Claims

[Claim 1] A method performed by an open-radio access network (O-RAN) distributed unit (O-DU), the method comprising:
transmitting, to an O-RAN radio unit (O-RU) through a fronthaul interface, one or more control plane (C-plane) messages; and
receiving, from the O-RU through the fronthaul interface, an acknowledgement (ACK)/Non-acknowledgement (NACK) feedback message for the one or more C-plane messages,
wherein each C-plane message of the one or more C-plane messages includes section extension information for requesting ACK/NACK,
wherein the section extension information includes a request identifier (ID) used to identify a section description for which ACK/NACK feedback is requested, and
wherein the ACK/NACK feedback message includes at least one of ACK information for indicating a request ID of a correctly decoded section description or NACK information for indicating a request ID of an incorrectly decoded section description.

[Claim 2] The method of claim 1, wherein the incorrectly decoded section description is dropped after section extension information associated with the incorrectly decoded section description is decoded.

[Claim 3] The method of claim 1,
wherein the section extension information includes an extension type for ACK/NACK request and an extension length indicating a size of the section extension information as one word corresponding to 4 bytes,
wherein the extension type is indicated by 7 bits of the section extension information,
wherein the extension length is indicated by 8 bits of the section extension information, and
wherein the request ID is indicated by 16 bits of the section extension information.

[Claim 4] The method of claim 1, further comprising:
based on identifying that an ACK/NACK status of a section description in the one or more C-plane messages is not received by an end of a receive window, identifying that the section description is dropped before section

extension information corresponding to the dropped section description is decoded.

[Claim 5] The method of claim 1,
wherein the ACK/NACK feedback message is associated with a C-plane message and includes a transport header and an application header,
wherein the application header includes a frame identifier, a subframe identifier, a slot identifier, and a section type indicating a section type 8 for sending ACK/NACK from the O-RU to the O-DU,
wherein the ACK/NACK feedback message includes information for indicating the number of ACKs included in the ACK/NACK feedback message and information for indicating the number of NACKs included in the ACK/NACK feedback message,
wherein the number of ACKs is indicated by 8 bits of the ACK/NACK feedback message, and
wherein the number of NACKs is indicated by 8 bits of the ACK/NACK feedback message.

[Claim 6] A method performed by an open-radio access network (O-RAN) radio unit (O-RU), the method comprising:
receiving, from an O-RAN distributed unit (O-DU) through a fronthaul interface, one or more control plane (C-plane) messages; and
transmitting, to the O-RU through the fronthaul interface, an acknowledgement (ACK)/Non-acknowledgement (NACK) feedback message for the one or more C-plane messages,
wherein each C-plane message of the one or more C-plane messages includes section extension information for requesting ACK/NACK,
wherein the section extension information includes a request identifier (ID) used to identify a section description for which ACK/NACK feedback is requested, and
wherein the ACK/NACK feedback message includes at least one of ACK information for indicating a request ID of a correctly decoded section description or NACK information for indicating a request ID of an incorrectly decoded section description.

[Claim 7] The method of claim 6, wherein the incorrectly decoded section description is dropped after section extension information associated with the incorrectly decoded section description is decoded.

[Claim 8] The method of claim 6,
wherein the section extension information includes an extension type for ACK/NACK request and an extension length indicating a size of the section extension information as one word corresponding to 4 bytes,
wherein the extension type is indicated by 7 bits of the section extension information,
wherein the extension length is indicated by 8 bits of the section extension information, and
wherein the request ID is indicated by 16 bits of the section extension information.

[Claim 9] The method of claim 6, wherein the ACK/NACK feedback message is transmitted within an ACK transmit window.

[Claim 10] The method of claim 6,
wherein the ACK/NACK feedback message is associated with a C-plane message and includes a transport header and an application header,
wherein the application header includes a frame identifier, a subframe identifier, a slot identifier, and a section type indicating a section type 8 for sending ACK/NACK from the O-RU to the O-DU,
wherein the ACK/NACK feedback message includes information for indicating the number of ACKs included in the ACK/NACK feedback message and information for indicating the number of NACKs included in the ACK/NACK feedback message,
wherein the number of ACKs is indicated by 8 bits of the ACK/NACK feedback message, and
wherein the number of NACKs is indicated by 8 bits of the ACK/NACK feedback message.

