the terminal, a neighboring base station, and a core network.

[80] Referring to FIG. 6B, the xAPP of the RIC 640 may correspond to one or more E2 node functions of the E2 node 610. The E2 node function of the E2 node 610 may correspond to one or more xAPPs of the RIC 640. The E2 node functions, Func (1) 612a to Func (N) 612b of the E2 node 610 may be managed by an E2 agent. The RIC 640 coupled to the E2 node 610 through the E2 interface denotes a near-RT RIC. The near-RT RIC may control and optimize a function and resource of the E2 node (O-CU-CP, O-CU-UP, O-DU, and O-eNB) on a real-time basis, i.e., near-RT, by performing data collection and control operations in units of about 10 milliseconds (ms) to 1 second through the E2 interface. The RIC 640 may use the E2 interface to host one or more xApps which collect (UE-based or cell-based) near-RT information and provide a service. The near-RT RIC control for the E2 node may be adjusted based on policy and enrichment data provided through A1 in the non-RT RIC. The RRM function 614 between the near-RT RIC 640 and the E2 node 610 is provided by the interaction of the function of the E2 node exposed to the E2 interface through the E2SM (service model).

[81] FIG. 7 illustrates examples of a function split between an E2 node and an RIC according embodiments of the disclosure. An O-RAN standard provides a function split between the E2 node and the RIC. For example, the E2 node may be a CU. The RIC may be a near-RT RIC. The RIC may be coupled to an open network automation platform (ONAP)/management and orchestration (MANO)/network management system (NMS) through an A1 interface. The RIC may be coupled to the E2 node through an E2 interface. The E2 interface may transfer commands. A function split option may have a function split 700 in which the entirety of radio resource management (RRM) is managed by a near-RT RIC and a function split 740 in which the RRM is selectively managed in the near-RT RIC.

[82] The near-RT RIC is expected to support E2 as an open logical interface aiming at multi-vendor environments regardless of the implementation of a specific RRC-RRM algorithm located in the near-RT RIC. The disclosure may

【CLAIMS】

【Claim 1】

A method performed by a near-Real Time (RT) radio access network (RAN) intelligent controller (RIC) in a wireless communication system, the method comprising:

receiving, from an E2 node, an E2 removal request message for removing a connection between the near-RT RIC and the E2 node through an E2 interface; and

transmitting, to the E2 node, an E2 removal response message through the E2 interface,

wherein the E2 node comprises an O-RAN distributed unit (O-DU), an O-RAN central unit-control plane (O-CU-CP), an O-RAN central unit - user plane (O-CU-UP), or a base station that communicates with the near-RT RIC via the E2 interface, and

wherein the E2 interface provided for communication between the near-RT RIC and the E2 node supports an E2 application protocol (E2AP) for communication over the E2 interface.

【Claim 2】

The method of claim 1, further comprising:

removing at least one resource associated with the connection between the near-RT RIC and the E2 node.

【Claim 3】

The method of claim 1, further comprising:

deleting information associated with the connection between the near-RT RIC and the E2 node.

【Claim 4】

The method of claim 1, wherein the E2 node removes at least one resource associated with the connection between the near-RT RIC and the E2 node after receiving the E2 removal request message.

【Claim 5】

The method of claim 1, wherein the E2 node stops data transmission toward the near-RT RIC after receiving the E2 removal request message.

【Claim 6】

A near-real time (RT) radio access network (RAN) intelligent controller (RIC) in a wireless communication system, the near-RT RIC comprising:

a transceiver;

a processor; and

memory storing instructions that, when executed by the processor, cause the near-RT RIC to:

receive, from an E2 node, an E2 removal request message for removing a connection between the near-RT RIC and the E2 node through an E2 interface; and

transmit, to the E2 node, an E2 removal response message through the E2 interface,

wherein the E2 node comprises an O-RAN distributed unit (O-DU), an O-RAN central unit-control plane (O-CU-CP), an O-RAN central unit - user plane (O-CU-UP), or a base station that communicates with the near-RT RIC via the E2 interface, and

wherein the E2 interface provided for communication between the near-RT RIC and the E2 node supports an E2 application protocol (E2AP) for communication over the E2 interface.

