ForCES LFB Library
<draft-ietf-forces-lfb-lib-01 >

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Draft Status

- Version 00: June 2009
- Version 01: March 2010
- Updates and the motivations behind
  - make a full description on how the library document should be defined so as to meet requirements of a typical router functions
    - partially done
  - define and categorize LFB classes to form a basic LFB lib system according to the requirements
    - partially done
  - define or assess LFBs with their individual components
    - not start yet
  - document management
    - avoid XML definition duplications in the document
      - have cut pages from 118 to about 80
Update since Version 00 (1)

• Add “Overview” section
  – summarizes typical router functions
    • IP forwarding
    • address resolution
    • ICMP
    • network management
    • running routing protocol
  – describe how the document is to be managed to meet the requirements of the typical router functions
    • use a IP forwarding function as an example to show how an LFB based processing path can be organized for some typical router function
    • propose some principles to classify LFB classes
Update since Version 00 (2)

- Base types definitions
  - Separate XML definitions for base types from that of Base LFB Library
    - form a “BaseTypeLibrary”
    - may use a library load element to reuse it anywhere if needed other than the Base LFB Library in this document

- Currently no update to any specific base type definitions in v00
  - may update it anytime in the process when we define and update specific LFBs
Update since Version 00 (3)

- LFB Classes Description
  - re-categorized the LFB groups
  - to categorize LFBs into groups only for better understanding purposes
    - there may be no other functional roles with categorization?

LFB Classes

- Core LFBs
  - FE Protocol LFB, load library="FEPO"
  - FE Object LFB, load library="FEOBject"

- Port LFBs
  - Generic Connectivity LFB
  - Ethernet Port LFBs
    - EtherPort LFB
    - EtherEncap LFB
    - EtherDecap LFB
  - POS Port LFBs
    - ?
  - ATM Port LFBs
    - ?
LFB Classes

• Address Resolution LFBs
  – ARP
  – IPv6 Address Resolution

• ICMP LFBs
  – ICMP Generator
  – ICMPv6 Generator

• IP Packet Validation LFBs
  – IPv4 Validator
  – IPv6 Validator

• Classifier LFBs
  – Metadata Classifier
  – Arbitrary Classifier
LFB Classes

• Forwarding LFBs
  – Unicast Longest Prefix Match LFBs,
    • IPv4, IPv6
  – Nexthop Applicator LFBs
    • IPv4, IPv6

• QoS Control LFBs
  – Scheduler LFBs
  – Queue LFBs

• Miscellaneous Packet Manipulation LFBs
  – Packet Trimmer
  – Duplicator
  – IPv4 Option Processing
  – IPv6 Extend Header Processing

• Redirect LFB
Update since Version 00 (4)

- A section for “Base LFB Library Use Case for Typical Router Functions”
  - provides more detailed descriptions on how various typical router functions are implemented based on the defined base LFB set.
  - also to verify the completeness of the base LFB library set

- By discussing the processing paths for typical functions, we do greatly get to know lots on LFB classes with their properties required

- Followed are some proposed processing paths for typical router functions based on current LFB classes
  - not in the draft yet, only for later discussion and as a demonstration on the possibility
  - far from perfect
LFB Processing Path for Typical Router Functions

- **IPv4 unicast forwarding**

![Diagram of LFB Processing Path](image-url)
LFB Processing Path for Typical Router Functions

- ARP Processing

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Metadata (For IPv4 packets need ARP)

ARP protocol packets
LFB Processing Path for Typical Router Functions

- ICMP processing

![Diagram showing the processing path for typical router functions, including ICMP processing, IPv4 packets, IPv4 packets need ICMP processing, and metadata.]
LFB Processing Path for Typical Router Functions

- Running Routing Protocol
LFB Processing Path for Typical Router Functions

- Supporting Network Management

![Diagram of LFB Processing Path](image)
Discuss on Next Work

• What should we focus on for the next work?

• Need to carefully handle the definition of Each LFB class
  – Need to review and modify LFB components one by one
  – May be good to start with port LFBs,
    • how a port type should be mapped into LFBs?
      – currently an ethernet port is described by 4 LFBs
        » generic connectivity LFB, etherport, etherEncap, etherDecap
    • what components for every LFB should be defined?
      – currently generic connectivity LFB is still vacuum for components
Thanks!