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LANCOM Systems

LCOS 8.63 Beta 1 – in a nutshell
June 2012

IP^{v6}

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Systems

LCOS 8.63 Beta 1

General



The LANCOM operating system LCOS and the corresponding management tools (LCMS) regularly provide **free** new functions to all current LANCOM routers, access points and gateways.

As a new service, LANCOM offers you a beta version of our updated operating system LCOS. The **LCOS 8.63 Beta 1** is based on version 8.62 and extends it with IPv6 capability. This trial version offers you for the first time the opportunity to test IPv6 with your current LANCOM network components.

The following is an overview of the new IPv6 features.



LCOS 8.63 Beta 1

Highlights



- LCOS 8.63: Based on LCOS 8.62, additionally with IPv6 functions
- The tunneling techniques 6to4, 6in4, and 6rd enable IPv6 Internet access even if your provider does not support native IPv6
- Support for native IPv6 Internet access (plain IPv6, IPv6 over PPP)
- DHCPv6 client
- DHCPv6 server (stateless mode)
- DHCPv6 relay agent
- IPv6 firewall

Paths to IPv6

Our recommendations

There are two ways to migrate to IPv6:

- a) Without native IPv6 Internet access (tunneling)
 - "6to4" (not recommended)
 - "6in4" (worth considering)
 - "6rd" (recommended)

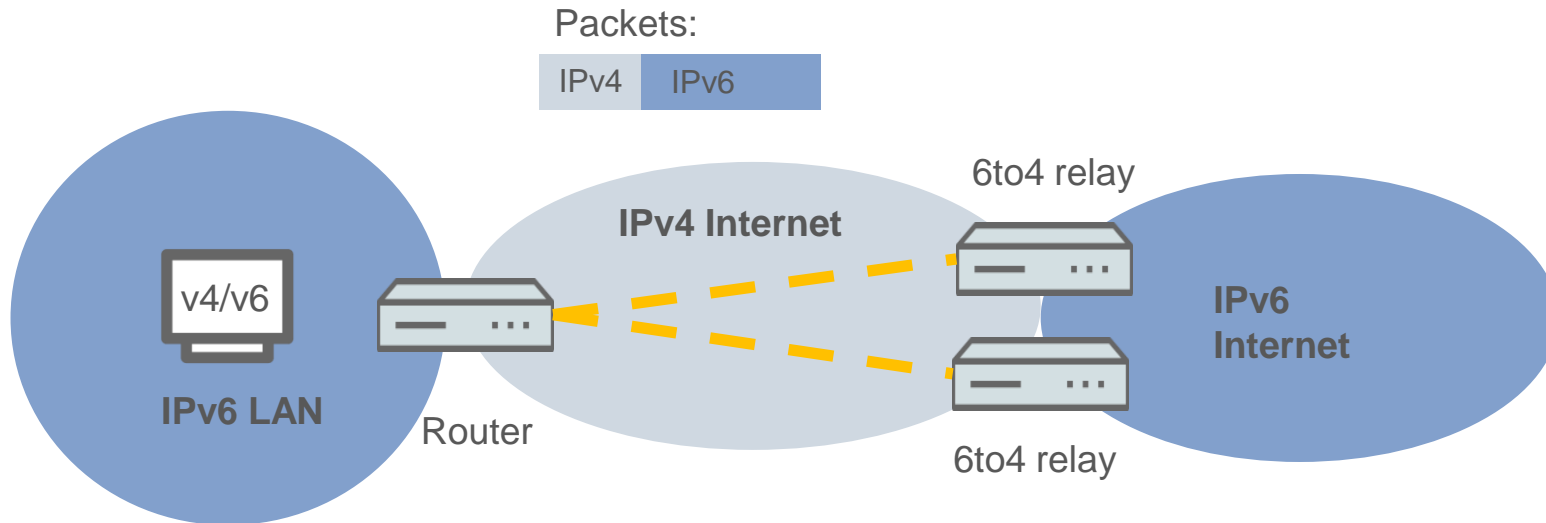
- b) Parallel IPv4 and IPv6 access (dual stack)
 - as the desired goal, although not yet widely available

...LCOS 8.63 Beta can implement any of these options!



