

Handover Issues in IEEE 802.16m/e Co-existing Systems

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Source:

Yung-Han Chen, Fang-Ching (Frank) Ren, Richard Li
ITRI

Voice:

E-mail:

chenyunghan@itri.org.tw

richard929@itri.org.tw

Wern-Ho Sheen
NCTU/ITRI

Re:

IEEE 802.16m-08/024 - Call for Contributions on Project 802.16m System Description Document (SDD), on the topic of “Upper MAC concepts and methods (limited to addressing, mobility and power management)”

Venue:

IEEE Session #56, Denver, USA

Base Contribution:

N/A

Purpose:

For discussion on the handover issues among 16m and 16e systems

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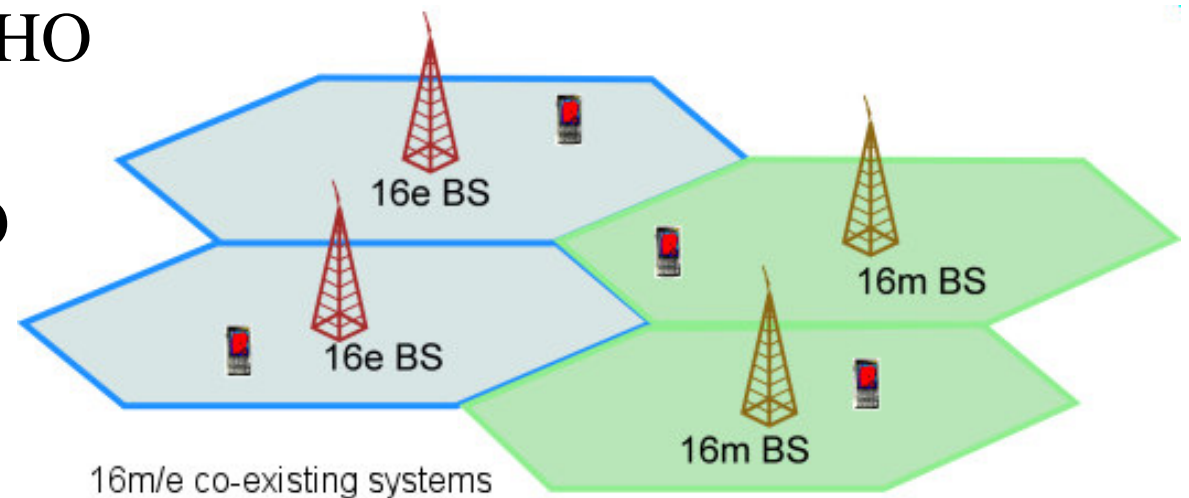
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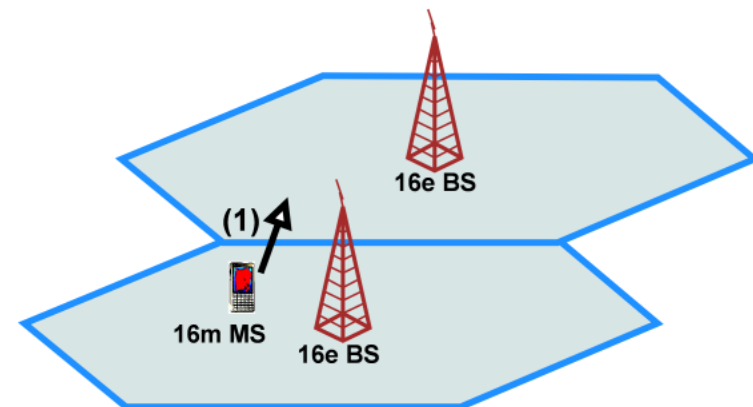
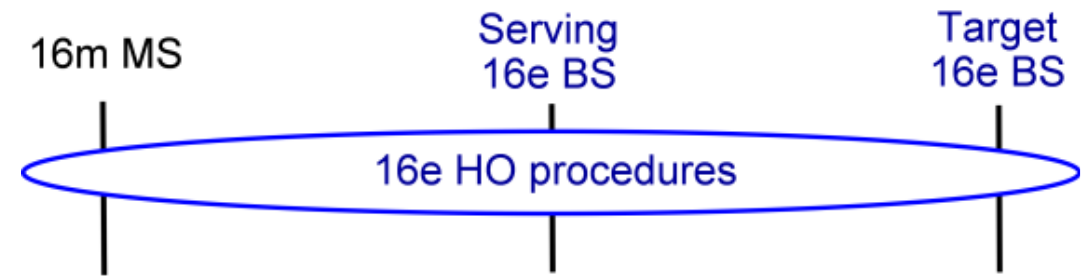
HO Cases in 16m/e Co-existing Systems

