



DSMIP6-TLS in emergency response  
and public safety teams

or

*IPv6 enabled self organizing systems for  
emergency response environments*

# Agenda



- Very quick facts about Go6 Institute
- IPv6 on 3G networks in Slovenia in a glance
- DSMIP6-TLS in emergency response and public safety teams

# Go6 institute

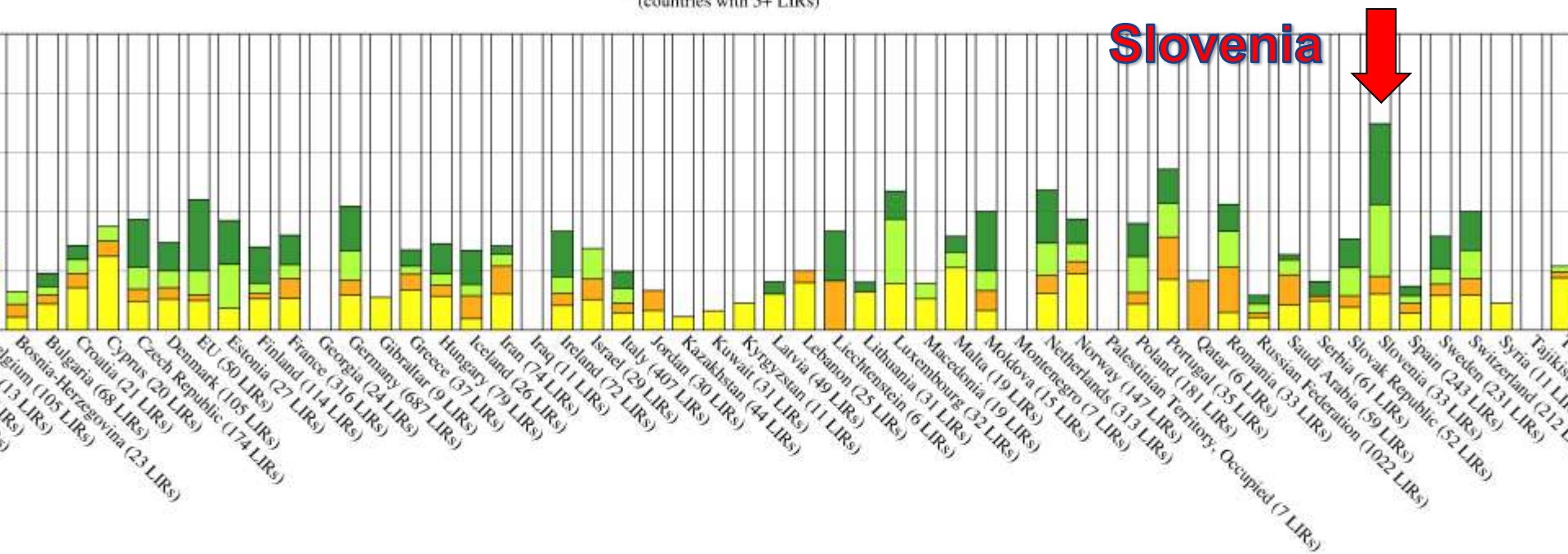


- IPv6 initiative in Slovenia
- Not-for-profit organisation
- Strategic partnership with Arnes and LTFE
- Open platform, based on membership (major ISP, mobile operators, content providers, integrators,...)
- Financially supported by members of go6 platform
- Steered by go6 expert council, formed from representatives of government, telco&post regulator, academic research network, faculty, Slo IPv6 WG chair and industry

