Handover Management based on the Number of Frame Retransmissions for VoWLANs

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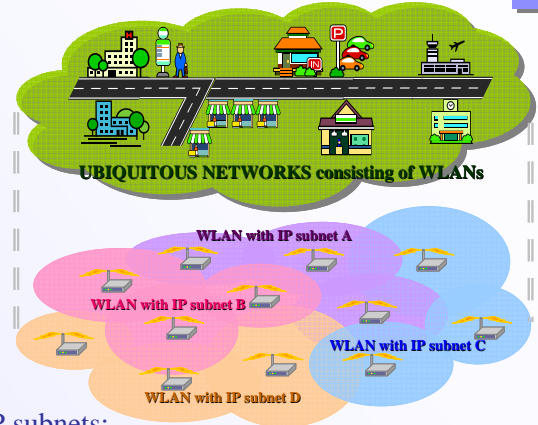** **** Department of Computer Science and Electronics, Kyushu Institute of Technology (KIT), Japan
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Introduction

- WLANs that are independently managed by different organizations will complementarily cover wide areas such as an entire city

- It is very difficult for MNs to maintain communication quality during handover between different IP subnets

- To achieve seamless handover, three requirements should be satisfied.
  1. quick perception of a change in a wireless link condition
  2. elimination of communication interruption due to handover process
  3. selection of an optimal WLAN

UBIQUITOUS NETWORKS consisting of WLANs

WLAN with IP subnet A
WLAN with IP subnet B
WLAN with IP subnet C
WLAN with IP subnet D

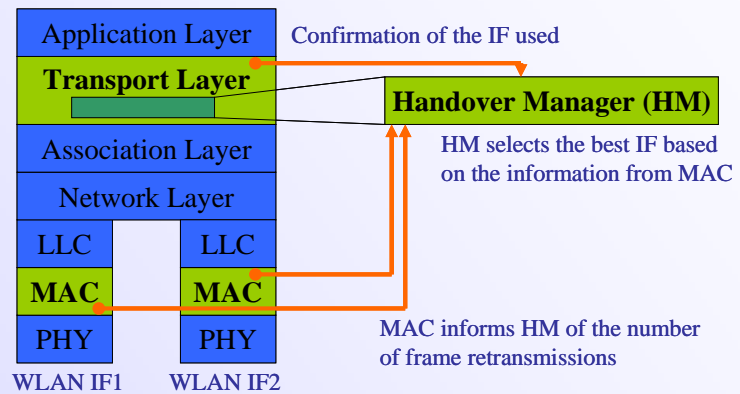## Features

- Support of continuous communication during handover between different IP subnets:
  Employment of Media Optimization Network Architecture (MONA)

- Simple heuristic handover trigger: The number of frame retransmissions

- Multi-homing and Cross-layer architecture
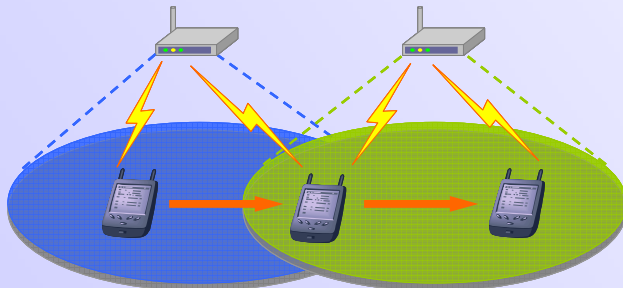
MN with two IFs (i.e., multi-homing) never experiences communication interruption period due to handover process
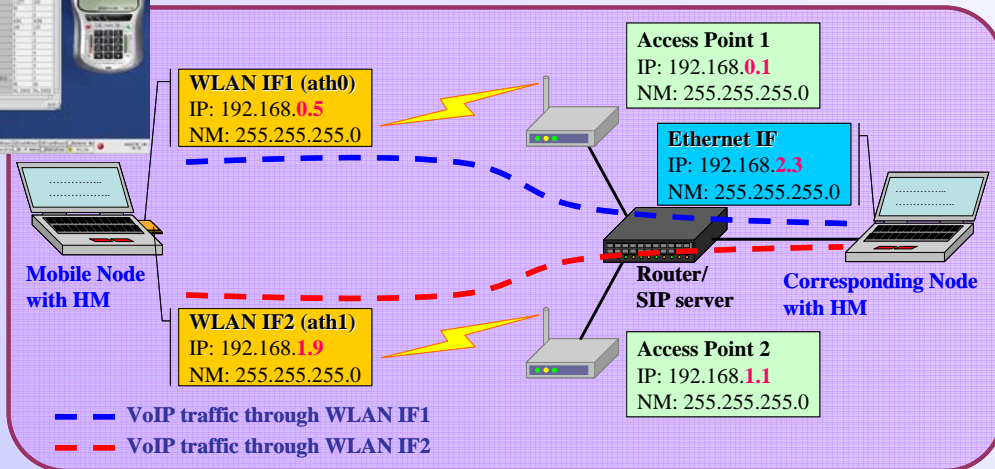
| Application Layer |
| Transport Layer |
| Association Layer |
| Network Layer |
LLC	LLC
MAC	MAC
PHY	PHY

WLAN IF1   WLAN IF2

Confirmation of the IF used

Handover Manager (HM)

HM selects the best IF based on the information from MAC

MAC informs HM of the number of frame retransmissions

Demonstration

Single-path transmission using WLAN IF1

"When frame retransmissions increase on WLAN IF1…"

Multi-path transmission using both of WLAN IFs

"When wireless condition on WLAN IF2 is stable…"

Single-path transmission using WLAN IF2

WLAN IF1 (ath0)
IP: 192.168.0.5
NM: 255.255.255.0

WLAN IF2 (ath1)
IP: 192.168.1.9
NM: 255.255.255.0

Mobile Node with HM

Access Point 1
IP: 192.168.0.1
NM: 255.255.255.0

Access Point 2
IP: 192.168.1.1
NM: 255.255.255.0

Ethernet IF
IP: 192.168.2.3
NM: 255.255.255.0

Router/ SIP server

Corresponding Node with HM

- - - VoIP traffic through WLAN IF1
- - - VoIP traffic through WLAN IF2

Seamless handover between different IP subnets !