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Abstract	Re-definition of Idle mode service primitives in section 14.2.4.2
Purpose	Adoption
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Amendment to Idle Mode Service Primitives

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ETRI

1. Motivation

This contribution is to clarify subscriber mode related function of an NCMS on the MS side and refine idle mode service primitives and figures in order to include interfaces between an MS and a NCMS on the MS side. It consists of two parts; changing of subscriber mode management and idle mode service primitives.

1) Motivation of changing of subscriber mode

Subscriber mode management is described as informative in section 14.2.4 and it is managed at an MS, a BS and an NCMS. Figure 479 which shows subscriber mode transition diagram at NCMS is not clear whether for an NCMS on a BS and an MS side or not.

Therefore, we clarify figure 479 and the related texts in order to be used both NCMS at an MS and a BS side.

2) Motivation of changing of idle mode service primitives

In the current draft, there are defined four procedures for idle mode service primitives; idle mode initiation at an MS or an NCMS on a BS side, Paging Announce and Network re-entry. However, the interface between an MS and an NCMS on the MS is only defined in idle mode initiation at NCMS on the BS side.

Therefore, we propose to change figure 480, 482, 483 to the figures which are included the service primitives between an 802.16 entity (MS) and an NCMS on the MS side and modify the related service primitives parameters in this contribution. And we also correct some editorial texts.

2. Proposed Text Changes

[Modify the text from line 62 of page 66 as follows]

Figure 479 shows Subscriber Mode transition diagram at the NCMS with service primitives related with the Subscriber Mode transition. Subscriber Mode transition from Normal Operation to Idle Mode is performed by exchanging C-PG-REQ and C-PG-RSP between ~~a BS~~ an 802.16 entity and the NCMS after successful DREG-REQ message from the MS with De-Registration_Request_Code=0x01 or DREG-CMD message from the BS with Action Code = 0x05, where C-PG-REQ and C-PG-RSP are defined in 14.2.4.2.1 and 14.2.4.2.2, respectively. Subscriber Mode transition from Idle Mode to Normal Operation is initiated after exchanging ~~C-PG-IND~~, C-PG-RSP; and C-PG-ACK between an 802.16 entity ~~BS~~ and the NCMS, where ~~C-PG-IND~~, C-PG-RSP, and C-PG-ACK are defined in 14.2.4.2.4, 14.2.4.2.2, and 14.2.4.2.3, respectively.