- In 16m/e co-existing systems, there are 4 HO cases for a 16m or a 16e MS:
 - Case (1): HO from a 16e cell/sector to another 16e cell/sector
 - Case (2): HO from a 16m cell/sector to another 16e cell/sector
 - Case (3): HO from a 16e cell/sector to another 16m cell/sector
 - Case (4): HO from a 16m cell/sector to another 16m cell/sector
- For a 16e MS, only 16e HO procedures can be used.
- For a 16m MS, the 4 HO cases need to be re-investigated.



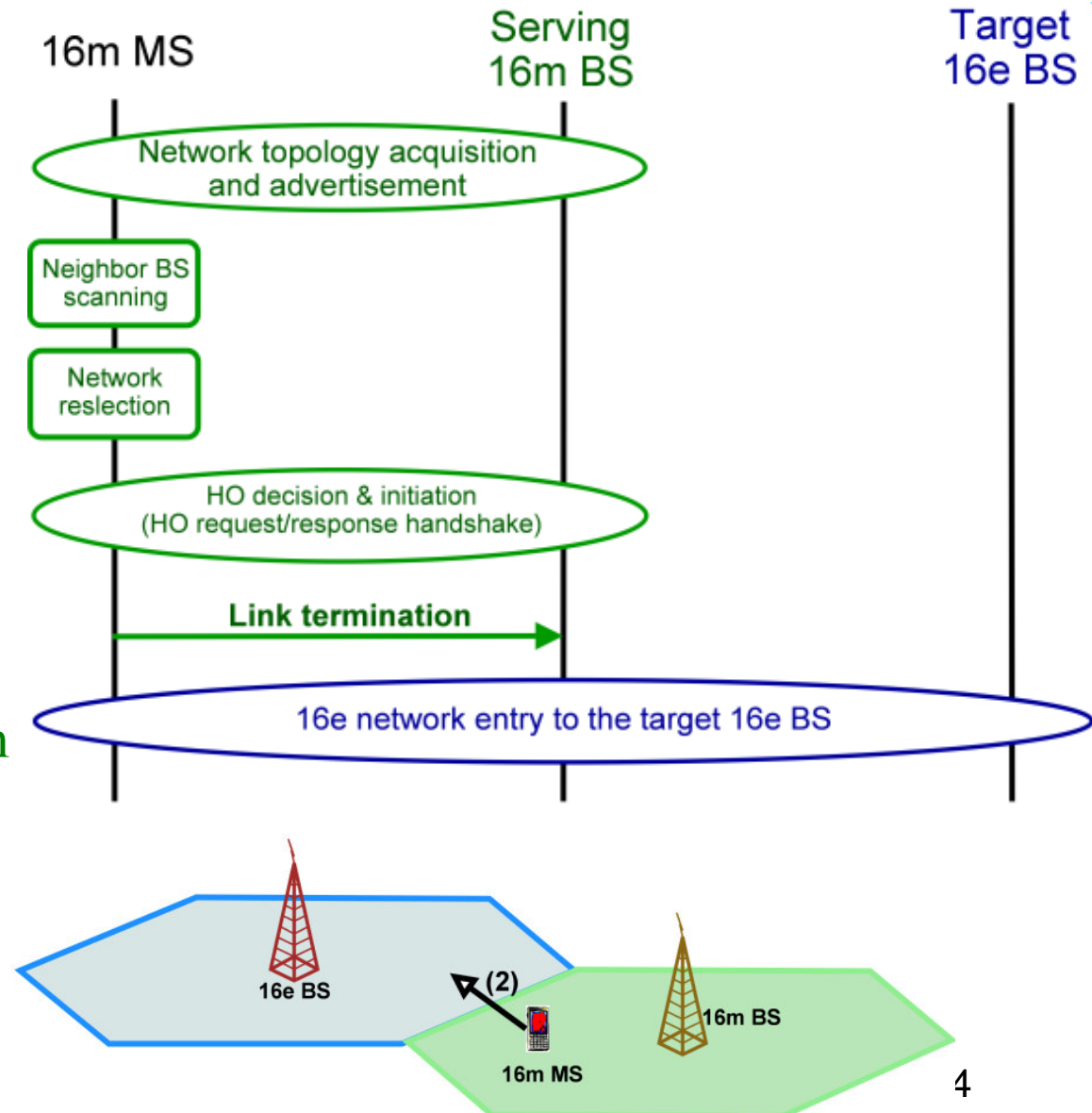
16m MS HO Case (1)

