



802.21

L2 Services for Handover Optimization

David Johnston

david.johnston@ieee.org

dj.johnston@intel.com

Purpose (of these slides)



- Introduce 802.21
- Describe work relevant to DNA
- Solicit feedback

802.21



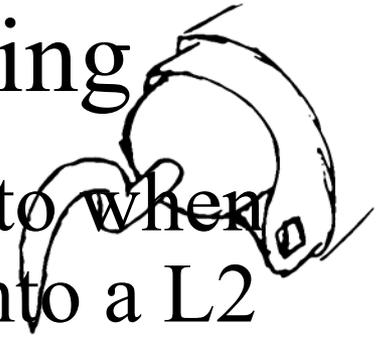
- Approved as a full IEEE WG Feb 27th
- Has been meeting as an ECSG for 1 year
- Initial charter to study handover between
 - 802.x \Leftrightarrow 802.x (where handover not supported)
 - 802.x \Leftrightarrow 802.y (where x may not equal y)
 - 802.x \Leftrightarrow Non 802 (e.g. cellular)
- Now has approved PAR for ‘Media Independent Handover Services’

Motivation



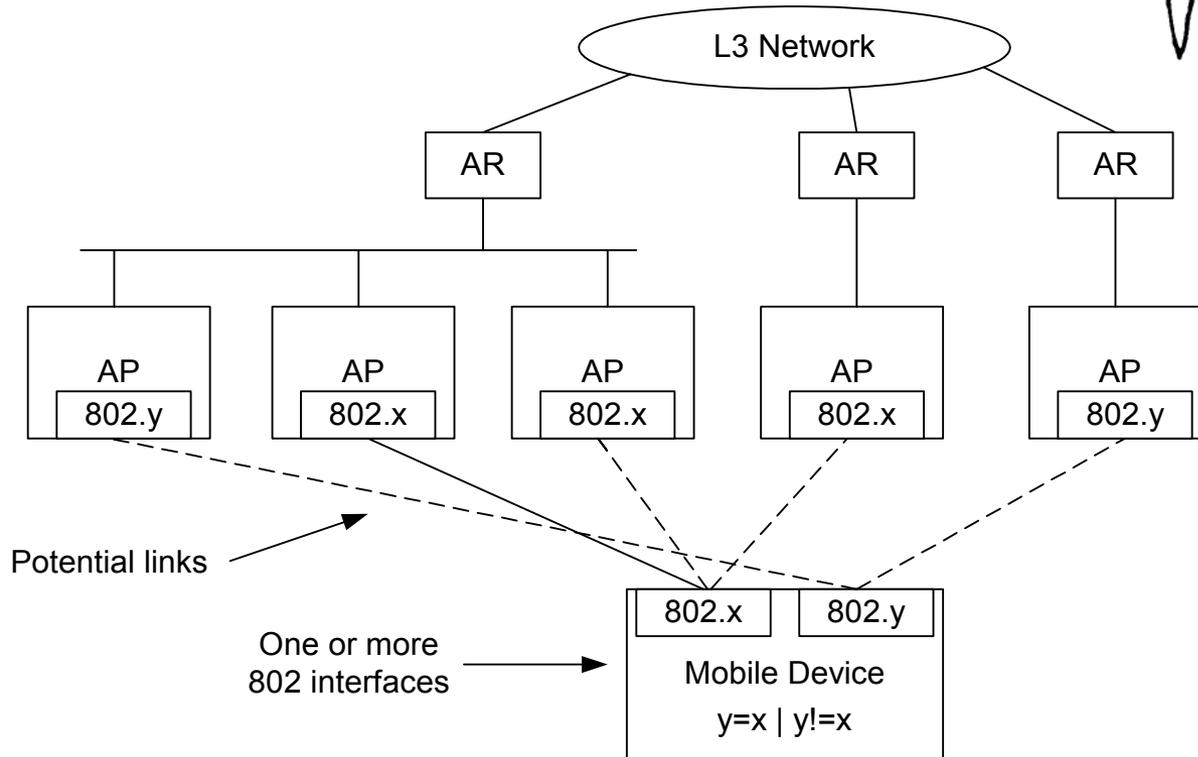
- Multi-Interfaced Devices
 - Laptops, PDAs, 11/16/PP/PP2 handsets etc.
- Session maintenance
 - Across heterogeneous media
- Inadequate L2 support for L3 DNA and Mobopts activities.

Problems We Are Addressing



- You don't know what you attached to when you associated/registered/plugged into a L2 network
- Upper layers don't know what is going on at L2 and so can't make good handover decisions
- There is no media independent way of asking for handover related information over a link. A conduit is needed.

