

# SiNOG 1.5

4. december 2014, Ljubljana, IJS

## Tematska delavnica o brežžičnih omrežjih - Eduroam

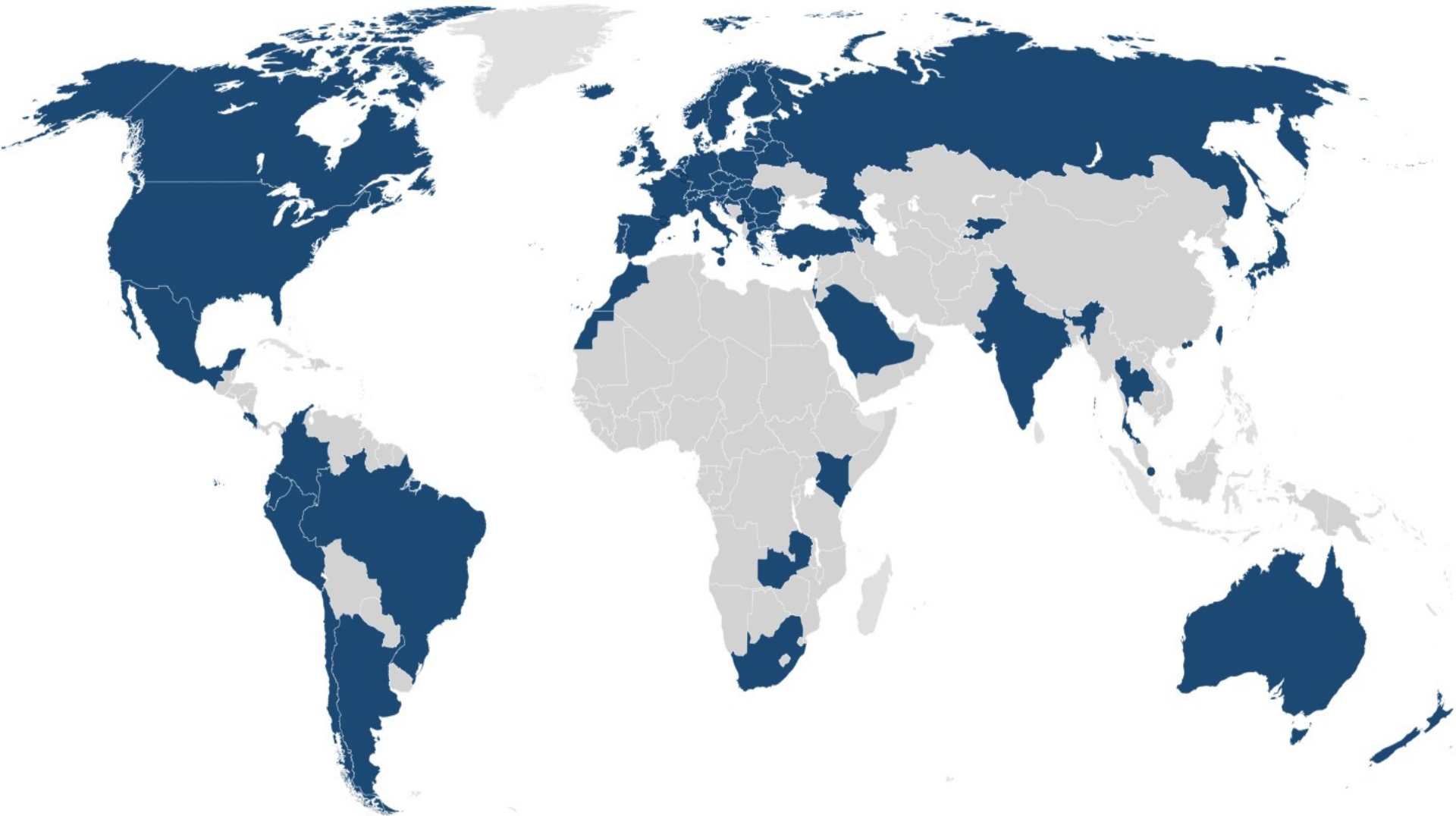
Rok Papež

Arnes