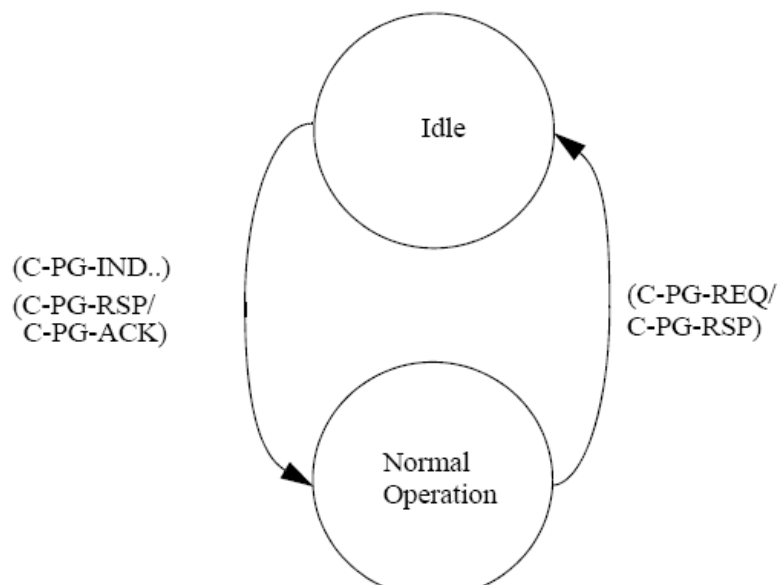


Figure 479—Subscriber mode transition diagram at NCMS

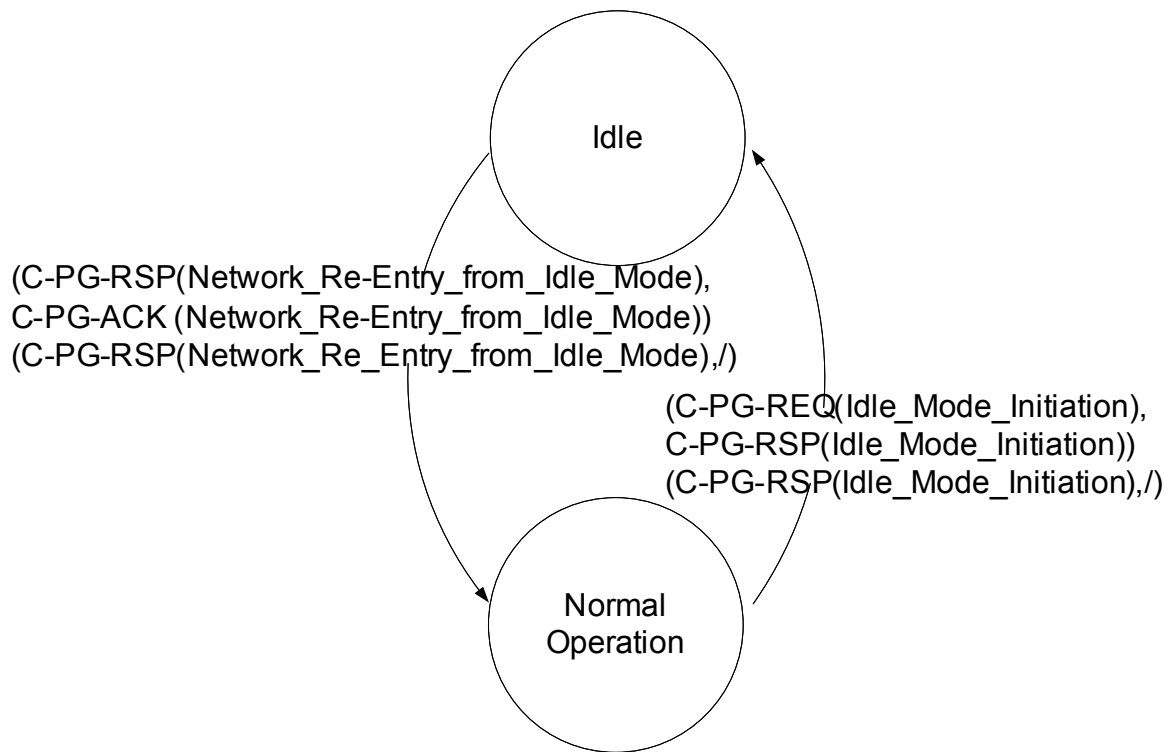


Figure 479—Subscriber mode transition diagram at NCMS (on BS or MS)

[Change the figure 480 and its title to as follows]

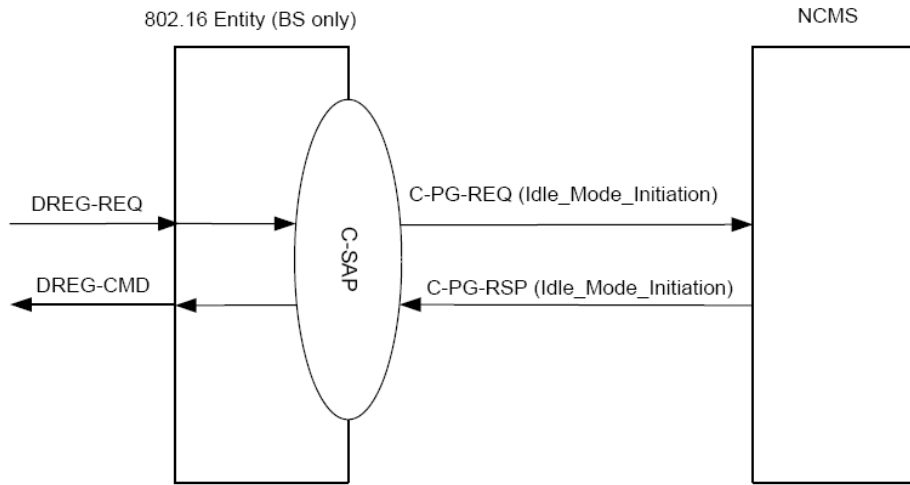


Figure 480—Idle mode initiation (MS initiated)