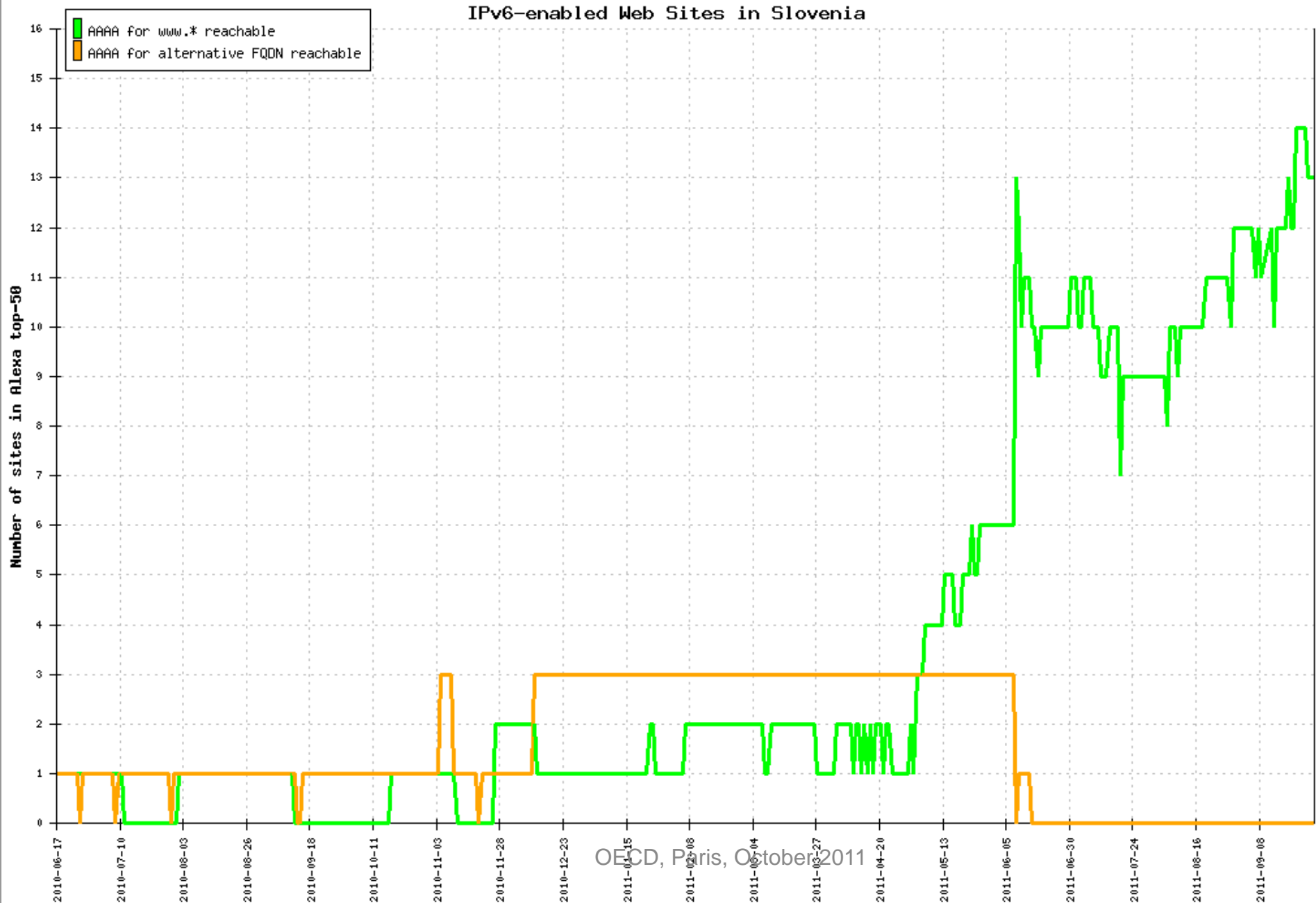
# IPv6 in Slovenia



IPv6 'ripeness'-rating of LIRs per country  
(countries with 5+ LIRs)














# IPv6 content in Slovenia (vyncke.com measurements)



# IPv6 content in Slovenia (vyncke.com measurements)

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Country	Sample	Green	Orange
 <a href="#">Slovenia</a>	50	26.0% (13)	0.0% (0)
 <a href="#">Netherlands</a>	50	16.0% (8)	2.0% (1)
 <a href="#">Portugal</a>	50	16.0% (8)	0.0% (0)
 <a href="#">Moldova</a>	50	10.0% (5)	0.0% (0)
 <a href="#">Switzerland</a>	50	8.0% (4)	4.0% (2)
 <a href="#">Germany</a>	50	8.0% (4)	2.0% (1)
 <a href="#">Indonesia</a>	50	8.0% (4)	0.0% (0)
 <a href="#">Japan</a>	50	6.0% (3)	4.0% (2)
 <a href="#">France</a>	50	6.0% (3)	2.0% (1)
 <a href="#">Luxembourg</a>	50	6.0% (3)	0.0% (0)
 <a href="#">Liechtenstein</a>	50	6.0% (3)	0.0% (0)