- The 16e MS HO is from a 16e cell/sector to another 16e cell/sector.
- The 16m MS can only use 16e HO procedures.



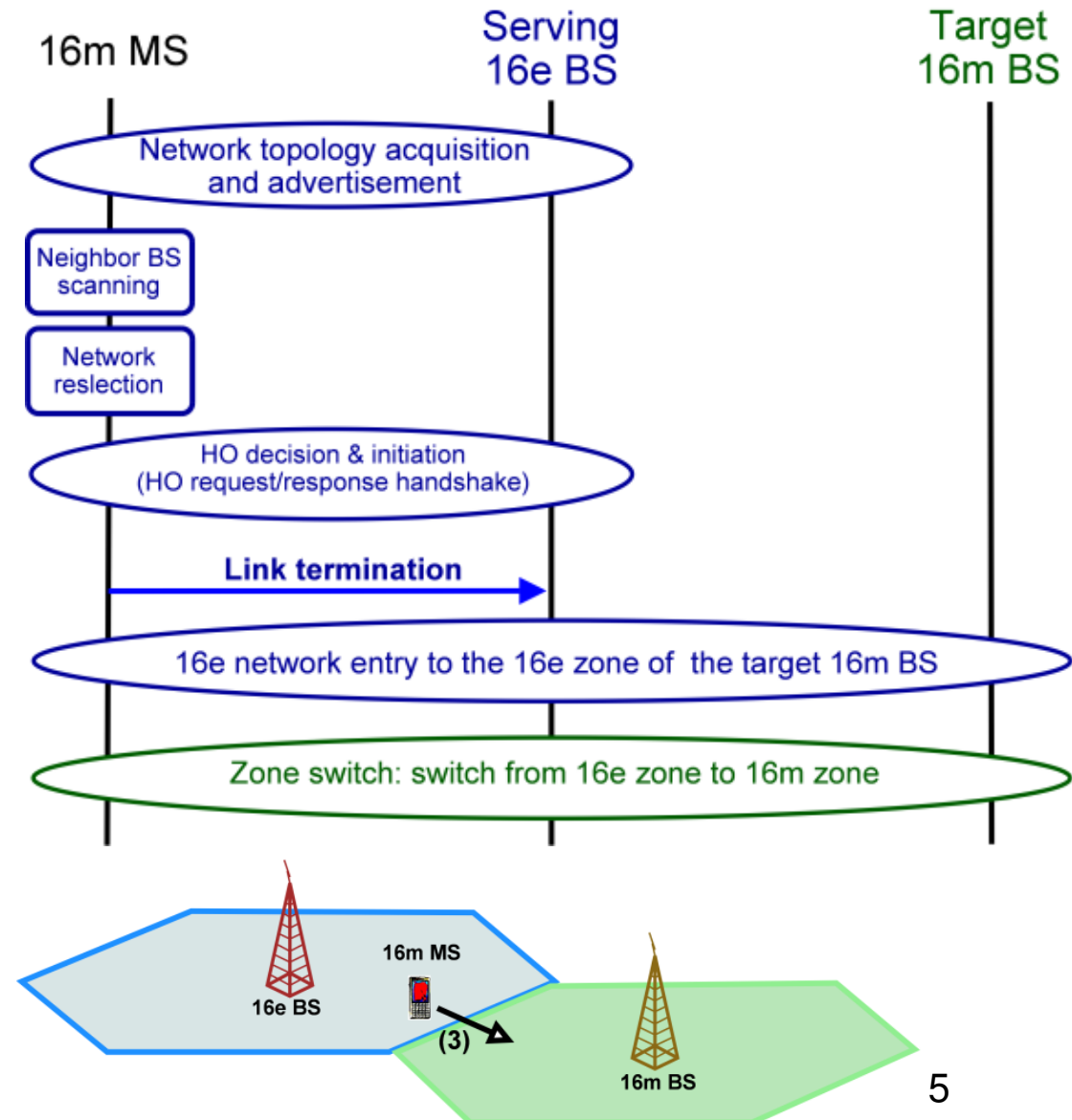
16m MS HO Case (2)

