

**Minimization of Handoff  
interruption time optimizing IP  
Address Assignment  
Procedure**

Prepared By Md. Alimur Rahman

# Abstract

- Packet Zone ID concept is introduced
- Packet Zone ID is broadcasted by BS
- BS receives previous PZID in the RNG-REQ by the MSS
- BS decides whether new IP address assignment/Mobile IP registration is required or not
- Then BS notifies MSS whether DHCP or Mobile IP procedure may be skipped in the RNG-RSP message.

# Problem Statements

- According to current 802.16 standard, post-handoff new IP address assignment procedure is required.
- Two Types of IP Address renewal
  - DHCP
  - Mobile IP
- IP Address renewal is performed by MSS and IP address renewal requires at least 2 message exchange between target BS and MSS
- During the IP address change/renewal, all the TCP/IP connections are suspended and it leads to handoff latency.

Table 1 DHCP message exchange

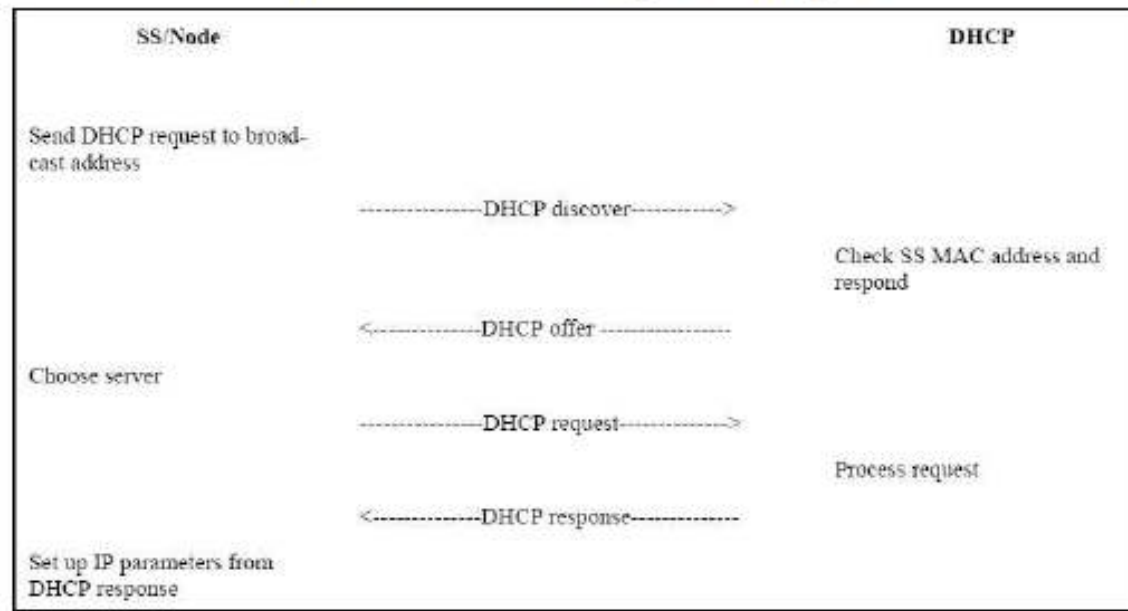
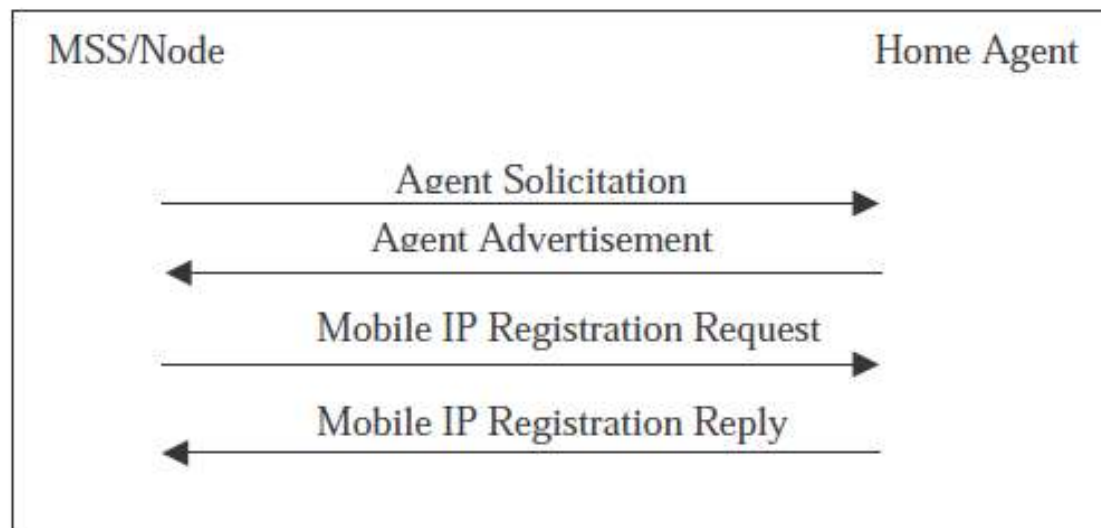


