RIPE NCC
RIPE NETWORK COORDINATION CENTRE

Building Communities

Lessons Learned from 10 years of IPv6 Training

Nathalie Trenaman| 6 November 2017 | IPv6 Day Denmark

Lessons Learned from IPv6 Courses

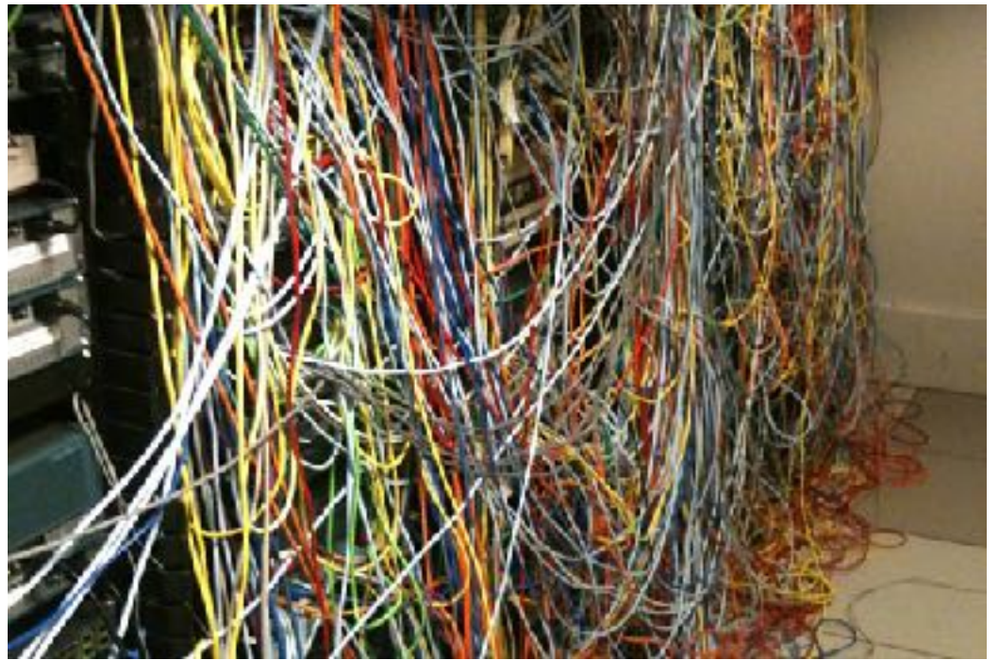
- The only reason for IPv6 deployment is IPv4 depletion
- The biggest fear is complexity
- Followed by security
  - There is no NAT
- Customers don’t ask for it
  - Low priority

Make a Run-Out Plan

- IPv4 addresses are getting expensive and harder to obtain
- Find out how long your pool lasts
  - Check de-provisioning procedures
- Decide if and when you need to acquire IPv4 addresses
  - Try to get local, clean and legit addresses
- On average an IPv6 deployment takes 2,5 years

Maintaining Two Protocols

- Working with IPv4 and IPv6 is double work
  - 2 Addressing plans
  - 2 Filter lists
  - 2 Protocols to monitor



