On Demand Mobility Management

draft-yegin-dmm-ondemand-mobility-02

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On Demand

New charter: ***"… define solutions that allow, for example, mobile nodes to select either a care-of address or a home address depending on an application' mobility needs. "***

Requirements: ***"REQ2: Bypassable network-layer mobility support for each application session"***

Types of IP Addresses

(with respect to IP-layer mobility management)

Type	Prefix managed by	Persistency	Example apps	Configured by
Fixed IP Address	Centrally-located IP anchor	Can be fixed all the time	Mobile server, SSH, VPN client, etc.	Mobile IP, GTP
Sustained IP Address	Dynamically selected IP anchor @ various locations	Released after IP session(s) terminate	Browser, email client, app store client, etc.	... Various DMM proposals...
Nomadic IP Address	Serving Access Router	Released upon handover	DNS client, IM client, MPTCP-based clients, etc.	DHCP, SLAAC

RFC 5014

- “IPv6 Socket API for Source Address Selection”
- Defines IPV6_ADDR_PREFERENCES socket flags to influence source address selection
  - IPV6_PREFER_SRC_HOME
  - IPV6_PREFER_SRC_COA

RFC 5014 – Not sufficient for DMM

- Home vs. CoA distinction not sufficient to capture 3 different types of IP addresses
- Selects among available addresses, but on-demand configuration is needed too
  - Example use: Don't automatically configure the rarely-used Fixed IP Address until it's requested by an app.
  - Indication of "Prefer(ence)" is not sufficient, we need "require(ment)"

Solution

- New IPV6_ADDR_PREFERENCES flags
  - IPV6_REQ_FIXED_IP
  - IPV6_REQ_SUSTAINED_IP
  - IPV6_REQ_NOMADIC_IP
- Works with RFC 5014 framework
- If the requested type IP address is not already configured, then the IP stack attempts to dynamically configure one

Questions and comments?

Policy

- Following are policy matters:
  - The type of IP addresses configured on the host at the boot time.
  - Permission to grant various types of IP addresses to a requesting application.
  - Determination of a default address type when an application does not use the API.