- The 16e MS HO is from a 16m cell/sector to another 16e cell/sector.
- The serving 16m BS can collect the information of its neighbor 16m and 16e cells/sectors.
- Network topology acquisition and advertisement, neighbor BS scanning, network reselection, HO decision & initiation, and link termination are through 16m HO procedures.
- The network entry to the target 16e BS is through 16e network entry procedures.



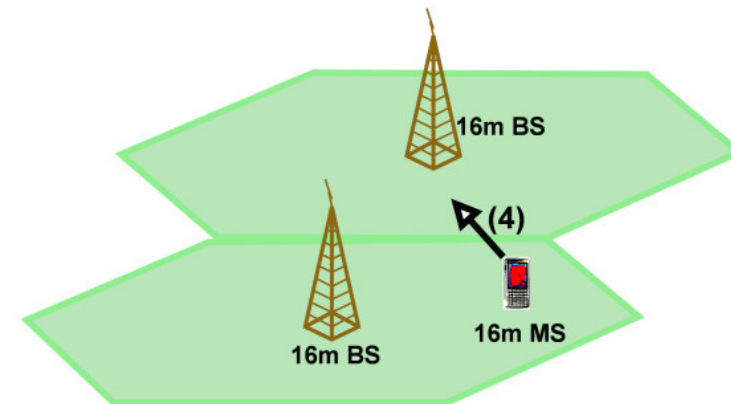
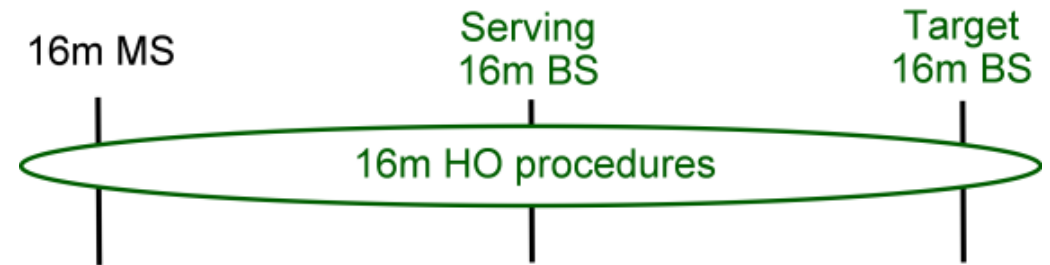
16m MS HO Case (3)

