

CLAIMS

What is claimed is:

- 1 1. A method for wireless communications, comprising:
2 identifying, at a relay device, a set of resources partitioned into a first subset of
3 resources for the relay device and a second subset of resources for a parent network node and
4 a child network node in communication with the relay device;
5 receiving, from the parent network node, a first resource configuration for a
6 slot of the second subset of resources;
7 receiving, from the child network node, a second resource configuration for
8 the slot of the second subset of resources;
9 scheduling communications in the slot of the second subset of resources based
10 at least in part on the first and second resource configurations; and
11 communicating with one or more devices during the slot of the second subset
12 of resources according to the scheduled communications.
- 1 2. The method of claim 1, further comprising:
2 identifying a slot structure for a slot of the first subset of resources, wherein
3 the slot structure indicates a set of flexible symbols;
4 dividing the set of flexible symbols into a set of free flexible symbols and a set
5 of non-free flexible symbols; and
6 transmitting an indication of the set of free flexible symbols to the parent
7 network node or the child network node.
- 1 3. The method of claim 2, further comprising:
2 receiving, from the parent network node or the child network node, a request
3 for a number of free flexible symbols, wherein the indication of the set of free flexible
4 symbols is transmitted in response to the request.
- 1 4. The method of claim 2, wherein transmitting the indication of the set
2 of free flexible symbols comprises:
3 transmitting a radio resource control (RRC) message that specifies a ratio of a
4 number of free flexible symbols to a total number of flexible symbols of the set of flexible
5 symbols.

- 1 5. The method of claim 2, further comprising:
2 determining the set of free flexible symbols based at least in part on a traffic
3 demand of a cell supported by the relay device.
- 1 6. The method of claim 2, wherein the indication comprises a bitmap that
2 specifies whether a flexible symbol of the set of flexible symbols is free.
- 1 7. The method of claim 1, further comprising:
2 transmitting, to the child network node, a request for a number of free flexible
3 symbols of the slot of the second subset of resources; and
4 receiving, from the child network node, an indication of the number of free
5 flexible symbols in response to the request.
- 1 8. The method of claim 7, wherein receiving the indication of the number
2 of free flexible symbols comprises:
3 receiving a radio resource control (RRC) message that specifies a ratio of the
4 number of free flexible symbols to a total number of flexible symbols of the slot.
- 1 9. The method of claim 7, wherein the indication comprises a bitmap that
2 specifies whether a flexible symbol of the slot of the second subset of resources is free.
- 1 10. The method of claim 1, further comprising:
2 transmitting, to the parent network node, a request for a number of free
3 flexible symbols of the slot of the second subset of resources; and
4 receiving, from the parent network node, an indication of the number of free
5 flexible symbols in response to the request.
- 1 11. The method of claim 10, wherein receiving the indication of the
2 number of free flexible symbols comprises:
3 receiving a radio resource control (RRC) message that specifies a ratio of the
4 number of free flexible symbols to a total number of flexible symbols of the slot.
- 1 12. The method of claim 10, wherein the indication comprises a bitmap
2 that specifies whether a flexible symbol of the slot of the second subset of resources is free.

1 13. The method of claim 1, further comprising:
2 determining a direction table for the slot of the second subset of resources
3 based at least in part on the first and second resource configurations, wherein the direction
4 table indicates a communication direction for a set of symbols of the slot of the second subset
5 of resources.

1 14. The method of claim 13, further comprising:
2 determining, for a symbol of the slot of the second subset of resources, that the
3 parent network node and the child network node are scheduled for downlink transmissions;
4 and
5 indicating the symbol of the slot of the second subset of resources as uplink
6 based at least in part on determining that the parent network node and child network nodes
7 are scheduled for downlink transmissions.

1 15. The method of claim 13, further comprising:
2 determining, for a symbol of the slot of the second subset of resources, that the
3 parent network node and the child network node are scheduled for uplink transmissions; and
4 indicating the symbol of the slot of the second subset of resources as downlink
5 based at least in part on determining that the parent and child network nodes are scheduled
6 for uplink transmissions.

1 16. The method of claim 13, further comprising:
2 determining, for a symbol of the slot of the second subset of resources, that the
3 parent network node and the child network node are scheduled for different communication
4 directions; and
5 indicating the symbol of the slot of the second subset of resources as
6 unavailable based at least in part on determining that the parent and child network nodes are
7 scheduled for different communication directions.

1 17. The method of claim 13, further comprising:
2 identifying, for the slot of the second subset of resources, a first set of free
3 flexible symbols for the parent network node or the child network node;

4 determining, for a symbol of the slot of the second subset of resources, that the
5 parent network node and the child network node are either free flexible or scheduled for
6 downlink transmissions; and

7 indicating the symbol of the slot of the second subset of resources as uplink
8 based at least in part on determining that the parent network node and the child network node
9 are either free flexible or scheduled for downlink transmissions.