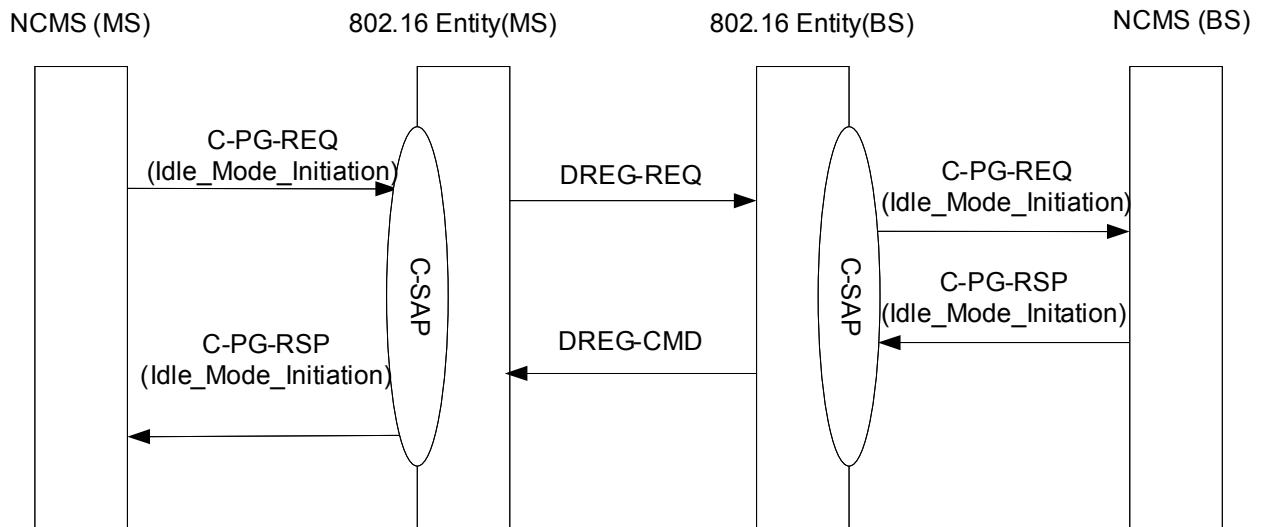


Figure 480 – Idle mode initiation (NCMS on the BS side)

[Change the figure 482 to the following figure Section 14.2.4.2]