Table 2 Mobile IP message exchange



# Overview of Proposed Solutions

- To minimize the handoff interruption time due to IP address change, PZID(Packet Zone ID) concept is introduced
- Packet Zone ID, which is shared by several BS and means same subnet area and area managed by the same Foreign Agent, is broadcasted by BS
- MSS sends previous PZID in the RNG-REQ after handoff
- When BS receives previous PZID in the RNG-REQ, target BS decides whether IP address renewal is required or not based on the previous PZID and current PZID
- Then BS notifies MSS with the RNG-RSP message, whether DHCP or Mobile IP procedure may be skipped

## Packet Zone ID

- The BS's are divided into logical groups called Packet Zone which is in the same subnet for DHCP case and/or is managed by the same Foreign Agent
- A BS belongs to one and only one Packet Zone ID
- The basic assumption behind this is that performing decision on IP address change in BS-side is better than in MSS-side (at least 2 message exchanges over air interface is necessary)
- With this approach in the same subnet area, for DHCP case 2 messages exchange may possibly be skipped and 1 Mobile IP message (Agent Solicitation, Agent Advertisement) exchange may be skipped.

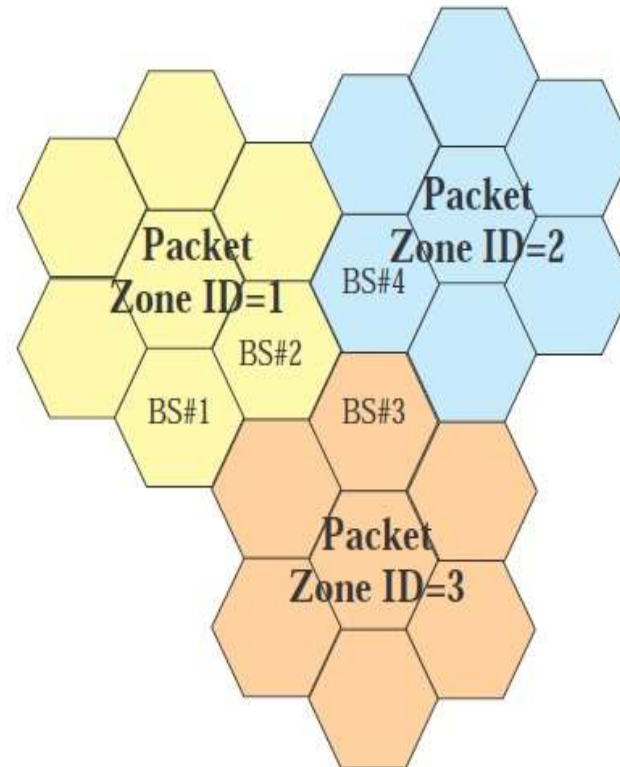


Figure 1 Packet Zone ID Grouping example

Handoff Direction(Serving BS →Target BS)		IP Address Refresh
BS#1	BS#2	Not Required
BS#2	BS#3	Required
BS#3	BS#4	Required
BS#4	BS#2	Required

# Conclusion

In order to minimize the handoff latency due to IP address update, if the MSS RNG-REQ included a PZID, MSS may skip the DHCP procedure or Mobile IP registration procedure. As a result Handoff Interruption Time will be minimized.

THANK YOU