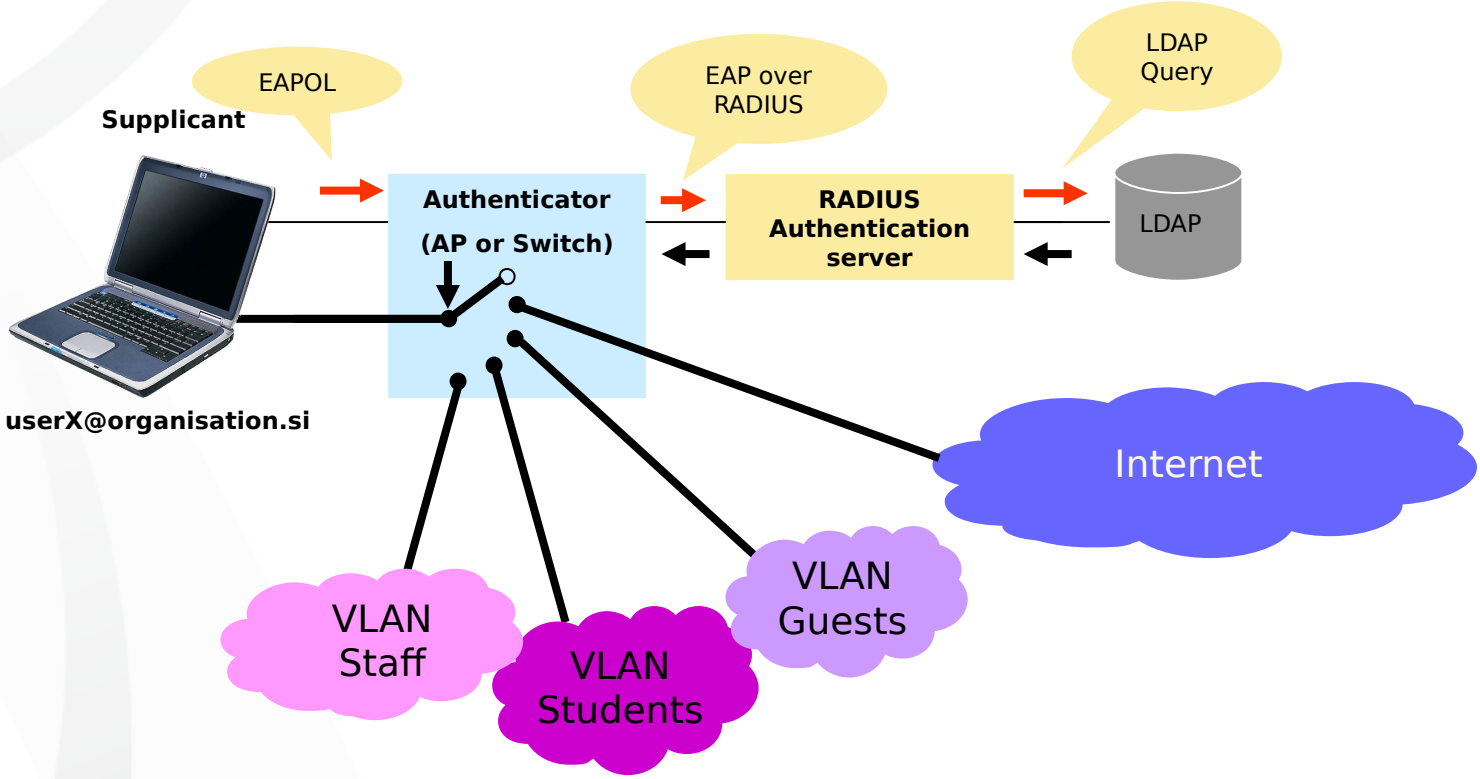
rok.papez@arnes.si

<http://aai.arnes.si>, <http://www.eduroam.org>

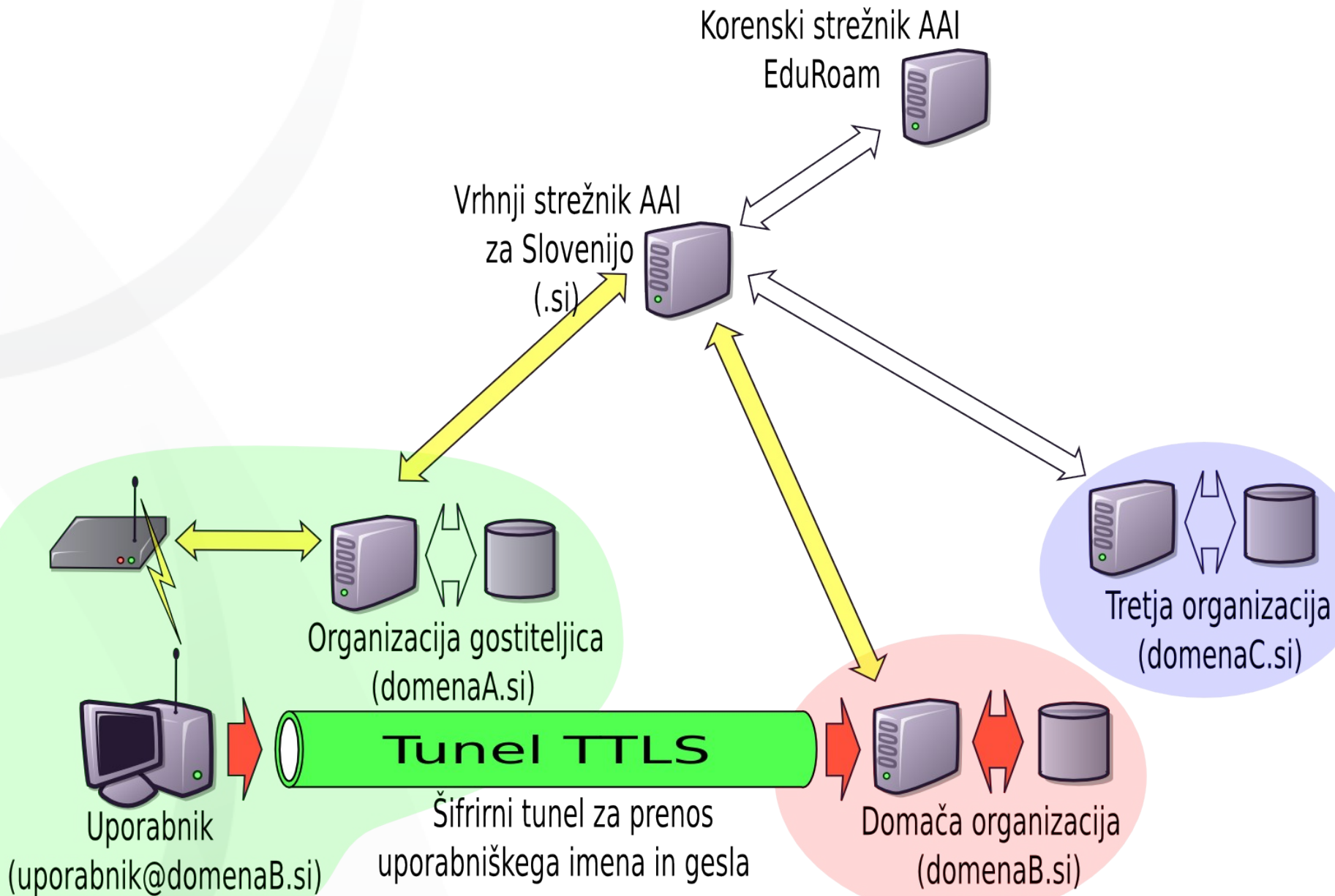
# Eduroam svet



# 802.1x

