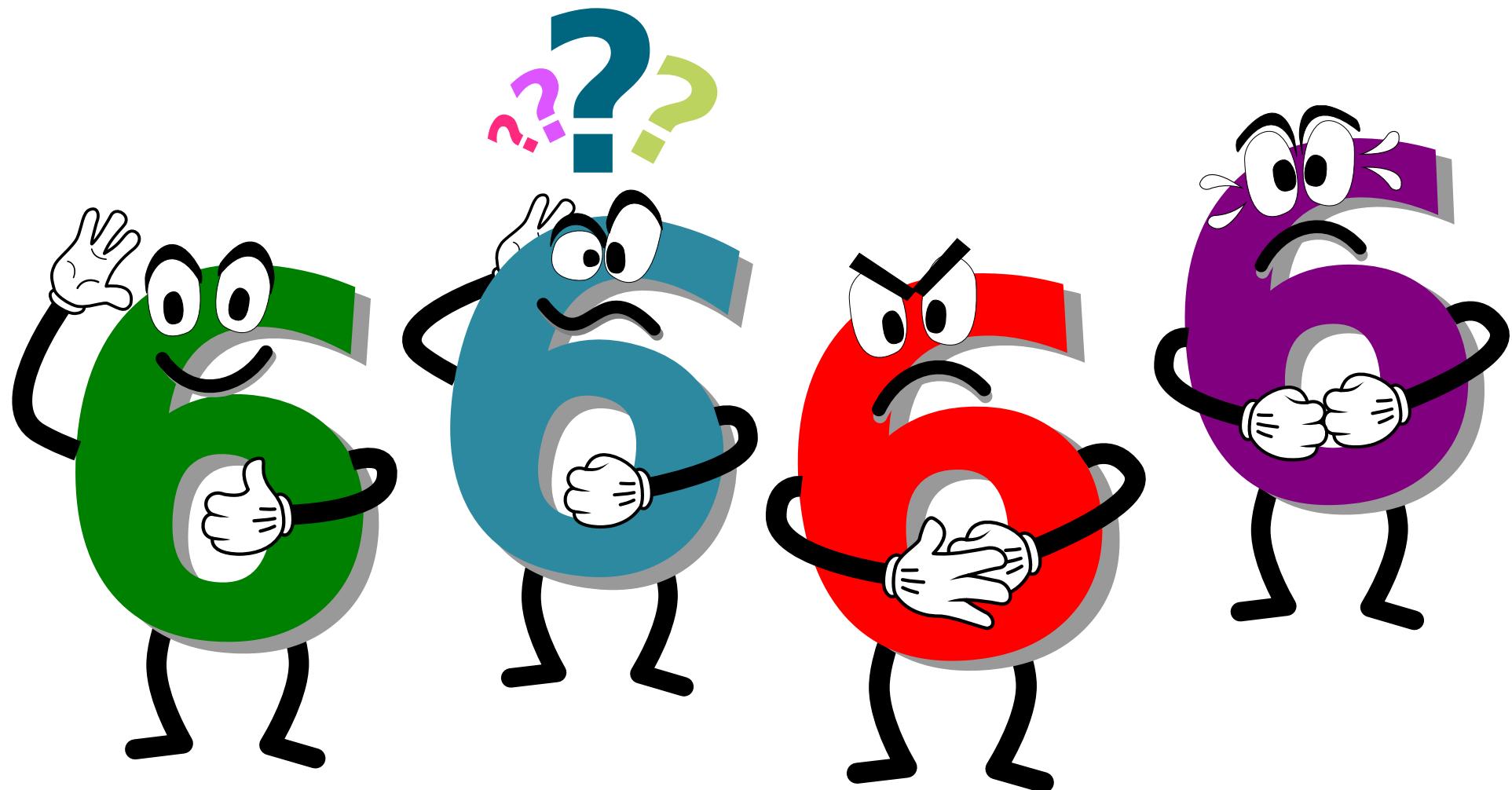
