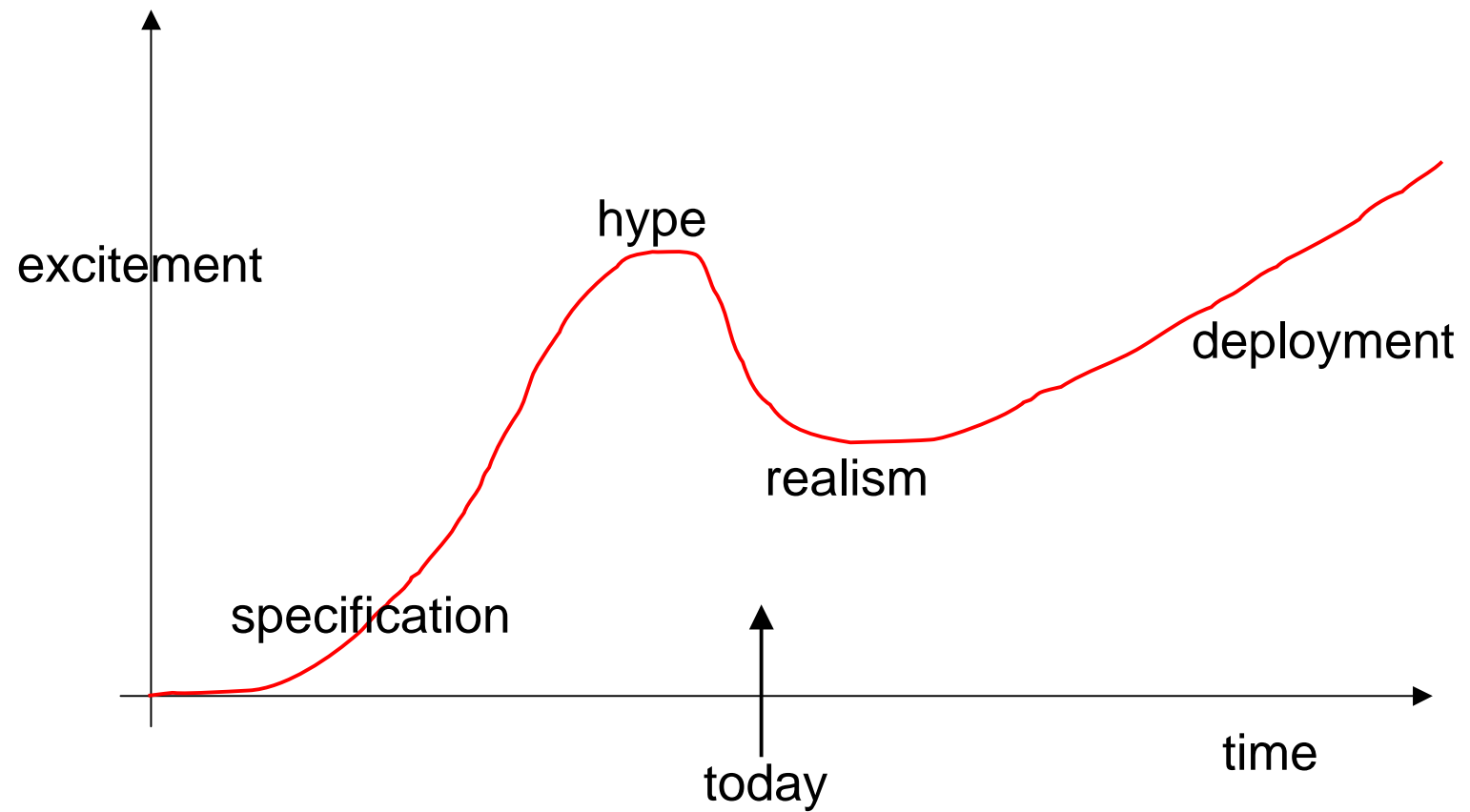
IPv6 Task Force II
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BT exact
TECHNOLOGIES



Status of IPv6





What does an ISP do?

Offers Services to its Customers:

