Progress report

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Outline

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Aim

- ▶ Migrate the background of the paper to NB-IoT

Term

- ▶ AC - Access Class 0-9 for general device, 11-15 for high priority device
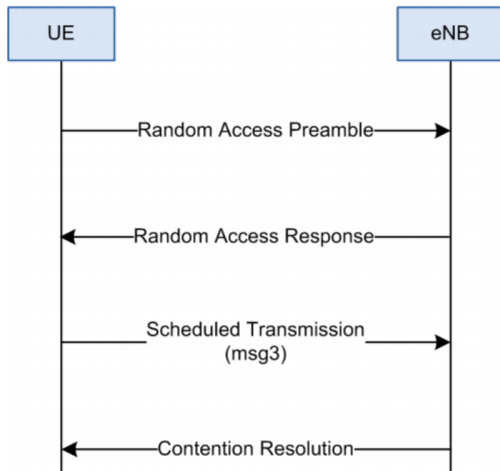- ▶ CE level - Coverage Enhancement (0-2 to against different signal fading)

NB-IoT v.s. LTE (same)

- They got same message flow
- They both use Access Class Barring on congestion control, but its seems there are somethins different

RAP message flow [1]

SIB14-NB [2]

SystemInformationBlockType14-NB field descriptions
ab-BarringBitmap
Access class barring for AC 0-9. The first/ leftmost bit is for AC 0, the second bit is for AC 1, and so on.
ab-BarringExceptionData
Indicates whether ExceptionData is subject to access barring.
ab-BarringForSpecialAC
Access class barring for AC 11-15. The first/ leftmost bit is for AC 11, the second bit is for AC 12, and so on.
ab-Category
Indicates the category of UEs for which AB applies. Value *a* corresponds to all UEs, value *b* corresponds to the UEs that are neither in their HPLMN nor a PLMN that is equivalent to it, and value *c* corresponds to the UEs that are neither in the PLMN listed as most preferred PLMN of the country where the UEs are roaming in the operator-defined PLMN selector list on the USIM, nor in their HPLMN nor in a PLMN that is equivalent to their HPLMN, see TS 22.011 [10].
ab-Common
The AB parameters applicable for all PLMN(s).
ab-PerPLMN-List
The AB parameters per PLMN, listed in the same order as the PLMN(s) occur in *plmn-IdentityList* in *SystemInformationBlockType1-NB*.

NB-IoT v.s. LTE (different)

- ▶ NB-IoT have different maximum retransmit time and frequency according to each CE level
- ▶ In NB-IoT congestion control, UEs with AC 0-9 use EAB and AC 11-15 use ACB
- ▶ In NB-IoT, it use SIB-NB to deliver system information instead of traditional SIB

RAP for NB-IoT [1]
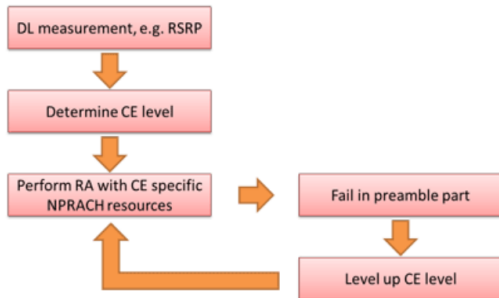
MIB-NB in NB-IoT [2]

```
MasterInformationBlock-NB ::=      SEQUENCE {
    systemFrameNumber-MSB-r13          BIT STRING (SIZE (4)),
    hyperSFN-LSB-r13                   BIT STRING (SIZE (2)),
    schedulingInfoSIB1-r13             INTEGER (0..15),
    systemInfoValueTag-r13             INTEGER (0..31),
    ab-Enabled-r13                     BOOLEAN,
    operationModeInfo-r13              CHOICE {
        inband-SamePCI-r13                 Inband-SamePCI-NB-r13,
        inband-DifferentPCI-r13            Inband-DifferentPCI-NB-r13,
        guardband-r13                      Guardband-NB-r13,
        standalone-r13                     Standalone-NB-r13
    },
    spare                              BIT STRING (SIZE (11))
}
```

Extended Access Barring

Extended access barring
US 20160050615 A1

摘要

A system and method for authorizing access to a transmission station for a mobile device is disclosed. The mobile device can receive device extended access barring (EAB) configuration information in a broadcast control channel (BCCH) from a transmission station. The mobile device can bar the mobile device configured for EAB and having characteristics identified in the EAB configuration information for barring from accessing the transmission station. Alternatively, a system and method for barring a mobile device from accessing a transmission station is disclosed. The transmission station can receive from the mobile device a radio resource control (RRC) connection establishment request. The transmission station can configure a system information block (SIB) with extended access barring (EAB) configuration information. The transmission station can broadcast the SIB with EAB configuration information to the mobile device.

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SIB-NB in NB-IoT

·SIB1-NB：存取有關之資訊與其他系統資訊方塊排程
·SIB2-NB：無線資源配置資訊
·SIB3-NB：Cell Re-selection資訊
·SIB4-NB：Intra-frequency的鄰近Cell相關資訊
·SIB5-NB：Inter-frequency的鄰近Cell相關資訊
·SIB14-NB：存取禁止(Access Barring)
·SIB16-NB：GPS時間/世界標準時間(Coordinated Universal Time, UTC)資訊

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References

[1] Narrowband internet of things. [Online]. Available: https://cdn.rohde-schwarz.com/pws/dl_downloads/dl_application/application_notes/1ma266/1MA266_0e_NB_IoT.pdf

[2] 3gpp ts 36.331. [Online]. Available: http://www.3gpp.org/ftp/Specs/archive/36_series/36.331/36331-e10.zip

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Thanks for Your Attentions