Tunneling mechanisms

6to4 tunnel



- Dynamic tunnels: Automatic selection of a relay (no need to explicitly set up a tunnel; choice of 6to4 relay depends on the location and network)
- IPv6 prefix: Formed from 6to4 prefix 2002::/48 and the router's own public* IPv4 address (* required)
- 6to4 router sends packets to a 6to4 relay

Advantage:

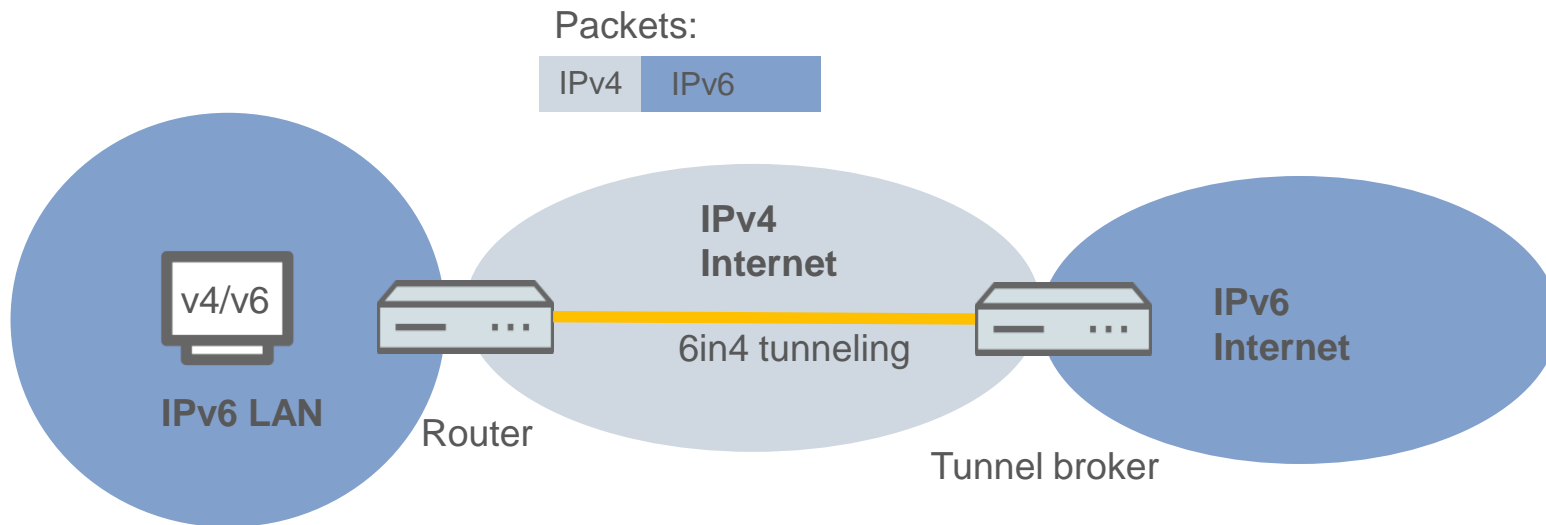
6to4 relays offer public access to the IPv6 network over an IPv4 connection.

Downside:

Open architecture theoretically allows IP spoofing, i.e. the falsification of IP addresses.

Tunneling mechanisms

6in4 tunnel



- Linking of IPv6 networks via IPv4-only Internet
- Static tunnel configuration
- IPv6 prefix: Statically assigned by a "tunnel broker"
- Tunnel broker, e.g. *Hurricane Electric* (<http://www.he.net/>)

Advantage:

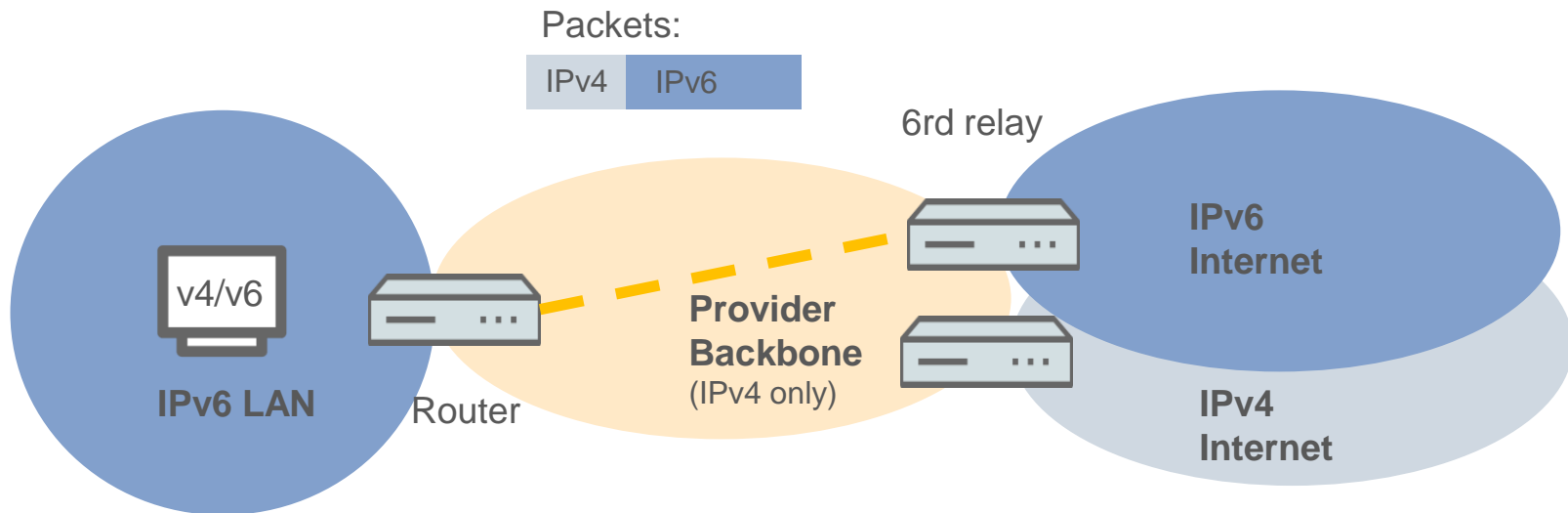
Secure, static tunnel configuration from an existing IPv4 access to the IPv6 network.

Downside:

Must be applied for from the tunnel broker.

Tunneling mechanisms

6rd tunnel



- 6rd = IPv6 Rapid Deployment
- Dynamic tunnel with 6rd relay in the provider backbone, no explicit tunnel set-up required
- Router sends packets to the provider's 6rd relay
- IPv6 prefix: Assigned by provider (static or DHCPv4)
- Provider support essential

Advantage:

Better security than with 6to4.

Downside:

Provider (ISP) must support 6rd.

Native Internet access

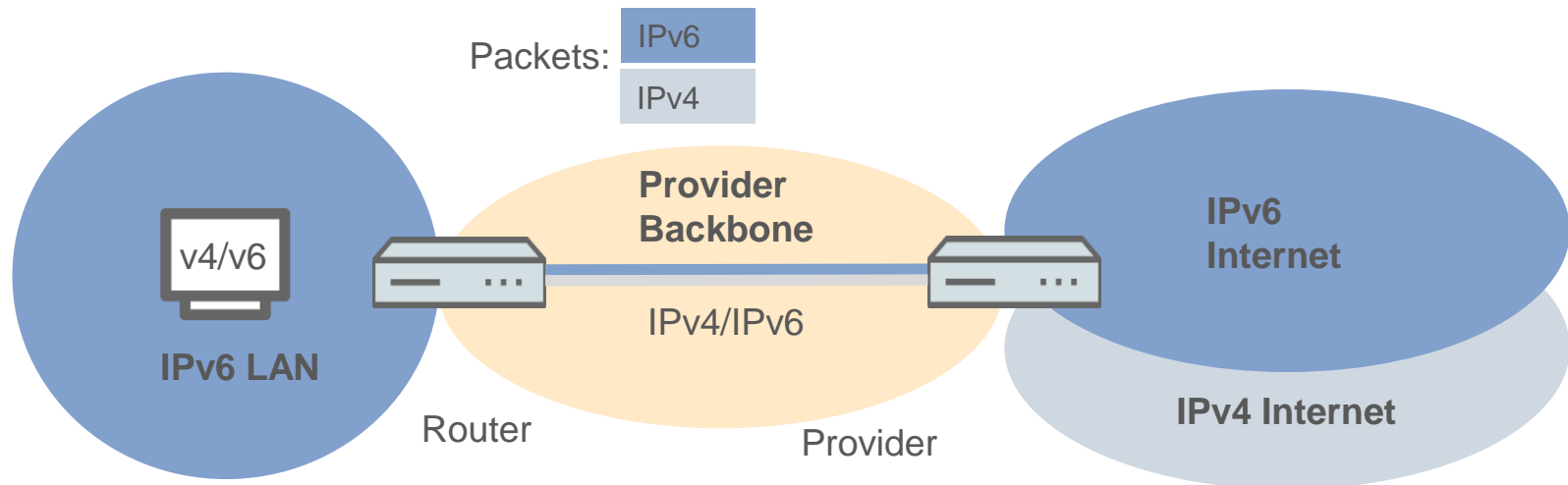
PPP (dual stack)

