

# Limited Domains and Internet Protocols

`draft-carpenter-limited-  
domains-04`

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# Topics

- Document reminder
- Changes since IETF 102
- Taxonomy
- Protocol scope in limited domains
- Functional requirements of limited domains
- Next steps

**NEW**

# Reminder

## Types of limited domain

- SOHO networks
- In-vehicle networks
- SCADA networks
- Sensor networks
- Enterprise & campus
- Data & hosting centres
- CDNs
- Network slices
- etc

## Technologies

- Differentiated Services
- NFV/SFC
- Data Centre Overlays
- Segment Routing
- Autonomic Networks
- Homenet (HNCP...)
- Creative use of IPv6
- Deterministic Networking
- etc

# Updates since IETF102

- Improved/reorganized descriptive text
- Added taxonomy
- Added section on scope of protocols in limited domains
- Added section on functional requirements of limited domains

# Taxonomy (outline)

- The Domain as a Whole
- Individual Nodes
- The Domain Boundary
- Topology
- Technology
- Connection to the Internet
- Security, Trust and Privacy Model
- Operations

The main value of this taxonomy is to help identify common features and requirements.

# The scope of protocols in limited domains (1)

- Some protocols will be designed to only work correctly between end systems inside domains.
- Some IETF efforts (diffserv, SFC, Segment Routing, DETNET...) actively encourage this.
- IoT edge networks are definitely limited domains.
- We need to discuss whether protocols (or extensions) should sometimes be standardised to interoperate only within a Limited Domain boundary. Such protocols would not be required to interoperate across the Internet as a whole.
  - except perhaps via encapsulation

# The scope of protocols in limited domains (2)

- If you think that was provocative, read draft-voyer-6man-extension-header-insertion
- We conclude that it is reasonable to explicitly define limited-domain protocols, if they
  - completely describe the scenario
  - explain how the domain is defined.
- As long as all relevant standards are respected *outside* the domain boundary, a limited-domain protocol is not harmful to the Internet.
- However, mechanisms are needed to support domain membership operations.

# Functional Requirements of Limited Domains (1)

- **Domain Identity.** A domain must have a unique and verifiable identifier - a public key for the domain. The holder of the private key becomes the trust anchor for the domain.
- **Node Eligibility.** A node must be able to determine which domain(s) it can join.
- **Secure Enrolment.** A node must be able to enrol securely in a given domain and acquire relevant credentials for operations within the domain.
- **Withdrawal.** A node must be able to cancel enrolment in a given domain.



# Functional Requirements of Limited Domains (2)

- Dynamic Membership. A node should be able to temporarily leave and rejoin a domain.
- Role. A node must have a verifiable role (capabilities and authorizations).
- Verify Peer. A node must be able to verify whether another node is a member of the domain.
- Verify Role. A node must be able to learn the role of another node.
- Domain Data. It must be possible for a node to acquire domain policy and/or domain configuration data.

# Discussion + next steps

- Comments? Questions?
- Next steps: further develop the functional requirements

