

# Analysis and recommendation for the ULA usage

[draft-liu-v6ops-ula-usage-analysis-00](#)

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# Motivation of this draft

- ULA (RFC4193) defined in 2005, how to use it seems un-documented and controversial
- There are explicit requirements of using ULA in some scenarios (e.g. renumbering, homenet). The use cases are not scenario-specific only, they involve common ULA usage.
- So we think it is worth to make comprehensive analysis, and try to make some recommendations according to the discussion

# ULA's features

- FC00::- 40bit(or varieties) Global ID to provide (quasi) uniqueness
- Independent address space
- Not routed globally, only locally

# Contents

## General Use Cases

- ULA-only: The hosts only configured with ULA.
  - *Isolated network*
  - *Connected network*
- ULA + Global address(es)

## Some special Use Cases

- Private routing
- NAT64 pref64
- Session identifier

# ULA-only

- Isolated network
  - *Straightforward way with minimal administrative cost for address provision*
  - *Suitable for close systems, e.g. cars, plane, buildings, which don't intend to connect to internet*
  - *Automatic ULA provision is needed*

# ULA-only

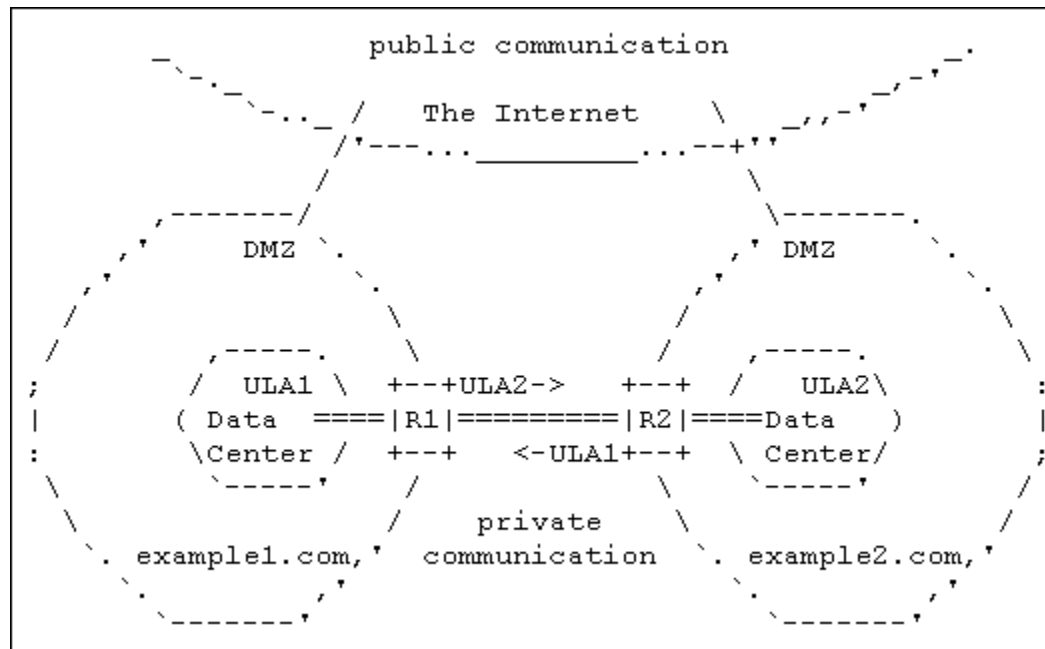
- Connected network
  - Using IPv6 NAT (e.g. NPTv6-rfc6296), rfc1918 mode
    - *Avoiding renumbering from uplink*
    - *Better security? (old argument about IP leaking, topology hiding)*
    - *Inheriting NAT issues (end-to-end transparency, global multicast .etc)*
  - Using Proxies
    - *No IP layer connectivity*
    - *Ensure high level security; easy to monitor/record/audit user's behavior*

# ULA+Global

- ULA for local communication, while Global for outside. Address selection policy is needed.
- Benefit to renumbering: Stable local communication while renumbering from uplinks
- Argument of operation complexity and cost (may be a common worry about running multiple prefixes in IPv6)

# Some Special Use Cases-1

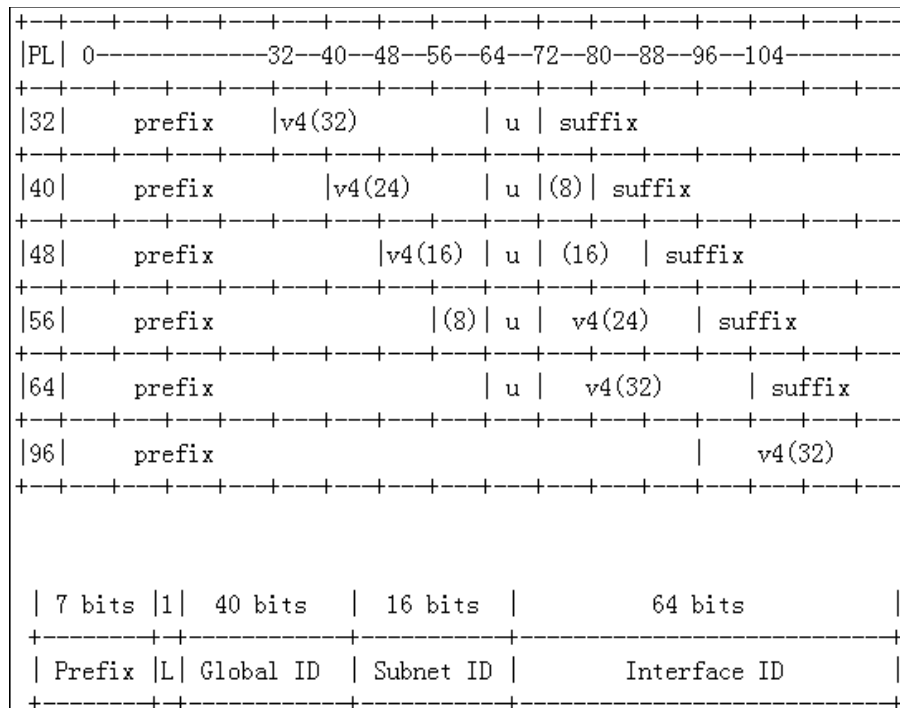
- Privacy routing (*Fred Baker, draft-baker-v6ops-b2b-private-routing*)
  - *Business to business private link*
  - *End-to-end transparent*





# Some Special Use Cases-2

- Used as NAT64 pref64 (*proposed by Cameron Byrne*)
  - *ensures that only local systems can use the NAT64 translation*
  - *helps clearly identify traffic that is locally contained*
  - *Being really used in T-Mobile USA*
- pref64 shorter than /48 violate the 40bit Global ID of ULA, not recommended to use



# Some Special Use Cases-3

- Used as identifier
- E.g. RFC6124 BTMM, using ULA as transport-layer identifier
- Seems ULA is suitable to be identifier
  - *IPv6-compliant, easy to be grabbed from the stack*
  - *(quasi)uniqueness to avoid collision in most of the cases*
  - *Stable, assigned to the interface, no need for the application to maintain it*
- But may have privacy issues

**Thank you!**  
Comments are appreciated

**Adopted as a WG item?**

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