establishing a U-Plane bearer in the SCell in the dual-connectivity scenario and have found various problems therewith. For example, in the LTE, a mobility management apparatus (i.e., Mobility Management Entity (MME)) in a core network executes a procedure for establishing the U-Plane bearer (i.e., E-RAB and S5/S8 bearer) in response to receiving a NAS message (e.g., Attach Request or Service Request) transmitted from the UE. Considering the dual-connectivity scenario, the MME need to set a data bearer that passes through an LPN (SCell), which is different from the MeNB (PCell), in response to the NAS message received through the MeNB (PCell). However, since the MME does not know to which LPN the U-Plane bearer should be set, it is impossible to set up the U-Plane bearer that passes through an appropriate LPN.

[0008]

Accordingly, ~~one object~~ embodiments of the present invention ~~is to~~ provide a radio communication system, a base station, a mobile station, a communication control method, and a program that contribute to a simple establishment of a U-Plane bearer in the dual-connectivity scenario.

Solution to Problem

[0009]

In a first aspect, there is provided a radio communication system ~~includes~~ including: a first base station that operates a first cell; at least one second base station, each of which operates a second cell; a core network that includes a mobility management apparatus and a data transfer apparatus; and a mobile station. ~~The mobile station has~~ having a capability to establish a data radio bearer in the second cell when the mobile station has established a signaling radio bearer in the first cell. ~~The~~, wherein first base station is configured to receive, from the mobile station through the signaling radio bearer, a signal containing a NAS message that causes a setup of a data bearer in the data transfer apparatus. ~~The~~ and ~~first base station is further configured to~~ forward the NAS message to the mobility management

apparatus and send, to the mobility management apparatus, base station information indicating a selected base station that has been selected from the at least one second base station and terminates the data bearer.

[0010]

In a second aspect, there is provided a first base station ~~includes~~ including: a radio communication unit that operates a first cell; and a controller. ~~The~~, wherein the controller is configured to receive, from a mobile station through a signaling radio bearer in the first cell, a signal containing a NAS message that causes a setup of a data bearer in a data transfer apparatus within a core network. ~~The controller is further configured to~~ and forward the NAS message to a mobility management apparatus within the core network and send, to the mobility management apparatus, base station information indicating a selected base station that has been selected from at least one second base station and terminates the data bearer.

[0011]

In a third aspect, there is provided a mobile station ~~is~~ used in combination with the radio communication system according to the first aspect stated above, ~~and includes~~the mobile station including a radio communication unit and a controller. ~~The controller is configured to~~ that controls the radio communication unit to receive configuration information regarding the data radio bearer from the first base station and receive or transmit user data through the second cell.

[0012]

In a fourth aspect, there is provided a communication control method in a first base station that operates a first cell, ~~includes~~ the communication method including: (a) receiving, from a mobile station through a signaling radio bearer in the first cell, a signal containing a NAS message that causes a setup of a data bearer in a data transfer apparatus within a core network; and (b) forwarding the NAS message to a mobility management apparatus within the core network and sending, to the mobility management apparatus, base station

information indicating a selected base station that has been selected from at least one second base station and terminates the data bearer.

[0013]

In a fifth aspect, ~~a program includes instructions for causing a computer to perform the communication control method according to the above fourth aspect~~, there is provided a non-transitory computer readable medium that stores a program for causing a computer to perform a communication control method in a first base station that operates a first cell, wherein the communication control method includes: receiving, from a mobile station through a signaling radio bearer in the first cell, a signal containing a NAS message that causes a setup of a data bearer in a data transfer apparatus within a core network; and forwarding the NAS message to a mobility management apparatus within the core network and sending, to the mobility management apparatus, base station information indicating a selected base station that has been selected from at least one second base station and terminates the data bearer.

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Advantageous Effects of Invention

[0014]

According to the above aspects, it is possible to provide a radio communication system, a base station, a mobile station, a communication control method, and a program that contribute to a simple establishment of a U-Plane bearer in the dual-connectivity scenario.

Brief Description of Drawings

[0015]

Fig. 1 is a diagram showing a configuration example of a radio communication system (e.g., LTE system) according to a first embodiment;

Fig. 2 is a diagram showing one example of bearer architecture in the radio communication system according to the first embodiment;

Fig. 3 is a diagram showing another example of the bearer architecture in the radio communication system according to the first embodiment;

Fig. 4 is a diagram showing a configuration example of a first base station (e.g., MeNB) according to the first embodiment:

Fig. 5 is a diagram showing a configuration example of a second base station (e.g., LPN) according to the first embodiment;

Fig. 6 is a diagram showing a configuration example of a mobile station (e.g., UE) according to the first embodiment;

Fig. 7 is a diagram showing a configuration example of a mobility management apparatus (e.g., MME) according to the first embodiment;

Fig. 8 is a diagram showing a configuration example of a data transfer apparatus (e.g., S-GW) according to the first embodiment;

Fig. 9 is a flowchart showing an operation example of the first base station (e.g., MeNB) according to the first embodiment;