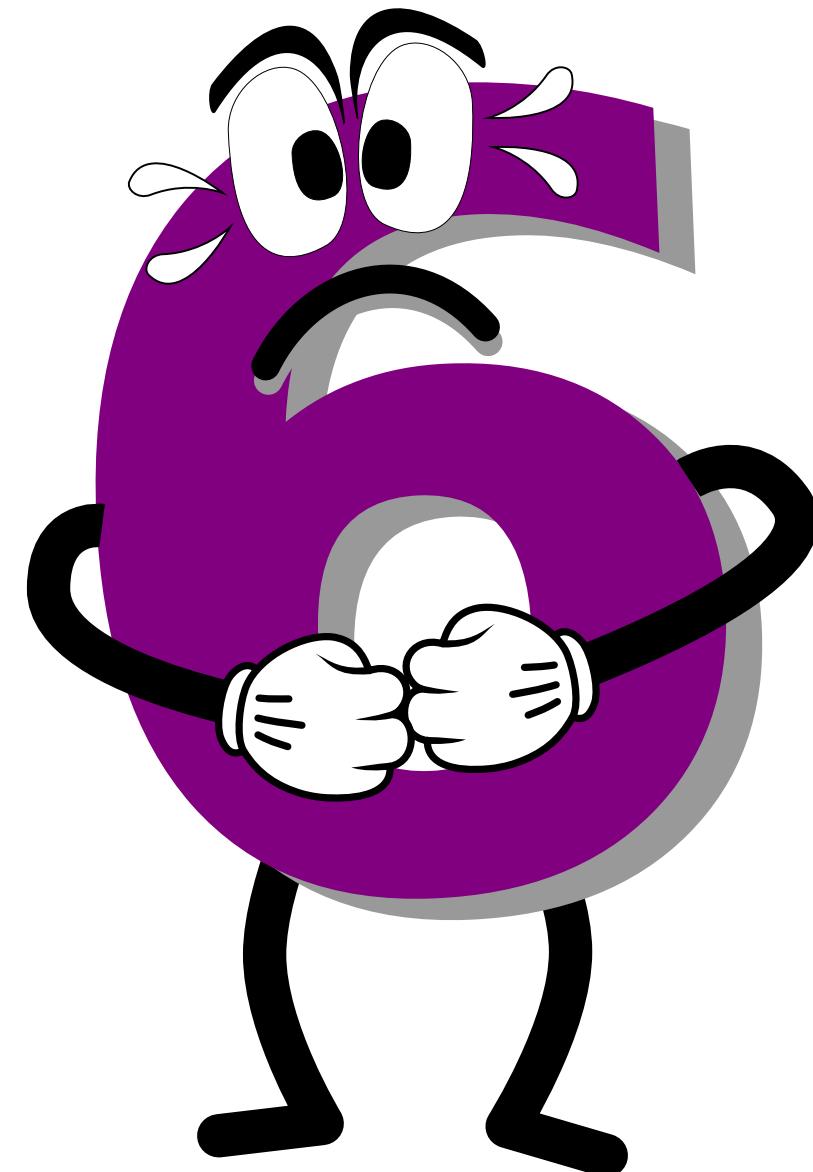


