

Loopback Flow Table Offload Driver

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Motivation

- Prototyping of Uses of Flow Table API

- Flow Table API by John Fastabend et al.

Flow Table Architecture

1 User-Space Application

Flow Table Architecture

- 1 User-Space Application
- 2 Flow Table API Netlink

Flow Table Architecture

- 1 User-Space Application
- 2 Flow Table API Netlink
- 3 Offload Driver

Flow Table Architecture + Loopback Offload Driver

- 1 User-Space Application
- 2 Flow Table API Netlink
- 3 Offload Driver: UNFT

Flow Table Architecture + Loopback Offload Driver

- 1 User-Space Application
- 2 Flow Table API Netlink
- 3 Offload Driver: UNFT
- 4 Flow Table Hairpin Netlink

Flow Table Architecture + Loopback Offload Driver

- 1 User-Space Application
- 2 Flow Table API Netlink
- 3 Offload Driver: UNFT
- 4 Flow Table Hairpin Netlink
- 5 Userspace Loopback Backend

Flow Table Architecture + Loopback Offload Driver

- 1 User-Space Application
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Return path is the reverse of the above

Prototype

- Not performant!

Prototype

- Not performant!
- Will release and provide URLs vial email

flow-table

User-space code to drive Flow Table API

- flow-table-ctl

flow-table

User-space code to drive Flow Table API

- flow-table-ctl
- libflow-table
 - netlink message handling
 - netlink/JSON conversion
 - comparison and copying of flows as C structures

unft: User space Netlink Flow Table

Offload Loopback Driver

- Implements Flow Table API NDOs

unft: User space Netlink Flow Table

Offload Loopback Driver

- Implements Flow Table API NDOs
- Forwards NDO calls to userspace using Flow Table Hairpin API

unft: User space Netlink Flow Table

Offload Loopback Driver

- Implements Flow Table API NDOs
- Forwards NDO calls to userspace using Flow Table Hairpin API
- Allows userspace to register a listener for those messages

unft: User space Netlink Flow Table

Offload Loopback Driver

- Implements Flow Table API NDOs
- Forwards NDO calls to userspace using Flow Table Hairpin API
- Allows userspace to register a listener for those messages
- Listens for responses from userspace

flow-table-hairpin

User space backend for unft

- Flow table backend (ftbe) abstraction

flow-table-hairpin

User space backend for unft

- Flow table backend (ftbe) abstraction
- Dummy ftbe simply stores flows as C structures

Questions