- The 16e MS HO is from a 16e cell/sector to another 16m cell/sector.
- The serving 16e BS cannot know whether the neighbor cell/sector is 16m or not.
- The 16m MS has to use **16e HO procedures** to handover to the 16e zone of the target 16m BS.
- Then the 16m MS can detect that it is a 16m cell/sector through some indicator (e.g. a new value in 'HO type support' in DCD TLV) and send the request to switch to 16m zone.



16m MS HO Case (4)

- The 16e MS HO is from a 16m cell/sector to another 16m cell/sector.
- The 16m MS can use 16m HO procedures.



HO Cases Summary

		Target BS		
		Serving BS	16e	16m
16e MS	16e	16e HO Procedures		
	16m	16e HO Procedures		
16m MS	16e	16e HO Procedures	16e HO Procedure with zone switch (16e to 16m)	
	16m	16m: - Network topology acquisition and advertisement - Neighbor BS scanning - Network reselection - HO decision & initiation - Link termination 16e: - Network entry to the target 16e BS	16m HO Procedure	

Proposed Text for SDD (1/4)

10 Media Access Control Sub-Layer

10.x Handover in 16m/e co-existing systems

The 16m/e co-existing systems consist of 16m and 16e cells/sectors. The 16m MS and BS should support both 16m and 16e handover (HO) procedures. Therefore every 16m or 16e MS can HO among 16m and 16e cells/sectors.

10.x.1 Neighbor Cells/Sectors Information

The 16m BS should be able to collect the information of its neighbor 16m and 16e cells/sectors. The 16m BS should provide its cell/sector information of 16e zone to the neighbor 16e BSs. The information of the a neighbor 16m cell/sector includes its 16m and 16e zones. Through neighbor cells/sectors information advertisement, a 16m MS can use both 16m and 16e information, but a 16e MS can only use the 16e information.

Proposed Text for SDD (2/4)

10.x.2 Handover Cases

In 16m/e co-existing systems, there are 4 HO cases for a 16m or a 16e MS:

Case (1): HO from a 16e cell/sector to another 16e cell/sector

Case (2): HO from a 16m cell/sector to another 16e cell/sector

Case (3): HO from a 16e cell/sector to another 16m cell/sector

Case (4): HO from a 16m cell/sector to another 16m cell /sector

10.x.2.1 16e MS Handover

For a 16e MS, only 16e HO procedures can be used.

Proposed Text for SDD (3/4)

10.x.2.2 16m MS Handover

10.x.2.2.1 Case (1)

The 16e MS HO is from a 16e cell/sector to another 16e cell/sector. The 16m MS can only use 16e HO procedures.

10.x.2.2.2 Case (2)

The 16e MS HO is from a 16m cell/sector to another 16e cell/sector. The serving 16m BS can collect the information of its neighbor 16m and 16e cells/sectors. Network topology acquisition and advertisement, neighbor BS scanning, network reselection, HO decision and initiation, and link termination are through 16m HO procedures. The network entry to the target 16e BS is through 16e network entry procedures.

Proposed Text for SDD (4/4)

10.x.2.2.3 Case (3)

The 16e MS HO is from a 16e cell/sector to another 16m cell/sector. The serving 16e BS cannot know whether the neighbor cell/sector is 16m or not, thus the 16m MS has to use 16e HO procedures to handover to the 16e zone of the target 16m BS. Then the 16m MS can detect that it is a 16m cell/sector through some indicator (e.g. a new value in 'HO type support' in DCD TLV) and send the request to switch to 16m zone.

10.x.2.2.4 Case (4)

The 16e MS HO is from a 16m cell/sector to another 16m cell/sector. The 16m MS can use 16m HO procedures.