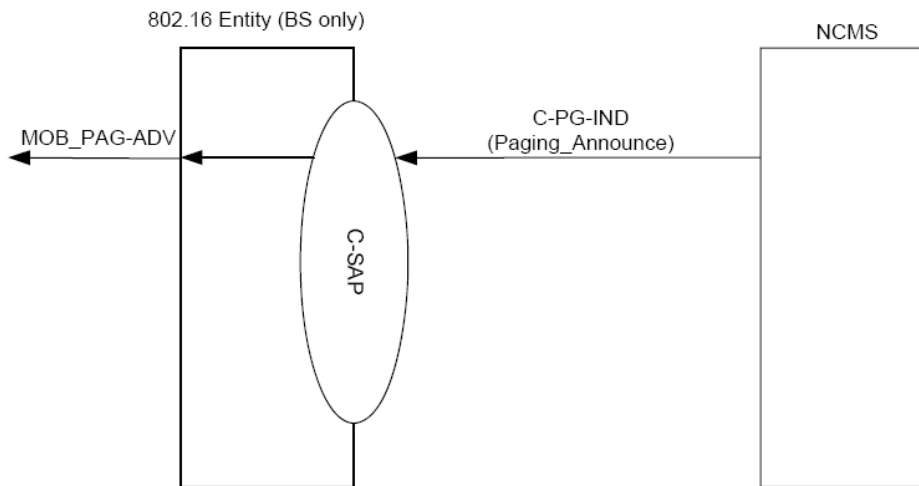


Figure 482—Paging Announcement

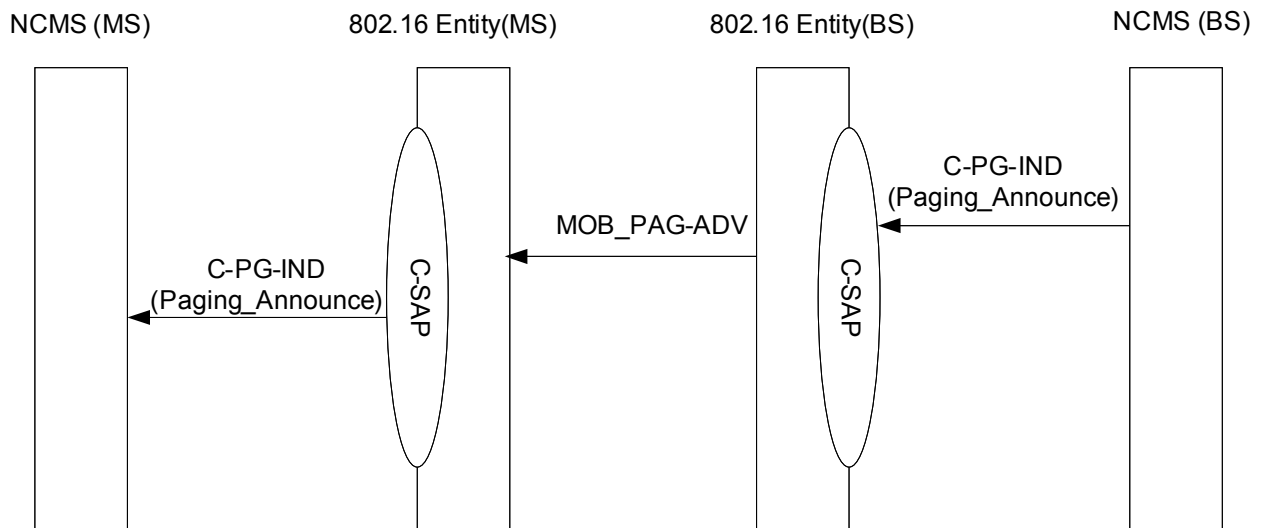


Figure 482- Paging Announcement

[Change the figure 483 to the following figure in 14.2.4.2]

