CLAIMS

What is claimed is:

1. A transmission station to control network overload, the transmission station comprising:

a processing module to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a transceiver module configured to broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection request, wherein the transmission station is configured to reject the RRC connection request based on the RAN overload state.

2. The transmission station of claim 1 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

3. The transmission station of claim 1 being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

4. The transmission station of claim 3, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

5. The transmission station of claim 1 being configured to receive an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to stop rejecting the RRC connection request based on a GUMMEI value.

6. The transmission station of claim 5 being configured to stop ongoing EAB actions based on a content of the overload stop message.

7. The transmission station of claim 1, being configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

8. The transmission station of claim 1 comprising an evolved Node B (eNB) configured to operate in a long term evolution (LTE) system.

9. A long term evaluation (LTE) system configured to control a network overload, the LTE system comprising:

an evolved node B (eNB) including:

a processing module to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a transceiver module configured to broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection request, wherein the transmission station is configured to reject the RRC connection request based on the RAN overload state.

10. The LTE system of claim 9 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

11. The LTE system of claim 9, wherein the eNB being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

12. The LTE system of claim 11, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

13. The LTE system of claim 9, wherein the eNB being configured to receive interface an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to stop rejecting the RRC connection request based on a GUMMEI value.

14. The LTE system of claim 13, wherein the eNB is configured to stop ongoing EAB actions based on the overload stop message content.

15. The LTE system of claim 9, wherein the eNB is configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

16. At least one non-transitory machine readable storage medium having instructions embodied thereon for controlling an overload of a radio access network (RAN), the instructions when executed perform the following:

configuring, using at least one processor, a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a RAN overload state;

broadcasting, using the at least one processor, the SIB type 14;

receiving, using the at least one processor, from a user equipment (UE) a radio resource control (RRC) connection request; and

rejecting, using the at least one processor, the RRC connection request based on the RAN overload state.

17. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following:

receiving an overload start message via an S1 interface, the overload start message including an indication that the RAN is overloaded.

18. The at least one non-transitory machine readable storage medium of claim 17, further comprising instructions which when executed by the at least one processor performs the following:

selecting at least one RRC to be rejected based on a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs) wherein the overload start message includes the list of GUMMEIs.

19. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following:

receiving an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs); and

stopping rejecting the RRC connection request based on a GUMMEI value.

20. The at least one non-transitory machine readable storage medium of claim 19, further comprising instructions which when executed by the at least one processor performs the following: stopping ongoing EAB actions based on the overload stop message content.

21. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following: sending to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

22. The at least one non-transitory machine readable storage medium of claim 16 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

23. A processing module to control network overload, the processing module comprising:

a hardware circuit to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a hardware circuit configured to send to broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection reques, and configured to reject the RRC connection request based on the RAN overload state.

24. The processing module of claim 23 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

25. The processing module of claim 23 being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

26. The processing module of claim 25, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

27. The processing module of claim 23 being configured to receive an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to stop rejecting the RRC connection request based on a GUMMEI value.

28. The processing module of claim 27 being configured to stop ongoing EAB actions based on a content of the overload stop message.

29. The processing module of claim 23, being configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

Claims

What is claimed is:

1. A transmission station to control network overload, the transmission station comprising:

a processing module to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a transceiver module configured to broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection request, wherein the transmission station is configured to reject the RRC connection request based on the RAN overload state.

2. The transmission station of claim 1 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

3. The transmission station of claim 1 being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

4. The transmission station of claim 3, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

5. The transmission station of claim 1 being configured to receive an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to stop rejecting the RRC connection request based on a GUMMEI value.

6. The transmission station of claim 5 being configured to stop ongoing EAB actions

based on a content of the overload stop message.

7. The transmission station of claim 1, being configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

8. The transmission station of claim 1 comprising an evolved Node B (eNB) configured to operate in a long term evolution (LTE) system.

9. A long term evaluation (LTE) system configured to control a network overload, the LTE system comprising:

an evolved node B (eNB) including:

a processing module to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a transceiver module configured to broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection request, wherein the eNB is configured to reject the RRC connection request based on the RAN overload state.

10. The LTE system of claim 9 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

11. The LTE system of claim 9, wherein the eNB being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

12. The LTE system of claim 11, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the eNB is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

13. The LTE system of claim 9, wherein the eNB being configured to receive interface an overload stop message via the S1 interface, the overload stop message including a list of

Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the eNB is configured to stop rejecting the RRC connection request based on a GUMMEI value.

14. The LTE system of claim 13, wherein the eNB is configured to stop ongoing EAB actions based on the overload stop message content.

15. The LTE system of claim 9, wherein the eNB is configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

16. At least one non-transitory machine readable storage medium having instructions embodied thereon for controlling an overload of a radio access network (RAN), the instructions when executed perform the following:

configuring, using at least one processor, a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a RAN overload state;

broadcasting, using the at least one processor, the SIB type 14;

receiving, using the at least one processor, from a user equipment (UE) a radio resource control (RRC) connection request; and

rejecting, using the at least one processor, the RRC connection request based on the RAN overload state.

17. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following:

receiving an overload start message via an S1 interface, the overload start message including an indication that the RAN is overloaded.

18. The at least one non-transitory machine readable storage medium of claim 17, further comprising instructions which when executed by the at least one processor performs the following:

selecting at least one RRC connection request to be rejected based on a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs) wherein the overload

start message includes the list of GUMMEIs.

19. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following:

receiving an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs); and

stopping rejecting the RRC connection request based on a GUMMEI value.

20. The at least one non-transitory machine readable storage medium of claim 19, further comprising instructions which when executed by the at least one processor performs the following: stopping ongoing EAB actions based on the overload stop message content.

21. The at least one non-transitory machine readable storage medium of claim 16, further comprising instructions which when executed by the at least one processor performs the following: sending to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.

22. The at least one non-transitory machine readable storage medium of claim 16 wherein the SIB type 14 includes an EAB category field to indicate a category of the UE where the EAB is applied.

23. A processing module of a transmission station to control network overload, the processing module comprising:

a hardware circuit to configure a system information block (SIB) type 14 with extended access barring (EAB) configuration information according to a radio access network (RAN) overload state; and

a hardware circuit configured broadcast the SIB type 14, and to receive from a user equipment (UE) a radio resource control (RRC) connection request, and configured to reject the RRC connection request based on the RAN overload state.

24. The processing module of claim 23 wherein the SIB type 14 includes an EAB

category field to indicate a category of the UE where the EAB is applied.

25. The processing module of claim 23 being configured to receive an overload start message via an S1 interface, the overload start message comprising an indication that the RAN is overloaded.

26. The processing module of claim 25, wherein the overload start message comprises a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to select at least one RRC connection request to be rejected based on the list of GUMMEIs.

27. The processing module of claim 23 being configured to receive an overload stop message via the S1 interface, the overload stop message including a list of Globally Unique Mobility Management Entity Identifiers (GUMMEIs), and wherein the transmission station is configured to stop rejecting the RRC connection request based on a GUMMEI value.

28. The processing module of claim 27 being configured to stop ongoing EAB actions based on a content of the overload stop message.

29. The processing module of claim 23, being configured to send to the UE a paging message, the paging message indicating an EAB configuration information presented in the SIB type 14.