Relevant Elements in Network



Work



- DNA
 - Put in place useful L2 network detection mechanisms
- Handover Optimization
 - Handover information definition and transport
 - L2 Triggers
- Other
 - Cellular coupling methods

DNA Related Proposals



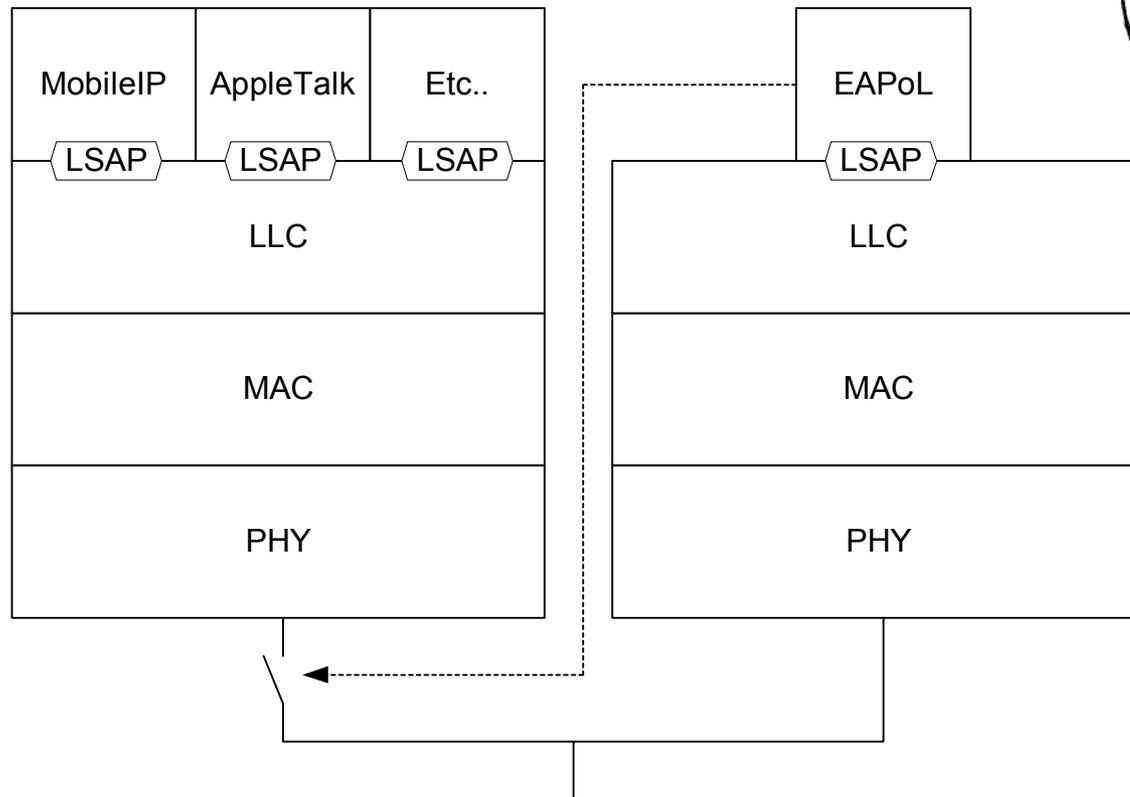
- CUPE (Controlled/Uncontrolled Port Entity)
 - Builds on 802.1X fork
 - Provides media independent access to ‘information’
 - DNA is the primary purpose of that information
 - Authenticity determined by which side of the fork the information resides on
 - Media specific optimizations expected (through 802.11 FR and 802.16e)