# At which IPv6 stage are you?



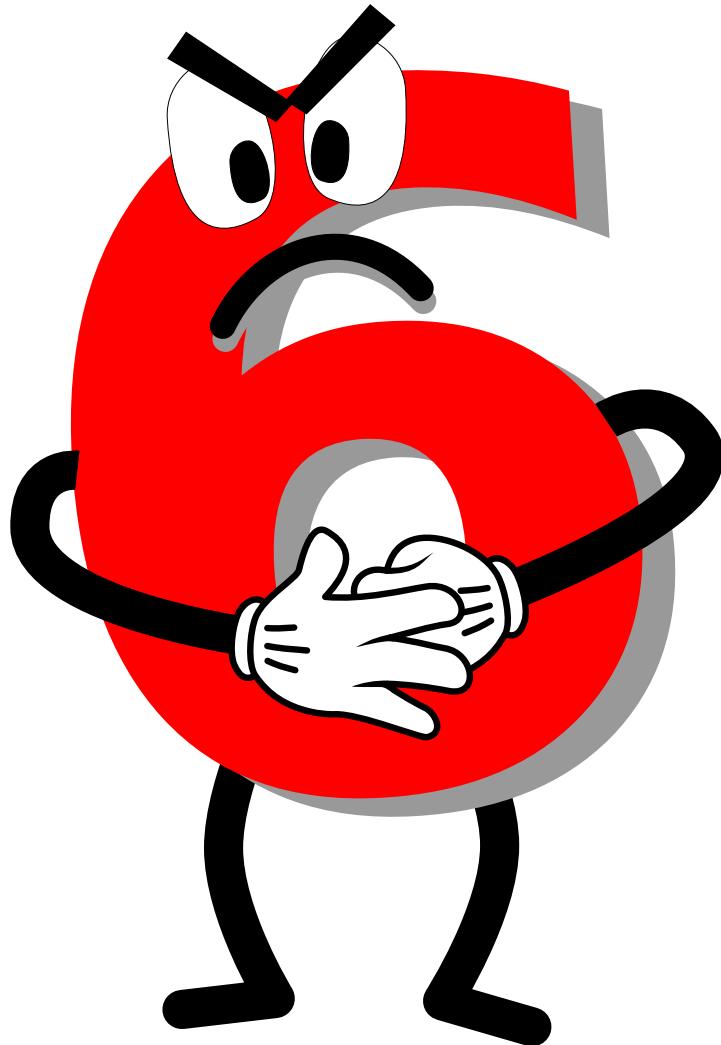
# Scared



The address is too long!

All my IP addresses are traceable!

# Angry



It's a conspiracy there  
is no IPv4 shortage!

As long as I get an  
IPv4 address I don't  
care!

Nobody is using it  
anyway!

# Confused



There are so many new acronyms.  
SLAAC, DAD, RA, ND ...

Why can't I reach IPv6 websites over IPv4?

Why are multiple IPv6 address assigned to interfaces?

::BFF



My home network is running on IPv6.

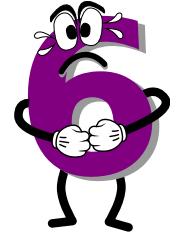
I know what SLAAC, RD and ND are.

I can classify IPv6 addresses.

I can configure an IPv6 firewall.

# The address is too long!

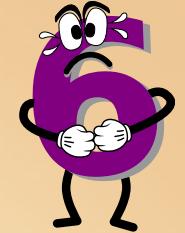
## Really?