Current status (H1/2012):

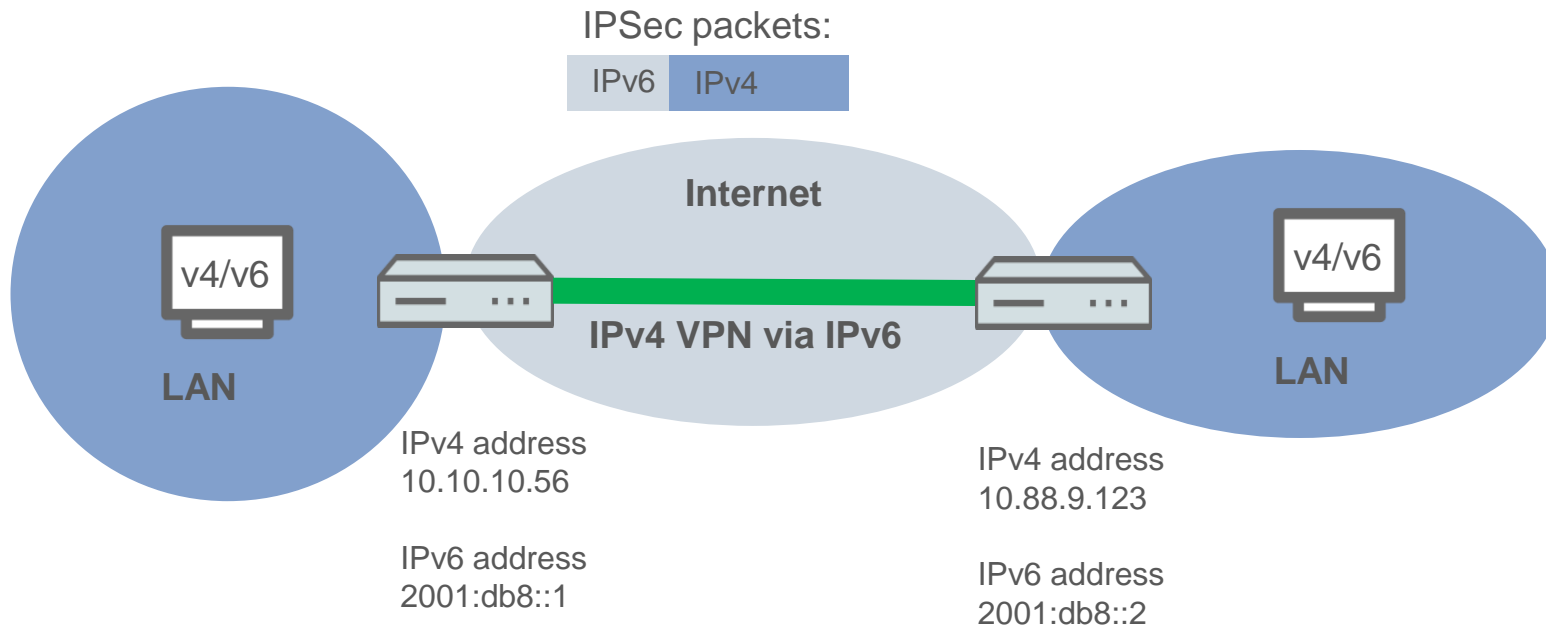
Only a few ISPs assign their end customers IPv4 and IPv6 addresses.

