IP Micro-Mobility Support Using HAWAII

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draft-ietf-mobileip-hawaii-00.txt
Updates

• HAWAII is transparent to mobile hosts that use Mobile-IP with extensions
  – Mobile-IP security model applies to HAWAII
• HAWAII implemented on FreeBSD and Lucent’s PathStar router
• Paging support added to HAWAII
Trends

- Wide-area wireless data networks
  - high mobility users
- IP functionality in access network elements including base stations
  - homogeneous IP-based access network
- Diverse applications
  - quality of service support necessary

♫ Mobility has to be processed locally
Design Goals

- **Scalability**
  - process updates locally
- **Limit disruption**
  - forward packets if necessary
- **Efficiency**
  - avoid tunneling where possible
- **Quality of Service (QoS)**
  - local restoration of reservations
- **Reliability**
  - leverage fault detection mechanisms in routing protocols
Power-up in Home Domain

1.1.1.100 -> port 3
1.1.1.100 -> port 4

MY IP: 1.1.1.100
BS IP: 1.1.1.5

Domain Root Router 1
Domain Root Router 2

1) Efficiency - no tunneling
2) Reliability - leveraging routing protocols

HAWAII

Mobile IP reg.
**Micro-Mobility: Forwarding scheme**

- **Limited Disruption**
- **Scalability** through localized updates
- **Quality of Service** support through localized reservation

**Domain Root Router 1**

- 0)1.1.1.100 -> port 4
- 2)1.1.1.100 -> port 4

**Domain Root Router 2**

- 0)1.1.1.100 -> port 3
- 2)1.1.1.100 -> port 4

**Routing Details**

- **MY IP:** 1.1.1.100
- **OLD BS IP:** 1.1.1.5
- **NEW BS IP:** 1.1.1.6

**Mobile IP Registration**

- **HAWAII**
Changes from previous version

- HAWAII is transparent to mobile hosts that use Mobile-IP with extensions
  - Mobile-IP security model applies to HAWAII

- HAWAII works with arbitrary topologies

- HAWAII base stations map to “next hop IP router” from the mobile host

- HAWAII leverages fault detection mechanisms of existing routing protocols for Reliability

- Message formats - minor changes
Changes from Mobile-IP (rfc2002)

- Previous Foreign Agent Notification Extension (Route Optimization draft)
- NAI extension (NAI draft)
- Mobile challenge-response extension (Challenge Response draft)
- NAI in foreign agent advertisements to detect domain changes (Private addresses draft)
- Register with foreign agent while using co-located addresses
- Allow split Mobile-IP registrations at the foreign agent (regionalized tunnel draft)