BLG 632E
NEXT GENERATION WIRELESS NETWORKS

CRN: 23552

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ASSIGNMENT #4

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1.

1.1.

Tracking area updates has a control communication overhead on the network. Cell ping-pong effect is the major weakness of location area schemes. If a user moves repeatedly between the boundaries of two or more location areas, inducing a high location update rate with comparatively low physical mobility.

1.2.

With tracking area non-overlapping scheme, every time when UE moves between tracking area boundaries, a tracking area update is needed. So comparatively low physical mobility leads to a tracking area update.

With tracking area overlap scheme, when UE enters another tracking area boundary, it is still connected to its original tracking area. Tracking area update is only needed when UE moves beyond its original tracking area boundary. So comparatively high physical mobility is needed to a tracking area update. This leads to reduction on cell ping-pong effect.

2.

Variables:

Tue = 128 frames

Tc = 128 frames

Ns = 0.25 (1/4), i.e every 4^{th} radio frame contains 1 paging subframe

IMSI = 286 01 0123456789

Answer:

T = min (Tc, Tue)

T = min (128, 128)

T = 128

Ns = max (1, number of paging subframes per frame(Nf))

4 = max(1, Nf)

Nf = 4

N = min (T, number of paging subframes per frame X T)

N = min (128, 4 X 128)

N = 128

UE_ID = IMSI mod 1000

UE_ID = 286 01 0123456789 mod 1000

UE_ID = 789

i_s = floor(UE_ID/N) mod Ns

i_s = floor(789/128) mod 4

i_s = 6 mod 4

i_s = 2

SFN mod T = (T/N) X (UE_ID mod N)

SFN mod 128 = (128/128) X (789 mod 128)

SFN mod 128 = 1 X 21

SFN = 21

3.a. From CN -> HA

src=IP_CN dst=IP_HoA	IP Payload

3.b. From HA -> MN

src=IP_NA dst=IP_CoA		src=IP_CN dst=IP_HoA	IP Payload

3.c. From MN -> HA

src=IP_CoA dst=IP_NA		src=IP_HoA dst=IP_CN	IP Payload

3.d. From HA -> CN

src=IP_HoA dst=IP_CN	IP Payload