Intended goal (end of 2012):

Internet providers offer widespread coverage of IPv4 and IPv6 addresses in parallel (dual stack).



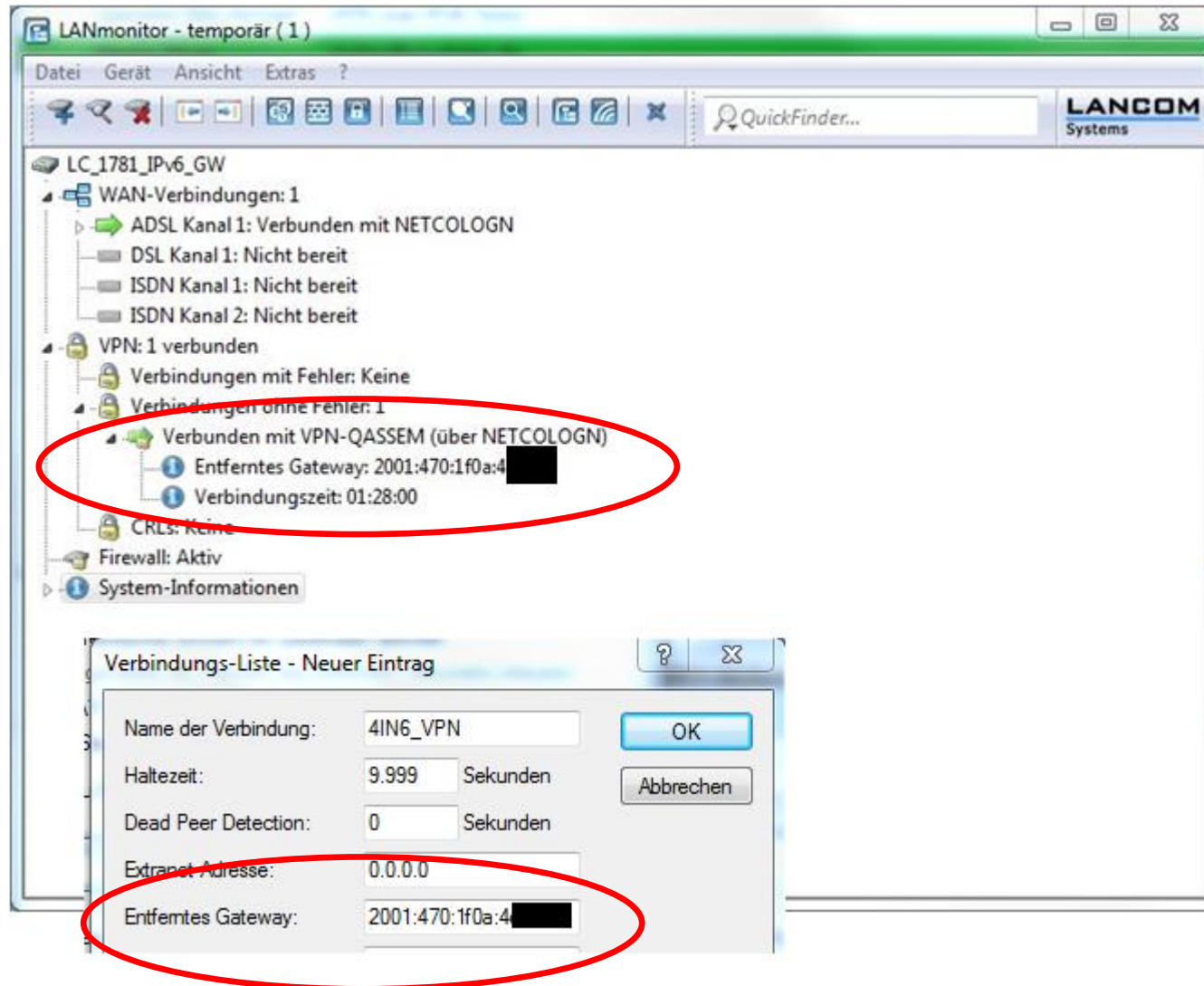
- IPv4 and IPv6 share a PPP session with double address assignment (dual stack)
- Joint and separate PPP sessions for IPv6 are supported
- Provider assigns IPv4 address and IPv6 prefix (prefix delegation)
- Native connectivity to IPv4 and IPv6 Internet



