

Stony Brook Wireless Router: High Capacity Multi-hop Wireless LAN

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Concept

Wiring Access Points (APs) can be a significant effort in terms of labor, time and expense

Idea: Use wireless distribution system (WDS) connecting APs to form a multihop mesh network

APs have multiple radio interfaces tuned to different bands (802.11 a,b) and different channel within bands. Improves capacity.

Goal: Wireless backbone transparent to clients. Special software and setup not needed

Design

Routing

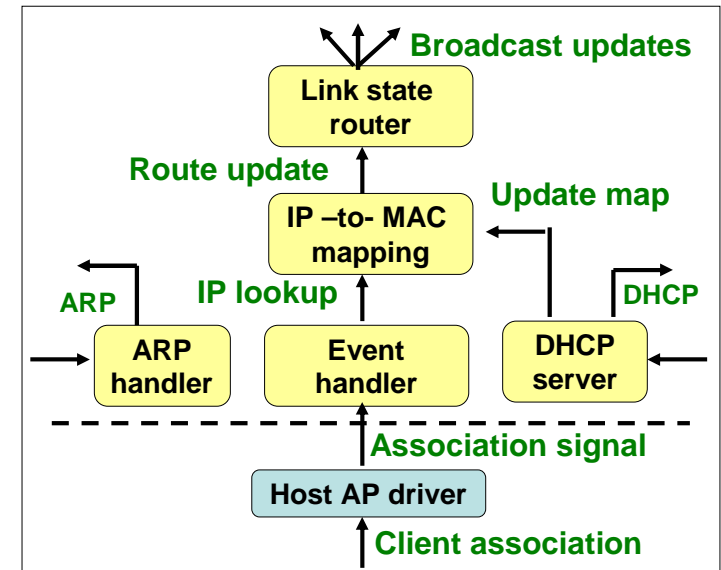
Link-state based routing (OLSR) on the wireless backbone

Client association with AP triggers route updates on the backbone

Channel Assignment

Assign different radio interfaces on each APs to different bands (or channels) to improve capacity

Topology control possible.

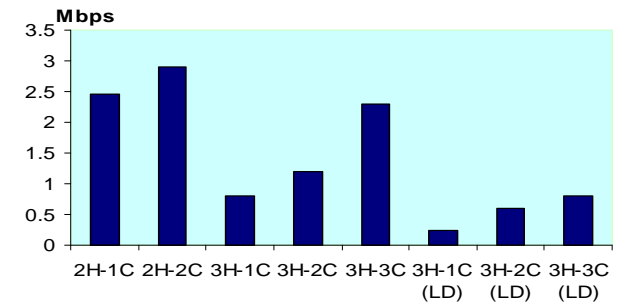
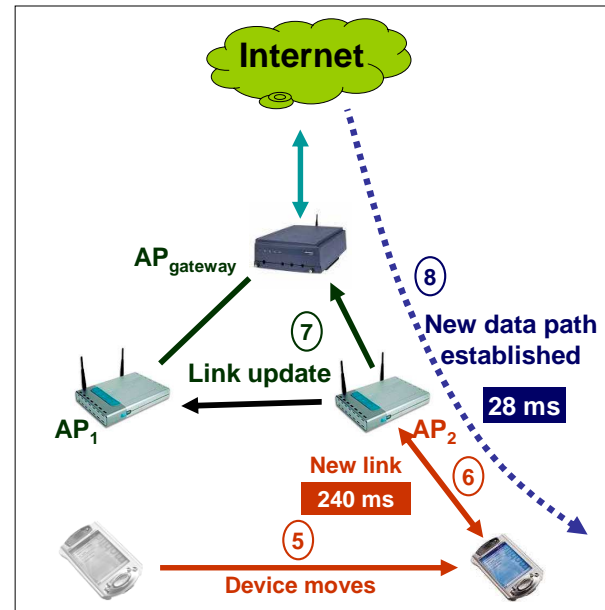
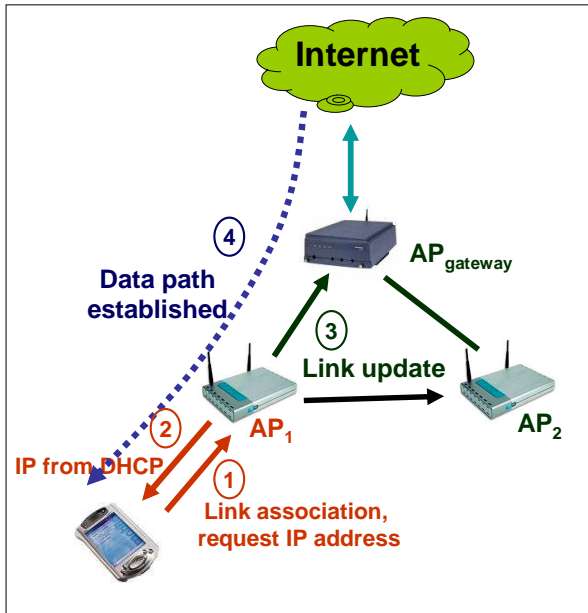


Testbed

Router-based Linux APs (by Soekris)

HostAP drivers to implement APs

Three 802.11b based radios per node



Max UDP throughput for multi-path forwarding with different channel assignments.

xH-nC denotes 'x' hops and 'n' non-overlapping channels. LD denotes large distances