[Claim 11] A device of an open-radio access network (O-RAN) distributed unit (O-DU), comprising:
at least one transceiver; and
at least one processor coupled to the at least one transceiver, configured to control the at least one transceiver to:
transmit, to an O-RAN radio unit (O-RU) through a fronthaul interface, one or more control plane (C-plane) messages; and

receive, from the O-RU through the fronthaul interface, an acknowledgement (ACK)/Non-acknowledgement (NACK) feedback message for the one or more C-plane messages,

wherein each C-plane message of the one or more C-plane messages includes section extension information for requesting ACK/NACK,

wherein the section extension information includes a request identifier (ID) used to identify a section description for which ACK/NACK feedback is requested, and

wherein the ACK/NACK feedback message includes at least one of ACK information for indicating a request ID of a correctly decoded section description or NACK information for indicating a request ID of an incorrectly decoded section description.

[Claim 12] The device of claim 11,

wherein the section extension information includes an extension type for ACK/NACK request and an extension length indicating a size of the section extension information as one word corresponding to 4 bytes,

wherein the extension type is indicated by 7 bits of the section extension information,

wherein the extension length is indicated by 8 bits of the section extension information,

wherein the request ID is indicated by 16 bits of the section extension information,

wherein the ACK/NACK feedback message is associated with a C-plane message and includes a transport header and an application header,

wherein the application header includes a frame identifier, a subframe identifier, a slot identifier, and a section type indicating a section type 8 for sending ACK/NACK from the O-RU to the O-DU,

wherein the ACK/NACK feedback message includes information for indicating the number of ACKs included in the ACK/NACK feedback message and information for indicating the number of NACKs included in the ACK/NACK feedback message,

wherein the number of ACKs is indicated by 8 bits of the ACK/NACK feedback message, and

wherein the number of NACKs is indicated by 8 bits of the ACK/NACK feedback message.

[Claim 13] A device of an open-radio access network (O-RAN) radio unit (O-RU), comprising:
at least one transceiver; and
at least one processor coupled to the at least one transceiver, configured to control the at least one transceiver to:
receive, from an O-RAN distributed unit (O-DU) through a fronthaul interface, one or more control plane (C-plane) messages, and
transmit, to the O-RU through the fronthaul interface, an acknowledgement (ACK)/Non-acknowledgement (NACK) feedback message for the one or more C-plane messages,
wherein each C-plane message of the one or more C-plane messages includes section extension information for requesting ACK/NACK,
wherein the section extension information includes a request identifier (ID) used to identify a section description for which ACK/NACK feedback is requested, and
wherein the ACK/NACK feedback message includes at least one of ACK information for indicating a request ID of a correctly decoded section description or NACK information for indicating a request ID of an incorrectly decoded section description.

[Claim 14] The device of claim 13,
wherein the section extension information includes an extension type for ACK/NACK request and an extension length indicating a size of the section extension information as one word corresponding to 4 bytes,
wherein the extension type is indicated by 7 bits of the section extension information,
wherein the extension length is indicated by 8 bits of the section extension information,
wherein the request ID is indicated by 16 bits of the section extension information,
wherein the ACK/NACK feedback message is associated with a C-plane message and includes a transport header and an application header,
wherein the application header includes a frame identifier, a subframe identifier, a slot identifier, and a section type indicating a section type 8 for sending ACK/NACK from the O-RU to the O-DU,
wherein the ACK/NACK feedback message includes information for indicating the number of ACKs included in the ACK/NACK feedback

message and information for indicating the number of NACKs included in the ACK/NACK feedback message,

wherein the number of ACKs is indicated by 8 bits of the ACK/NACK feedback message, and

wherein the number of NACKs is indicated by 8 bits of the ACK/NACK feedback message.

[Claim 15] A non-transitory computer readable medium storing instructions that, when executed by a device, cause the device to perform one of methods of claims 1 to 10.