- Connectivity – VPN's

- Access to the Internet

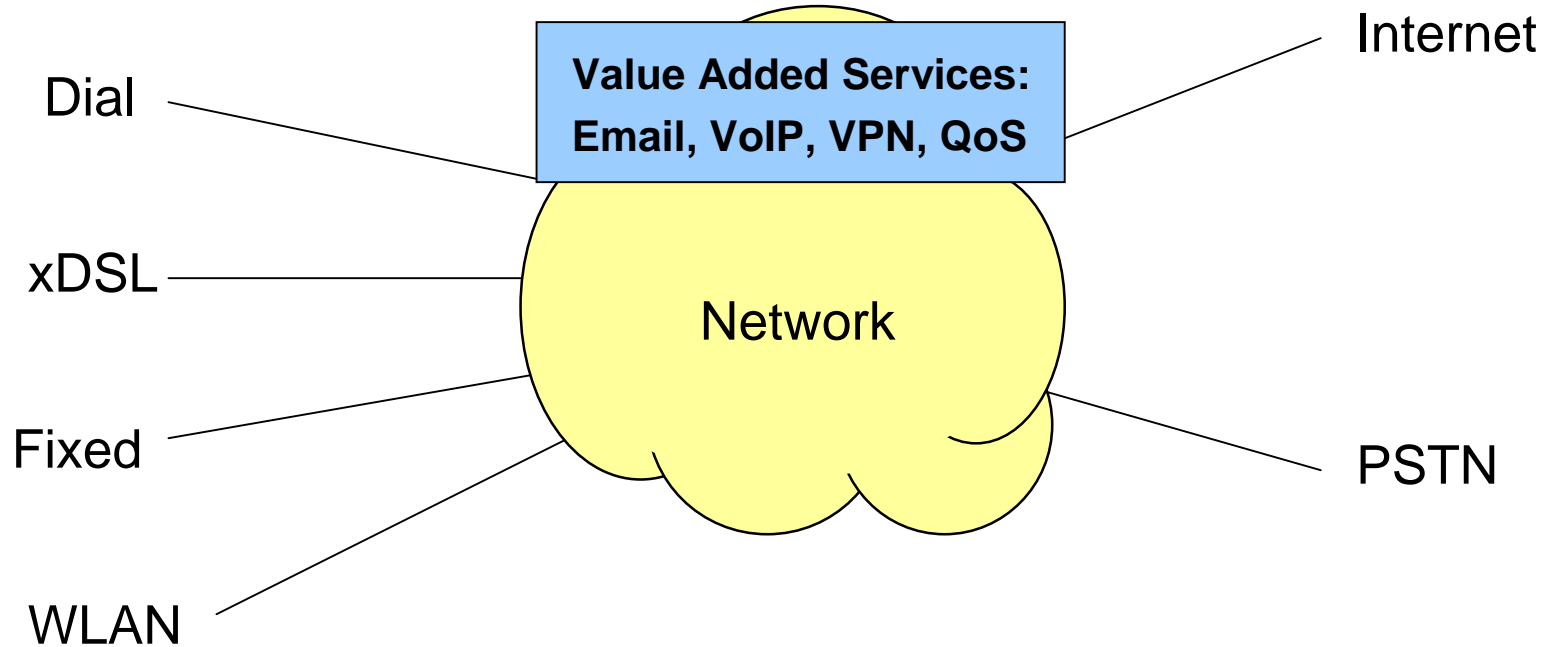
- Access to on net value added services – email

- Additional services – VoIP

This has little to do with technology








A typical ISP





Internet/ISP Trends

www.nua.com
580M people on line
predict 1B by 2005

- Always On 
- Number of devices 
- Number of addresses 
- Need for Globally routable addresses 
- Security 
- Mobility 
- End user Cost 
- Operating Cost 



IPv4 ISP - Technical

What has IPv4 to Offer?

- Massive installed base
- Huge numbers of trained engineers

But IPv4 has:

- NAT:
 - Not globally routable and hence makes some applications difficult!
 - Expensive in terms of management (address pools)
- Mobile IPv4
 - Routing not ideal, Microsoft not going to implement
- IPsec
 - Add on and hence not universally available



IPv6 ISP - Technical

What has IPv6 to Offer?

- Effectively limitless addresses:
 - Restores end to end Internet transparency – easier to roll out new applications (P2P, VoIP)
 - May simplify management (auto config/help desk support)
- Mobile IPv6
 - Technically good but needs a business model
- IPsec
 - Universally available – could it replace PPP?

But IPv6 has:

- Less mature equipment, far fewer applications
- In general operational engineers are reluctant



IPv6 ISP - Technical



IPv4

NAT
Address problems
Service limitations
Extra management
IPsec limited
Limited mobility support

Vast installed base of kit
and applications
Many experienced
engineers

IPv6

Transparency
Unlimited addresses
Service opportunities
OSS opportunities
IPsec ubiquitous
Mobile IPv6 universal

Limited kit and
applications
Limited operational
engineer acceptance



IPv6 ISP - Technical

Today

- IPv4 still makes sense in the commercial world
- IPv6 should be considered for niche applications
- All ISP's should understand IPv6 and what it means to them

3 to 5 Years

- IPv6 will be carrying a significant amount of traffic
- All ISP's will need an IPv6 offering

5 to 10 Years

- IPv6 everywhere



ISP - Business

IPv6 offers:

“Internet transparency”

“Addresses for mankind”

“Equal opportunity to access data”

These statements mean little for the majority of ISP's where **shareholder value** is the only concern

Does IPv6 increase shareholder value?

Increase revenues?

Reduce costs?



ISP - Business

- Increase revenues:
 - More “conventional” customers: probably not
 - But maybe new customer categories ie automotive, health, games etc
 - 3G?
 - More services: maybe
 - Voice substitution
 - Innovative P2P applications
 - To support the new customer categories



ISP - Business

- Reduce costs
 - Equipment: no
 - maybe similar hardware (NAT, Interworking)
 - OSS: maybe
 - Auto config
 - No address management issues
 - New OSS services as customer can be contacted
 - But need to support both IPv4 and IPv6 hence higher?



IPv6 ISP - Business

For

- New applications
- New customer categories
- Easier OSS

Against

- Interworking costs
- Training
- Running IPv4 and IPv6

In general business model less well developed than technical



Conclusions

- All ISP's should:
 - Understand IPv6 today via trial deployments to see how it affects their technical architecture and affects their business
 - Look for niche commercial deployments within 12 months
 - Expect IPv6 to seriously effect their business with 3 to 5 years

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