

IPv6 Deployment, Security, Traps

auch: „Teil 3“

IPv6 Workshop ISPA Academy

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Introducing IPv6 @Home

- In echt oder in der Sandkiste?
 - ...get real, you had some 10 years to play in the sandbox!
 - 6net-Project started in 2001 ☺ www.6net.org
- IPv6: an art – a craft – or what?:
 - yes, it is a craft, you can learn some stuff, formally
 - yes, it is an art, like everything that requires experience
 - but, it is rather a process
 - learning by doing! ...and expect surprises ☺
- IPv6-now!
 - what 's the goal for your shop?
- IPv6-act-now!
 - what do you need? Maybe – a plan? ☺ like HEAnet, IE?

Was brauchen wir für IPv6

- Software, ganz klar
 - im Endsystem – a non-issue these days
 - mostly at least, in modernen Endsystemen
 - im Core: Router, L3-Switches
 - DNS und Services
 - out-sourced?

- Hardware, ganz klar
 - Core/Backbone-Equipment mit (basic) Hardware-Support
 - „enough“ VLAN capacity or tunnels or MPLS
 - Firewalls? 😊 and ☹️
 - any special equipment? appliances? load balancers?
 - IDS/IPS?
 - CPEs? ☹️ am Weg zu 😊

Was brauchen wir für IPv6

■ Redundanzen

- Backup ebenfalls IPv6-fähig?
- Hot-Stand-By?
- Load-Balancer?
- Ausfalls/Notfalls-Rechenzentrum?

■ Management

- MIBS? Netflow V9?
- nagios/icinga/service monitoring?
- your favourite commercial net-management money-pit?
- logfile analysis scripts or application?
- configuration management system?

Pitfalls

- Backends/Back-Office/Services
 - IP-Address Management/Access Control?
 - IP-Addresses as 32bit-u-int in a Database-Schema?
- Traffic Statistics? Data Retention?
- Error Handling/Helpdesk?
 - can your TTsys grok IPv6 addresses?
 - does your Help-Desk speak IPv6?
- Incident Handling?
 - how about logfiles?
 - how about service availability checking?
- Applications?

Applications (cont...)

- Was sind die „wichtigen“ Services?
 - for us:
 - wireless access
 - students ' hostels
 - university administration
 - eLearning / Streaming
 - ...

- Aber
 - kann die eLearning-Plattform IPv6?
 - kann die Uni-Verwaltung IPv6?
 - kann der Web-Server IPv6 (ja ☺)
 - funktioniert **eduroam**?
 - funktioniert der Streaming-Server mit IPv6? (ja ☺)

Dual-Stack or Dedicated Service

- Das Komfortabelste ist eine kongruente Konfiguration und flächendeckend Dual-Stack
- Eine mögliche Alternative ist die Auslieferung via L2-VLAN
 - keine Einschränkung der MTU ☺
- Wenn die Hardware noch „müde“ ist
 - Transport von IPv6-Paketen in MPLS (6PE und Freunde)
- IPv6-in-IPv4 Tunnel im Backbone
 - nicht sexy aber OK, wenn alle wissen, was sie tun (PMTU!!)
 - debugging
- Fan-Out
 - Tunnel-Broker
 - VPNs

Surprises/Process

- Windows-Versionen kommen oft mit ‚kranken‘ default-configs,
 - zB im Wireless meldet sich Vista/Windows7 als 6to4 Tunnel-Server und Router
 - hat dann keine IPv4-Connectivity für den Tunnel
 - wirkt wie black-hole route ☹
- VPN oder Firewall-Services am Endhost
 - kennt kein IPv6, daher
 - ships-in-the-night, daher
 - IPv4 ist verschlüsselt und geknechtet,
 - IPv6 geht daneben im Klartext vorbei
 - abhängig von Funktion des Endsystems und
 - den DNS-Antworten

brave new world

- VoIP HardPhones IPv6-only?
- „scenic routing“ durch Tunnel, 2x um die Kugel, 1x zum Satelliten
- many (most?) ISPs do not (yet) have the tools or skills or resources to do trouble-shooting for IPv6 (reliably or quickly)
- IPv6-access to stuff like Google 😊
 - white-listing or manual selection
- Content-Delivery-Services?
- <insert your input here>
- v6 here \leftrightarrow v4 there: „Carrier-Grade“ NAT-PT?
 - who 's going to have the rotating \$-signs next year?

for further info...

- diverse (ältere) Projekte (6NET, 6diss,...)
 - <http://www.6net.org/>
 - <http://www.6diss.org/>

- RIPE Labs <http://labs.ripe.net/>
- IPv6ActNow <http://www.ipv6actnow.org/>
- RIPE 's IPv6 working Group
 - maintains IPv6-capable CPE list!
 - reports about live test, e.g. recently by Heise.de (Nov. 2010)
<http://www.ripe.net/ripe/wg/ipv6/index.html>
- RIPE NCC 's Test-Probe Project („Atlas“)
<https://atlas.ripe.net/>

- World IPv6 Day 6.6.2011 by ISOC
<http://www.worldipv6day.org/>

for further info...

- World IPv6 Launch 6.6.2012 by ISOC
<http://www.worldipv6launch.org/>
- Für Endsysteme
<http://test-ipv6.com/>
- Präsentationen...
 - World IPv6 Launch: The Future is Forever
<https://ripe64.ripe.net/presentations/40-ISOC-WorldIPv6Launch-RIPE64.pdf>
 - ... comparing V4 and V6 protocol Performance
<https://ripe64.ripe.net/presentations/78-2012-04-16-ripe64.pdf>
 - The case for IPv6-only data centres
https://ripe64.ripe.net/presentations/67-20120417-RIPE64-The_Case_for_IPv6_Only_Data_Centres.pdf

Fragen?

