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(54) **METHOD FOR HANDLING STATUS REPORT PROHIBIT TIMER AFTER RE-ESTABLISHMENT IN A WIRELESS COMMUNICATIONS SYSTEM**
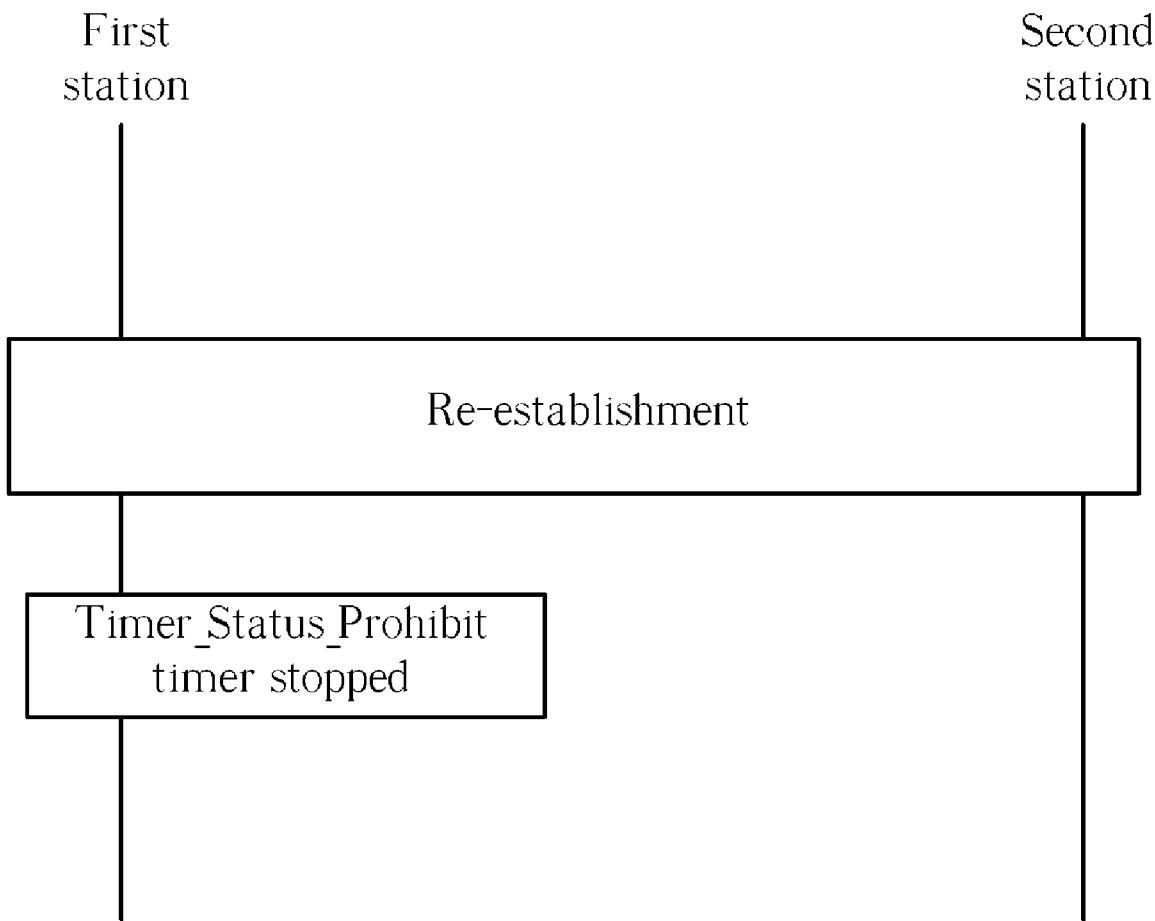
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(57) **ABSTRACT**

A method for handling a Timer_Status_Prohibit timer in a wireless communication system includes starting the Timer_Status_Prohibit timer for a Radio Link Control Acknowledged Mode (RLC AM) entity, performing a re-establishment procedure for the RLC AM entity, and stopping the Timer_Status_Prohibit timer after re-establishment of the RLC AM entity.

