

**Scalable Multihoming
across IPv6 Local-Address Routing Zones
Stateless Address Mapping (SAM)**

draft-despres-sam-03

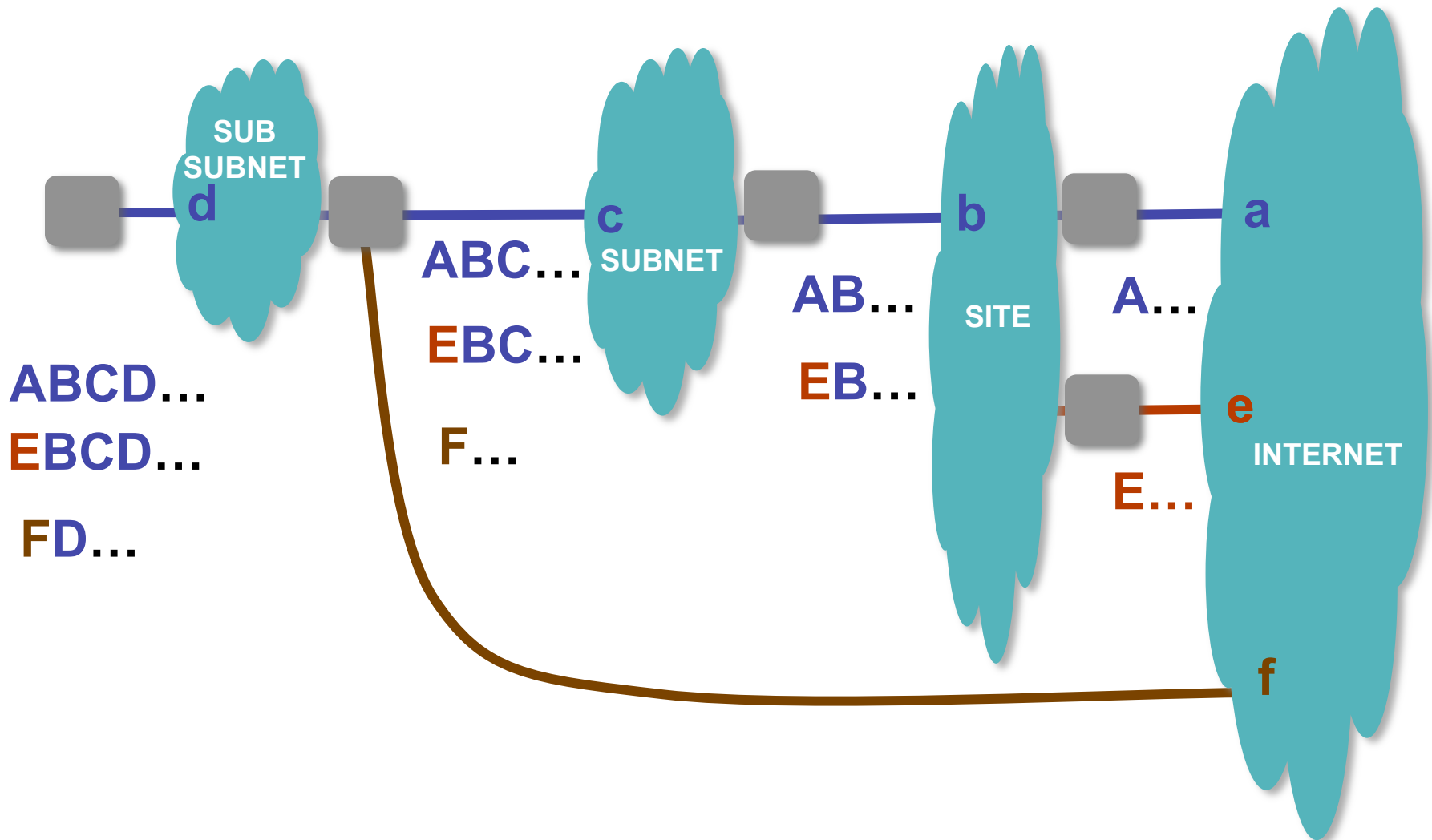
SAM Features

- **Routing-zone hierarchies**
- **Multihoming**
 - **Scalable (no provider-independent prefixes)**
 - **E2E transparency**
 - **Ingress-filtering compatible**
- **Routing-zone Local addressing**
 - **Renumbering avoidance**
- **Automated prefix sub-delegation**
- **Incremental deployment**
- **Simple design**

