Progress Report on Shim6 Implementation

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Shim6 WG

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Introduction

- Subject: SHIM6 implementation on Linux
- Schedule
  - Phase 1: May, 2006 ~ November, 2006
    - SHIM6 Stack using Netfilter
    - Library for SHIM6
    - Simple Testbed
  - Phase 2: January, 2007 ~ TBD
    - SHIM6 Stack via direct kernel patch
    - Extended socket API & Library for SHIM
- Participants: ETRI & SNU, Korea

Considerations (1)

- **Base documents**
  - Level 3 multihoming shim protocol
    - draft-ietf-shim6-proto-05.txt
  - Failure Detection and Locator Pair Exploration Protocol for IPv6 Multihoming
    - draft-ietf-shim6-failure-detection-05
  - Hash Based Addresses (HBA)
    - draft-ietf-shim6-hba-01
  - Applicability Statement for the Level 3 Multihoming Shim Protocol
    - draft-ietf-shim6-applicability-01
- **Base Platform**
  - Linux
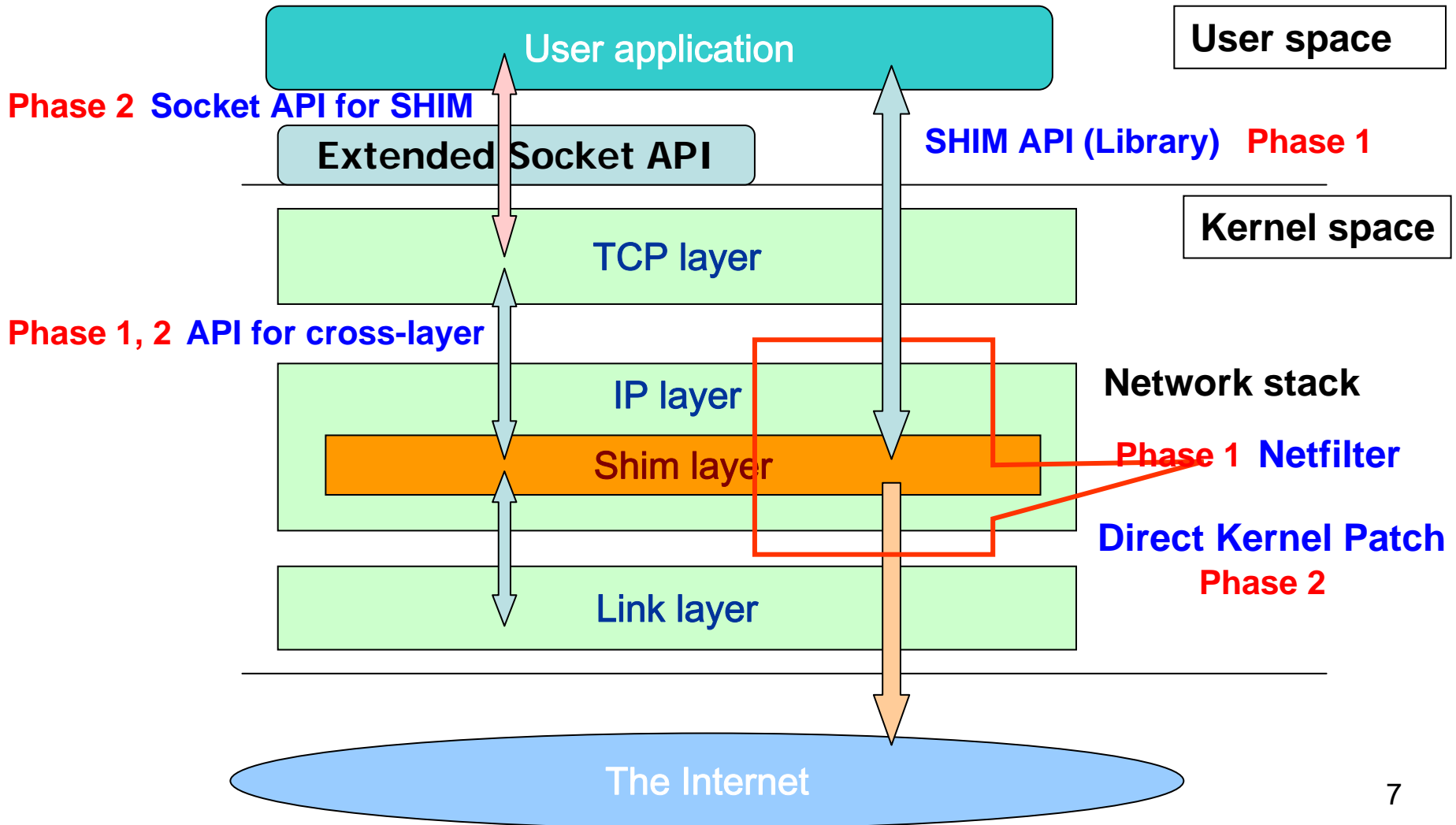 - BSD
  - Windows