The Link Interface



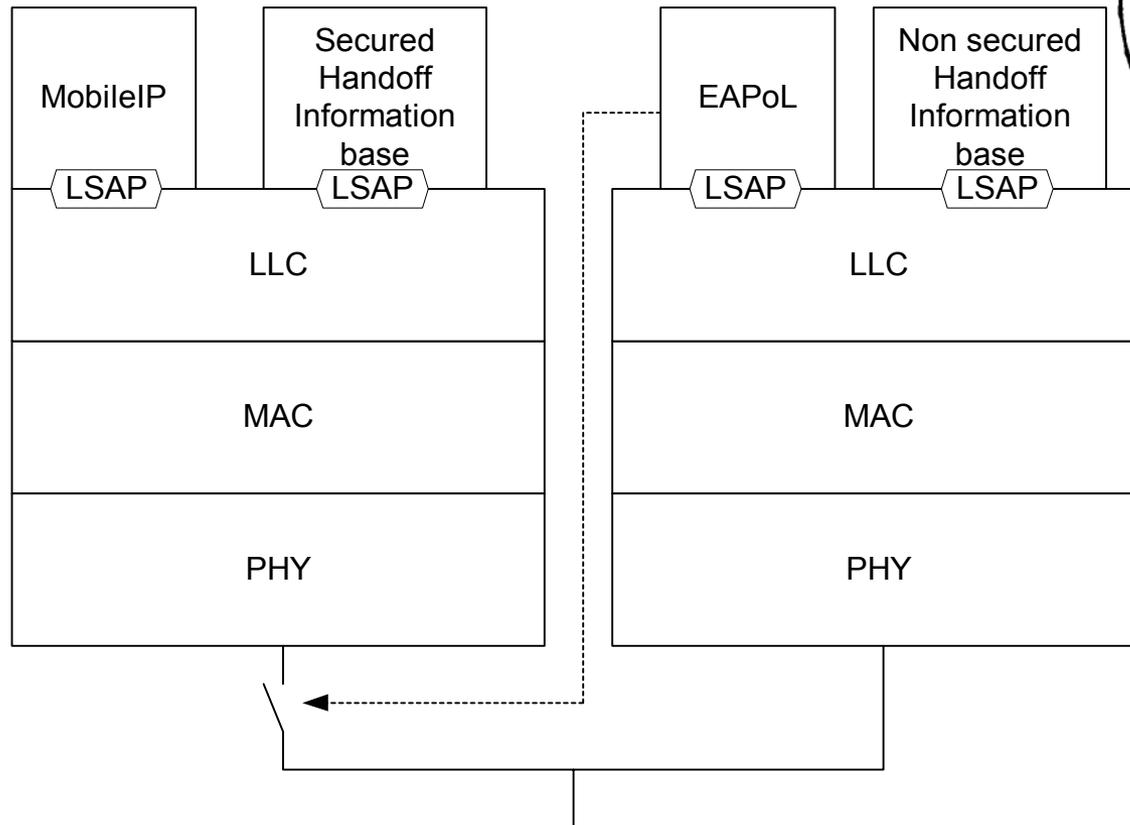
- A media independent protocol operating over 802 links
 - Get handover or network detection and selection information
 - Maybe act as conduit for event into
 - Maybe act as conduit for backhaul signaling
- CUPE model being promoted
 - Controlled and Uncontrolled Port Entity

