

IPv6@home

Othmar Gsenger <otti@wirdorange.org>

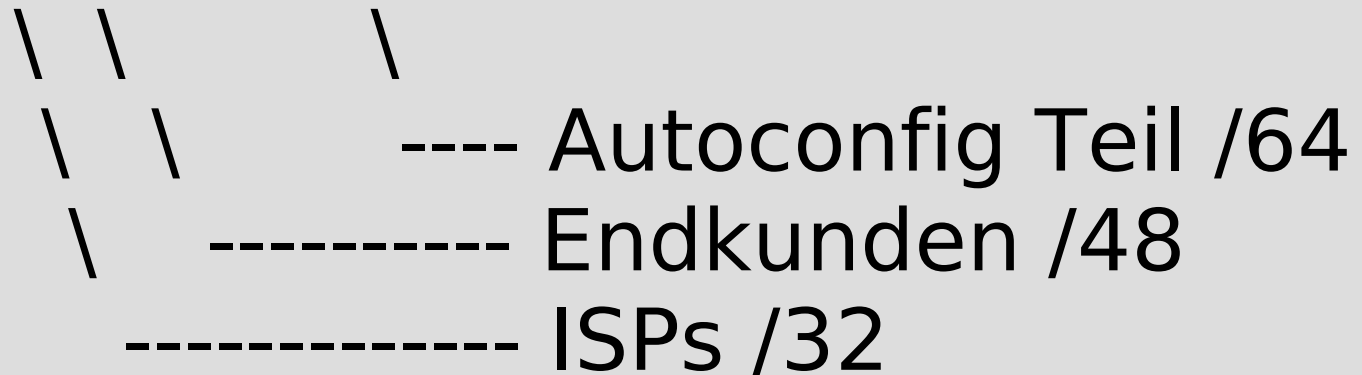
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Ipv6 Adressen

otti@vilap ~ % dig +short AAAA www.kame.net

2001:200:0:8002:203:47ff:fea5:3085



otti@vilap ~ % whois 2001:200:0:8002:203:47ff:fea5:3085
inet6num: 2001:200::/32
netname: WIDE-JP-19990813

Router Advertisement Daemon (radvd)

- Router schickt Router Advertisements mit Netzwerkadresse
- Host hängt seine eigene MAC Adresse an
- 2001:200:0:8002:203:47ff:fea5:3085
Netzwerkadresse | mac adresse |
| + fffe in der Mitte |

freenet6 (go6.net)

- Ipv6 Tunnel Broker
- Bis zu /48 für registrierte Benutzer
- NAT Transversal

Traceroute broker.freenet6.net

traceroute to broker.freenet6.net (64.86.88.116), 30 hops max, 40 byte packets

```
1 10.21.1.254 (10.21.1.254) 1.352 ms 10.394 ms 16.469 ms
2 62.218.221.254 (62.218.221.254) 16.465 ms 15.466 ms 16.976 ms
3 mgraz1-180-221.net.uta.at (212.152.180.221) 14.966 ms 7.410 ms 9.509 ms
4 c76wat1-ten1-2.net.uta.at (212.152.193.10) 16.446 ms 15.474 ms 16.974 ms
5 c76wmodel1-tengige4-1.net.uta.at (212.152.192.206) 16.457 ms 15.480 ms 9.964 ms
6 vie3-core.gigabiteth1-0.swip.net (130.244.205.57) 6.478 ms 32.471 ms 16.459 ms
7 fra2-core.pos9-0.swip.net (130.244.205.41) 23.490 ms 20.955 ms 20.968 ms
8 * weis-core-1.pos0-0.swip.net (130.244.194.181) 32.787 ms 31.931 ms
9 some.frankfurt.router.teleglobe.net (130.244.200.162) 24.964 ms 40.434 ms 33.480 ms
10 if-1-0-0.core2.fr1-frankfurt.teleglobe.net (80.231.65.5) 32.964 ms 32.472 ms 32.966 ms
11 if-5-0-0.core1.pv1-paris.teleglobe.net (80.231.65.66) 30.455 ms 29.467 ms 29.969 ms
12 if-2-0.core2.pg1-paris.teleglobe.net (80.231.73.5) 29.467 ms 29.953 ms 29.470 ms
13 if-9-0.mcore4.nqt-newyork.teleglobe.net (216.6.87.25) 115.918 ms 114.385 ms 114.996 ms
14 if-1-0.mcore3.mtt-montreal.teleglobe.net (216.6.87.22) 121.858 ms 121.385 ms 122.429 ms
15 vlan3.msfc1.mtt-montreal.teleglobe.net (207.45.221.168) 285.332 ms 198.344 ms 196.864
ms
16 * *
```

6to4

- Eigenes Prefix 2002::/16
- 2002:'IPv4 Adresse'::/48 wird in Ipv4 verpackt zu dieser Adresse geroutet
- Ohne Registrierung
- Anycast 6to4 Router