Considerations (2)

- Design Issues
  - Kernel Implementation
    - Direct Kernel Patch
      - Long term Solution
    - Netfilter & IP table
      - Interim Solution
  - API works
    - Extended Socket API
    - Library for SHIM
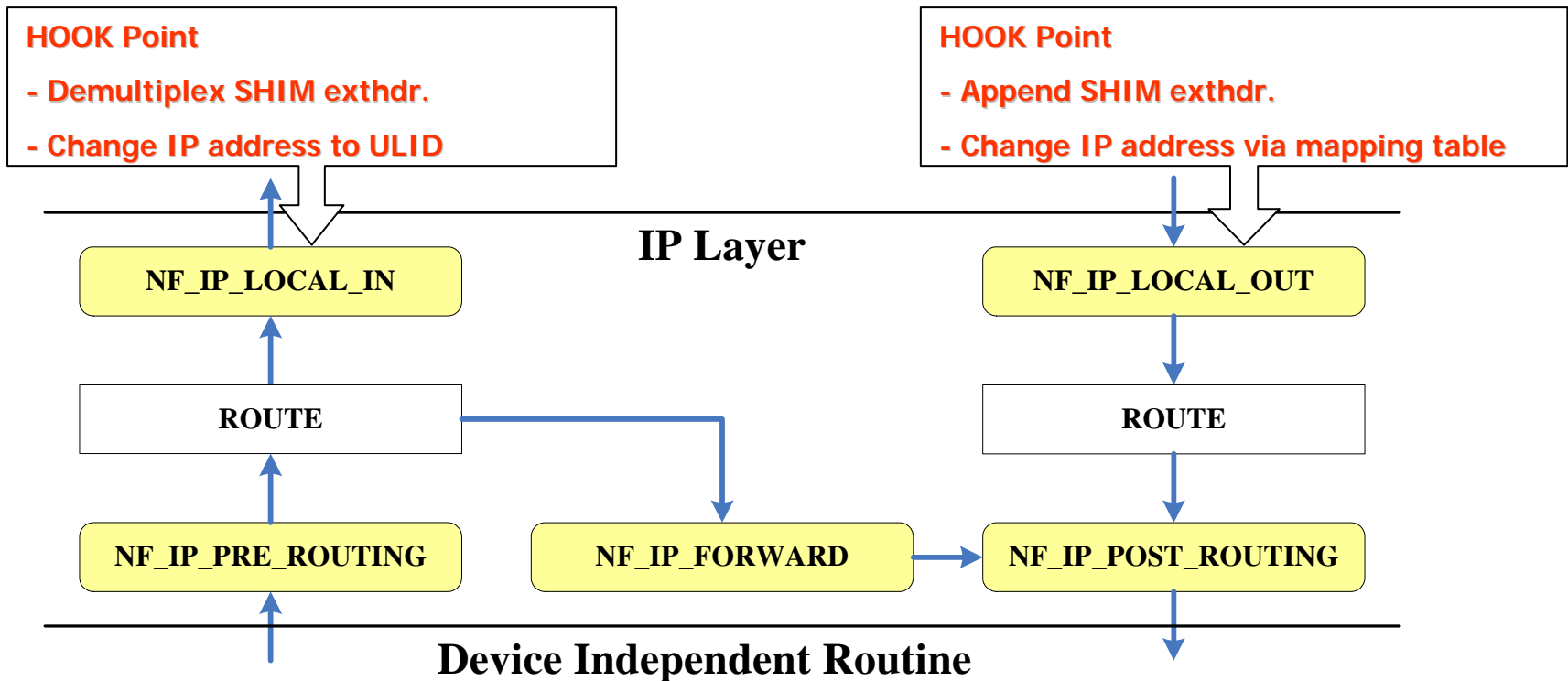
Project Overview

