

On demand IPv4 address provisioning in Dual-Stack PPP deployment scenarios

draft-fleischhauer-ipv4-addr-saving-02

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What does it do?

- Establishes / Releases IPCP connection within a Dual-Stack PPP session on demand and only if it is needed (or not needed anymore).
 - Triggered by IPv4 traffic / timer
 - IPCPv6 connection stays permanently “active”.
- No really new approach.
 - Requests more explicit what RFC 6204 and also I-D 6204bis already state in requirement WLL-3:

“If the WAN interface supports PPP encapsulation, in a dual-stack environment with IPCP and IPV6CP running over one PPP logical channel, the Network Control Protocols (NCPs) MUST be treated as independent of each other and start and terminate independently.”

Illustration

Current approach:

During the whole time of a Dual-Stack PPP session both contexts (IPCP and IPv6CP) are established and IPv6 as well as IPv4 resources are needed the whole time. – Also in case when no IPv4 communication takes place!



Proposal:

Establish IPv4 context only if it is really needed and release it when there is no IPv4 communication.



Achievements

- General achievements:
 - Allows to really de-couple IPv4 and IPv6 contexts within a Dual-Stack PPP session
 - No need to terminate/re-start whole PPP session when an initial IPv6-only PPP session has to be upgraded to Dual-Stack (or vice versa ;-)
 - More efficient usage of sparse (IPv4) network resources
 - Provides mechanism to ease IPv4 phase out (long term)

Achievements / Use cases

- Basic Assumption: All “own” services of the network provider (e.g. VoIP, NTP, DNS ...) are already running on top of IPv6! => Mainly mid to long-term scope.
- Additional achievements from a network provider perspective:
 - One “generic” PPP network and CPE profile for single play (=VoIP), double play and x-play customers
 - Eases provisioning and production.
 - Keep the network operation costs and the network complexity as low as possible.
 - Optimize the usage of sparse (IPv4) resources.
 - No need for an IPv4 context for single play customers (VoIPv6).
 - Single play (VoIP) customers can easily be upgraded to Double / Multiple play services.
 - Dynamic “Test and trial” offerings for upgrading single play customers to Double and Multiple play Internet services.

Version 02 - update

- New chapter "2.1. Illustrative service provider use case"
 - describes a typical use case
- Modification of "Figure 1: PPP Dual-Stack architecture"
 - the CPE/CER is now divided in 3 functional parts
 - the text in chapter 2.2 reflects this changes
- New chapter "4. Potential for optimization"
 - describes options to increase the efficiency and success of the mechanism

Next steps

- Please read and provide feedback.
 - Like / Don't like.
 - Makes sense or not.
 - (Providers) Fits to your use cases or not.
 - Are you aware of other use cases that fit into this scenario?
 - Don't care ;-).
- Decide how to proceed with this I-D.
 - Within Intarea?
 - Other WG? Where?

Thank you very much for your
attention.