【Claim 7】

The near-RT RIC of claim 6, wherein the memory further comprises the instructions that, when executed by the processor, cause the near-RT RIC to:

remove at least one resource associated with the connection between the near-RT RIC and the E2 node.

【Claim 8】

The near-RT RIC of claim 6, wherein the memory further comprises the instructions that, when executed by the processor, cause the near-RT RIC to:

delete information associated with the connection between the near-RT RIC and the E2 node.

【Claim 9】

The near-RT RIC of claim 6, wherein the E2 node removes at least one resource associated with the connection between the near-RT RIC and the E2 node after receiving the E2 removal request message.

【Claim 10】

The near-RT RIC of claim 6, wherein the E2 node stops data transmission toward the near-RT RIC.

【Claim 11】

A method performed by an E2 node in a wireless communication system, the method comprising:

transmitting, to a near-Real Time (RT) radio access network (RAN) intelligent controller (RIC), an E2 removal request message for removing a connection between the near-RT RIC and the E2 node through an E2 interface; and

receiving, from the near-RT RIC, an E2 removal response message through the E2 interface,

wherein the E2 node comprises an O-RAN distributed unit (O-DU), an O-RAN central unit-control plane (O-CU-CP), an O-RAN central unit - user plane (O-CU-UP), or a base station that communicates with the near-RT RIC via the E2 interface, and

wherein the E2 interface provided for communication between the near-RT RIC and the E2 node supports an E2 application protocol (E2AP) for communication over the E2 interface.

【Claim 12】

The method of claim 11, further comprising:

removing at least one resource associated with the connection between the near-RT RIC and the E2 node.

【Claim 13】

The method of claim 11, further comprising:

stopping data transmission toward the near-RT RIC.

【Claim 14】

The method of claim 11, wherein the near-RT RIC removes at least one resource associated with the connection between the near-RT RIC and the E2 node after transmitting the E2 removal request message.

【Claim 15】

The method of claim 1, wherein the near-RT RIC deletes information associated with the connection between the near-RT RIC and the E2 node after transmitting the E2 removal request message.

【Claim 16】

An E2 node in a wireless communication system, the E2 node comprising:

a transceiver;

a processor; and

memory storing instructions that, when executed by the processor, cause the E2 node to:

transmit, to a near-Real Time (RT) radio access network (RAN) intelligent controller (RIC), an E2 removal request message for removing a connection between the near-RT RIC and the E2 node through an E2 interface; and

receive, from the near-RT RIC, an E2 removal response message through the E2 interface,

wherein the E2 node comprises an O-RAN distributed unit (O-DU), an O-RAN central unit-control plane (O-CU-CP), an O-RAN central unit - user plane (O-CU-UP), or a base station that communicates with the near-RT RIC via the E2 interface, and

wherein the E2 interface provided for communication between the near-RT RIC and the E2 node supports an E2 application protocol (E2AP) for communication over the E2 interface.

【Claim 17】

The E2 node of claim 16, wherein the memory further comprises the instructions that, when executed by the processor, cause the E2 node to:

remove at least one resource associated with the connection between the near-RT RIC and the E2 node.

【Claim 18】

The E2 node of claim 16, wherein the memory further comprises the instructions that, when executed by the processor, cause the E2 node to:

stop data transmission toward the near-RT RIC.

【Claim 19】

The E2 node of claim 16, wherein the near-RT RIC removes at least one resource associated with the connection between the near-RT RIC and the E2 node after transmitting the E2 removal request message.

【Claim 20】

The E2 node of claim 16, wherein the near-RT RIC deletes information associated with the connection between the near-RT RIC and the E2 node after transmitting the E2 removal request message.