First
station

Second
station

Re-establishment

Timer_Status_Prohibit
timer stopped

10

20

First station

Second station

12

22

Upper layers

Upper layers

13

23

SDU

SDU

14

24

RLC

RLC

15

25

PDU

PDU

16

26

Lower layers

Lower layers

Fig. 1 Prior art

Second station

Re-establishment

Timer_Status_Prohibit timer stopped

First station
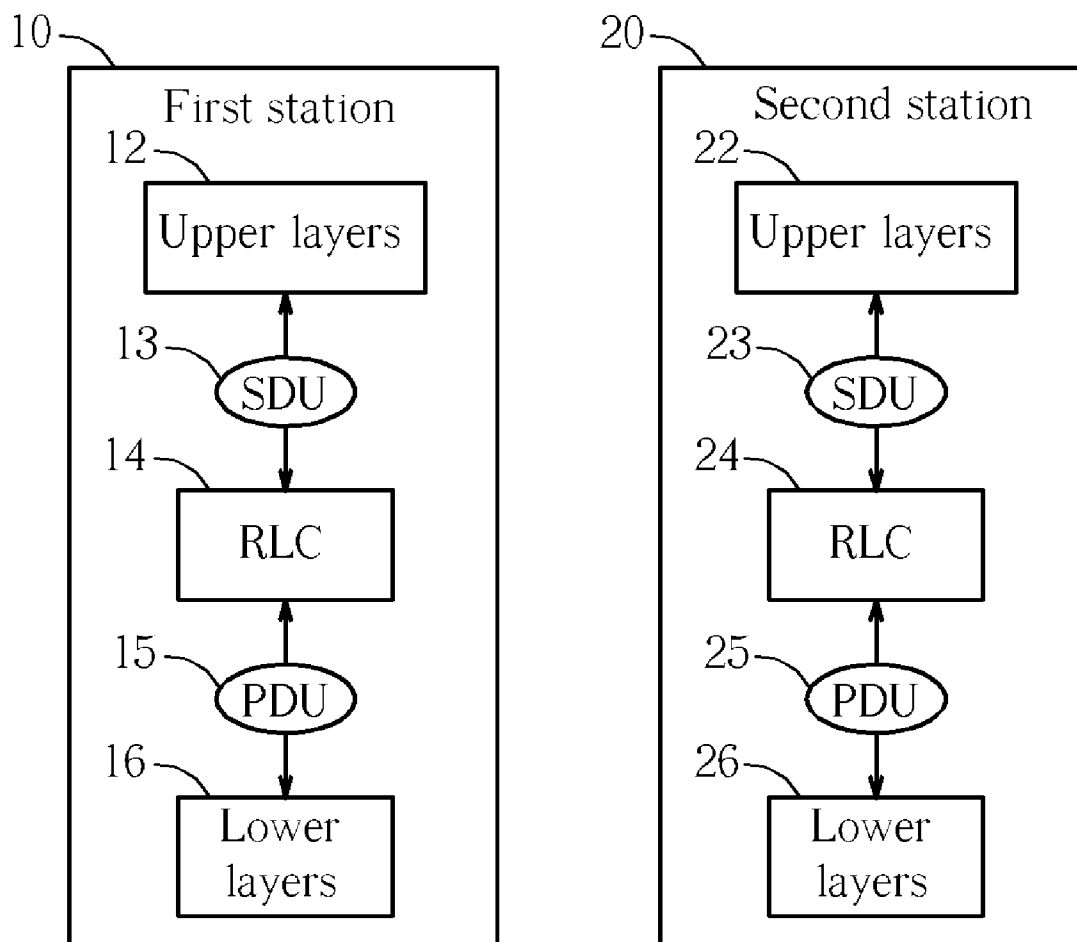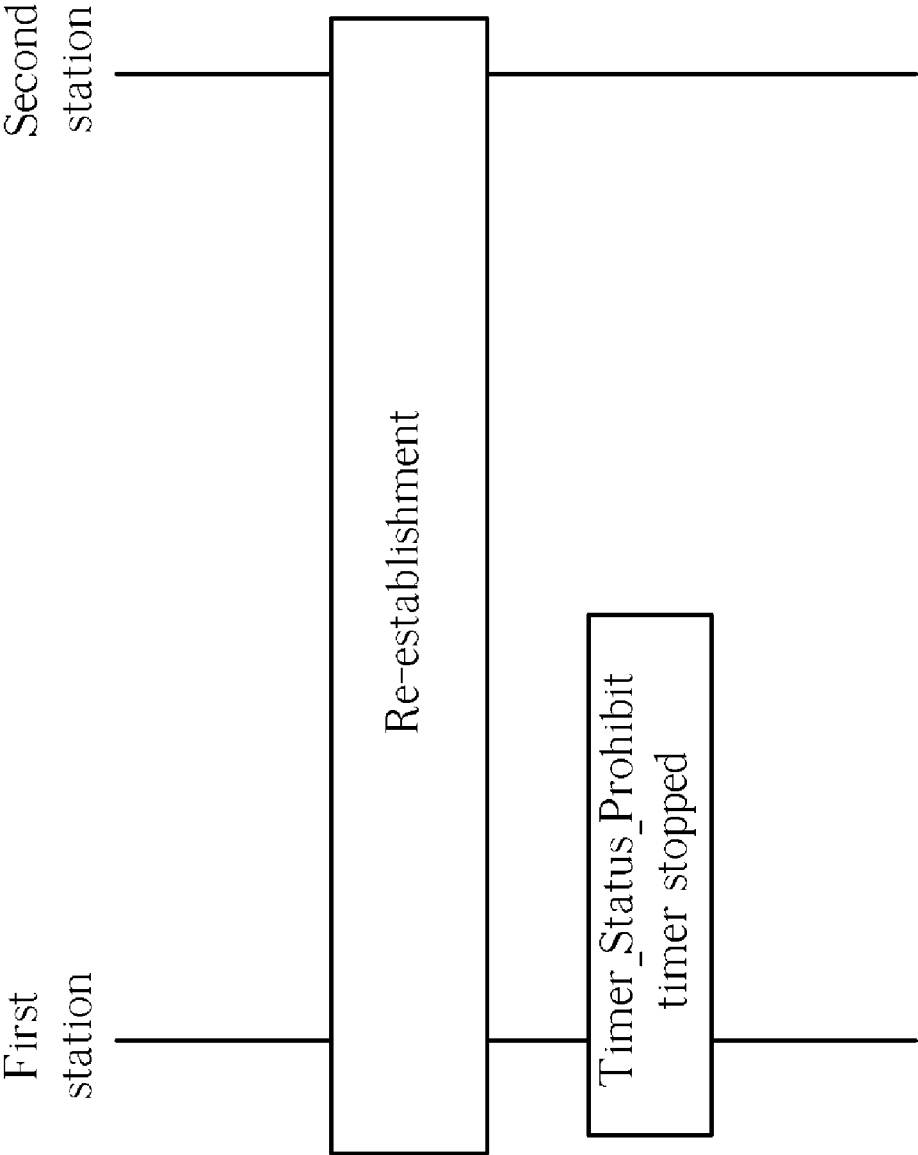
Fig. 2