fd00::1

THIS IS A PERFECTLY  
VALID IPV6 ADDRESS

# All my IP addresses are traceable!



c

is for

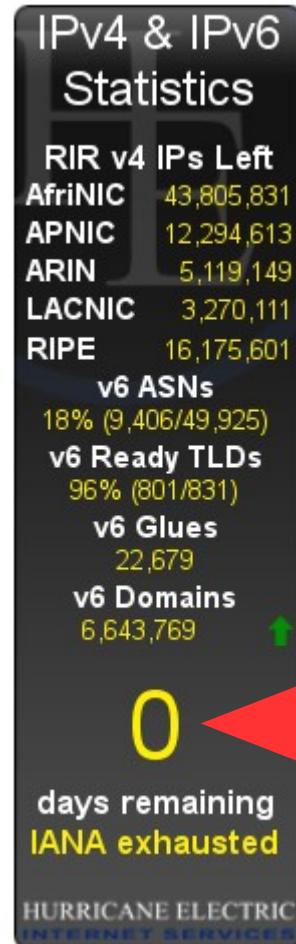
cookie



# It's a conspiracy there's no IPv4 shortage!



HURRICANE ELECTRIC  
INTERNET SERVICES

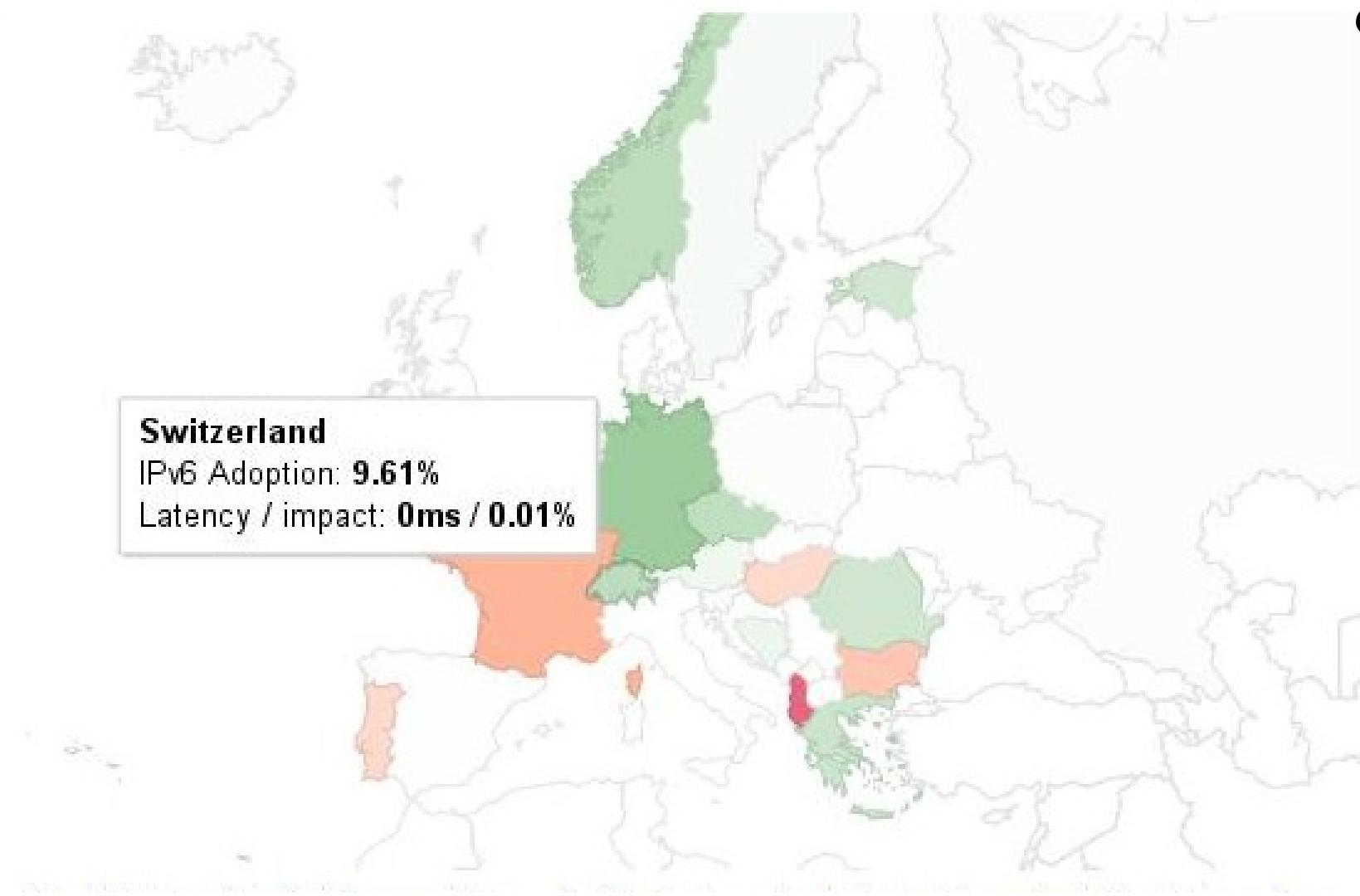


Hurricane Electric's IPv4 exhaustion counter shows a big yellow zero.

And RIRs are running towards 0 as well.