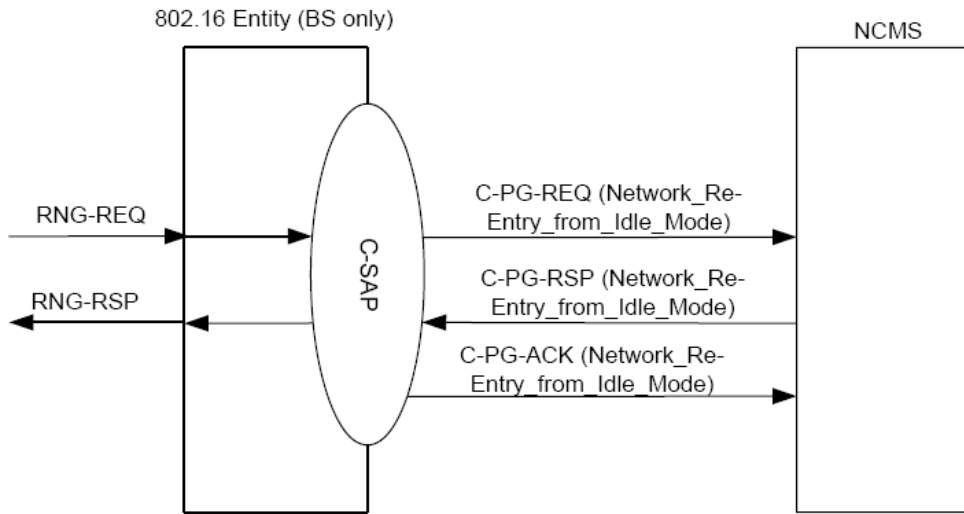


Figure 483—Network re-entry from Idle mode primitives

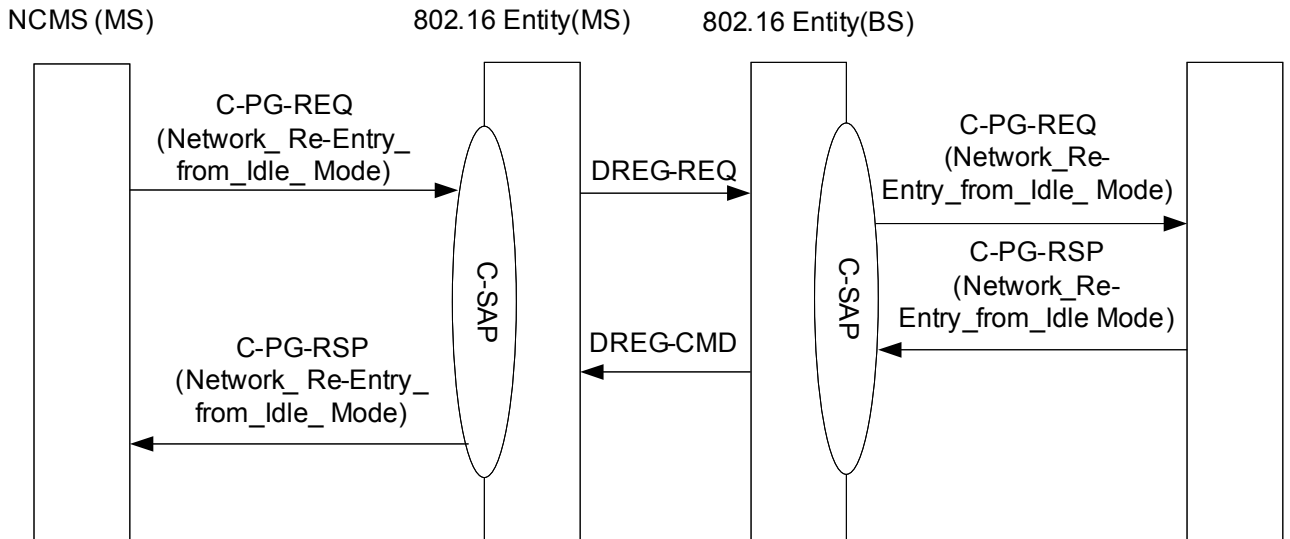


Figure 483- Network re-entry from Idle mode primitives

[Modify Subclause 14.2.4.2.1 as follows]

14.2.4.2.1 C-PG-REQ

This primitive is used by an 802.16 entity or NCMS to trigger an idle mode service procedure. The Operation_Type included in this primitive defines the type of idle mode service procedure to be performed. The possible Operation_Types for this primitive are listed in Table below.

Operation Type	Action Type	Description
Action	Idle Mode Initiation_ Idle Mode Initiation	Idle Mode Initiation Request
Action	Network Re-Entry from Idle Mode_ Network_Re- Entry from Idle Mode	Network Re-Entry from Idle Mode Request

[Modify Subclause 14.2.4.2.1.1 as follows]

14.2.4.2.1.1 C-PG-REQ (Action_Type = Idle_Mode_Initiation)**Function:**

This primitive is issued by a BS to inform the Paging and Idle Mode Services entity in the NCMS that an MS requests to initiate Idle Mode. This primitive can also be issued by the NCMS to force MS into an Idle mode by instructing the BS to initiate a DREG-CMD to the MS with Action Code = 0x05.

Semantics of the service primitive:

The parameters of the primitive are as follows:

C-PG-REQ

```
(
  Operation_Type: Action,
  Action_Type: Idle_Mode_Initiation,
  Destination: NCMS, BS, MS,
  Attribute_List:
    MS MAC Address,
    Paging_Information,
    Paging_Controller_ID,
    Security_Information,
    Idle_Mode_Retain_Information,
    MAC_Hash_Skip_Threshold,

    Service_Flow_parameters,
    Service_and_operational_information
)
```

MS MAC Address

48-bit MAC Address which identifies MS during Idle Mode

Paging_Information

Paging Group ID, Paging Cycle, Paging Offset

Paging_Controller_ID

A logical network identifier for the serving BS or other network entity retaining MS service and operational information and/or administrating paging activity for the MS while in Idle Mode. The Paging Controller ID shall be set to the BSID when a BS is acting as the Paging Controller.