METHOD FOR HANDLING STATUS REPORT PROHIBIT TIMER AFTER RE-ESTABLISHMENT IN A WIRELESS COMMUNICATIONS SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001]   This is a continuation application of application Ser. No. 10/064,747, filed Aug. 13, 2002, which is included in its entirety herein by reference.

BACKGROUND OF THE INVENTION

[0002]   1. Field of the Invention

[0003]   The present invention relates to a method for handling a status report prohibit timers in a wireless communications system, and more specifically, to a method for handling a Timer_Status_Prohibit timer after re-establishment in a wireless communications system.

[0004]   2. Description of the Prior Art

[0005]   Technological advances have moved hand in hand with more demanding consumer expectations. Devices that but ten years ago were considered cutting edge are today obsolete. These consumer demands in the marketplace spur companies towards innovation. The technological advances that result only serve to further raise consumer expectations. Presently, portable wireless devices, such as cellular telephones, personal digital assistants (PDAs), notebook computers, etc., are a high-growth market. However, the communications protocols used by these wireless devices are quite old. Consumers are demanding faster wireless access with greater throughput and flexibility. This has placed pressure upon industry to develop increasingly sophisticated communications standards. The 3rd Generation Partnership Project (3GPP) is an example of such a new communications protocol.

[0006]   Please refer to FIG. 1. FIG. 1 is a simplified block diagram of the prior art communications model. In a typical wireless environment, a first station 10 is in wireless communications with one or more second stations 20. The first station 10 is comprised of upper layers 12, a radio link control (RLC) entity 14, and lower layers 16 which are below the RLC 14. In the following disclosure, all of the RLC entities are assumed to be RLC acknowledged mode (RLC AM) entities. The upper layers 12 can deliver messages to the RLC 14 through service data units (SDUs) 13. The SDUs 13 may be of any size, and hold data that the upper layers 12 wish delivered to the second station 20. The RLC 14 composes the SDUs 13 into one or more protocol data units (PDUs) 15. Each PDU 15 of the RLC 14 is of a fixed size, and is delivered to the lower layers 16. The lower layers 16 include the physical layer, which is in charge of transmitting data to the second station 20.

[0007]   The second station 20 shown has exactly the same basic structure as the first station 10. The second station 20 also includes upper layers 22, an RLC 24, and lower layers 26. Just as with the first station 10, the second station 20 uses the upper layers 22 to transmit SDUs 23 to the RLC 24, and uses the RLC 24 to transmit PDUs 25 to the lower layers 26. The data transmitted by the first station 10 is received by lower layers 26 of the second station 20 and reconstructed into one or more PDUs 25, which are passed up to the RLC 24. The RLC 24 receives the PDUs 25 and from them assembles one or more SDUs 23, which are then passed up to the upper layers 22. The upper layers 22, in turn, convert the SDUs 23 back into messages, which should be identical to the original messages that were generated by the first station 10. In communication systems, the terms SDU and PDU have broad meanings. For purposes of the following disclosure, the term "SDU" is used to indicate SDUs passed from the upper layers to the RLC, and the term "PDU" should be understood as PDUs passed from the RLC to lower layers. In addition, for simplicity the following disclosure will be written from the perspective of the first station 10, unless otherwise noted.

[0008]   During an RLC re-establishment function for acknowledged mode and unacknowledged mode, upper layers may request re-establishment of an RLC entity. However, the 3GPP TS 25.322 V3.11.0 specification does not specify how each of the timers should be handled during re-establishment. Due to this lack of guidelines, potential problems could develop due to the improper use of the timers.

[0009]   Therefore, since the current 3GPP specification does not specify how each of the timers should be handled during re-establishment, deadlock can occur and quality of service may be reduced substantially.

SUMMARY OF THE INVENTION

[0010]   It is therefore a primary objective of the claimed invention to provide a method for handling a status report prohibit timer after re-establishment in a wireless communications system in order to solve the above-mentioned problems.

[0011]   According to the claimed invention, a method for handling a Timer_Status_Prohibit timer in a wireless communication system includes starting the Timer_Status_Prohibit timer for a Radio Link Control Acknowledged Mode (RLC AM) entity, performing a re-establishment procedure for the RLC AM entity, and stopping the Timer_Status_Prohibit timer after re-establishment of the RLC AM entity.

[0012]   These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]   FIG. 1 is a simplified block diagram of the prior art communications model.

[0014]   FIG. 2 is a message sequence chart illustrating handling of the Timer_Status_Prohibit timer during a re-establishment function according to the present invention.

DETAILED DESCRIPTION

[0015]   Please refer to FIG. 2. FIG. 2 is a message sequence chart illustrating handling of the Timer_Status_Prohibit timer during a re-establishment function according to the present invention. After the RLC AM entity 14 is re-established by upper layers, the present invention method includes stopping the Timer_Status_Prohibit timer because the state of the RLC AM entity after re-establishment should be like the initial state of the RLC AM entity after it was established.

[0016] Compared to the prior art, the present invention provides steps for handling the Timer_Status_Prohibit timer after re-establishment. Therefore, using the method specified in the present invention will prevent RLC AM entities from experiencing deadlock, and will help maintain the quality of service.

[0017] Those skilled in the art will readily observe that numerous modifications and alterations of the device and method may be made while retaining the teachings of the invention. Accordingly, the above disclosure should be construed as limited only by the metes and bounds of the appended claims.

What is claimed is:

1. A method for handling a Timer_Status_Prohibit timer in a wireless communication system, the method comprising:

starting the Timer_Status_Prohibit timer for a Radio Link Control Acknowledged Mode (RLC AM) entity;

performing a re-establishment procedure for the RLC AM entity; and

stopping the Timer_Status_Prohibit timer after re-establishment of the RLC AM entity.

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