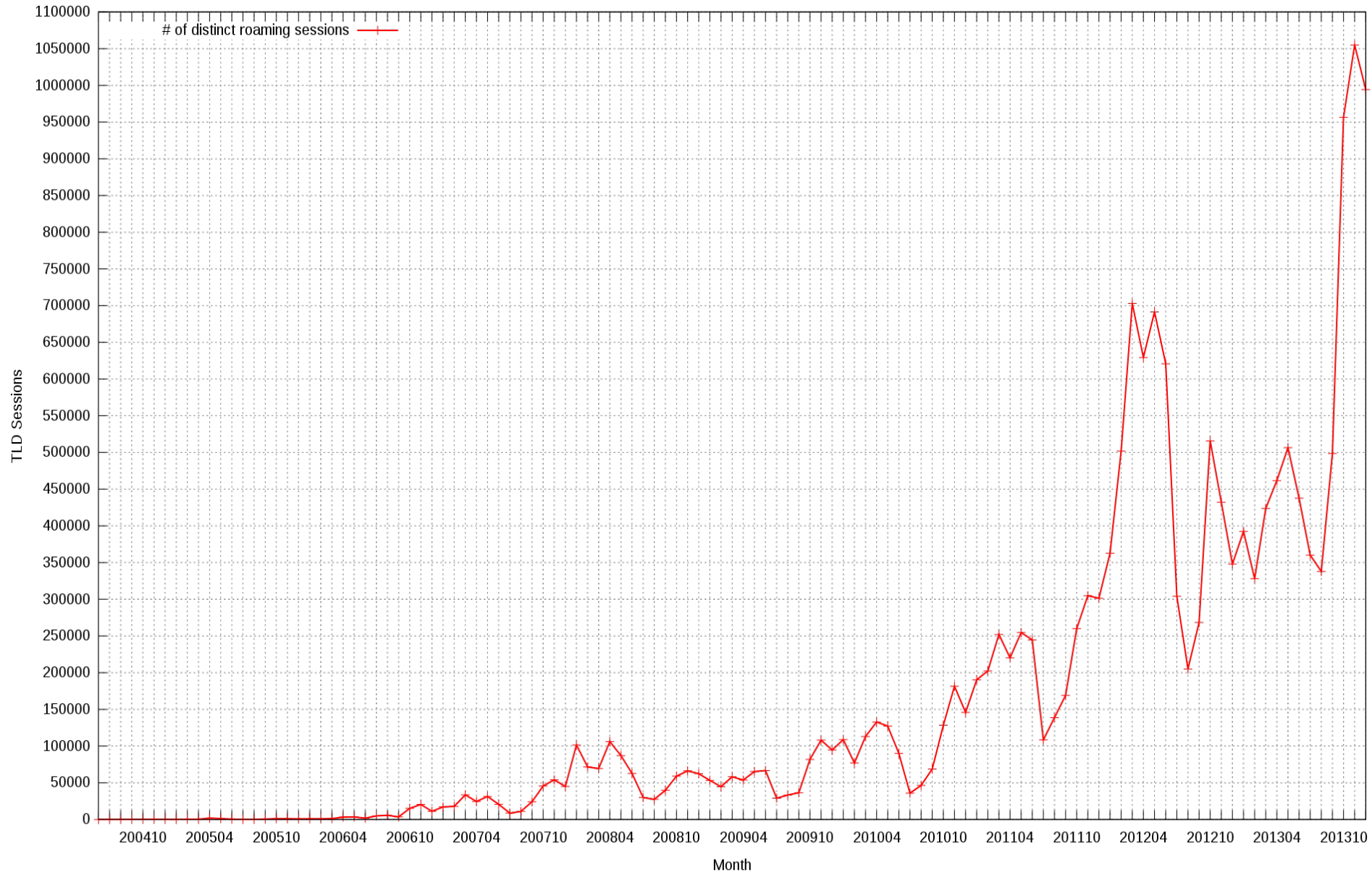


→ signalling  
— data



# Eduroam.si statistika gostovanj

Eduroam TLD Sessions



Access network

Wi-Fi

iNet vedno

BYOD

Federated  
identity

Varnost!

VoIP && QoS  
on Wi-Fi



# Wireless == great!



I'm going to start calling my girlfriend eduroam so maybe she'll go down on me 12 times a day too.