1 18. The method of claim 13, further comprising:

2 identifying, for the slot of the second subset of resources, a first set of free
3 flexible symbols for the parent network node or the child network node;

4 determining, for a symbol of the slot of the second subset of resources, that the
5 parent network node and the child network node are either free flexible or scheduled for
6 uplink transmissions; and

7 indicating the symbol of the slot of the second subset of resources as downlink
8 based at least in part on determining that the parent network node and the child network node
9 are either free flexible or scheduled for uplink transmissions.

1 19. The method of claim 1, further comprising:

2 receiving a resource allocation scheme from the parent network node or an
3 anchor network node, wherein the resource allocation scheme indicates the first and second
4 subsets of resources.

1 20. The method of claim 1, further comprising:

2 transmitting, to the child network node, a request for the second resource
3 configuration; and

4 receiving, from the child network node, the second resource configuration in
5 response to the request.

1 21. The method of claim 20, wherein the second resource configuration is
2 received via a physical uplink control channel (PUCCH) or a physical uplink shared channel
3 (PUSCH).

1 22. The method of claim 1, further comprising:

2 identifying transmission regulation information associated with the second
3 subset of resources; and

4 communicating with the one or more devices during the slot of the second
5 subset of resources based at least in part on the transmission regulation information.

1 23. The method of claim 22, wherein identifying the transmission
2 regulation information comprises:
3 receiving, from at least one of the parent network node and the child network
4 node, transmission regulation information associated with the parent network node or the
5 child network node.

1 24. The method of claim 23, wherein the transmission regulation
2 information comprises a range of beam directions, a set of beam widths, or a transmission
3 power.

1 25. The method of claim 1, further comprising:
2 allocating a control channel for the relay device to resources of the first subset
3 of resources.

1 26. The method of claim 25, wherein the control channel is associated with
2 communications via the first or second subsets of resources.

1 27. The method of claim 25, further comprising:
2 allocating a second control channel for the relay device to resources of the
3 second subset of resources.

1 28. The method of claim 27, further comprising:
2 determining a direction table for the resources of the second subset of
3 resources based at least in part on control channel configurations for the parent network node
4 and the child network node.

1 29. The method of claim 1, further comprising:
2 receiving an indication of a control channel allocation for a control channel for
3 the relay device, wherein the control channel is associated with communications via the first
4 or second subsets of resources.

1 30. The method of claim 1, further comprising:

2 scheduling communications for a slot of the first subset of resources
3 independent of the first and second resource configurations; and
4 communicating with the one or more devices during the slot of the first subset
5 of resources according to the scheduled communications.

1 31. The method of claim 1, further comprising:
2 receiving the first resource configuration via a semi-static cell-specific
3 message, a semi-static user equipment (UE)-specific message, or a group-common control
4 channel.

1 32. The method of claim 31, wherein:
2 the semi-static cell-specific message is received via a system information
3 block (SIB);
4 the semi-static UE-specific message is received via radio resource control
5 (RRC) signaling; and
6 the group-common control channel is received via a group-common physical
7 downlink control channel (GC-PDCCH) and comprises a slot format indicator (SFI).

1 33. An apparatus for wireless communications, comprising:
2 a processor;
3 memory in electronic communication with the processor; and
4 instructions stored in the memory and executable by the processor to cause the
5 apparatus to:
6 identify, at a relay device, a set of resources partitioned into a first subset of
7 resources for the relay device and a second subset of resources for a parent network node and
8 a child network node in communication with the relay device;
9 receive, from the parent network node, a first resource configuration for a slot
10 of the second subset of resources;
11 receive, from the child network node, a second resource configuration for the
12 slot of the second subset of resources;
13 schedule communications in the slot of the second subset of resources based at
14 least in part on the first and second resource configurations; and
15 communicate with one or more devices during the slot of the second subset of
16 resources according to the scheduled communications.

1 34. An apparatus for wireless communications, comprising:
2 means for identifying, at a relay device, a set of resources partitioned into a
3 first subset of resources for the relay device and a second subset of resources for a parent
4 network node and a child network node in communication with the relay device;
5 means for receiving, from the parent network node, a first resource
6 configuration for a slot of the second subset of resources;
7 means for receiving, from the child network node, a second resource
8 configuration for the slot of the second subset of resources;
9 means for scheduling communications in the slot of the second subset of
10 resources based at least in part on the first and second resource configurations; and
11 means for communicating with one or more devices during the slot of the
12 second subset of resources according to the scheduled communications.

1 35. The apparatus of claim 34, further comprising:
2 means for identifying a slot structure for a slot of the first subset of resources,
3 wherein the slot structure indicates a set of flexible symbols;
4 means for dividing the set of flexible symbols into a set of free flexible
5 symbols and a set of non-free flexible symbols; and
6 means for transmitting an indication of the set of free flexible symbols to the
7 parent network node or the child network node.

1 36. The apparatus of claim 35, further comprising:
2 means for receiving, from the parent network node or the child network node,
3 a request for a number of free flexible symbols, wherein the indication of the set of free
4 flexible symbols is transmitted in response to the request.

1 37. The apparatus of claim 35, wherein the means for transmitting the
2 indication of the set of free flexible symbols further comprises:
3 means for transmitting a radio resource control (RRC) message that specifies a
4 ratio of a number of free flexible symbols to a total number of flexible symbols of the set of
5 flexible symbols.

