IP Micro-Mobility Support Using HAWAII

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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

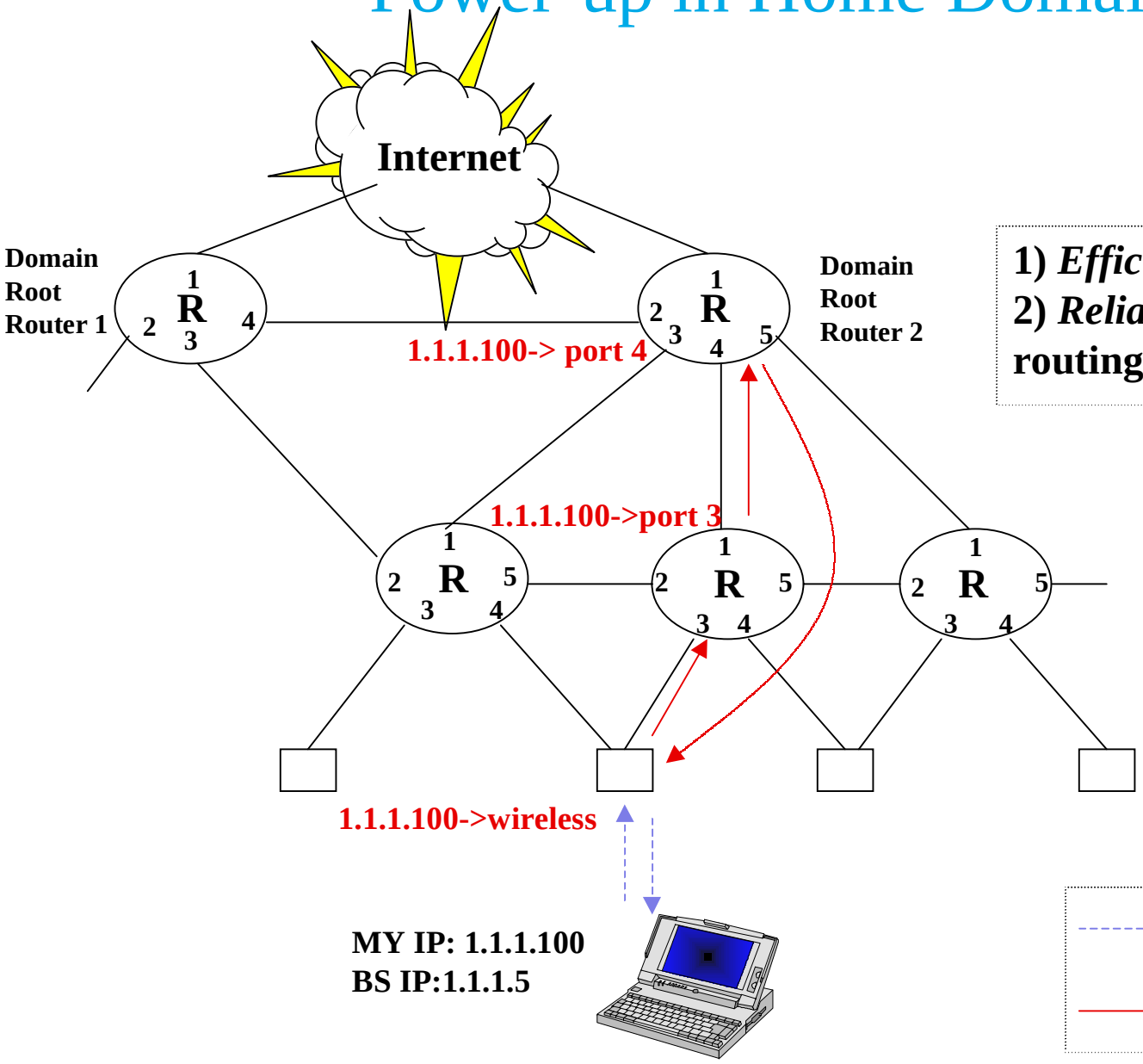
- Wide-area wireless data networks
  - high mobility users
- IP functionality in access network elements including base stations
  - homogeneous IP-based access network
- Diverse applications
  - quality of service support necessary