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RETWEETS	FAVORITES	
22	98	

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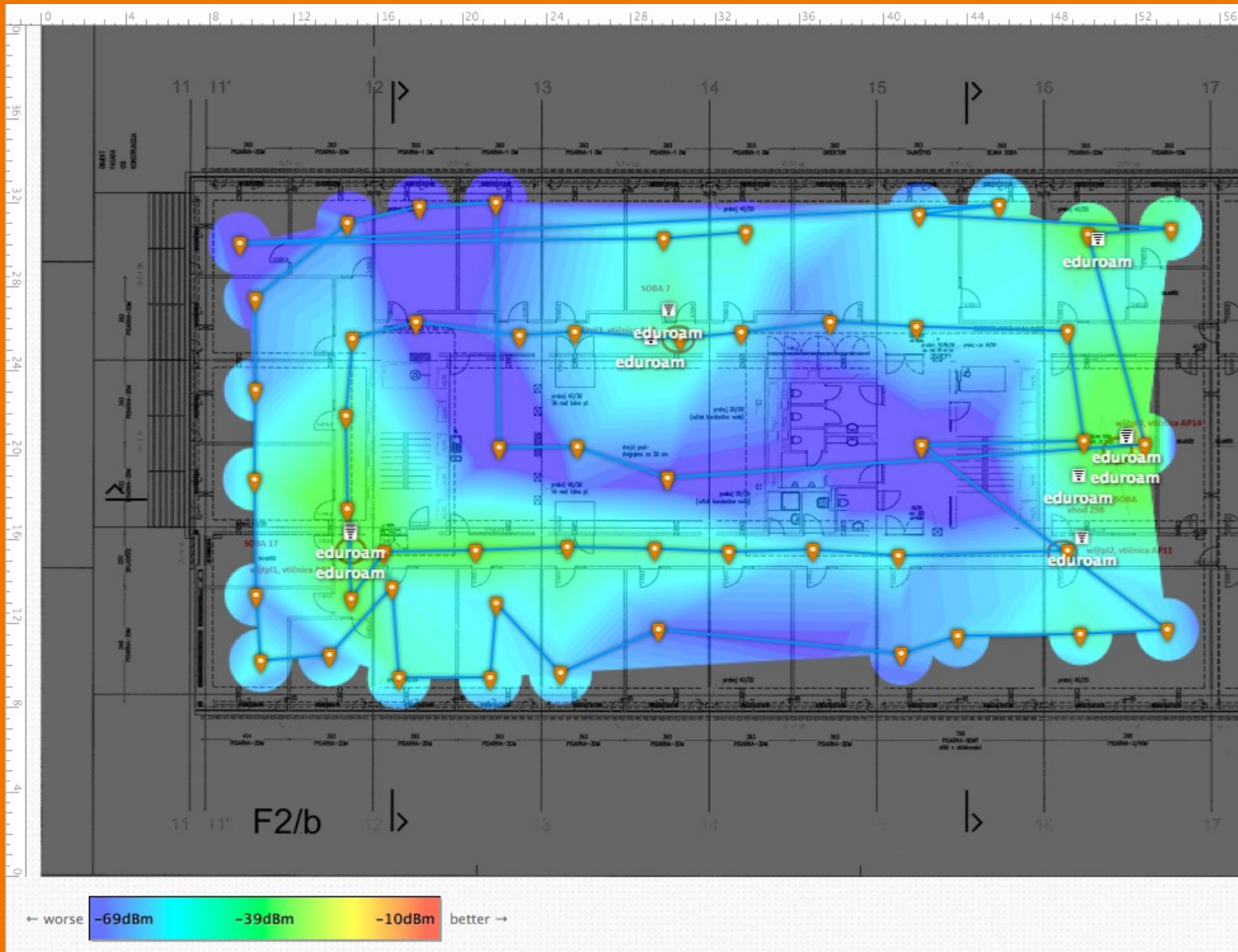
2:41 PM - 15 Sep 2014

# Postavitev brezžičnega omrežja

- Čim večjo pokritost ali čim gostejše omrežje?
- Ogled prostorov (angl. Site Survey) @ 5GHz
- Oprema ustreza standardom?  
<https://aai.arnes.si/eduroam/oprema>
  - Proizvajalci – podpora/hrošči
- Eduroam + WPA2-PSK
- Avtonomni AP ali WLC