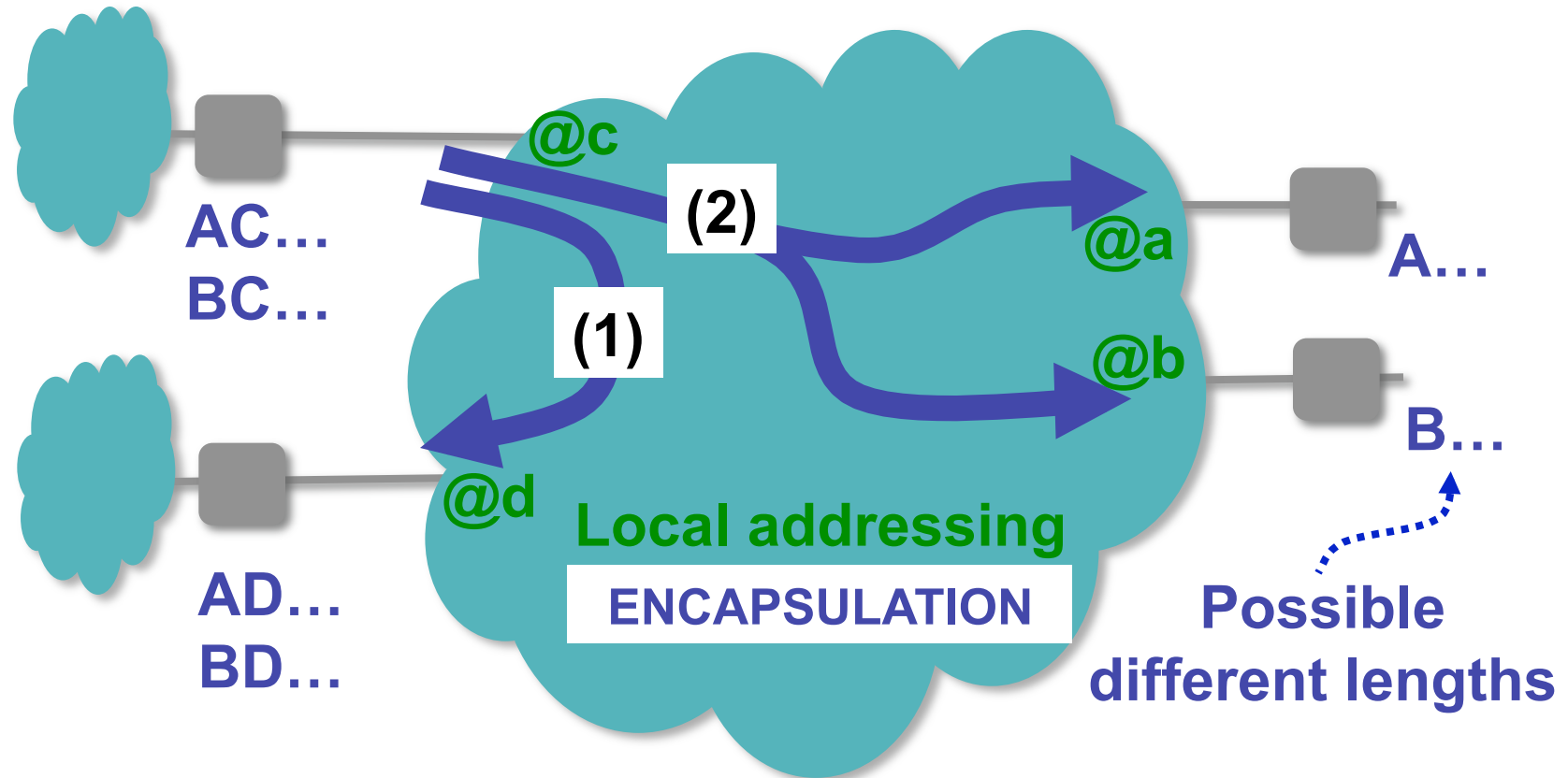
Requirements

- **SAM support**
 - in zone gateways
 - in hosts
 - in intermediate routers if they serve as relays for SAM parameter advertisement
- **New variants of IPv6 address formats**
 - Series of local IDs beyond 64 bits
 - Local-scope IIDs with a new format