- SHIM6 Implementation work
  - Scope
    - SHIM6 Layer
    - API work for ULP or other Layer (Library for SHIM).
  - Target operation system
    - **Linux 2.6.16.19**
    - **Netfilter, Iptables ver. 1.3.5**
  - Advantages
    - Easy and Quick adoption
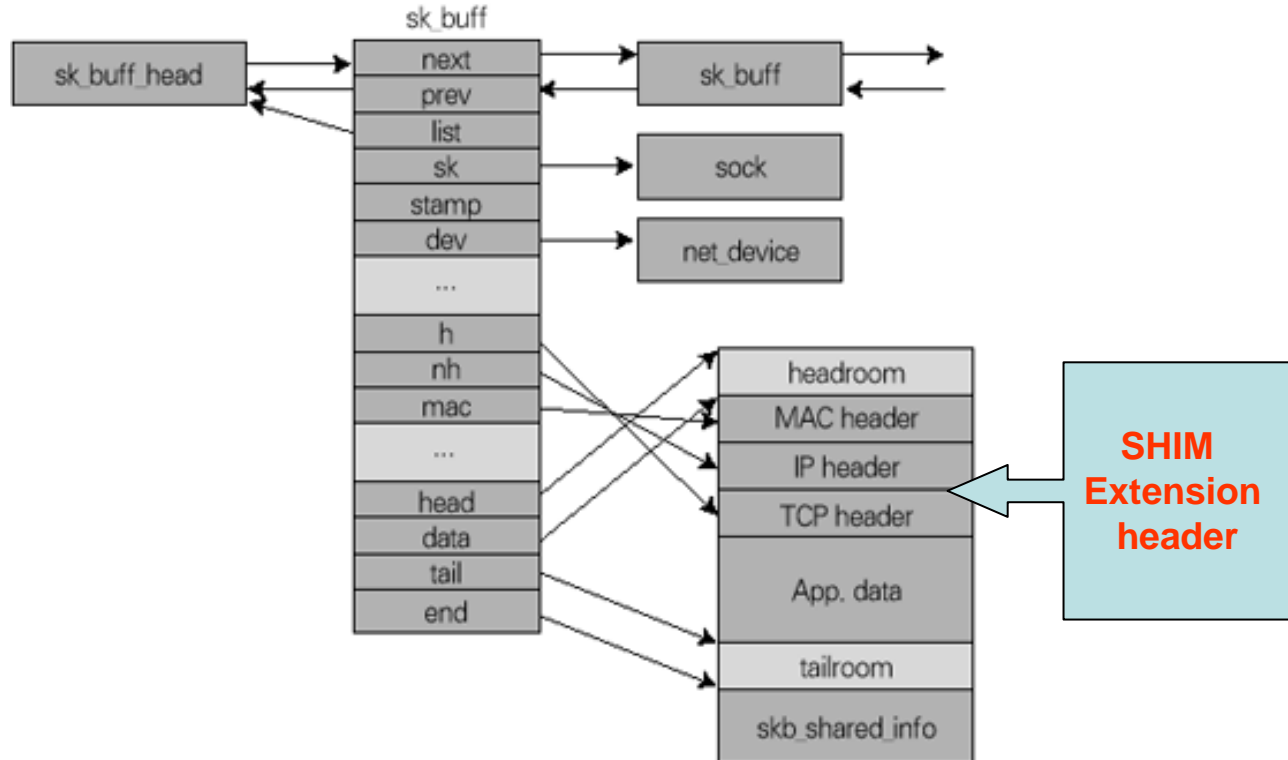   - Precedence experiments for supporting multihoming