# Mission, goal, quest...



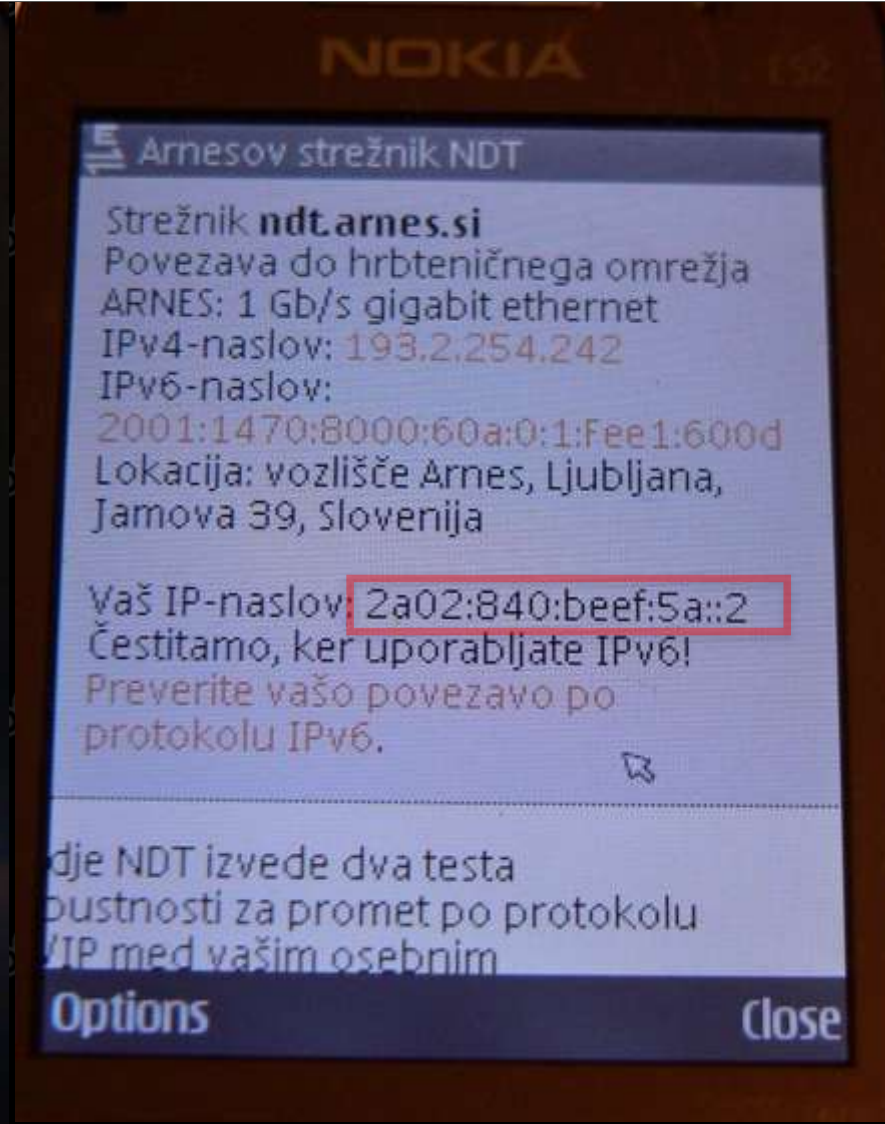
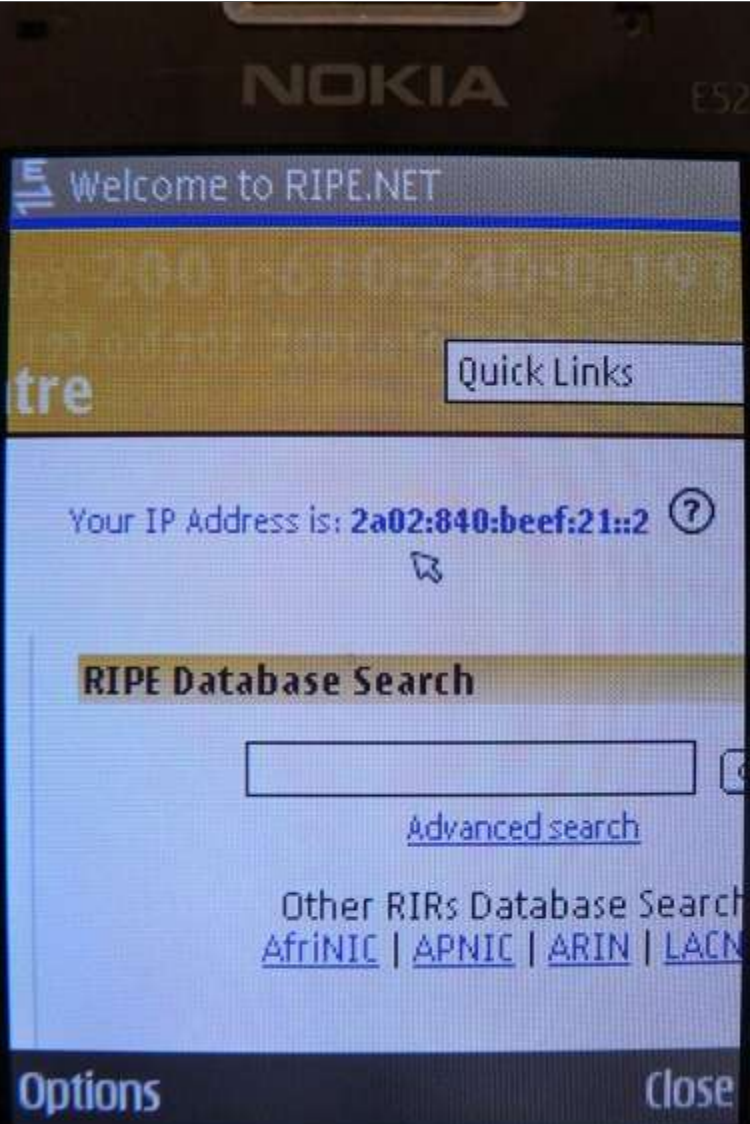
- We make people talk to each other about IPv6
- We push IPv6 deployment in Slovenia
- We aggregate knowledge and make it available between members of go6 platform
- We connect government, regulator, ISP's and industry between each other
- We make competition companies talk to each other to make IPv6 deployment easier
- We became IPv6 pivot point in Slovenia
- ...and it works 😊

