

Advanced topics in audio/video conferencing - ENUM -

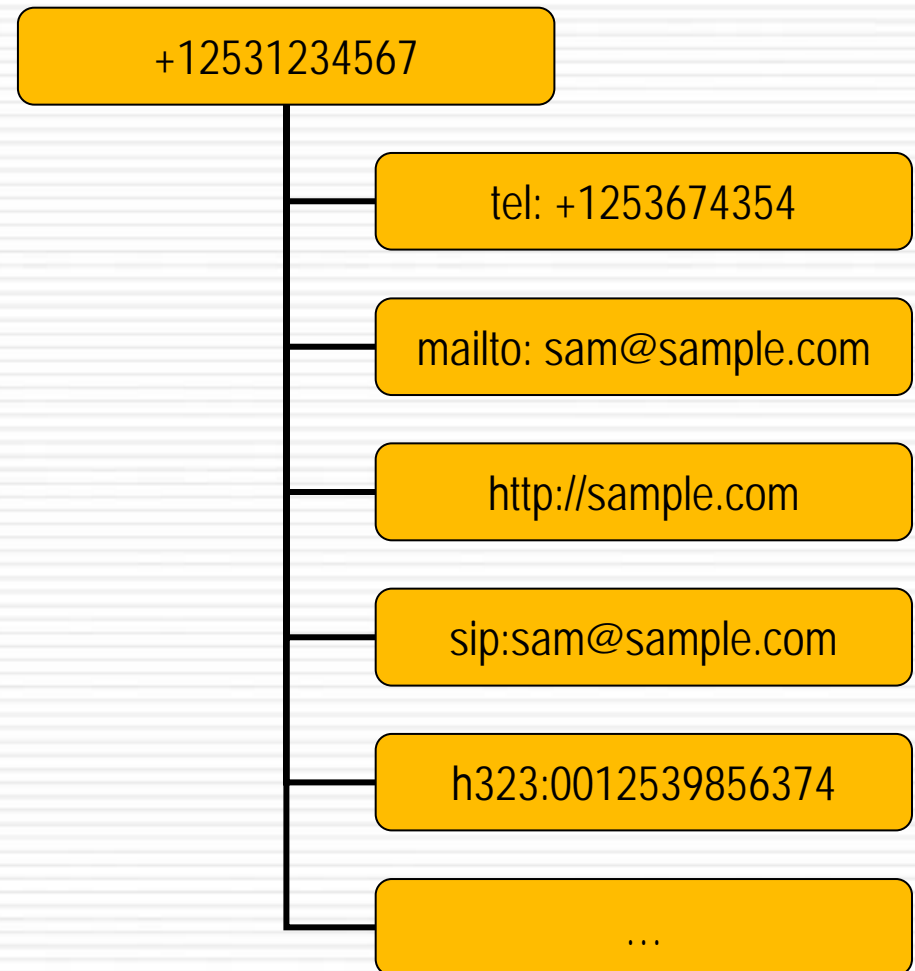
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Motivation

- More and more customers ask for Voice over IP (VoIP)
- Inter-working between PSTN (Public Switched Telephone Network) and VoIP is a challenge
 - VoIP addresses are often alphanumeric
- Many VoIP devices only have numeric keypads
 - Alphanumerics are hard to handle
- Some VoIP provider assign special numbers for VoIP services
 - Users get an additional number
- Customers prefer only one (phone) number
 - Service and device independent

ENUM at a glance

- ENUM: E.164 Number Mapping
 - IETF protocol (RFC 3761)
 - The “Common denominator”: Numbers
- One single number for several (multiple) services
 - PSTN
 - Email
 - Web
 - SIP
 - H.323
 - Any many more
- ENUM uses the DNS (Domain Name System) to map telephone numbers into internet addresses



How it works... (Admin view)

- E.164 numbers are inserted into DNS
- Example for: +41-1-268 15 15
 - Remove everything but numbers: 4112681515
 - Reverse it and put dots in between the digits: 5.1.5.1.8.6.2.1.1.4
 - Add the suffix ".e164.arpa": 5.1.5.1.8.6.2.1.1.4.e164.arpa
 - This is the DNS zone
 - Fill this DNS zone with NAPTR records such as:
 - IN NAPTR 100 1 "u" "E2U+sip" "!^.*\$!sip:info@switch.ch!"

