DTN Numeric Naming Architecture

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DTN Naming Architecture

Bundle Protocol (BP) includes URI-based naming scheme
- Each name can be up to 1023 bytes in length
- Long names consume too much bandwidth for constrained links

IPN naming scheme gives short integer names
- Nodes that obtain initial IPN delegations have a permanent performance advantage (unfair to late-comers)

Revised IPN naming scheme proposed

Revised IPN Naming Scheme

No change to native IPN representation.

No node number assignment range is any more advantageous than any other.

Node number has two components: "unit number" followed by "agent number".

Each "unit" is identified by a number that is 7n bits in length (1 <= n <= 8)

Length of the agent number in unit's scope is (63 - 7n) bits, and the scope of the unit is all node numbers that begin with the unit's number.

Unit number can be omitted from SDNV for correspondents in the same unit

Unit number can be encoded in an extension block when necessary

TLV-based Naming Scheme

New "scheme type" as the "T" in TLV

Second octet ("L") encodes length of Value ("V") field

Value field encodes numeric name

Name consists of 24-bit "Organization" code followed by a numeric node ID specific to the organization

Most significant bit in "L" octet is "Organization code present" bit

For communications among nodes belonging to the same organization, the 24-bit Organization number is omitted

Leading all-zero octets are not transmitted over the wire

E.g.; Node ID 10:20:30:40:50:60:70:80 transmitted as 30:40:50:60:70:80

E.g., Node ID 10:20:30:00:00:00:70:80 transmitted as 70:80

Draft

https://datatracker.ietf.org/doc/draft-templin-dtn-numid/