

# CAPWAP Extension Problem Statement

draft-shao-capwap-plus-ps-01  
draft-cao-capwap-eap-00

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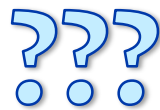
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# Background

- \* CAPWAP was standardized by IETF between 2004-2010.
  - \* RFC4564: requirements and objectives
  - \* RFC5415, RFC5416: specifications
- \* Years passed, but we still could not connect an AP to an AC of a different vendor
  - \* Partly because of the business model in the industry
  - \* And partly originated from the need of AP-AC interface standard extension



# Scenarios & Problems of AP-AC

## \* Scenarios

- \* In an incremental deployment, new APs can join the existing hotspot, and new AC can be added to increase network capacity
- \* Flat network architecture, distributed data routing and centralized control and authentication

# Local MAC and Split MAC, or Hybrid MAC?

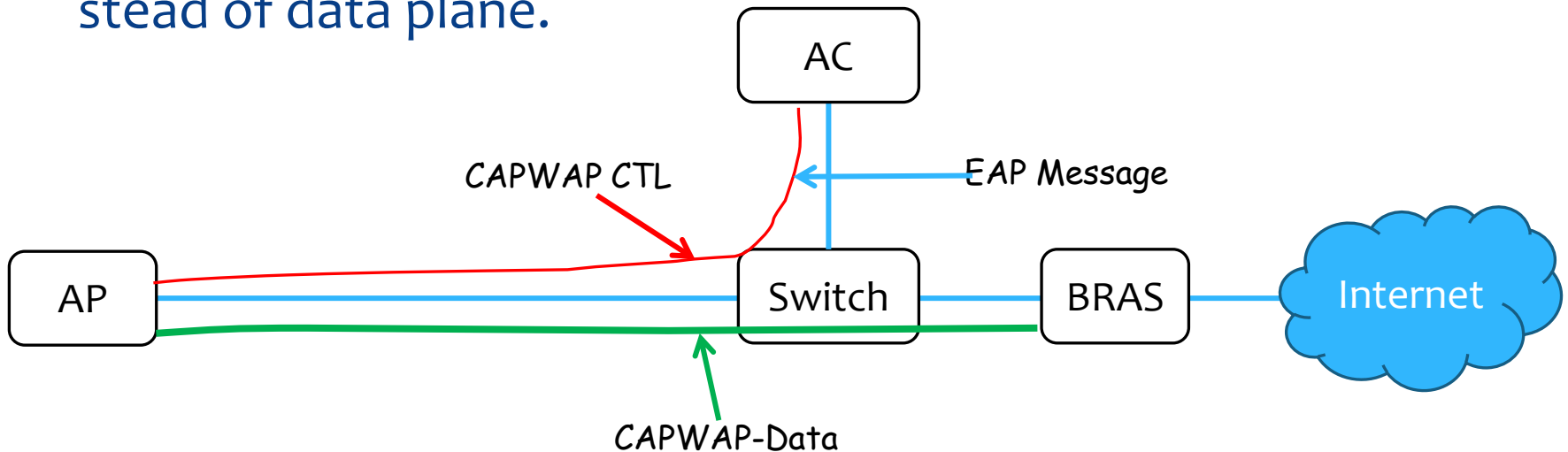
\* As from RFC5416, local mac and split mac

Functions		Local MAC	Split MAC
Function	Distribution Service	AP/AC	AC
	Integration Service	AP	AC
	Beacon Generation	AP	AP
	Probe Response Generation	AP	AP
	Power Mgmt/Packet Buffering	AP	AP
	Fragmentation/Defragmentation	AP	AP/AC
	Assoc/Disassoc/Reassoc	AP/AC	AC
IEEE 802.11 QoS	Classifying	AP	AC
	Scheduling	AP	AP/AC
	Queuing	AP	AP
IEEE 802.11 RSN(WPA2)	IEEE 802.1X/EAP	AC	AC
	RSNA Key Management	AC	AC
	IEEE 802.11 Encryption/Decryption	AP	AP/AC

- It is difficult to inter-operate because of these options

# Encapsulate of EAP in CAPWAP-CTL Plane

- \* In a scenario of data and control separation, the EAP message should be encapsulated in CAPWAP-CTL plane in stead of data plane.



- \* Note: EAP is by default encapsulated into the CAPWAP-Data Plane

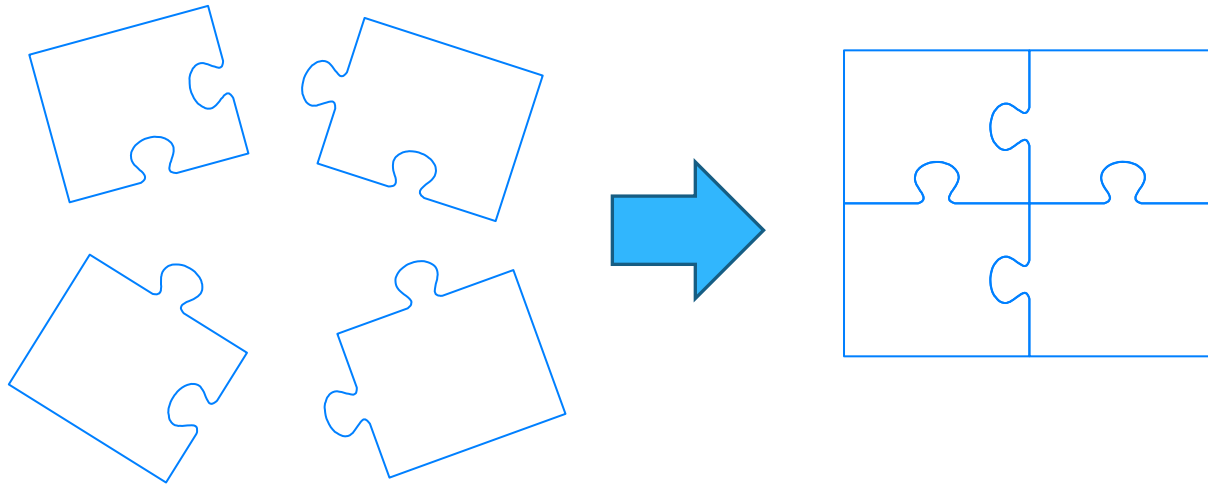
# New air-interface management elements

- \* New Elements needed, as IEEE has moved from ~802.11-2007 to 802.11-2012
  - \* 802.11n support
    - \* CAPWAP should allow the access controller to know the supported 802.11n features and the access controller should be able to configure the different channel binding modes.
  - \* Channel auto reconfiguration
    - \* Channel auto reconfiguration could improve the Wi-Fi performance, CAPWAP message could be extended to support this function.
  - \* Power auto reconfiguration
    - \* Power auto reconfiguration could improve the Wi-Fi performance. CAPWAP message could be extended to achieve following outcome.
- \* Others?

# Seriously, it is NOT a Myth

## We extend the first step though...

- \* Three operators in China has cosign the AP-AC standard work in CCSA
- \* Testing the inter-operability of AP and AC between four different vendors



# Next Step in IETF

- \* Re-start the Capwap work in Opsawg
  - \* Capwap encapsulation of EAP document – Opsawg
  - \* Air-interface management extension document- Opsawg
- \* Best current practice on the Local/Split MAC – individual



Comments Welcome