How it works... (User view)

- A dials +41-1-268-15-15

- Remove everything except numbers: 4112681515
- Reverse DNS lookup on 5.1.5.1.8.6.2.1.1.4.e164.arpa
- NAPTR records like `IN NAPTR 100 1 "u" "E2U+sip" "!^.*$!sip:info@switch.ch!"` is returned
- Client initiates call to party B using `sip:info@switch.ch`

(or the user may has to pick an alternative, in case multiple NAPTR records are returned)

**AGAIN: The user only needs to
know: +4112681515**

Use case SIP

- SIP: Session Initiation Protocol
 - RFC 3261, ...
- Application-layer control protocol that can
 - establish
 - modify
 - terminate

multimedia sessions, including Internet telephony calls, conferencing, presence, events notification, instant messaging, application sharing, ...

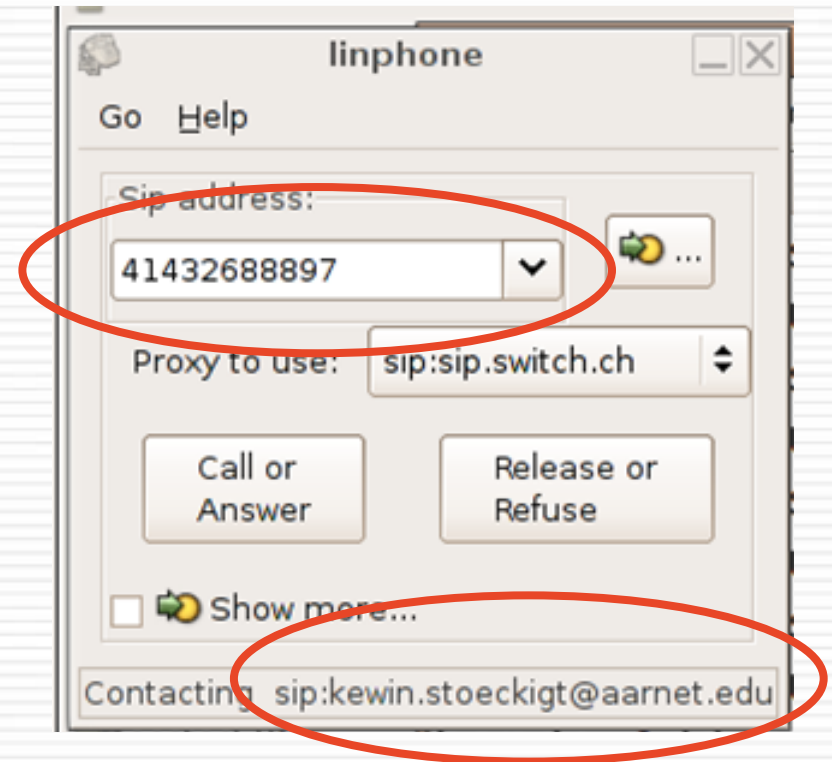
- Endpoints: Hard-Clients (incl. WLAN) and Soft-Clients

Use case SIP

- SIP is **not**:
 - A Transport protocol
 - A QoS reservation protocol
 - A Gateway control protocol
 - Designed for bulk transfer

Use case SIP

- Short demo
 - Try to Call sip: kewin.stoeckigt@aarnet.edu.au
 - Try to call +61421582563 (Mobile Number)
 - Try to call +61590023546 (ENUM AU trial)
 - Try to call +41432688897 (ENUM CH trial)
 - Try to call +12122023034 (L.A. number)
 - Try to call +12025171730 (NY number)
 - ...and a bunch of other numbers...