- Problem: Establishing a tunnel between sites with private provider IPv4 addresses is not possible
- This is already the case, e. g. in cellular or cable
- Instead the IPv6-WAN address is used
- IPv4 still remains the packet

IPv4 VPN via IPv6

LANmonitor



LANconfig 8.63 Beta 1

IPv6 features

- Easy setup with IPv6 Internet Wizard
- Device detection over IPv6
- Manual addition of devices using their IPv6 addresses
- Configuration over IPv6

The screenshot shows the LANconfig interface for IPv6 Testnetz (192.168.100.x) v6 Adressen. The main table lists devices with their IPv6 addresses, status, and type. A red circle highlights the address fe80::2a0:57ff:fe14:867b for device LC_9100_IPv6. Below the table is a log showing failed status checks for several devices.

Name	Adresse	Gerätstatus	Verlauf	Gerätetyp	Seriennummer
LC_1781_IPv6_GW	fe80::2a0:57ff:fe18:3c13	Ok		LANCOM 1781A	4002121718100..
LC_IAP-3G_IPv6	fe80::2a0:57ff:fe18:28aa	Ok		LANCOM IAP-3G	4002006218100..
LC_1681V_IPv6	fe80::2a0:57ff:fe17:39dd	Ok		LANCOM 1681V, VDSL2/A...	4002027618100..
LC_1711+_IPv6	fe80::2a0:57ff:fe15:e7f3	Ok		LANCOM 1711+ VPN	4001643418000..
LC_9100_IPv6	fe80::2a0:57ff:fe14:867b	Ok		LANCOM 9100 VPN	4002225818000..
LC_L-54ag_IPv6	fe80::2a0:57ff:fe10:aa82	Ok		LANCOM L-54ag Wireless	4000320706000..

Datum	Zeit	Name	Adresse	Meldung
15.12.2011	09:42:39	Router052	10.1.203.141	Aktion abgebrochen
15.12.2011	09:42:39	VP-100-00...	10.1.201.171	Aktion abgebrochen
15.12.2011	09:43:18	LC_1681V_I...	fe80::2a0:57ff:...	Prüfen: Status nicht OK
15.12.2011	09:43:18	LC_1711+_I...	fe80::2a0:57ff:...	Prüfen: Status nicht OK
15.12.2011	09:43:19	LC_L-54ag_...	fe80::2a0:57ff:...	Prüfen: Status nicht OK

6 Gerät(e)

Questions?

Look here for the answers:



IPv6



- **IPv6 site** on the LANCOM homepage—just follow the logo!
- **Techpapers on migration and tunnel technology** — see our IPv6 microsite
- **LCOS 8.63 Beta 1 Addendum to the reference manual**
- **LANCOM Training Center: IPv6 entry-level workshops**; further information available on the LANCOM homepage

Service and Support

We wish you every success with your new LCOS 8.63 Beta version!

We look forward to your **praise and criticism, suggestions or questions:**

mylancom@lancom.de

The latest information about Service and Support can be found on our Support flyer, our Internet site or from our **Knowledge Base**:

If the manual and our latest support topics in the Internet do not resolve your issue, then feel free to contact our **Support Hotline** in Germany from Monday to Friday between 9:00 AM and 5:00 PM (CET)

0900-1-LANCOM (=0900-1-526266)

(1.24€/min. from German landlines).

Your LANCOM Systems Team