☞ 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

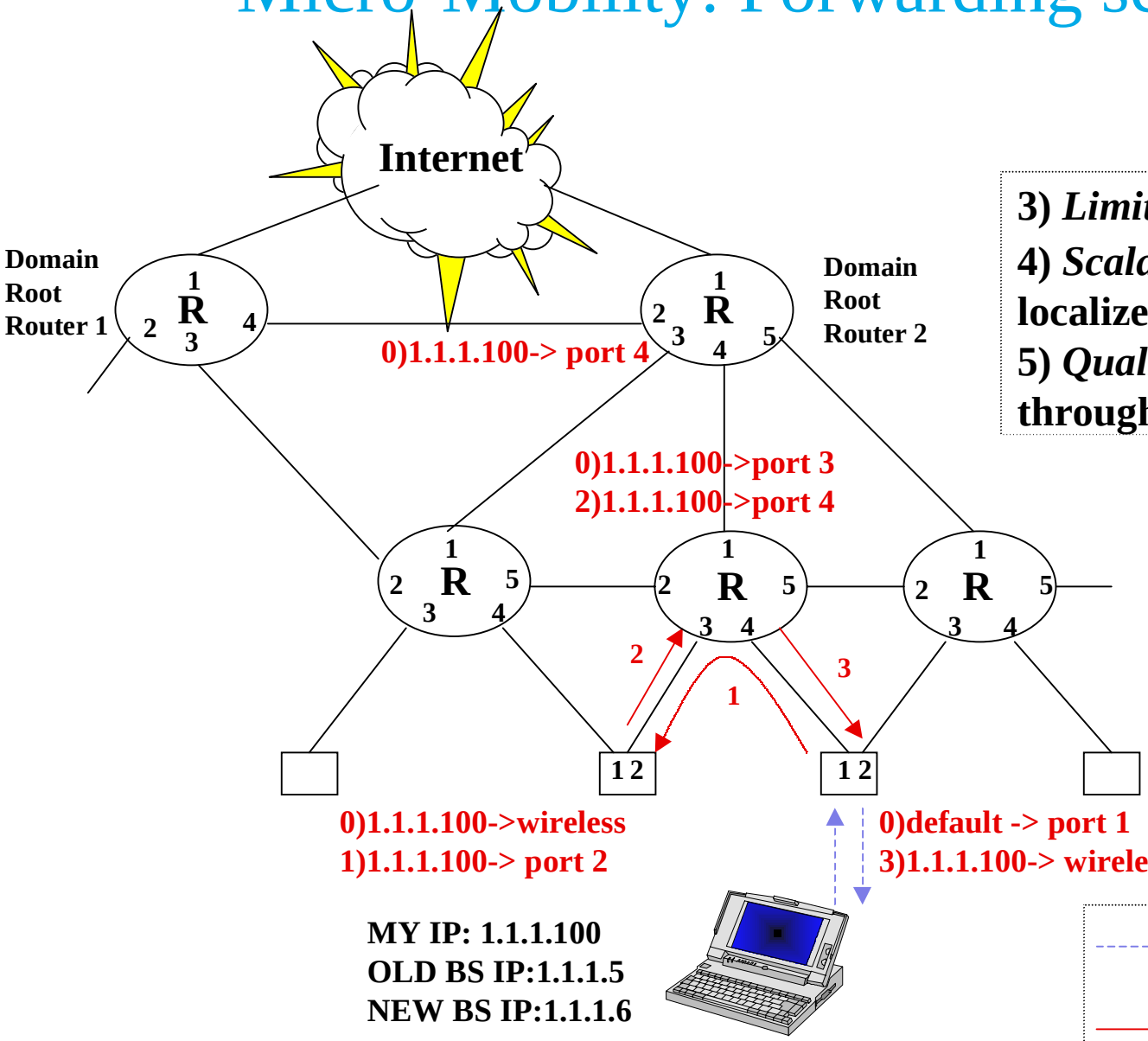


1) *Efficiency* - no tunneling
2) *Reliability* - leveraging routing protocols

Mobile IP reg.

HAWAII

Micro-Mobility: Forwarding scheme



3) *Limited Disruption*

4) *Scalability* **through localized updates**

5) *Quality of Service* **support through localized reservation**

Mobile IP reg.

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)