



Router renumbering protocol, gap analysis

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IPv6 plug & play ?

- Was one of the goals at the origin of IPv6
- Is available for host configuration
 - SLAAC built with this idea
- But what for networks?
 - Router Renumbering (RFC 2894) is an RFC since 2000
 - No implementation, and people don't believe it is applicable (?)
 - Today procedures adopted seem static
- Plug&play statement of the old days seems dropped, or at least restricted to the edges





Renumbering

- Renumbering
 - Is painful as everybody agrees
 - A one year process for us each time
 - RENATER renumbered already 3 times ...
 - Let's make it automatic
- Automatic... but under control
 - Move step by step
 - Easy rollback process
 - Need to be able to renumber only parts of the network
 - Renumbering management tools
 - Vendor independant process





Automatic renumbering

- We have guidelines
- We have some protocols
 - Router renumbering (RFC 2894 - PS)
 - DHCPv6 – PD (RFC 3633 – PS)
 - DNS Dynamic update (RFC 2136 - PS & RFC 3007 - PS)
 - A6/DNAME (RFC 2874 – Experimental & RFC 3363 - Info)
 - ...
- We need to understand how protocols can be used along with the guidelines
 - Design new protocols if required
 - Let's start with RR as an example on how we worked





RR and baker/droms/lear procedures

- Mapping with the procedures
 - Baker / Droms / Lear
- Things in procedures RR CAN do:
 - Phase 3: **Configure routers** to add the new prefix to the old one (ADD PCO's)
 - Phase 4: **Configure hosts addresses with SLAAC**
 - Phase 7: **Remove the old prefix** in routers' configuration





RR and baker/droms/lear procedures

- Things in procedures RR CAN'T do:

- DNS modifications

- Update timers
- Change forward tree
- Change reverse tree

- Update non-router equipments

- Firewalls...

- DHCPv6 server changes

- Update timers
- Update pools

- Deal with hard-coded IPv6 addresses

- Internet Registries interaction

- Management

- Nice interface to be able to control the different steps
- Monitoring the process

- Rollback

DNS dynamic update...

Or A6/DNAME ???





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Some results from
LORIA (France)





NetSV – Monitors the renumbering

- Collects informations sent by the monitored/renumbered stations
 - Daemon needed on monitored hosts
- Graphical representation of the network, and renumbering phases
- Triggers application diagnostics on hosts
- Sends alarms when monitored stations detect addressing problems or crash



Don't forget ...

- Numbering is renumbering
 - & vice versa 😊
- We want to be able to renumber part of the IPv6 network
- Automatic – but under control
 - Step by step (in time & space)
 - CLI time is over now
 - What do we do with router renumbering ?
- Everything gets easier when we have good management facilities
 - IPv6 Flow monitoring, uRPF check, MIBs





Thank you !