# Nobody is using it anyway!

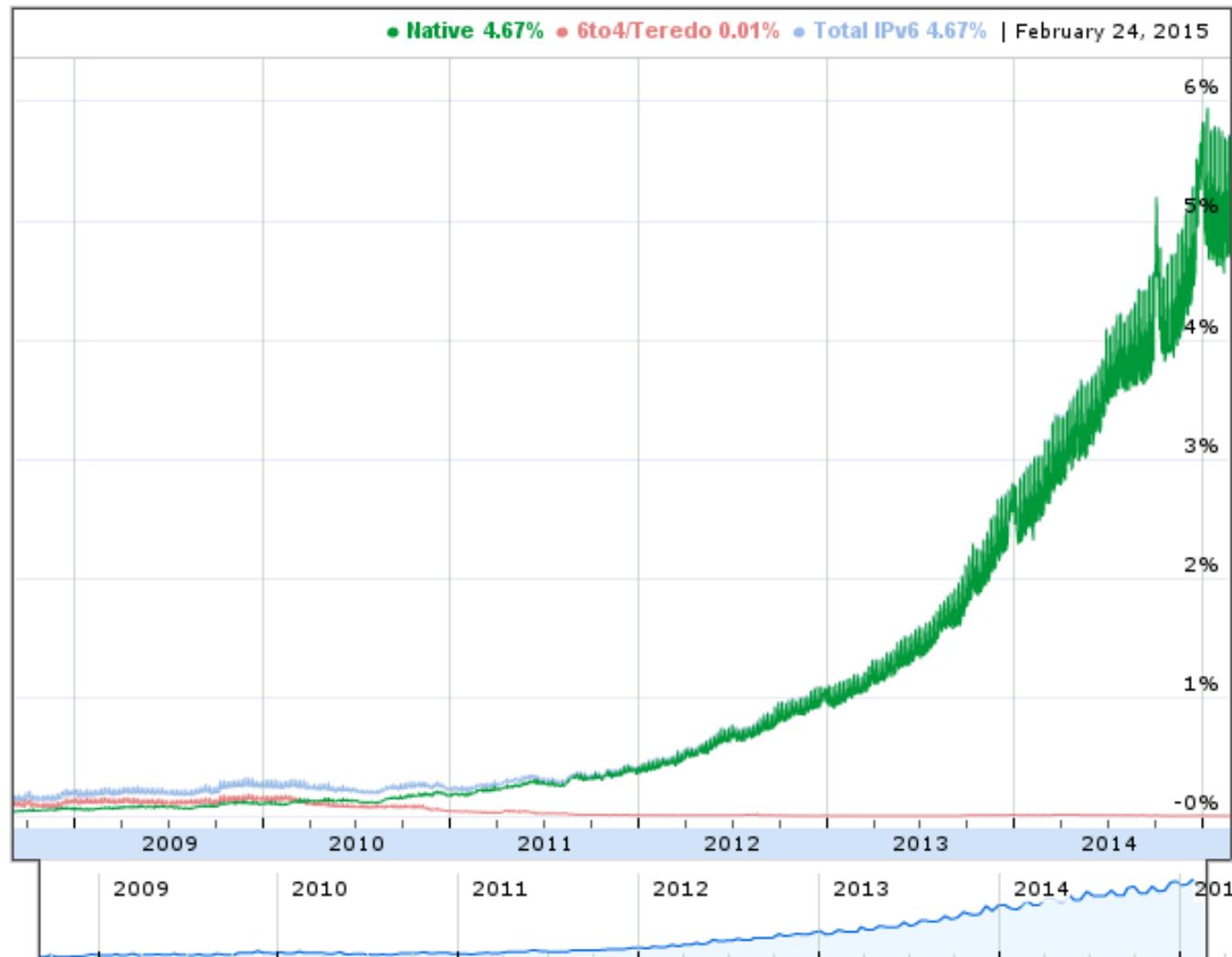
Per-Country IPv6 adoption



Source: <http://www.google.com/intl/en/ipv6/statistics.html>

# Nobody is using it anyway!

## World Wide Users



Source: <http://www.google.com/intl/en/ipv6/statistics.html>

# As long as I get my IPv4 address I don't care!

METANET

## IPv6 Status

### Umstellungsphase

Alle Kunden erhalten die gleiche Anzahl IPv6-Adressen gemäss Zuteilung im IPv4-Adressraum, um die Dual-Stack-Implementation (Parallelbetrieb) sicherstellen zu können. Die Zuweisung erfolgt ohne zusätzlichen Kosten. Bestehende Kunden können die Zuteilung via Support System jederzeit anfragen.

Diese Phase dauert an bis die METANET IPv4-Allokation ausgeschöpft ist.

### Post-Transitionsphase

Neue Systeme erhalten ab diesem Zeitpunkt nur noch IPv6-Adressen. Dies wird voraussichtlich nicht vor 2016 der Fall sein.



# There are so many new acronyms.



**SLAAC**

## **StateLess Address AutoConfiguration.**

Unlike DHCP in IPv4 the host portion of the IPv6 address is independently determined by the host itself.

**DAD**

## **Duplicate Address Detection**

Ensures there is no other Host on the same broadcast domain.

**ND**

## **Neighbor Discovery Protocol**

Used for getting information about the network neighborhood, somewhat similar to ARP.

**RA**

## **Router Advertisement**

Part of the NDP. Sent by a router to announce a gateway to into the subnet.

