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

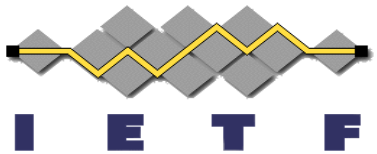
Authors

Weiming Wang , wmwang@zjgsu.edu.cn
Evangelos Haleplidis , ehalep@ece.upatras.gr
Kentaro Ogawa， ogawa.kentaro@lab.ntt.co.jp
Fenggen Jia， jfg@mail.ndsc.com.cn
Halpern Joel， joel.halpern@ericsson.com

Contributors

Jamal Hadi Salim, hadi@mojatatu.com
Ligang Dong, donglg@zjgsu.edu.cn

IETF 77th Meeting
March 21-26, 2010 , Anaheim, California, USA



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

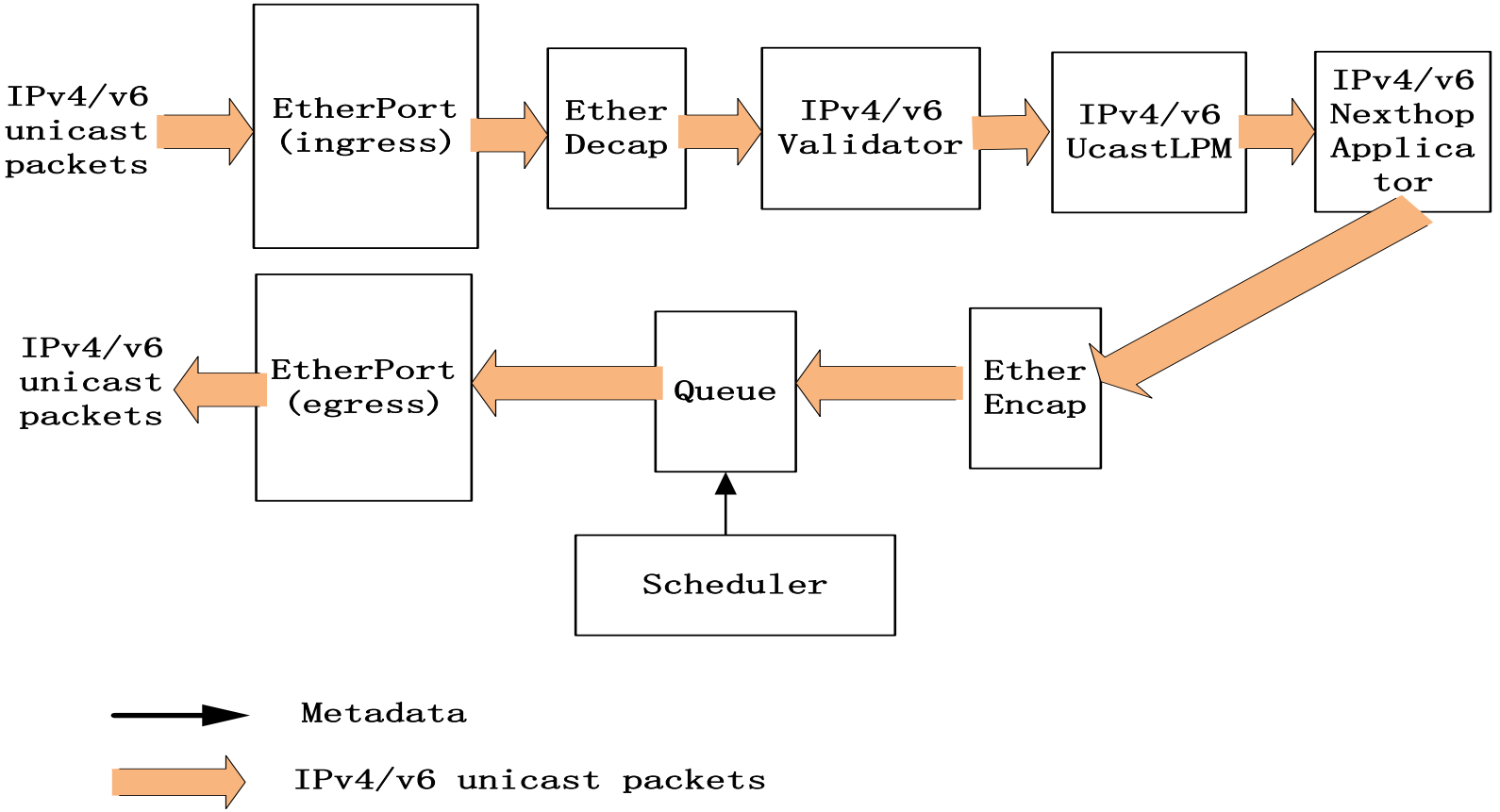
- Forwarding LFBs
  - Unicast Longest Prefix Match LFBs,
    - IPv4, IPv6
  - Nexthop Applicator LFBs
    - IPv4, IPv6
- QoS Control LFBs
  - Scheduler LFBs
  - Queue LFBs
- Miscellaneous Packet Manipulation LFBs
  - Packet Trimmer
  - Duplicator
  - IPv4 Option Proccessing
  - IPv6 Extend Header Processing
- 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