Security_Information

AK Context, security association info, authenticator ID, etc.

When generated:

This primitive is generated by an NCMS or an 802.16 Entity, when a BS receives a DREG-REQ message with ~~Deregistration_Request_Code=0x01, "request for MS De-Registration from serving BS and initiation of MS Idle Mode"~~.

Effect of receipt:

This primitive shall be generated on ~~the BS side~~ the NCMS on an BS or an MS side and ~~the Paging and Idle Mode Services entity~~ an NCMS at other side shall respond to this primitive by sending C-PG-RSP(Idle_Mode_Initiation).

14.2.4.2.1.2 C-PG-REQ (Action_Type = ~~Network re-entry from Idle mode~~ Network_Re-Entry_from_Idle_Mode)

.....

When generated:

This primitive is generated by BS when a RNG-REQ message including Ranging Purpose Indication with setting bit #0 to 1 in combination with Paging Controller ID. **This primitive also is generated by an NCMS on an MS side.**

Effect of receipt:

BS receiving C-PG-RSP(Network_Re-Entry_from_Idle_Mode) transmits RNG-RSP message including HO Process Optimization which is based on the service and operational information in this primitive. The BS acknowledges the receipt of this message by transmitting the C-PG-ACK(Network_Re-Entry_from_Idle_Mode) message to the NCMS.
When the NCMS on an MS side receives C-PG-RSP(Network_Re-Entry_from_Idle_Mode), subscriber mode of the NCMS is changed idle mode to normal operation.

[Modify Subclause 14.2.4.2.2 as follows]

14.2.4.2.2 C-PG-RSP

This primitive is used by an 802.16 entity or NCMS to respond to an idle mode service request. The Operation_Type included in this primitive defines the type of idle mode service procedure to be performed. The possible Operation_Types for this primitive are listed in Table below:

Operation Type	Action Type	Description
Action	- Idle Mode Initiation Idle_Mode_Initiation	Idle Mode Initiation Request
Action	- Network Re-entry from Idle Mode Network_Re-Entry_from_Idle_Mode	Network Re-Entry from Idle Mode Request

[*Modify Subclause 14.2.4.2.2 as follows*]

14.2.4.2.2.1 C-PG-RSP (Action_Type = Idle_Mode_Initiation)

Function:

This primitive is issued by the Paging and Idle Mode Services entity in the NCMS in response to the C-PG-REQ(Idle_Mode_Initiation) primitive.

Semantics of the service primitive:

The parameters of the primitive are as follows:

.....

When generated:

This primitive is generated by NCMS at MS side or 802.16 entity(BS). ~~to request a BS to issue a DREG-CMD message.~~

Effect of receipt:

A 802.16 entity(BS) receiving C-PG-RSP(Idle_Mode_Initiation) shall transmit DREG-CMD message with setting each field in accordance with the information elements in this primitive.

14.2.4.2.2.2 C-PG-RSP (Action_Type = Network re-entry from Idle modeNetwork Re-Entry from Idle Mode)

Function:

This primitive is issued by the Paging and Idle Mode Services entity to confirm the MS Network Re-entry from Idle Mode and provide the BS, at which the MS is attempting to re-enter the network, with service and operational information.

Semantics of the service primitive:

The parameters of the primitive are as follows:

.....

When generated:

This primitive is generated ~~by NCMS at BS or 802.16 entity(MS). a BS when it receives a RNG-REQ message including Ranging Purpose Indication with setting bit #0 to 1 in combination with Paging Controller ID.~~

Effect of receipt:

C-PG-REQ(Network_Re-Entry_from_Idle_Mode) notifies the Paging and Idle Mode Services entity that the specified MS is attempting to re-enter network through the specified BS in order to receive DL traffic. The management entity also checks the MS service and operational information for the MS, and transmits C-PG-RSP(Network_Re-Entry_from_Idle_Mode) in response to this primitive.