Hierarchic Global Prefixes



Local Addresses & Multihoming

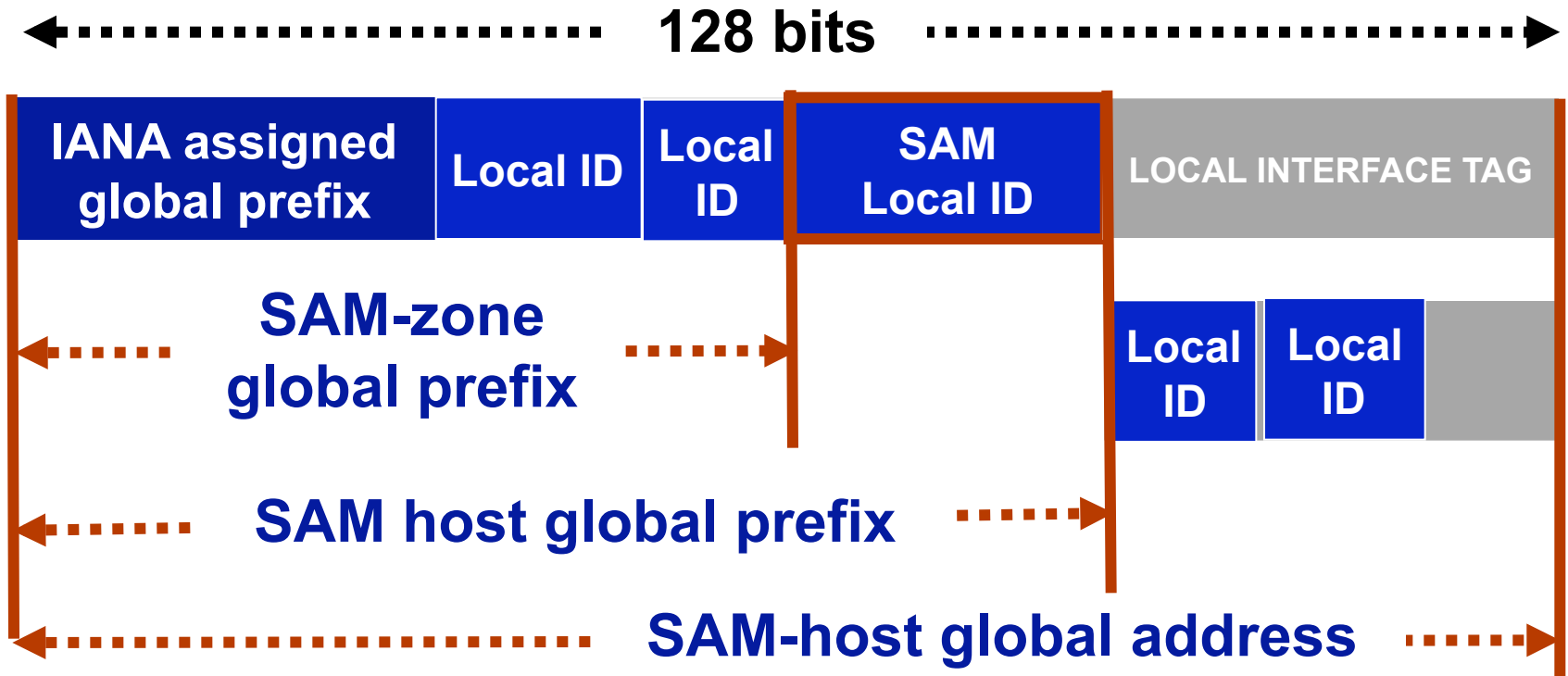


(1) Loc dest(Glob dest, Zone global prefixes)

(2) Loc dest(Glob srce, GW loc adds & their glob prefixes)

