

*A Movement Notification Library
for Mobile IPv6*

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Agenda

Introduction

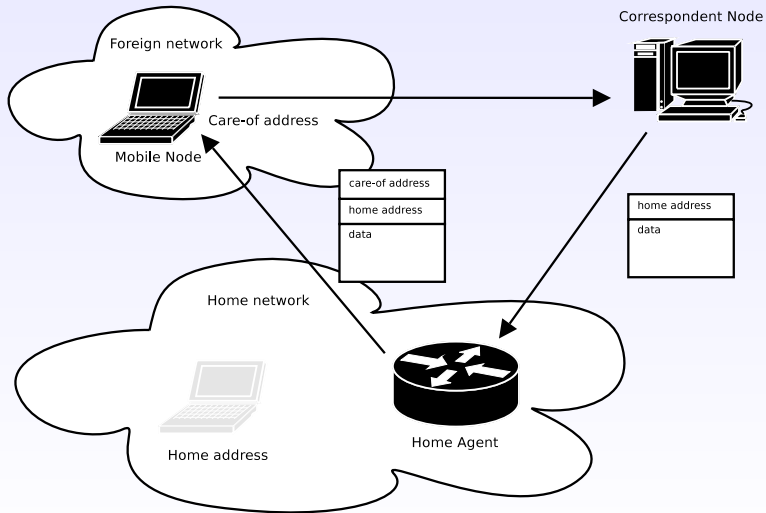
Analysis

Design

Demonstration

Conclusions

Mobile IPv6



Movement Notification

- ▶ Service Discovery
 - ▶ rediscover services in new network
- ▶ Adapt to network properties
 - ▶ higher costs for use of GPRS than for WLAN
- ▶ Congestion control in TCP
 - ▶ bandwidth * delay product changed
 - ▶ congestion is different in new path
- ▶ Multicast group rejoin
 - ▶ Example: video conferencing

Goal of the work

A Movement Notification Library for Mobile IPv6

- ▶ Create a mechanism that:
 - ▶ tells an application that the node has moved,
 - ▶ specifically for the node on which the application runs (so no notifications for movement of other nodes)
- ▶ This work is called *mobapi*

Environment

- ▶ Platform:
 - ▶ MIPL Mobile IPv6 stack for Linux v1.0 (Helsinki University of Technology)
 - ▶ Linux kernel 2.4.22
 - ▶ Result available as Open-Source Software (GNU GPL)
- ▶ Interface to users:
 - ▶ library, to be used by applications

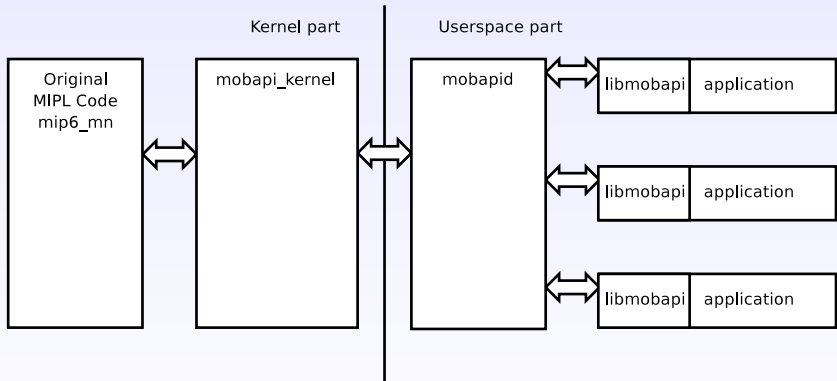
Mobile IP API

- ▶ IETF draft: draft-yokote-mobileip-api
- ▶ Specifies an interface to applications
- ▶ Application can ask for notification when mobile node has moved
- ▶ Main relevant function: `mip_notify_movement()`

Mobile IP API

- ▶ Function `mip_notify_movement()`
 - ▶ blocking mode
returns when:
 - ▶ node has moved
 - ▶ specified timeout period has passed
 - ▶ non-blocking mode
provides callback functionality for notification
 - ▶ application registers callback function
 - ▶ callback function is called when node has moved

Overall structure



Demonstration

Conclusions

- ▶ Clean design
- ▶ Easy to port
- ▶ Reliable and fast implementation
- ▶ Side-effect: portable and standard way for applications to obtain IPv6 addresses of the local node
- ▶ Proof-of-concept of Movement Notification succeeded

▶ Overall structure

Future work

- ▶ Port to other Mobile IPv6 platforms
 - ▶ KAME for *BSD
 - ▶ MIPL with Linux 2.6
- ▶ Better way to get hold of movement information
 - ▶ Advanced Sockets API
 - Well-supported IETF draft (soon to become RFC)
 - Exports IP header info to userspace
 - ▶ → drop kernel part
 - ▶ → integrate movement detection in daemon
 - ▶ → better portability