# Strokovni ogled - Arnes



# inSSIDer

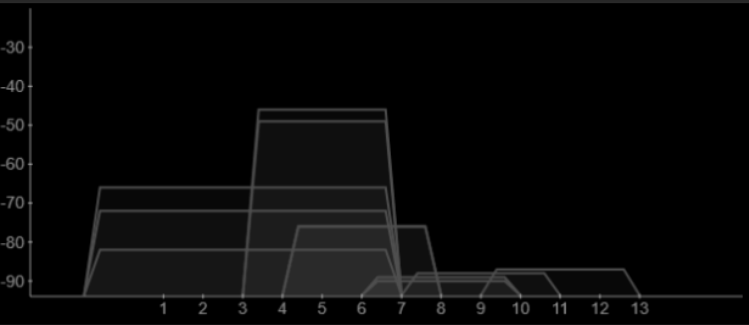
FILTERS  +    >

SSID	SIGNAL	CHANNEL	SECURITY	MAC ADDRESS	802.11
arnes	-46	5	WPA2-Personal	10:8C:CF:39:CA:40	g, n
eduroam	-49	5	WPA2-Enterprise	10:8C:CF:39:CA:41	g, n
★ eduroam	-50	48+44	WPA2-Enterprise	10:8C:CF:5E:86:A1	g, n
arnes	-62	48+44	WPA2-Personal	10:8C:CF:5E:86:A0	g, n
Pajk	-66	1+5	WPA2-Personal	C6:9F:DB:25:36:96	n
BDOffice	-72	1+5	WPA2-Personal	C2:9F:DB:25:36:96	n
Pajk	-76	6	WPA2-Personal	DE:9F:DB:1C:6C:3A	n
BDOffice	-76	6	WPA2-Personal	DC:9F:DB:1C:6C:3A	n
ardelion	-82	1+5	WPA2-Personal	C0:25:06:03:A2:8A	n
Portthru	-87	11	Open	3E:D1:DD:18:17:38	g
eduroam	-88	9	WPA2-Enterprise	10:8C:CF:39:EF:21	g, n
mesh.wlan-si.net	-89	8	Open	02:CA:FF:EE:BA:BE	n
open.wlan-si.net	-90	8	Open	F8:D1:11:25:6D:EC	n

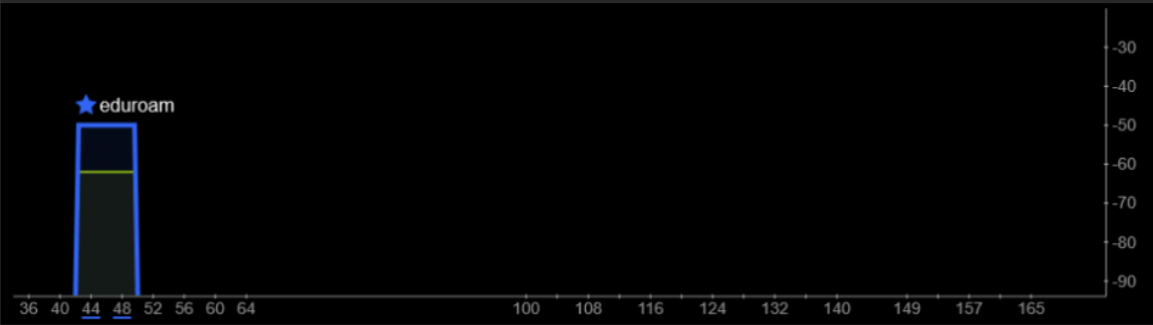
★ **eduroam\_5E:86:A1** **48+44** **83**  
Channel Link Score

MAC 10:8C:CF:5E:86:A1  
 Security WPA2-Enterprise Co-Channel 1 Network  
 802.11 g, n Overlapping 0 Networks  
 Max Rate 300 Signal -50 dBm

4 GHZ NETWORKS



5 GHZ NETWORKS



# Nasveti

- 2.4GHz Kanali 1,5,9,**13**
- Izklopimo 802.11b, pustimo 802.11g ali celo 802.11n
- AP postavljamo v pisarne/učilnice/knjižnice/avle, ne na hodnike
- Prioriteta
  - Dober signal kjer je potreben
  - Slab signal (ali brez) na hodnikih in prostorih kjer se uporabniki **ne** zadržujejo.
- Predvidoma ni VoIPa na wirelessu
- Filtriranje multicast DNS / Bonjour
  - DST 224.0.0.251/255.255.255.255
  - DST ff02::fb/128

# Dodatno

- Service Provider Wi-Fi
  - Smiselna ločitev lastništva infrastrukture in storitev
  - EAP-SIM ali EAP-AKA
  - Accounting
  - CPE Wi-Fi
- Eduroam via 4G (Custom Education/Eduroam SIM cards)
- QoS: N/A – Barvanje je problem!
- IPv6:
  - IPv6 ali filtriraj IPv6
  - NAT44 + IPv6
  - Samo IPv6 + NAT64
    - Pilot teče, skype ima težave

ArnesAAI

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<http://aai.arnes.si>