System Overview

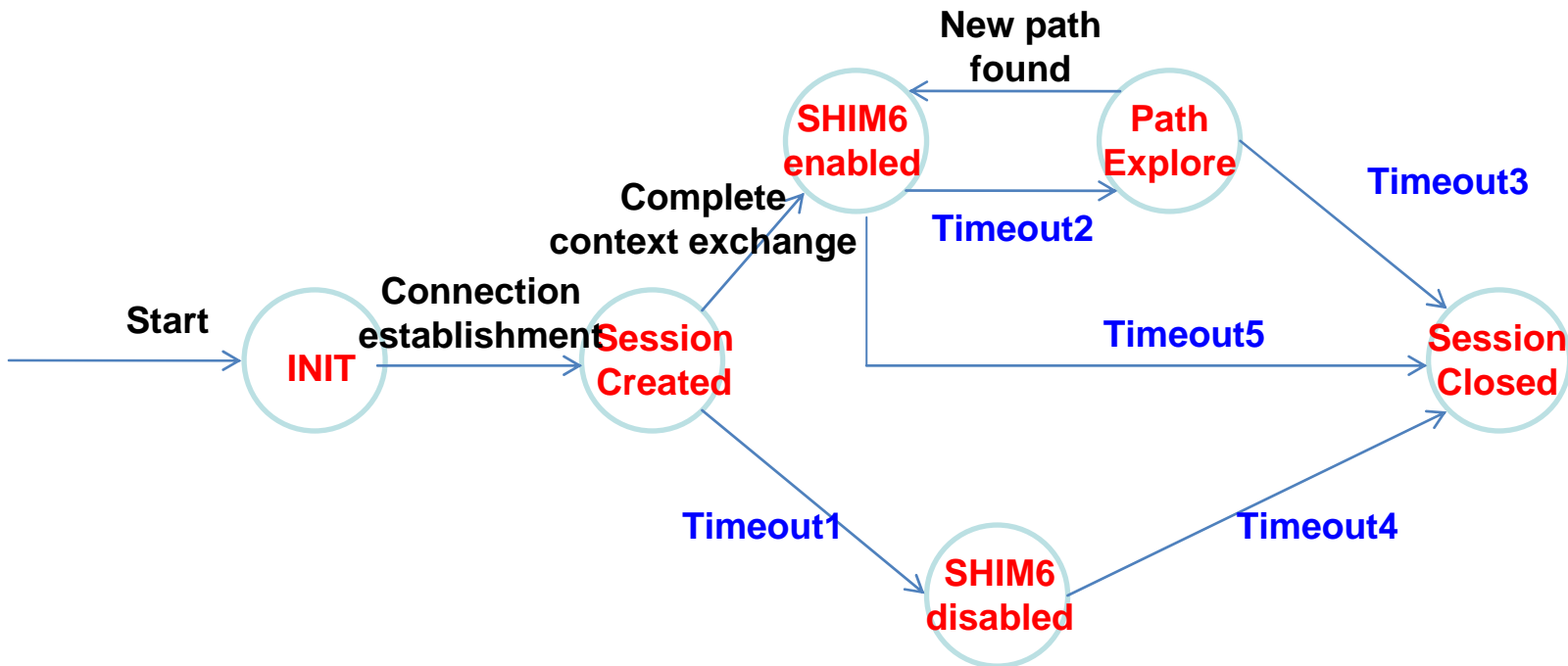# Revise Kernel space (1)

- About Netfilter

Revise Kernel space (2)

- About Data structure
  - sk_buff

SIHM state Transition

New path found

SHIM6 enabled

Path Explore

Complete context exchange

Timeout2

Timeout3

Start

Connection establishment

INIT

Session Created

Timeout5

Session Closed

Timeout1

SHIM6 disabled

Timeout4

Functionalities for SHIM

- Initial SHIM
  - Set, unset SHIM
  - Check whether host supports SHIM
- Context Management
  - Locator management
  - Context exchange
- REAP
  - Check status of current connection
  - Start path exploration process
  - Start reachability test on alternative paths

- System developer
  - Set, unset SHIM
  - Locator management
  - Context exchange
- User Application developer
  - get Context information
  - Etc.
- Cross layer Communication
  - Directly execute REAP or change Context
  - Etc.

Conclusion

- Milestone
  - Aug. 2006, Complete Library for SHIM6
  - Sep. 2006, Complete Kernel space for SHIM6 operation
  - Nov. 2006, Complete testbed and experiment
  - **Nov. 2006, 67th IETF Meeting, Demonstration**
- Cooperates with other group
  - Inter-operability test
  - Propose API for SHIM standard
  - Etc.