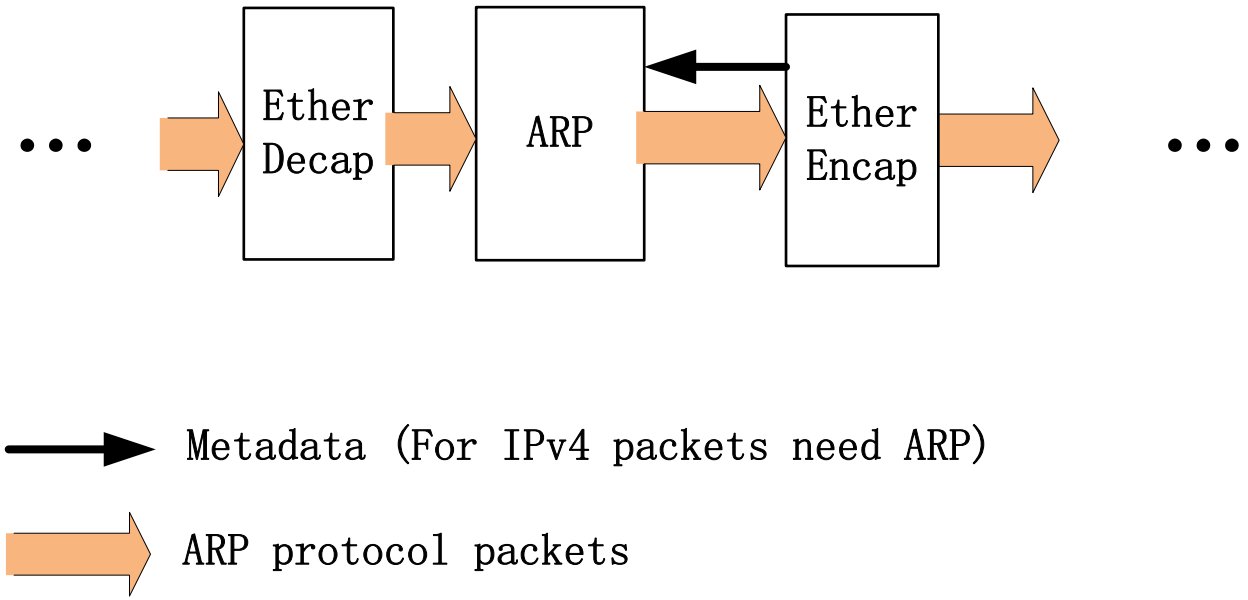
LFB Processing Path for Typical Router Functions

