[0004] Improvements are presented herein. These improvements may also be applicable to other multi-Radio Access Technologies (RAT) and the telecommunication standards that employ these technologies.

SUMMARY

[0005] The following presents a simplified summary of one or more embodiments of the present disclosure in order to provide a basic understanding of such embodiments. This summary is not an extensive overview of all contemplated embodiments, and is intended to neither identify key or critical elements of all embodiments nor delineate the scope of any or all embodiments. Its sole purpose is to present some concepts of one or more embodiments of the present disclosure in a simplified form as a prelude to the more detailed description that is presented later.

[0006] Methods, apparatuses, and non-transitory computer-readable mediums for UL grant allocation on a primary path for pre-scheduling.

[0006a] In an aspect, the present disclosure refers to a first network node comprising:

at least one memory configured to store computer program code; and

at least one processor configured to access said at least one memory and operate as instructed by the computer program code, the computer program code comprising:

first receiving code configured to cause at least one of said at least one processor to receive, from a second network node of a base station, a UE context modification request associated with a split bearer providing a primary path and a secondary path to the UE, the

context modification request comprising (i) a first parameter indicating the UE requires at least one pre-configured uplink scheduling grant, and (ii) a second parameter that comprises configuration information regarding the primary path,

first transmitting code configured to cause at least one of said at least one processor to transmit, to the second network node of the base station, in response to receiving the context modification request, a context modification response,

allocating code configured to cause at least one of said at least one processor to, in response to the UE context modification request, allocate one or more pre-configured grants to the UE, and

second receiving code configured to cause at least one of said at least one processor to receive, from the UE in response to the one or more pre-configured grants, first uplink data, before sending a scheduling request to the base station and receiving corresponding UL scheduling grants.

[0006b] In an aspect, the present disclosure refers to a method performed by at least one processor in a first network node, the method comprising:

receiving, from a second network node, a UE context modification request associated with a split bearer providing a primary path and a secondary path to the UE, the context modification request comprising (i) a first parameter indicating the UE requires at least one pre-configured uplink scheduling grant, and (ii) a second parameter that comprises configuration information regarding the primary path of the split bearer;

transmitting, to the second network node in response to receiving the context modification request, a context modification response;

in response to the UE context modification request, allocating one or more pre-configured grants to the UE; and

receiving, from the UE in response to the one or more pre-configured grants, first uplink data before receiving a scheduling request at the first network node requesting additional UL scheduling grants and sending corresponding additional UL scheduled grants.

[0006c] In an aspect, the present disclosure refers to a non-transitory computer readable medium having instructions stored therein, which when executed by a processor in a first network node cause the processor to:

receive, from a second network node, a UE context modification request associated with a split bearer providing a primary path and a secondary path to the UE, the context modification request comprising (i) a first parameter indicating the UE requires at least one uplink scheduling grant, and (ii) a second parameter that comprises configuration information regarding the primary path;

transmit, to the second network node in response to receiving the context modification request, a context modification response;

in response to the UE context modification request, allocate one or more pre-configured grants to the UE; and

receive, from the UE in response to the one or more pre-configured grants, first uplink data, before sending a scheduling request to the base station and receiving corresponding UL scheduling grants.

[0007] According to one or more examples, a first network node comprises at least one memory configured to store computer program code; and at least one processor configured to access said at least one memory and operate as instructed by the computer program code. The computer program code includes first receiving code configured to cause at least one of said at least one processor to receive, from a second network node, a F1: UE context modification request or a similar message, associated with a dual connectivity split bearer providing a primary path and a secondary path to the UE, the context modification

request including (i) a first parameter indicating the UE requires at least one pre-configured uplink scheduling grant on the primary path, and (ii) a second parameter that includes configuration information regarding the primary path, first transmitting code configured to cause at least one of said at least one processor to transmit, to the second network node in response to receiving the UE context modification request, a context modification response.

The computer program code includes allocating code configured to cause at least one of said at least one processor to, in response to the UE context modification request, allocate one or more pre-configured grants to the UE, to be able to transmit UL data on the primary path of the split bearer. The computer program code further includes

receiving, from the UE in response to the one or more pre-configured grants, first uplink data on the primary path.

[0008] According to one or more examples, a method performed by at least one processor in a first network node, the method comprises receiving, from a second network node, a UE context modification request associated with a split bearer providing a primary path and a secondary path to the UE, the context modification request including (i) a first parameter indicating the UE requires at least one pre-configured uplink scheduling grant on the primary path, and (ii) a second parameter that includes configuration information regarding the primary path of the split bearer. The method includes transmitting, to the second network node in response to receiving the context modification request, a context modification response. The method includes in response to the UE context modification request, allocating one or more pre-configured grants to the UE to enable the UE send UL data on the primary path before sending a scheduling request to obtain UL scheduling grants. The method includes receiving, from the UE in response to the one or more pre-configured grants, first uplink data.

[0009] According to one or more examples, a non-transitory computer readable medium having instructions stored therein, which when executed by a processor in a first network node, cause the processor to receive, from a second network node, a UE context modification request or a similar message associated with a dual connectivity split bearer providing a primary path and a secondary path to the UE, the context modification request including (i) a first parameter indicating the UE requires at least one pre-configured uplink