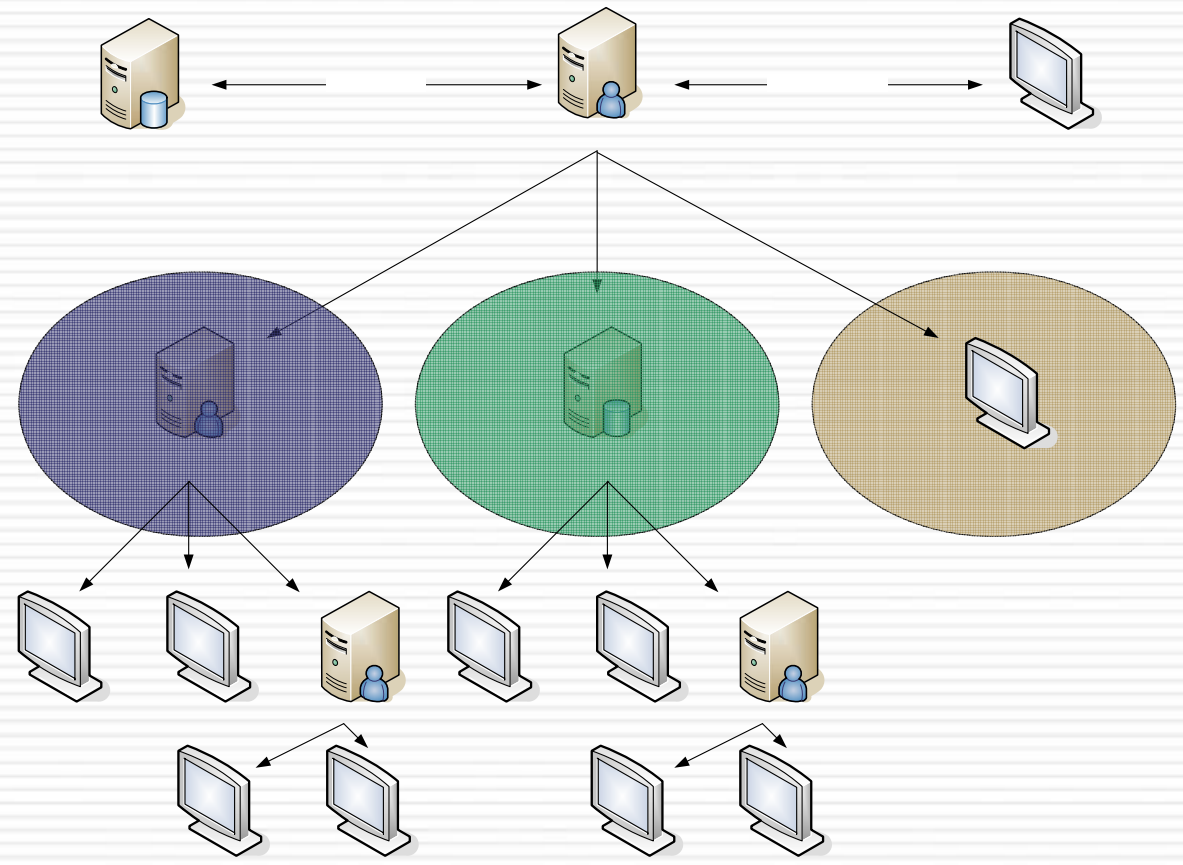
Use case H.323

- NAPTR records can handle H.323 URL
 - ENUM-GDS
 - h323:00498932996006
 - ENUM-DNS
 - h323:00498932996006@videamus2.rzg.mpg.de
 - h323:AU-KFS-RZG@videamus2.rzg.mpg.de
 - ENUM-IP
 - h323:192.94.63.100

ENUM: GDS and beyond

Use case H.323

- The big picture...



Use case H.323

- Can I use it today?
 - Yes you can!!
- Who supports it so far (Infrastructure)
 - GnuGK (AFAIK the only one so far; v.2.2.4)
 - Supports GDS, ENUM and DNS routing/lookup at the same time!!!

Shell command:

```
> export PWLIB_ENUM_PATH=e164.arpa
```

Config file:

```
[RoutingPolicy]
00615900=enum
+615900=enum
615900=enum
05900=enum
```

Excursion: ViDe project to replace GDS with ENUM

- Downsides of GDS
 - Mainly used by Research & Education sector
 - Commercial entities usually don't use it, e.g. BMW, PWC,...
 - H.323 focused (do you really want to create a SIP-GDS??)
 - Old'ish technology
- ENUM today
 - Available via GnuGK
- ENUM today++ (H.323, and much more)
 - Endpoints manage lookups, rather than infrastructure
 - User dials "ENUM" regardless of the service behind it

Use case {whatever}

- “How to use ENUM” overview available at:
http://www.aarnet.edu.au/services/enum/enum_use.html
- There are many other ways to use ENUM (...just Google it)

A new NAPTR??
cow:123456XXXX



Even the cows here are smart.

Conclusions

- It is new, it is cool, so use it!!!
- Combines different services (sip, h323, ...)
- Global connectivity to a variety of communities
- Supports a smooth transition away from GDS
- Prevent SIP-GDS

Summary