- Build a lab and test **everything**
- Use check lists and 4-eyes principle

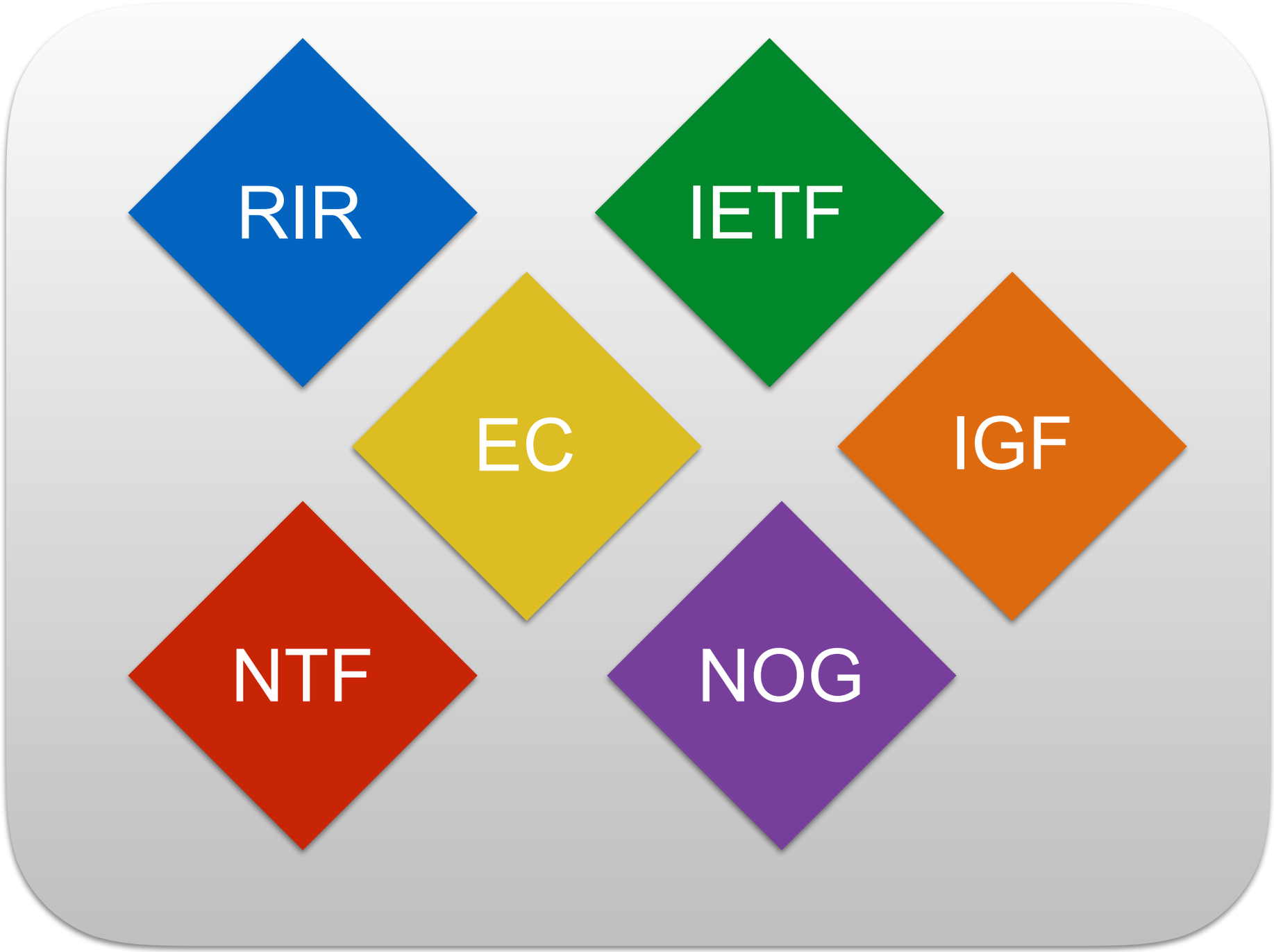
How About Security?

- Yes, you have to brush up your security skills
  - NDP replaces ARP and there is no NAT
- Biggest threat is human error
  - Everyone makes typo’s
- A lot of things are not protocol related
  - But we made an IPv6 Security training course

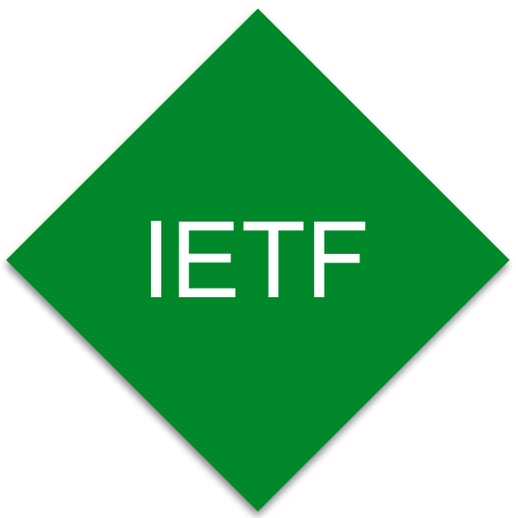
And What Does It Cost?

- Best plan is to add IPv6 to the life-cycle
  - Phased integration
  - Minimal cost
- Commonly agreed:
  - Biggest cost factor is working hours of the (development) teams
  - Updating code, tools and business support systems