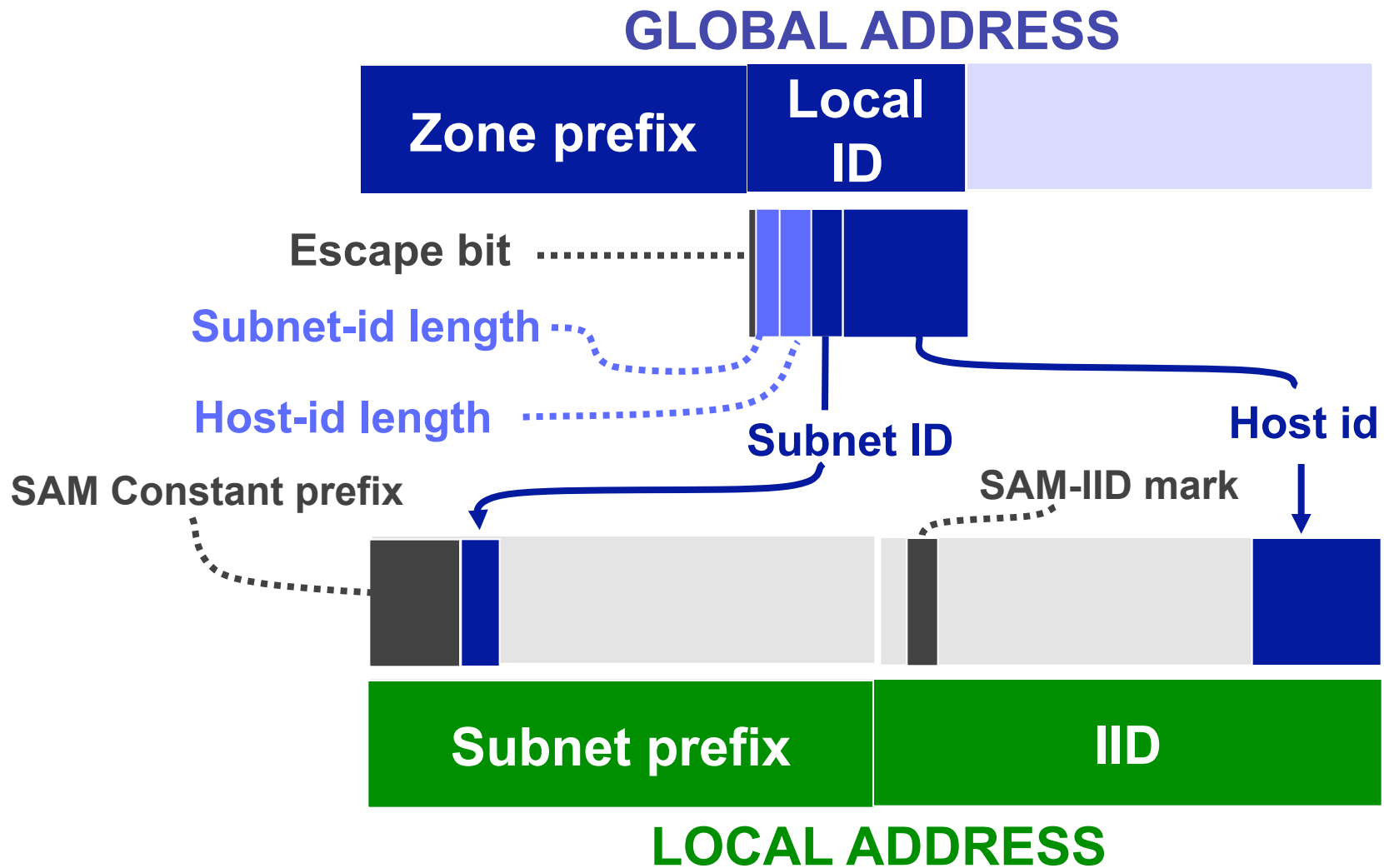
For (1), Specific global and local address formats are needed