# Why can't I reach IPv6 websites over IPv4?



# Why are multiple IPv6 addresses on interfaces?



```
urs@teefix:~$ ip -6 addr show dev eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc 1000
    inet6 2001:8e0:2003:b200:c0d7:1c4e:f566:cfbb/64 scope global \
        temporary dynamic
        valid_lft 86395sec preferred_lft 14395sec
    inet6 2001:8e0:2003:b200:b9a9:fd99:2034:3634/64 scope global \
        temporary deprecated dynamic
        valid_lft 86395sec preferred_lft 0sec
    inet6 2001:8e0:2003:b200:216:17ff:fe32:ed96/64 scope global \
        dynamic
        valid_lft 86395sec preferred_lft 14395sec
    inet6 fe80::216:17ff:fe32:ed96/64 scope link
        valid_lft forever preferred_lft forever
```

EUI-64

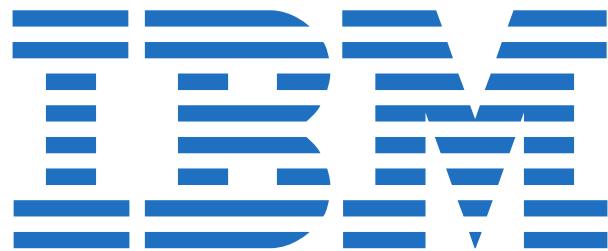
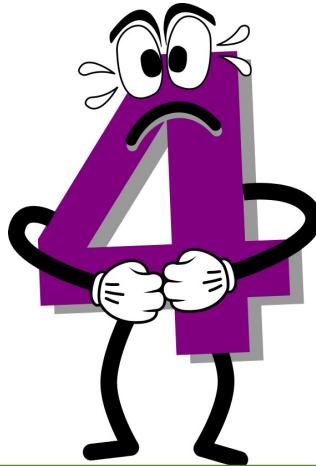
LINK LOCAL

DEPRECATED PE

ACTIVE PE

# Tech Company IPv6 Probe

IPv4 only lamers!