- IPv4 unicast forwarding



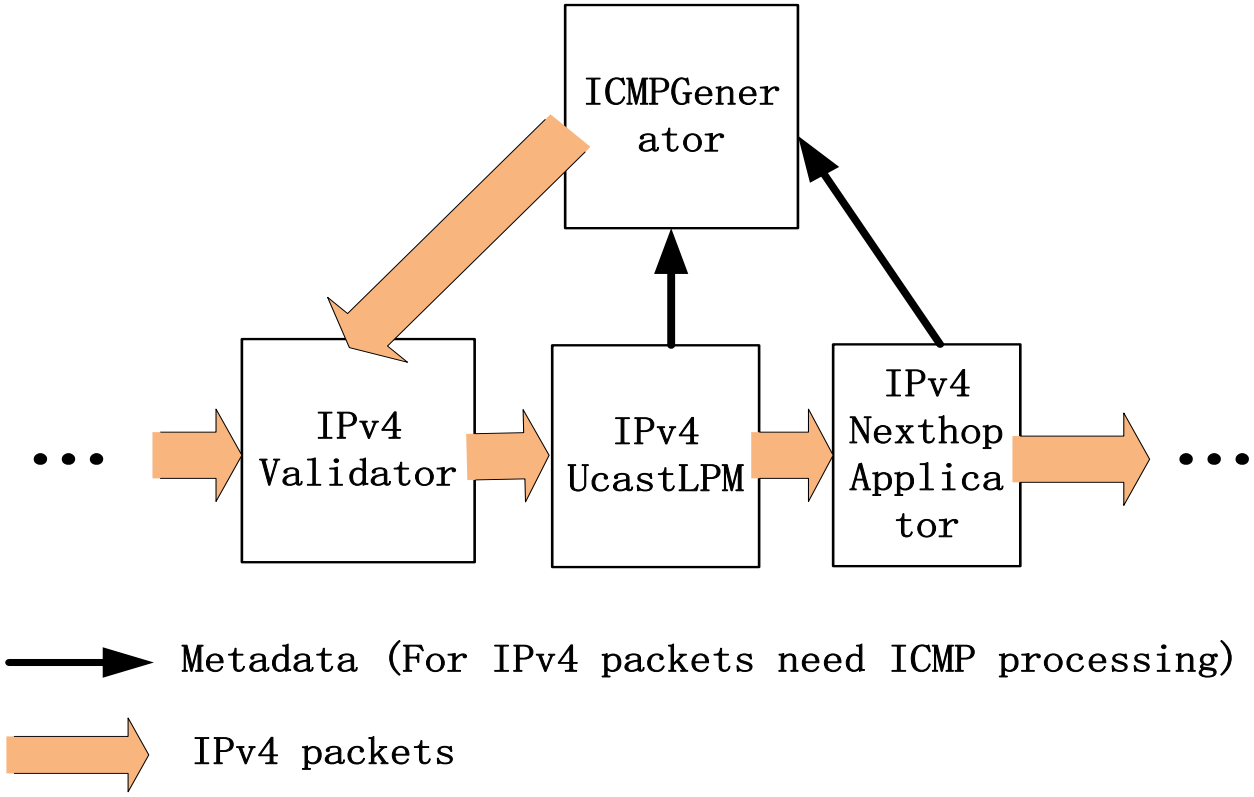
LFB Processing Path for Typical Router Functions

- ARP Processing



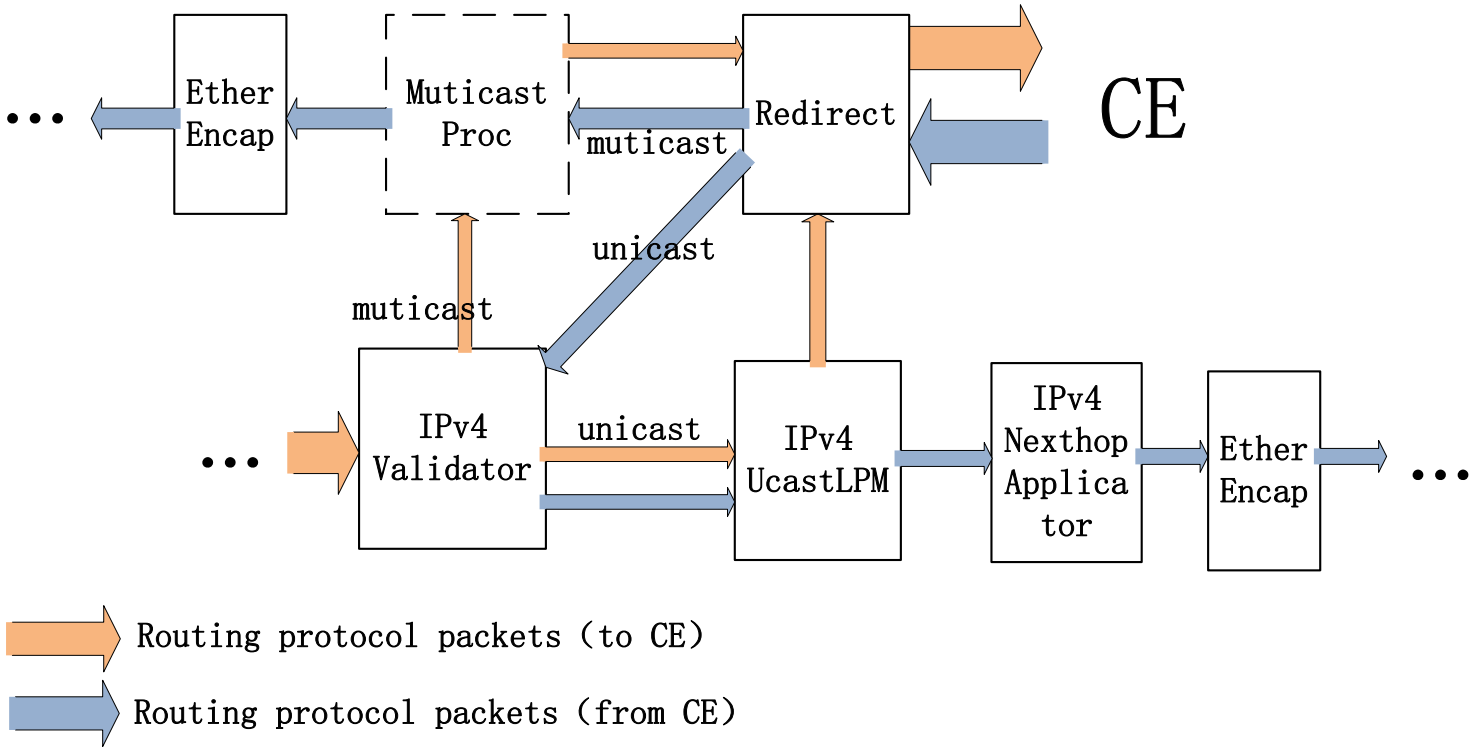
LFB Processing Path for Typical Router Functions