## Disclaimer:

IPv6 in Slovenia is being promoted by the Go6 institute, this is an industry body (important message here: self regulation can work!!!) and here is one of our success stories.

Go6 as an IPv6 catalyst got 2 mobile operators **together** deploying IPv6 on 3GPP **at the same time** and here is how they did it.

# Tušmobil - 2a02:840::/32AS41828



## IMAP login log record:

```
Mar 5 12:07:47 go6lab dovecot: imap-  
login: Login: user=, method=PLAIN,  
rip=2a02:840:beef:4c::2,  
lip=2a02:e8:0:1::babe:face, TLS
```

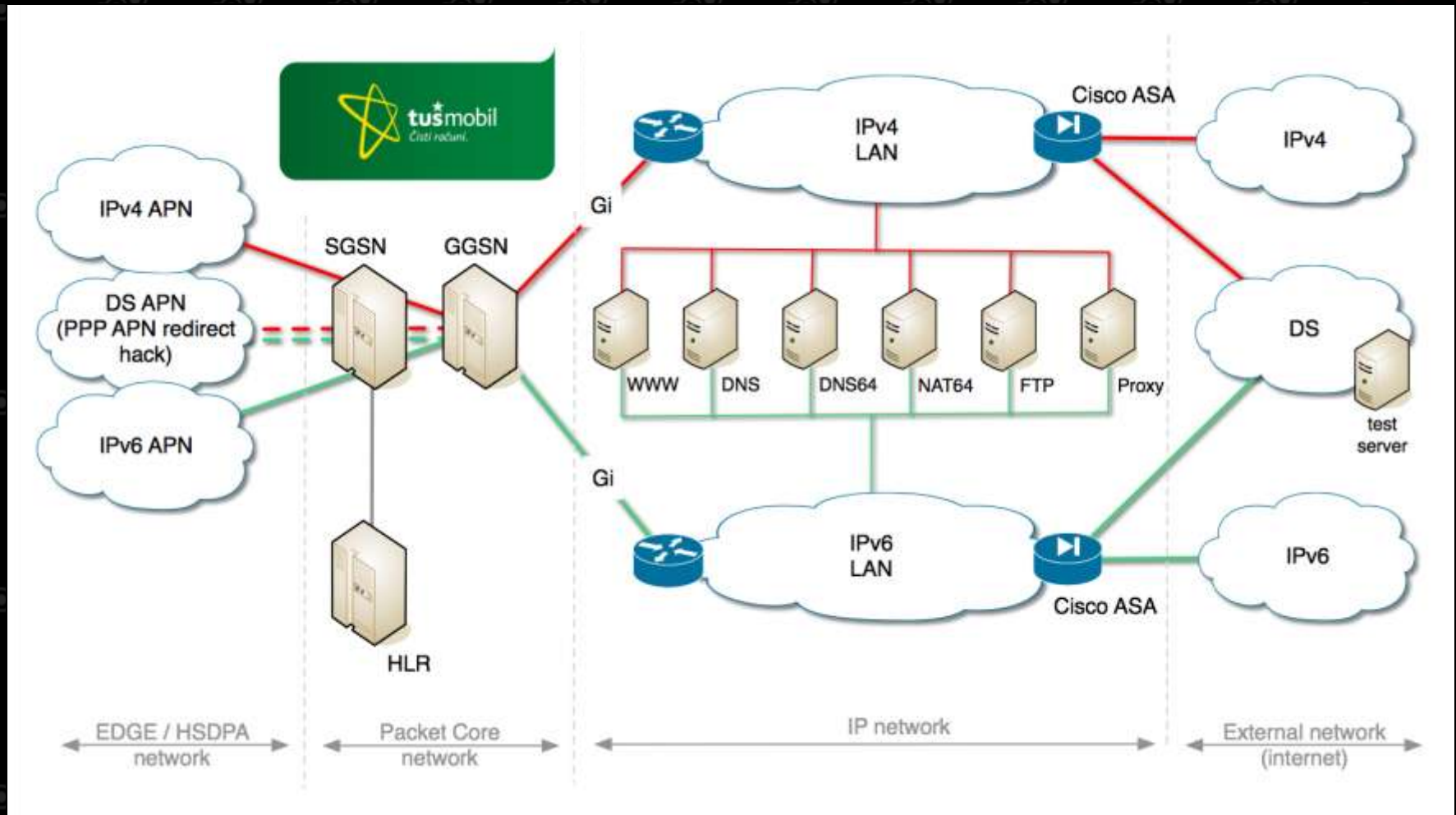
## SMTP log record (sending mail):

```
Mar 5 12:18:32 go6lab  
postfix/smtpd[24374]: 4AB9F2378666:  
client=unknown[2a02:840:beef:47::2],  
sasl_method=LOGIN, sasl_username=jan
```