There are many IPv6 Communities



Internet Engineering Task Force

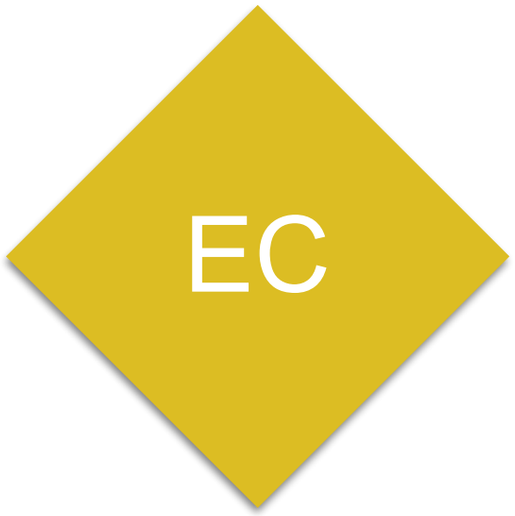


- Makes RFCs
- Has Working Groups
  - v6ops, 6man, opsec, homenet
  - Produces informational, experimental and best practice documents

Internet Governance Forum

- Non-technical, policy makers
  - Influences policy
  - Produces best practice documents
  - Meets once a year

European Commission



- Institute of the European Union
  - Proposes legislation (CGNAT!)
  - Supports local IPv6 Task forces
  - Ran the 6Deploy programme

Regional Internet Registries

- Distribute IPv6 addresses
- Provide training courses and material
- Center of expertise
- IPv6 Measurements
- Support different communities, NOGs and NTFs

Network Operator Groups

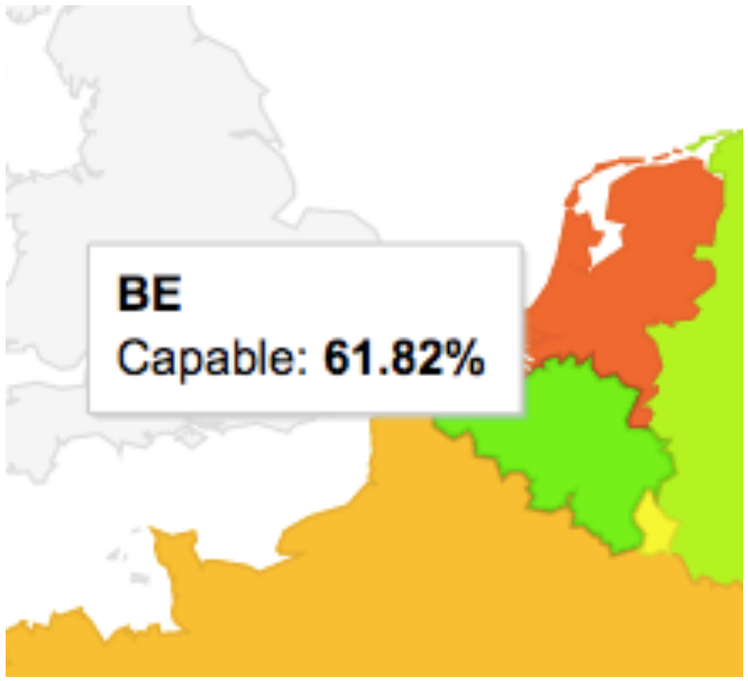
- Local community of Network Operators
  - DKNOG!
  - Provide mailing lists, chat channels
  - Organise meetings
  - Share knowledge

National IPv6 Task Forces

- Brings all local stakeholders together
  - Technical, policy, commercial
  - Discuss common challenges
  - Share knowledge

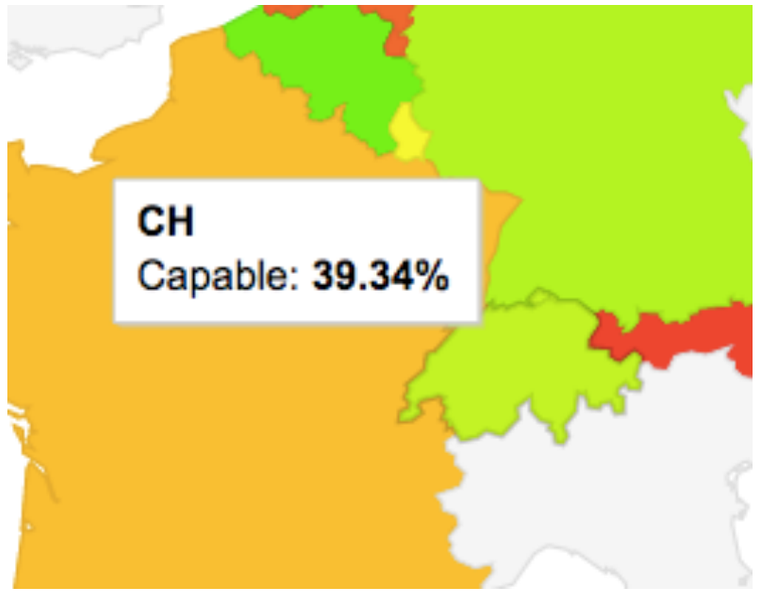
IPv6 TF Success Stories (1)

