

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

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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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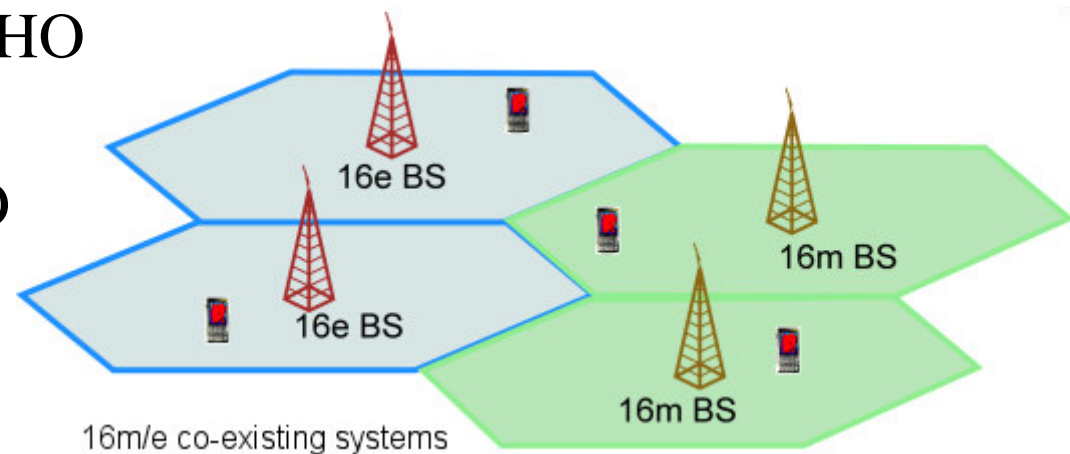
The contributor is familiar with the IEEE-SA Patent Policy and Procedures:

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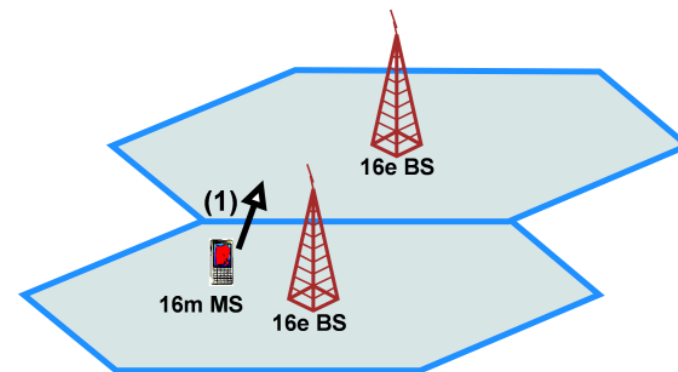
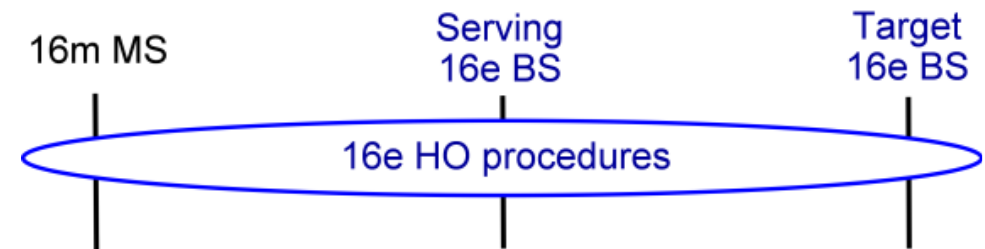
HO Cases in 16m/e Co-existing Systems

- 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.