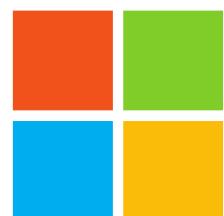
ORACLE®



Dualstack champions



vmware®



Microsoft

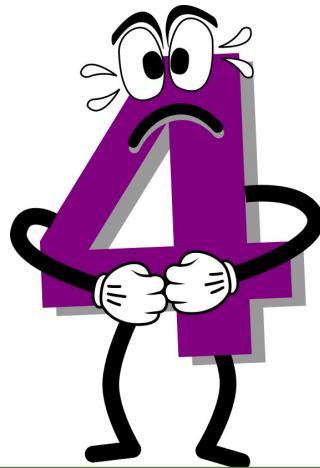


# Wanna use IPv6 at home?

sweet

# Swiss ISP offering IPv6\*

## IPv4 only lamers!



upc cablecom

# Sunrise

## IPv6 ready

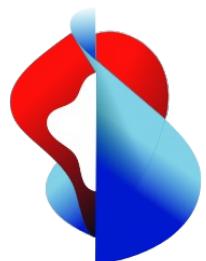


green.ch  
Internet made in Switzerland

# FIBER7

iWay.ch  
QUALITY INTERNET SERVICES

1.  
Bilanz Telekom Rating  
PROVIDER  
Bester ISP 2013



swisscom

# Dig a tunnel!



HURRICANE ELECTRIC  
INTERNET SERVICES



# IPv6 consumer routers\*



# Get a free certificate



HURRICANE ELECTRIC  
INTERNET SERVICES

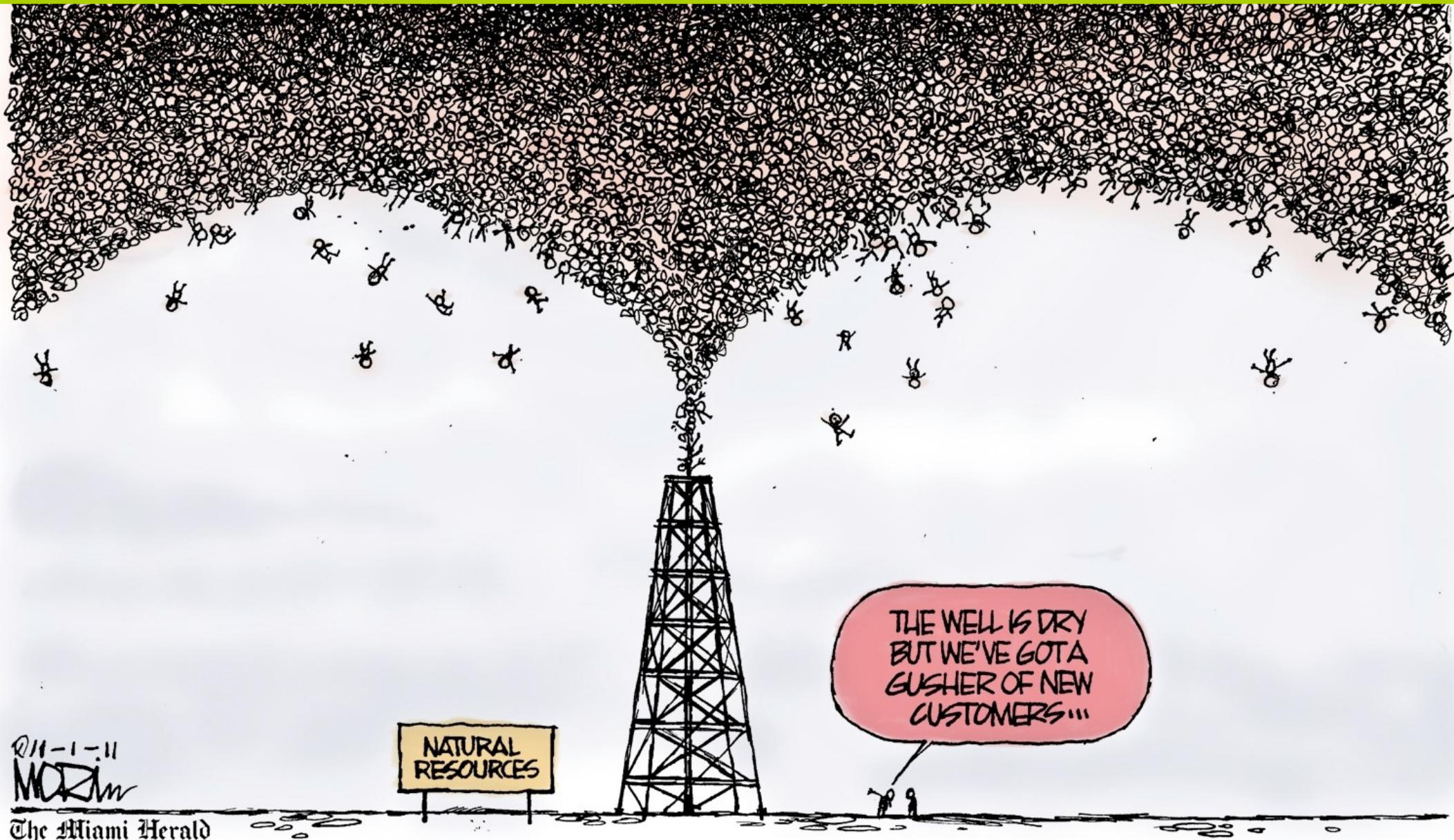


P A R E N T A L

ADVISORY

GEEK CONTENT

# Fun with IPv6 addresses!



# Fun with IPv6 addresses!

IPv4 is 32bit



4 294 967 296



11111111 11111111 11111111 11111111



255 . 255 . 255 . 255

# Fun with IPv6 addresses!

IPv6 is 128bit



340 282 366 920 938 \  
463 463 374 607 431 \  
768 211 456



# Fun with IPv6 addresses!

032: 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111  
064: 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111  
096: 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111  
128: 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111



~~255.255.255.255.255.255.255.255.1~~  
~~255.255.255.255.255.255.255.255~~



ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff

# Fun with IPv6 addresses!

2001:0db8:0000:0000:0000:0001:0002:0003



2001:db8:0:0:0:1:2:3



2001:db8::1:2:3

# Fun with IPv6 addresses!



1337

SPE4K

Elite = 1337  
Newbie = n00b

# Fun with IPv6 addresses!

# Translation table

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| g | i | k | l | o | s | t | y | z |
| 9 | : | c | 1 | 0 | 5 | 7 | : | 2 |
| 1 |   |   |   |   |   |   | 1 |   |