- Belgium
  - Big IPv4 shortage
  - Dense cable/FTTH/DSL networks
  - CGN limited to 1 IPv4 address per 16 users
  - 3 major ISPs sharing roadmaps and experiences
  - Informal, open atmosphere

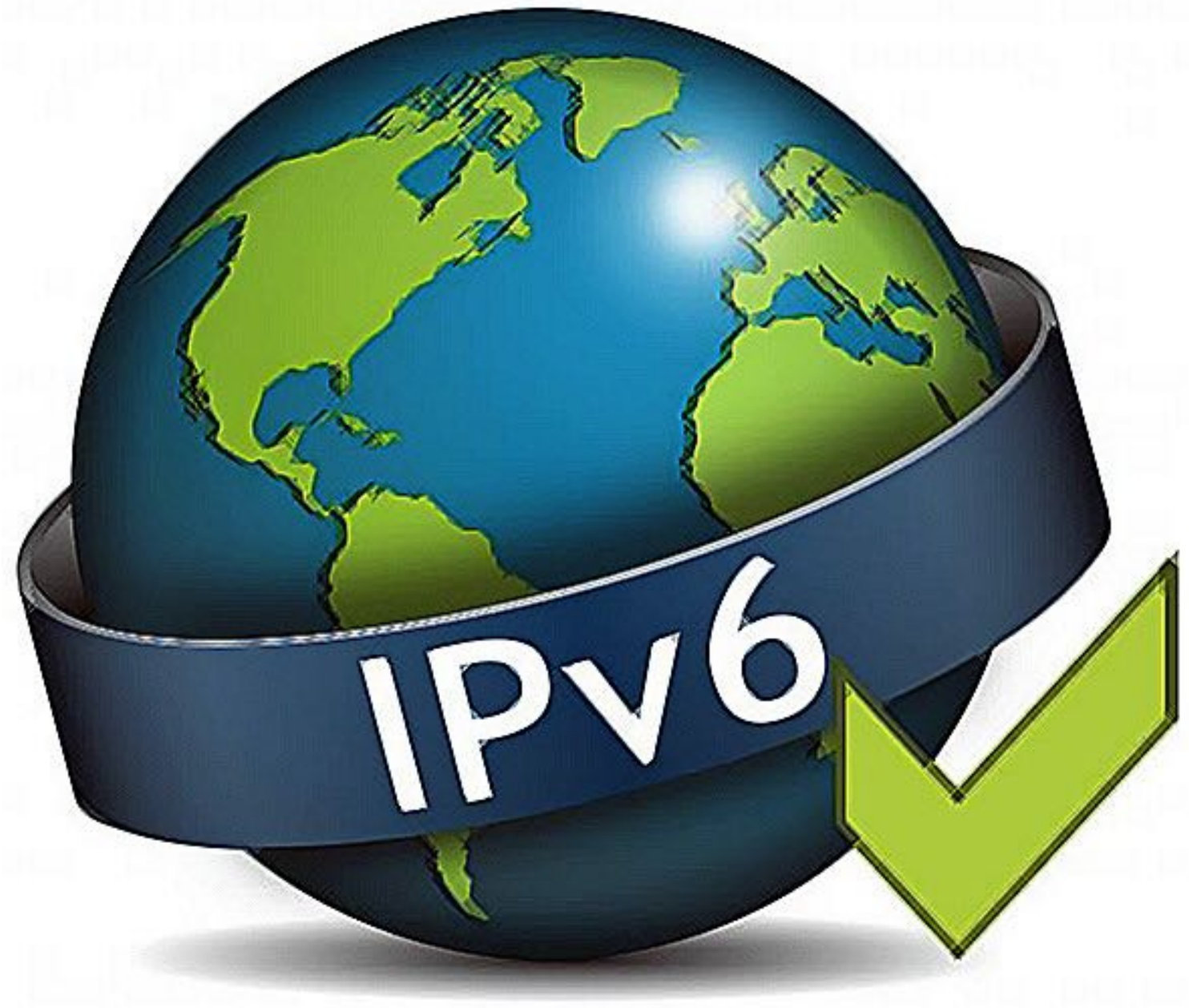


IPv6 TF Success Stories (2)

- Switzerland
  - Big IPv4 shortage
  - Regular small evening sessions
  - 1 large event per year
  - Much focus on enterprises
  - Maintains dashboard of IPv6 enabled websites



Put Denmark Back on the Map



Questions

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