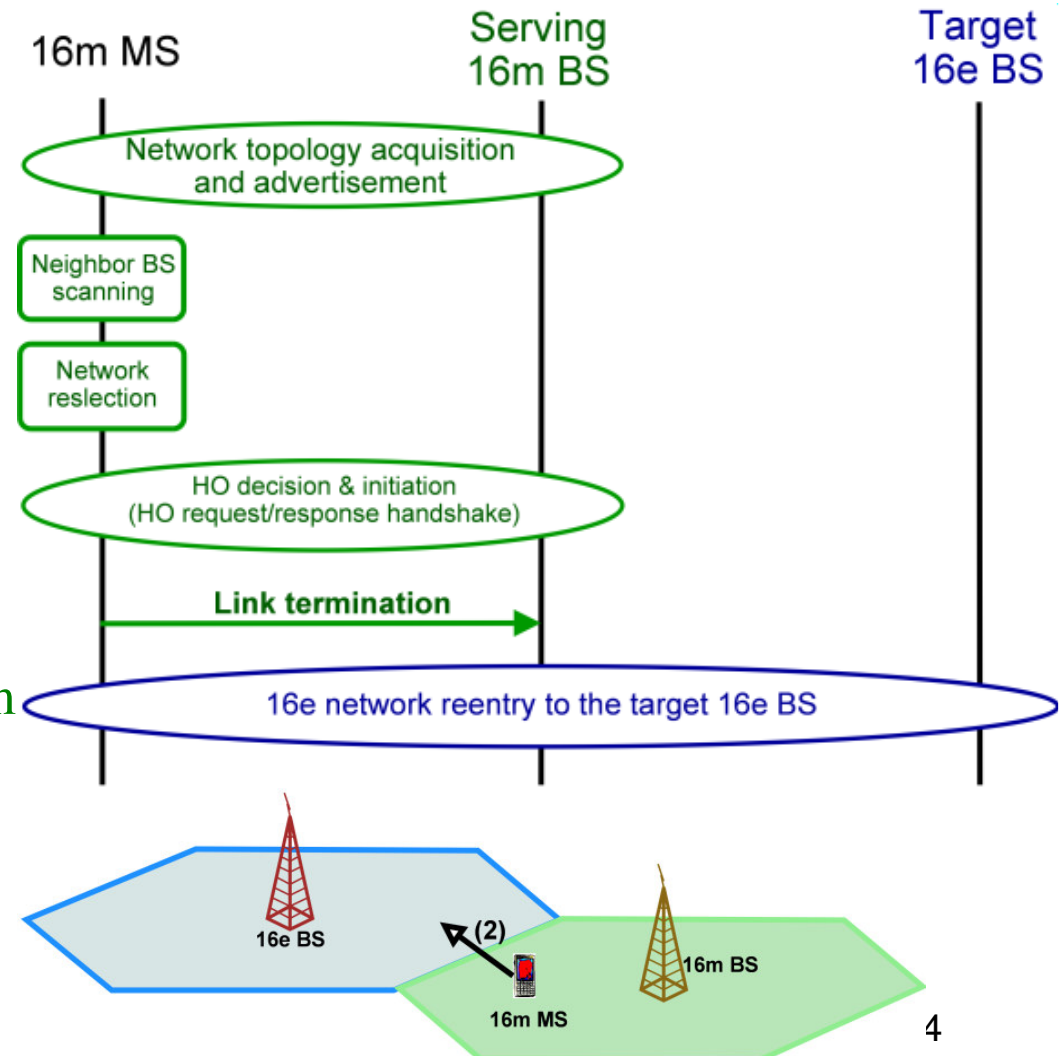
16m MS HO Case (1)

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



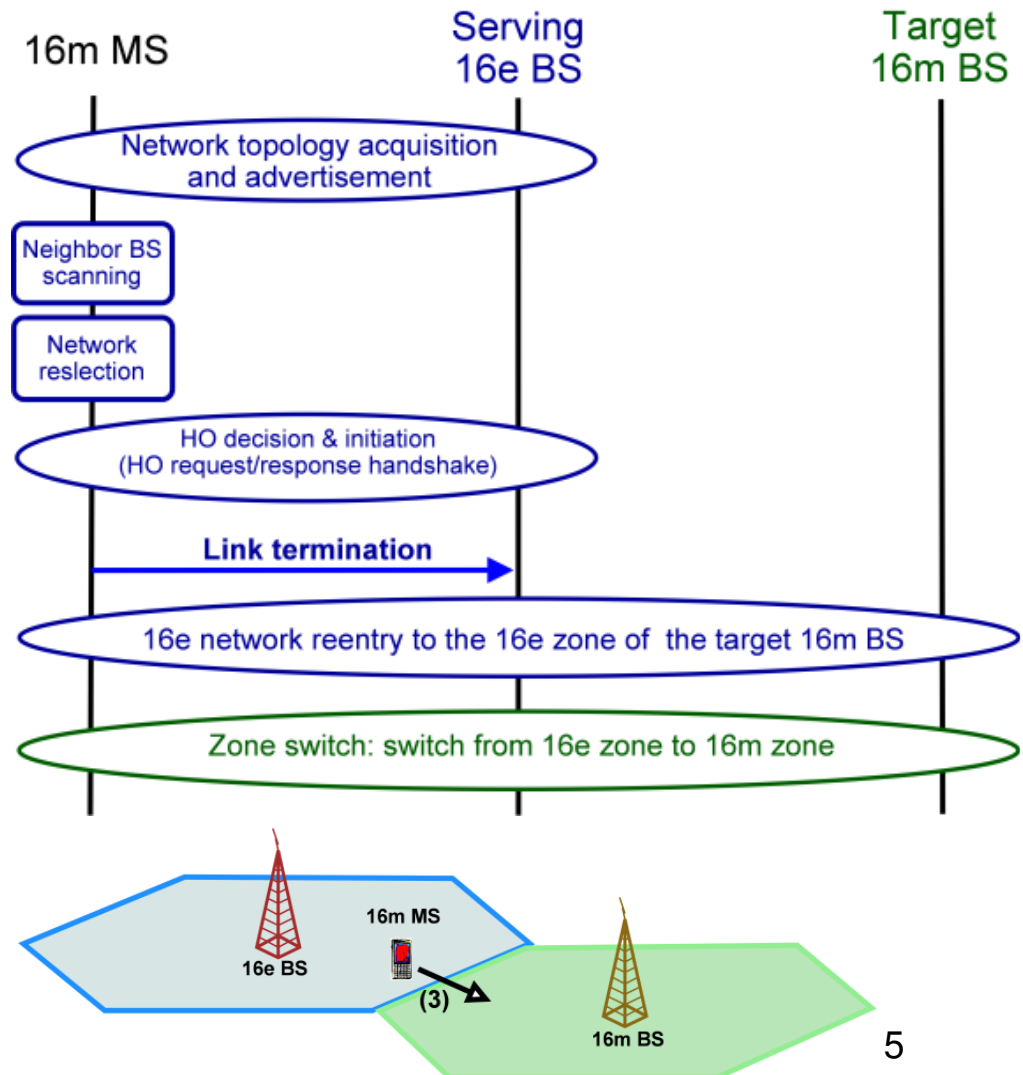
16m MS HO Case (2)

- 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 reentry procedures.