**facebook**

2001:db8::face:b00c

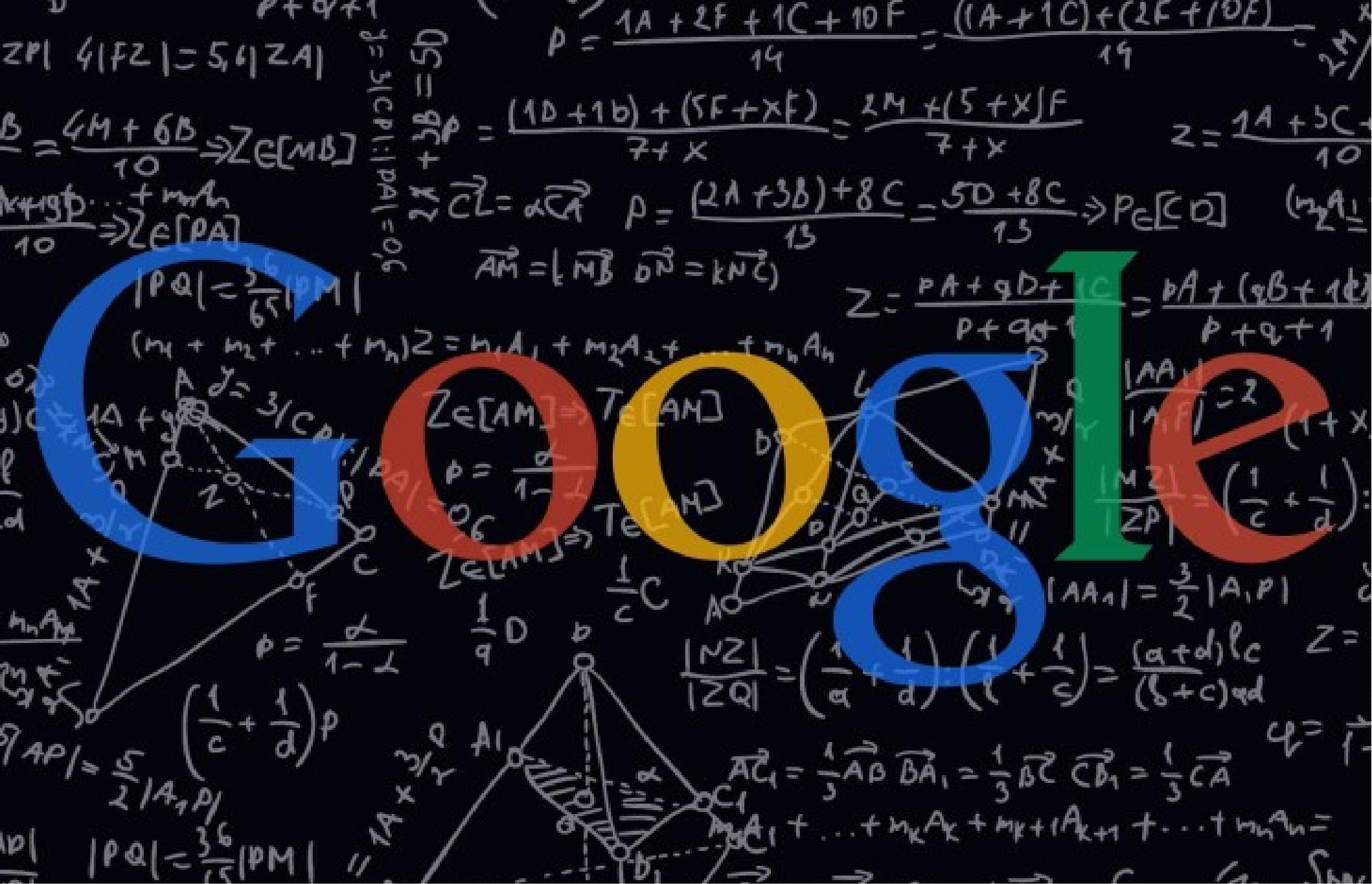
doodie®



2001:db8::D00:d1e



2001:db8::da7e



2001:db8::900:91e



2001:db8::C057:a:de1:501



2001:db8::ad:da5

# GIPSY KINGS



2001:db8::ba:1a:ba:1a



2001:db8::1ad:9a9a



Eidgenössische Zollverwaltung EZV

2001:db8::2011:57:7011

**weight  
watchers**

2001:db8::ea7:1e55



2001:db8::9e:55



2001:db8::90a7



2001:db8::9:9010



2001:db8::Be1f:e



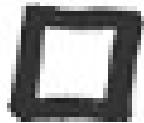
2001:db8::bab:face



2001:db8::B055



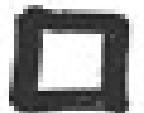
2001:db8::4:be57:1dea



Excellent



Average



Poor

2001:db8::50:50:1a:1a



2001:db8::ba1a:ba1a



No IP Address or Network Equipment was  
harmed in the making of this presentation