# Tušmobil - 2a02:840::/32 AS41828

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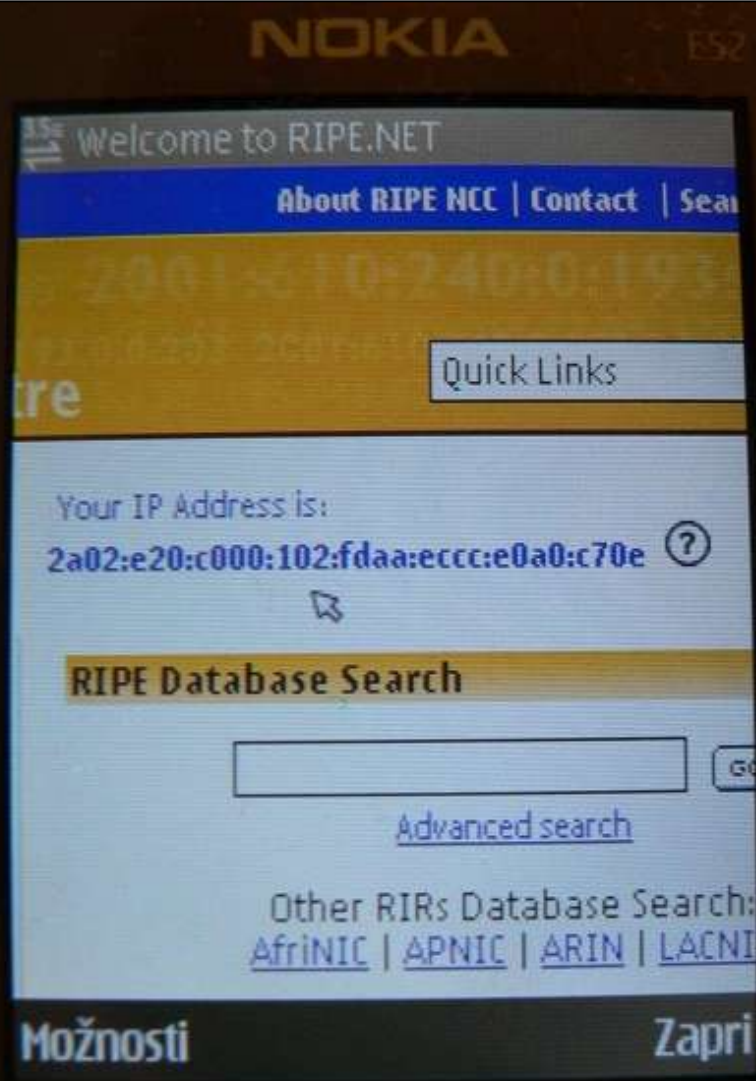
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## Versions of software used:

- SGSN NSN, SG6
- GGSN NSN, FlexiISN v 3.2 CD7
- Firewall Cisco ASA v7.2
- DNS64 totd 1.5.1
- NAT64 ecdysis-nf-nat64-20100226 @gentoo 2.6.3
- Mobile Nokia e52