802.1x

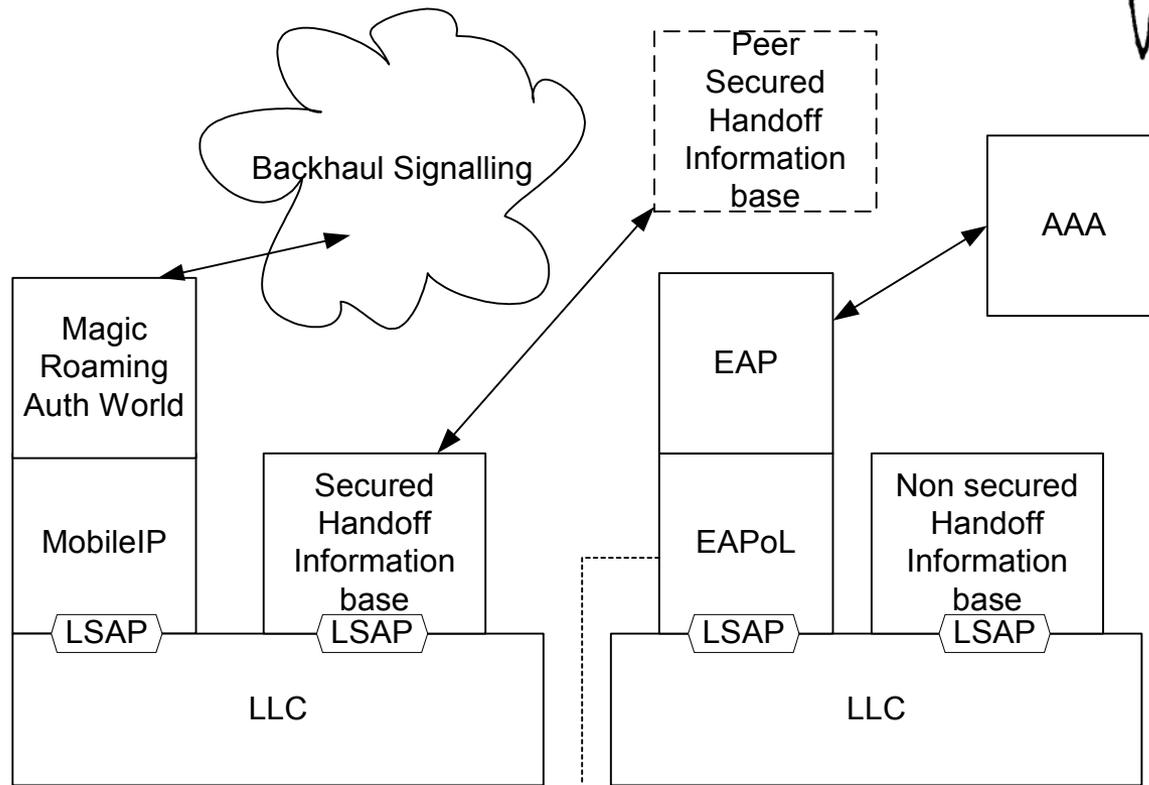


CUPE* Model

*Controlled/Uncontrolled Port Model



Upper Layer Event Binding



Handover Information



- Define Information semantics
 - Am I likely to authenticate here?
 - Subnet crossing indicators
 - What is the L3 service (IP, AT, ATM, etc)?
 - Neighborhood lists
 - Vendor
- Define Encoding
- Define Transport

Handover Information Equivalence



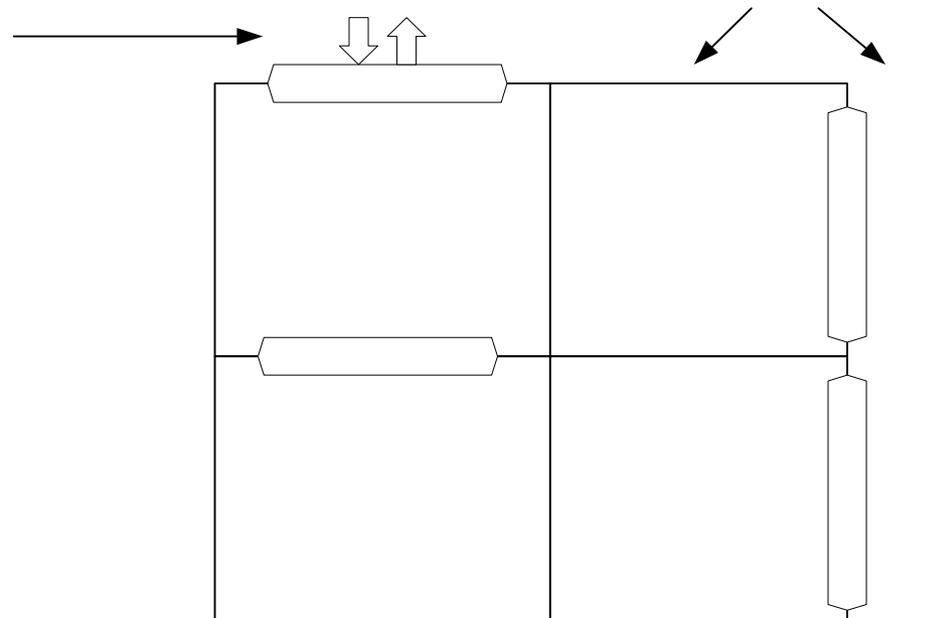
- The utility of any information increases with its similarity in terms of structure and semantics to information in other network domains
 - Try to align with structured information from non 802 groups to allow effective interworking with them
 - IETF, 3GPP, 3GPP2
 - Achieve levels of mapping
 - Structure equivalence – easy
 - Semantic equivalence – requires hard work
 - Encoding equivalence – next to impossible

Backhaul DNA



- My current link is better at delivering data to me than my pre-association/pre-initial-ranging link to the AP/BS over there
- Ask for the information via the local AP/BS who fetches it from the candidate AP/BS
- Some level of protocol required to do this and L3 support to render media independence

The Service

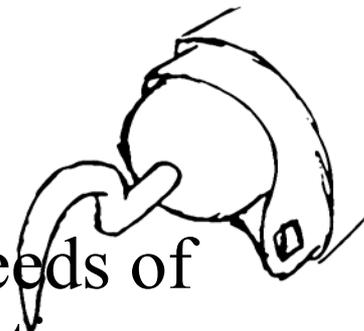


Define L1,2 – L3 Triggers



- This is the primary driver for the group
 - To maintain L3 sessions during handoff L2 support is required eg. TRIGTRAN, SEAMOBY, MOBOPTS
 - Triggers are the underlying mechanism for enabling seamless handoffs where possible
 - Triggers can be generic (link_up, link_down, etc)
 - It is the responsibility of an implementation to determine why and when it would fire a trigger.
 - Enables proprietary differentiation in lower layer mechanisms while maintaining a standard interface
 - Could be extensible. Vendor proprietary triggers?
- Will talk about this further in mobopts

Feedback?



- We need this stuff to match well to the needs of mobopts and DNA, otherwise we are wasting our time.
 - Approval at the 802.21 to iterate trigger and DNA proposals with the IETF to achieve a stable spec



Where to Look



- <http://www.ieee802.org/handoff>
 - Details for the mailing list are there
 - Its open to all