



Logius  
Ministerie van Binnenlandse Zaken en  
Koninkrijksrelaties

## Workshop on Addressing the Barriers to IPv6 Deployment: the Netherlands

Brussels, 24 May 2018

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Interior and Kingdom Affairs

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## Logius, national IPv6 plan



- "Logius is the digital government service of the Netherlands Ministry of the Interior and Kingdom Relations (BZK). It maintains government-wide ICT solutions and common standards"
- In 2015, Logius got tasked by the ministry to obtain IPv6 address space from the RIPE NCC and distribute IPv6 addresses to the national government
  - except the Ministry of Defense, they have different needs in relation to NATO

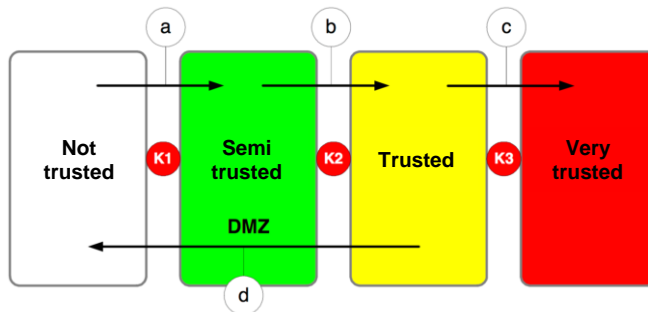
## 2015: national only



Prefix	Used by
2a04:9a00::/32	Other organizations
2a04:9a01::/32	Finance
2a04:9a02::/32	Infrastructure and Environment
2a04:9a03::/32	Interior and Kingdom Relations
2a04:9a04::/32	Justice and Safety
2a04:9a05::/32	Unused
2a04:9a06::/32	Unused
2a04:9a07::/32	Unused

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## Security bits



Base model for zones

4 bits in the IPv6 address are used to encode security zones  
(16 possible, 4 used today)

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## Government wide



- Report by TNO: advantages to having an integrated IPv6 numbering plan for the *entire* Dutch government
  - including municipalities, provinces, water boards
- Centralizing this function saves some money
- Being able to recognize IP packets as coming from / going to a governmental organization by looking at the IPv6 has security advantages
- Logius wrote a government wide IPv6 numbering framework:
  - [Overheidsbreed IPv6 nummerplankader](#)

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## 2016: government wide



Prefix	Used by
2a04:9a00::/32	Other organizations (large blocks)
2a04:9a01::/32	Finance
2a04:9a02::/32	Infrastructure and Water Management
2a04:9a03::/32	Interior and Kingdom Relations
2a04:9a04::/32	Justice and Safety
2a04:9a05::/32	Reserved (national)
2a04:9a06::/32	Reserved (national)
2a04:9a07::/32	Reserved (national)
2a07:3500::/32	Unused
2a07:3501::/32	Unused
2a07:3502::/32	Unused
2a07:3503::/32	Unused
2a07:3504::/32	Municipalities
2a07:3505::/32	Provinces / water boards
2a07:3506::/32	Other organizations (small blocks)
2a07:3507::/32	Suppliers of services to governmental organizations

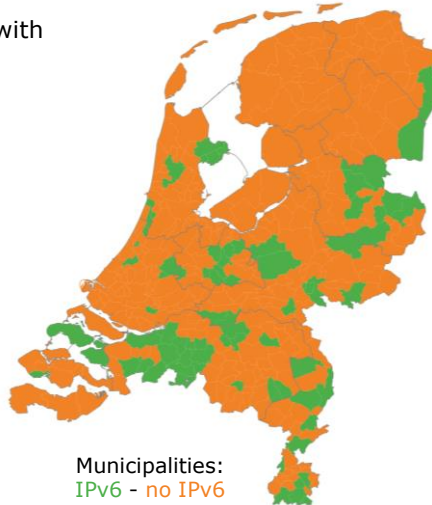
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## Deployment



- Dutch governmental organizations with IPv6 deployed on their website:

- National: 50%
- Provinces: 29%
- Water boards: 12%
- Municipalities: 20%
- Total: 27%



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## Deployment issues



- The Netherlands is not a federal state
- However, ministries, provinces, municipalities are very autonomous
- We have the ["apply or explain" list](#)
  - which requires IPv4 *and* IPv6
  - as well as 39 other required standards
- IPv6 deployment is the responsibility of each individual organization
- In general, governmental organizations recognize the need to implement IPv6
- But limited immediacy, other priorities compete for time and budget

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## Deployment: national



- Twelve ministries
- Around 7 large IT organizations
  - most of these support IPv6
- Enabling IPv6 for a service such as a website requires:
  - a few hours of work by the IT organization
  - a directive from the owner of the service
- Enabling IPv6 on 100 websites could (for instance) require 400 hours of work (nearly 3 person months), the IT organizations don't have budget for that
- Per service this is a small amount, but finding a small amount of money takes almost as much time as finding a large amount of money

## Deployment: mid-level



- Provinces:
  - most have requested IPv6 address space from Logius
  - deploying IPv6 individually
- Water boards:
  - have written a joint deployment plan
  - coordinating with Logius for address space

## Deployment: municipalities



- Association of Netherlands Municipalities is taking an active role
  - ["Digital Agenda 2020" program](#)
- Working with Logius to provide IPv6 address space to municipalities
- Providing tailored documentation and support

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## Deployment: internally



- Everyone is focussed on external deployment
  - website
  - mail
- What about internal networks?
  - internal within one organization
  - between governmental organizations over closed networks
- Not quite finished working out how to handle security issues with IPv6 addresses
  - we plan to enable IPv6 in the central point of our largest closed network later this year
  - hard to tell how quickly connected organizations will deploy IPv6 on their end

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## Conclusions



- The world seems to have found a way to keep using IPv4 with (almost) no new IPv4 addresses available
- Governments tend to have obtained IPv4 when it was easy to get and don't really grow, so don't really need additional IPv4 space
  - so lack of IPv4 addresses is not a significant driver for IPv6 deployment
- Support to service owners helps to get IPv6 adopted
- Lack of money is a barrier to IPv6 adoption
- A mandate needs to have teeth to work
- Unlikely to see IPv6 deployment pick up significantly if we keep doing what we've been doing so far