# Mobitel - 2a02:e20::/32AS29276



NOKIA ES2

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2001:510:740:0:193

Quick Links

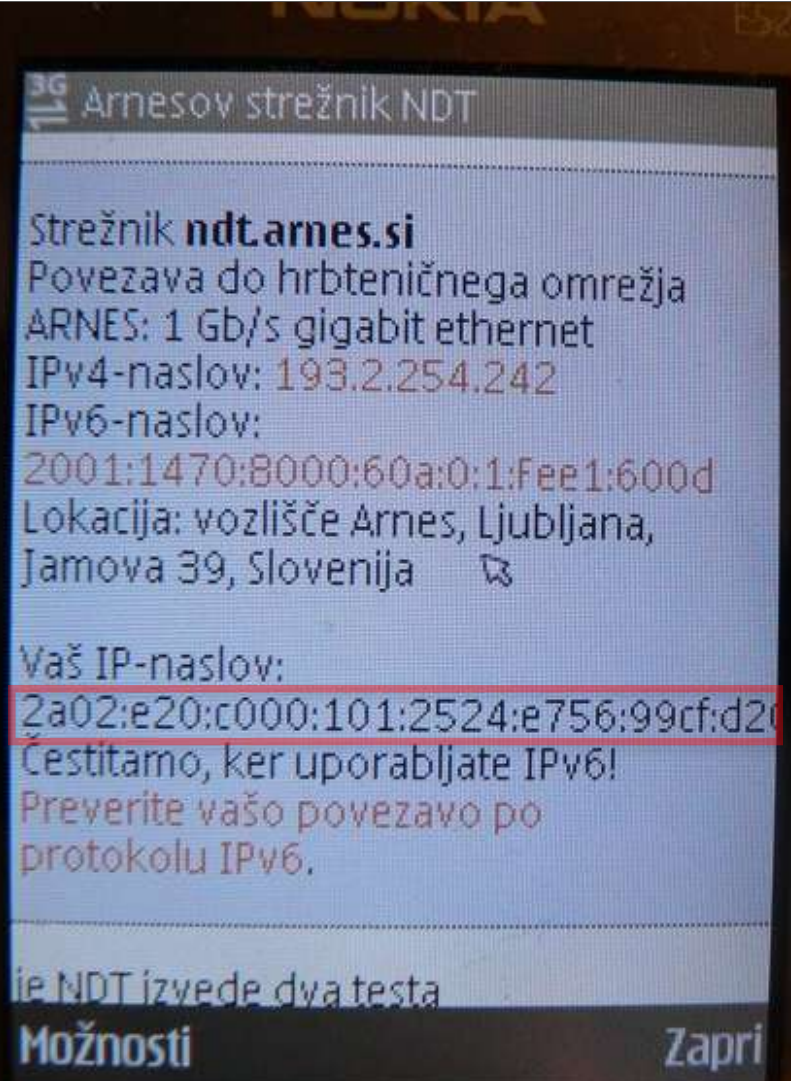
Your IP Address is:  
2a02:e20:c000:102:fdaa:eccc:e0a0:c70e ?

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Advanced search

Other RIRs Database Search:  
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Možnosti Zapri



NOKIA ES2

3G Arnesov strežnik NDT

Strežnik **ndt.arnes.si**  
Povezava do hrbteničnega omrežja  
ARNES: 1 Gb/s gigabit ethernet  
IPv4-naslov: 193.2.254.242  
IPv6-naslov:  
2001:1470:8000:60a:0:1:fee1:600d  
Lokacija: vozlišče Arnes, Ljubljana,  
Jamova 39, Slovenija

Vaš IP-naslov:  
2a02:e20:c000:101:2524:e756:99cf:d20

Čestitamo, ker uporabljate IPv6!  
Preverite vašo povezavo po  
protokolu IPv6.

ie NDT izvede dva testa

Možnosti Zapri





## Versions of software used:

- SGSN Ericsson Mk IV 2008B Dual Access
- GGSN Ericsson/Juniper J120 2009A
- MPLS Cisco 7609 Version 12.2(33)SRC2



# EC CIP call

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- 3M EUR of funding for IPv6 pilots and experiments in member states, 50% funded
- 5 experiments
- At least 1 cross-border
- Must be real IPv6 deployment, not papers and research
- ...otherwise I would not be standing here talking about this 😊

# Obvious and nice IPv6 features



- Seamless connectivity from targeted/affected areas across heterogeneous technologies (e.g. GPRS/UMTS, Satellite, TETRA, ruggedized COTS - WiFi) and cross border and public
- Automatic network/system planning and deployment
- Node and host auto configuration, self organizing and healing network features
- Secure and QoS enabled transmission of data, voice and multimedia rich services supported system