Filter: + Expression... Leeren Anwenden

No.	Time	Source	Destination	Protocol	Info
1	0.000000	2001:5c0:8fff:ffe:::	2002:5340:d013:1::1	ICMPv6	Echo request
2	0.000090	2002:5340:d013:1::1	2001:5c0:8fff:ffe:::	ICMPv6	Echo reply
3	0.999629	2001:5c0:8fff:ffe:::	2002:5340:d013:1::1	ICMPv6	Echo request
4	0.999716	2002:5340:d013:1::1	2001:5c0:8fff:ffe:::	ICMPv6	Echo reply
5	2.001611	2001:5c0:8fff:ffe:::	2002:5340:d013:1::1	ICMPv6	Echo request

▶ Frame 2 (138 bytes on wire, 96 bytes captured)
 ▶ Ethernet II, Src: Compu-Sh_02:66:a3 (00:00:cb:02:66:a3), Dst: Cisco_48:58:c0 (00:13:5f:48:58:c0)
 ▼ Internet Protocol, Src: 83.64.208.19 (83.64.208.19), Dst: 192.88.99.1 (192.88.99.1)

- Version: 4
- Header length: 20 bytes
- ▶ Differentiated Services Field: 0x00 (DSCP 0x00: Default; ECN: 0x00)
- Total Length: 124
- Identification: 0x0000 (0)
- ▶ Flags: 0x04 (Don't Fragment)
- Fragment offset: 0
- Time to live: 64
- Protocol: IPv6 (0x29)
- ▶ Header checksum: 0xf3ab [correct]
- Source: 83.64.208.19 (83.64.208.19)
- Destination: 192.88.99.1 (192.88.99.1)
- ▶ Internet Protocol Version 6
- ▶ Internet Control Message Protocol v6

```

0010  00 7c 00 00 40 00 40 29 f3 ab 53 40 d0 13 c0 58  .|..@.@] ..S@...X
0020  63 01 60 00 00 00 00 40 3a 40 20 02 53 40 d0 13  c.`....@ :@ .S@..
0030  00 01 00 00 00 00 00 00 00 01 20 01 05 c0 8f ff  ..... .. ....
0040  ff fe 00 00 00 00 00 00 47 3d 81 00 14 4f a1 11  ..... G=...0..
  
```


Anycast Router

- Hohe Verfügbarkeit
- Kurze Paketwege
- Geografisches Load-Balancing

Traceroute 192.88.99.1

XLink

```
1 fritz.fon.box (192.168.1.1) 0.843 ms 0.760 ms 0.609 ms
2 85.199.10.1 (85.199.10.1) 48.335 ms 49.858 ms 49.945 ms
3 cora.xlink.at (85.199.0.161) 116.427 ms 97.918 ms 116.916 ms
4 Gi4-0-208.vie-per-access-1.interoute.net (217.118.112.209) 114.087 ms 95.480 ms 128.866 ms
5 PO6-0.vce-val-core-1.interoute.net (217.118.118.129) 103.855 ms 122.261 ms 142.873 ms
6 PO9-0.mil-cal-access-1.interoute.net (217.118.118.134) 96.416 ms 128.959 ms 108.916 ms
7 89.202.64.74 (89.202.64.74) 103.405 ms 116.390 ms 133.375 ms
8 itgate.mix-it.net (217.29.66.65) 116.398 ms 131.382 ms *
9 if-2-0.scooby-monster.core.trn.itgate.net (213.254.2.33) 115.920 ms 109.081 ms 149.886 ms
10 if-0-0.hula.core.TRN.itgate.net (213.254.0.17) 133.372 ms * 118.717 ms
```

Inode

```
1 172.25.46.23 (172.25.46.23) 21.119 ms 19.120 ms 22.158 ms
2 bord-vl-00-505.shuttle.vien.inode.at (195.58.160.177) 30.635 ms 20.162 ms 20.393 ms
3 viec-gb-05-004.shuttle.vien.inode.at (62.99.171.45) 55.558 ms 20.859 ms 20.781 ms
4 otta-po-00-001.shuttle.vien.inode.at (62.99.170.81) 19.643 ms 19.201 ms 18.691 ms
5 ff-m-po-03-001.frankfm.germ.inode.de (62.99.170.2) 40.253 ms 33.844 ms 33.654 ms
6 decix2.rm-com.net (80.81.193.23) 33.827 ms 33.502 ms 33.496 ms
7 ipv6gw00-cc1.rm-com.net (217.173.143.232) 39.912 ms * 38.215 ms
```

Linux Tools

- iputils-ping (ping6)
- iputils-tracepath (tracepath6)
- iproute
- radvd

Let's go

- https://www.wirdorange.org/index.php/Linux_6to4
- <http://www.go6.net>