- ICMP processing



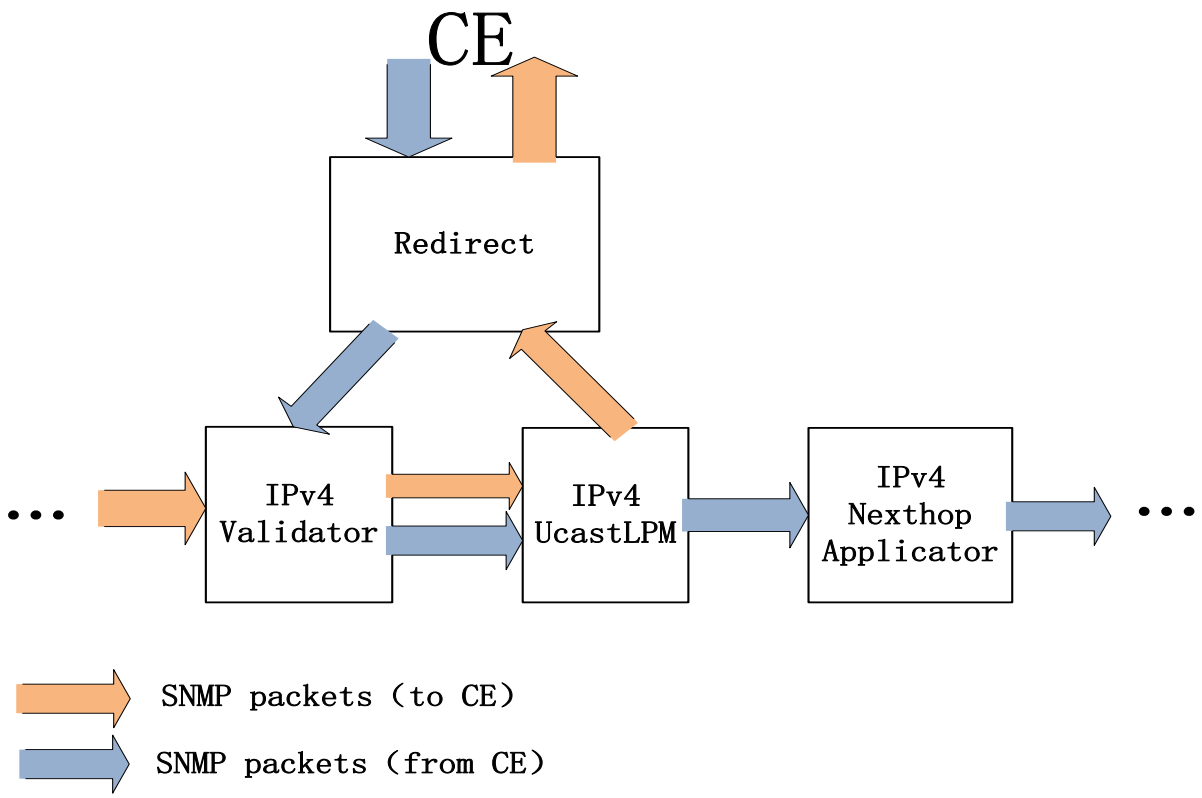
LFB Processing Path for Typical Router Functions

- Running Routing Protocol



LFB Processing Path for Typical Router Functions

- Supporting Network Management



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!