# Not so obvious IPv6 feature

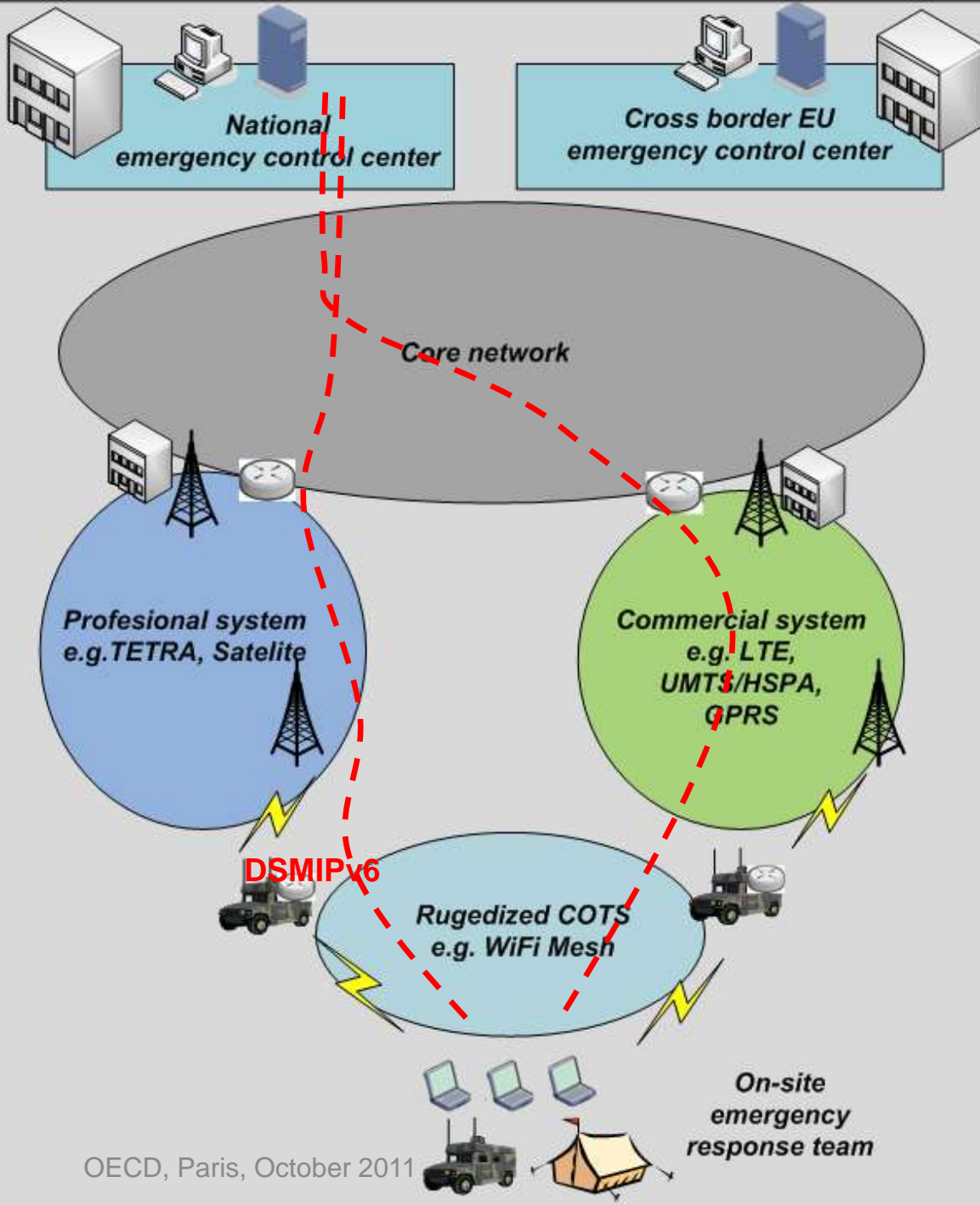
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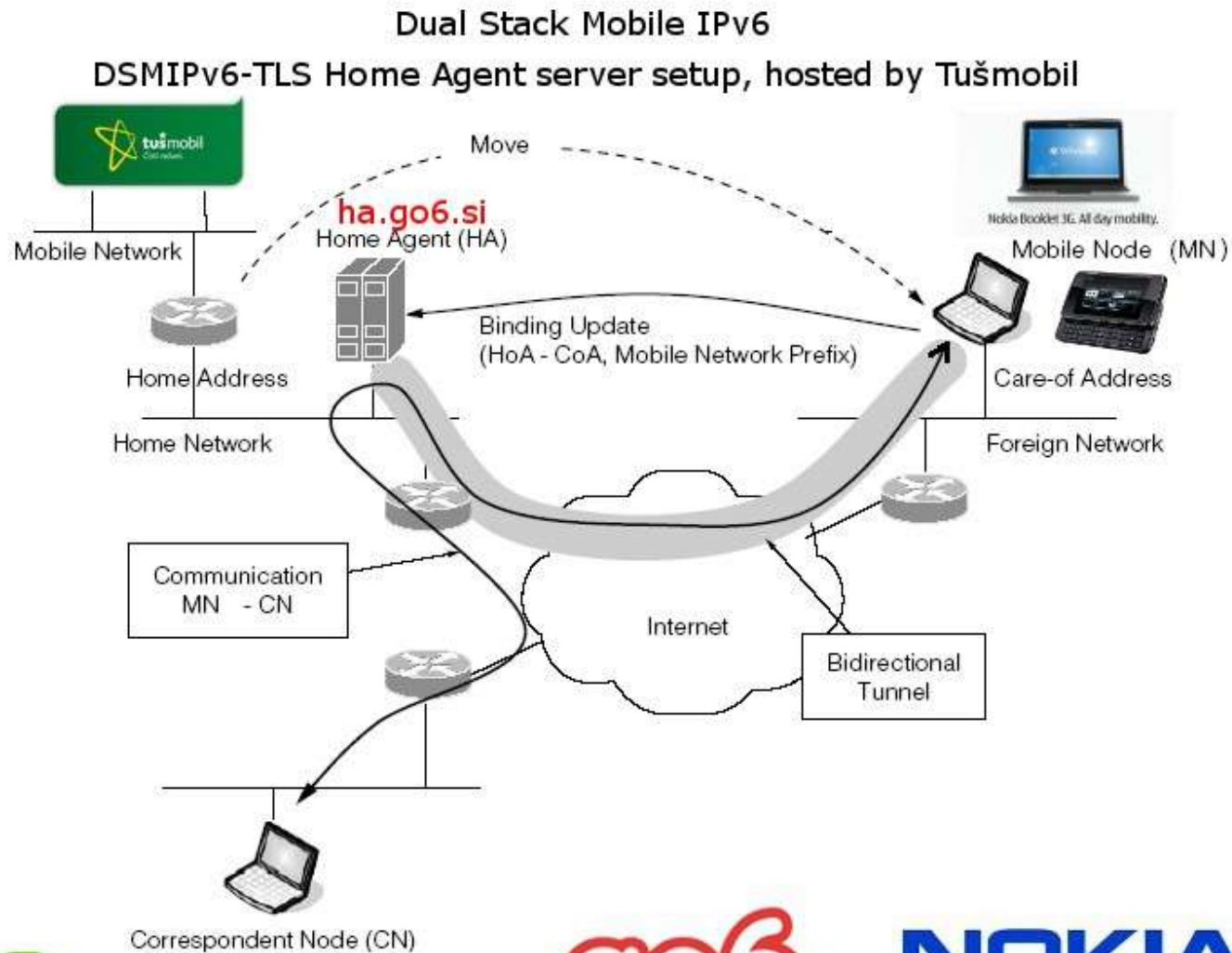
- Overlay network for data transport and service functionalities will be done on DSMIP6-TLS (dual stack mobile IPv6 secured with TLS)