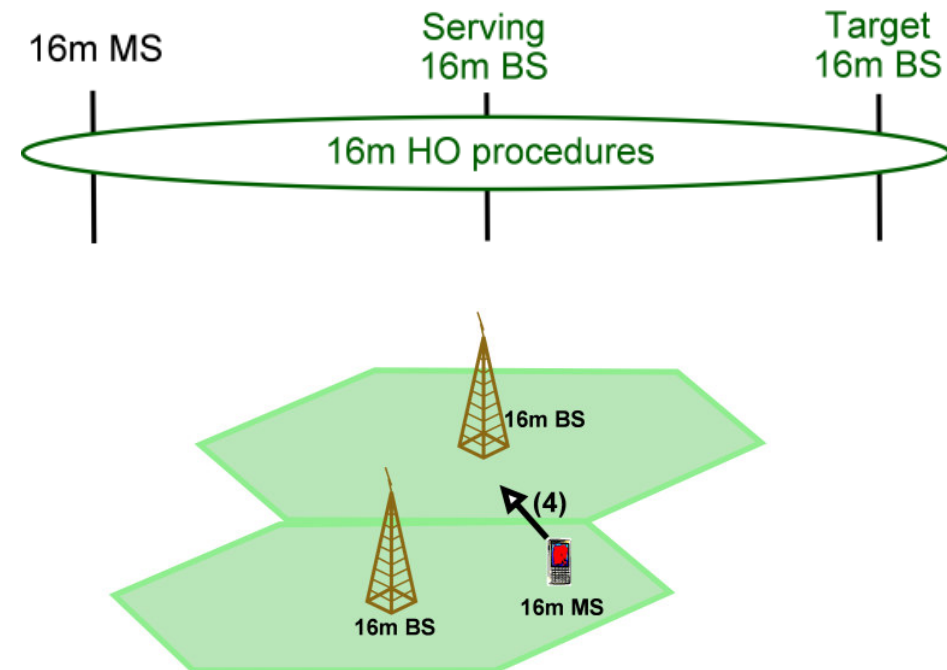
16m MS HO Case (3)

- 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.
- One feasible way in this case is that the 16m MS may use **16e HO procedures** firstly 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.
- On the other hand, the direct HO from a 16e cell/sector to a 16m cell/sector is FFS.



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	16e	16m
		Serving BS		
16e MS	16e		16e HO Procedures	
	16m			
16m MS	16e		16e HO Procedures	<ul style="list-style-type: none"> - 16e HO Procedures with zone switch (16e to 16m) - Direct HO from 16e to 16m (FFS)
	16m		16m: <ul style="list-style-type: none"> - Network topology acquisition and advertisement - Neighbor BS scanning - Network reselection - HO decision & initiation - Link termination 16e: <ul style="list-style-type: none"> - Network reentry to the target 16e BS 	16m HO Procedures

Proposed Text for SDD (1/3)

Section 10.x: Mobility in legacy/16m co-existing systems

The legacy/16m co-existing systems consist of legacy and 16m cells/sectors.

- A legacy BS advertises the system information for its neighbor legacy BSs and the legacy zones of its neighbor 16m BSs.
- A 16m BS advertises the system information for its neighbor legacy BSs in both legacy zone and 16m zone. And the 16m BS advertises the system information for its neighbor 16m BSs in 16m zone only.

Proposed Text for SDD (2/3)

Section 10.x.1: Handover from legacy BS to 16m BS

- When handover is triggered for a legacy MS, the legacy MS handover is from a legacy serving BS to the legacy zone of a target 16m BS using legacy handover signaling and procedures.
- When handover is triggered for a 16m MS, the 16m MS handover is from a legacy serving BS to the legacy zone of a target 16m BS using legacy handover signaling and procedures, followed by a zone switch from legacy zone to 16m zone. User data is transmitted in the legacy zone during zone switch process. After zone switch completes, the 16m MS is only served in the 16m zone.

Proposed Text for SDD (3/3)

Section 10.x.2: Handover from 16m BS to legacy BS

- When handover is triggered for a legacy MS, the legacy MS handover is from legacy zone of the serving BS to the legacy target BS using legacy handover signaling and procedures.
- When handover is triggered for a 16m MS, the 16m BS and 16m MS perform handover from a 16m BS to a legacy BS using 16m handover signaling and procedures. And the 16m BS performs context mapping and protocol inter-working from 16m to legacy system. Then, the 16m MS perform network re-entry to target legacy BS through legacy network re-entry signaling and procedures.