Hierarchic Global Addresses



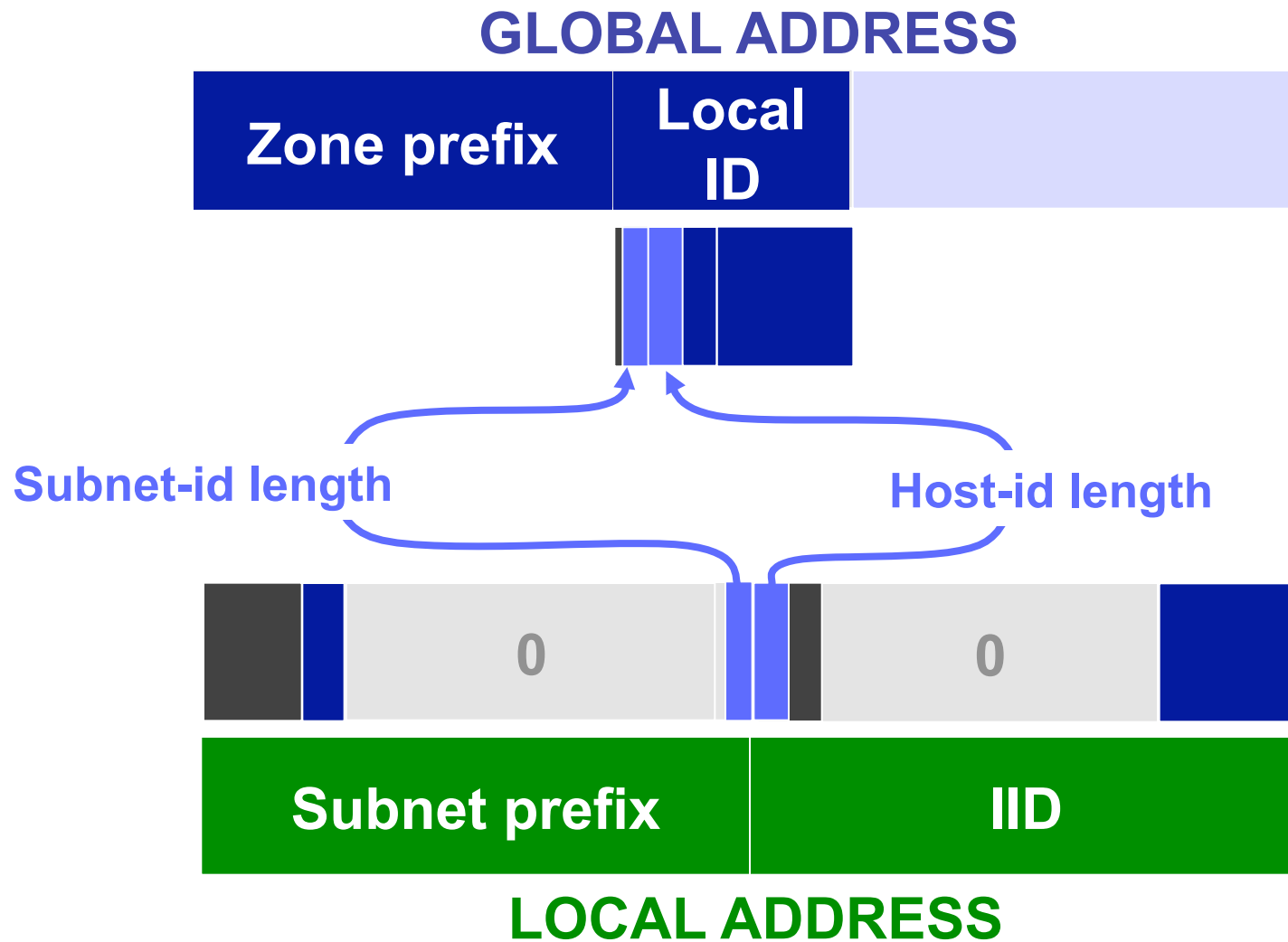
The high order bits of local interface tags must be distinguishable from those of a next local ID

Global Address → Local Address



If the next local ID has 0 in the two length fields, this is the local interface tag

Local Address → Local ID (Prefix Autoconfiguration)



Prefix Autoconfiguration Procedure

1. Does the link subnet start with the SAM constant prefix ? (If no, return to non-SAM operation.)
2. Determine host-ID length (e.g. default 1 octet)
3. Select a host ID at random to build a SAM IID
4. Test whether there is a duplicate IID
SAM IIDs are duplicates if one of their host IDs is prefix of the other (overlapping address sets)
5. If there is one, go to 3 (or exit after too many tries)
6. If there is none, derive the local ID from the host ID (as well as the local address)
7. Append the local ID to zone prefixes

A practical Example

- Subnet id: **0x9**
- Host id: **0x7777**
- → Local Address: **fcf9:0:0:1:2f00::7777**
- → Local ID: **1297:7770::/28**
- Zone global prefixes: **2001:db8:a:a::/48**
2001:db8:b:b:b00::/56
- → Global prefixes: **2001:db8:a:a:1297:7770::/76**
2001:db8:b:b:b12:9777:7000::/88
- → Global addresses: **2001:db8:a:a:1297:7770::**
2001:db8:b:b:b12:9777:7000::

Future work items ?

- **How to advertise SAM parameters (RAs, DHCPv6...)**
- **Extension to peer relationship between zones**
- **6man on legality of used IPv6 address formats**
- **Manufacturers interested ?**
- **Relationship with other subjects ?**
(LISP, VET, SAF, mif ...)
- **What else ?**