# High system level view

IPv6 enabled self organizing Communication platform for emergency response environments



# DSMIP6-TLS current deployment in Slo



Nokia Research Center



NOKIA  
CONNECTING PEOPLE

# Nokia is ahead with IPv6 on mobile devices (21M-02)



# Responder always reachable...



- mobile node reachability
  - Ability to connect to mobile node from operations center (initiation of communication in both ways is possible, not only one way)
  - Connect to any service directly (e.g. VOIP call to SIP client, check the temperature on fireman's clothes sensor, engage GPS on MN, send instructions and video, etc...)

# No matter which transport...



- live multimedia streaming, voice, data, and sensor data exchange from the field to the National Emergency Center
- heterogeneous networks/technologies
  - commercial (e.g. GPRS/UMTS/HSPA)
  - professional (e.g. TETRA SYSTEM, Satellite)
  - alternative ruggedized COTS networking systems (e.g. mesh enabled wifi 802.11a/g/n)

# Intended outcome...



- Our experimental deployment proposal needs IPv6 enabled in the whole transport path. That means different parts of governmental network and infrastructure. This way we are encouraging the IPv6 implementation also in other parts of government and public infrastructure

# Intended outcome...



- Outcome of this experimental deployment can be further extended to enhance the mobility of employees of ministries and government in the future, giving them the same working environment wherever they are (e.g. mobile office).

# Intended outcome...



- The experiment will be used as showcase to derive best practices, guidelines, methodologies and toolkits for the migration from IPv4 to IPv6.

# Go6 Q&A

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# Q&A