1 38. The apparatus of claim 35, further comprising:

2 means for determining the set of free flexible symbols based at least in part on
3 a traffic demand of a cell supported by the relay device.

1 39. The apparatus of claim 35, wherein the indication comprises a bitmap
2 that specifies whether a flexible symbol of the set of flexible symbols is free.

1 40. The apparatus of claim 34, further comprising:
2 means for transmitting, to the child network node, a request for a number of
3 free flexible symbols of the slot of the second subset of resources; and
4 means for receiving, from the child network node, an indication of the number
5 of free flexible symbols in response to the request.

1 41. The apparatus of claim 40, wherein the means for receiving the
2 indication of the number of free flexible symbols further comprises:
3 means for receiving a radio resource control (RRC) message that specifies a
4 ratio of the number of free flexible symbols to a total number of flexible symbols of the slot.

1 42. The apparatus of claim 40, wherein the indication comprises a bitmap
2 that specifies whether a flexible symbol of the slot of the second subset of resources is free.

1 43. The apparatus of claim 34, further comprising:
2 means for transmitting, to the parent network node, a request for a number of
3 free flexible symbols of the slot of the second subset of resources; and
4 means for receiving, from the parent network node, an indication of the
5 number of free flexible symbols in response to the request.

1 44. The apparatus of claim 43, wherein the means for receiving the
2 indication of the number of free flexible symbols further comprises:
3 means for receiving a radio resource control (RRC) message that specifies a
4 ratio of the number of free flexible symbols to a total number of flexible symbols of the slot.

1 45. The apparatus of claim 43, wherein the indication comprises a bitmap
2 that specifies whether a flexible symbol of the slot of the second subset of resources is free.

1 46. The apparatus of claim 34, further comprising:

2 means for determining a direction table for the slot of the second subset of
3 resources based at least in part on the first and second resource configurations, wherein the
4 direction table indicates a communication direction for a set of symbols of the slot of the
5 second subset of resources.

1 47. The apparatus of claim 46, further comprising:

2 means for determining, for a symbol of the slot of the second subset of
3 resources, that the parent network node and the child network node are scheduled for
4 downlink transmissions; and

5 means for indicating the symbol of the slot of the second subset of resources
6 as uplink based at least in part on determining that the parent network node and child network
7 nodes are scheduled for downlink transmissions.

1 48. The apparatus of claim 46, further comprising:

2 means for determining, for a symbol of the slot of the second subset of
3 resources, that the parent network node and the child network node are scheduled for uplink
4 transmissions; and

5 means for indicating the symbol of the slot of the second subset of resources
6 as downlink based at least in part on determining that the parent and child network nodes are
7 scheduled for uplink transmissions.

1 49. The apparatus of claim 46, further comprising:

2 means for determining, for a symbol of the slot of the second subset of
3 resources, that the parent network node and the child network node are scheduled for
4 different communication directions; and

5 means for indicating the symbol of the slot of the second subset of resources
6 as unavailable based at least in part on determining that the parent and child network nodes
7 are scheduled for different communication directions.

1 50. The apparatus of claim 46, further comprising:

2 means for identifying, for the slot of the second subset of resources, a first set
3 of free flexible symbols for the parent network node or the child network node;

4 means for determining, for a symbol of the slot of the second subset of
5 resources, that the parent network node and the child network node are either free flexible or
6 scheduled for downlink transmissions; and

7 means for indicating the symbol of the slot of the second subset of resources
8 as uplink based at least in part on determining that the parent network node and the child
9 network node are either free flexible or scheduled for downlink transmissions.

1 51. The apparatus of claim 46, further comprising:

2 means for identifying, for the slot of the second subset of resources, a first set
3 of free flexible symbols for the parent network node or the child network node;

4 means for determining, for a symbol of the slot of the second subset of
5 resources, that the parent network node and the child network node are either free flexible or
6 scheduled for uplink transmissions; and

7 means for indicating the symbol of the slot of the second subset of resources
8 as downlink based at least in part on determining that the parent network node and the child
9 network node are either free flexible or scheduled for uplink transmissions.

1 52. The apparatus of claim 34, further comprising:

2 means for receiving a resource allocation scheme from the parent network
3 node or an anchor network node, wherein the resource allocation scheme indicates the first
4 and second subsets of resources.

1 53. The apparatus of claim 34, further comprising:

2 means for transmitting, to the child network node, a request for the second
3 resource configuration; and

4 means for receiving, from the child network node, the second resource
5 configuration in response to the request.

1 54. The apparatus of claim 53, wherein the second resource configuration
2 is received via a physical uplink control channel (PUCCH) or a physical uplink shared
3 channel (PUSCH).

1 55. The apparatus of claim 34, further comprising:

2 means for identifying transmission regulation information associated with the
3 second subset of resources; and

4 means for communicating with the one or more devices during the slot of the
5 second subset of resources based at least in part on the transmission regulation information.

1 56. The apparatus of claim 55, wherein the means for identifying
2 transmission regulation information further comprises:
3 means for receiving, from at least one of the parent network node and the child
4 network node, transmission regulation information associated with the parent network node
5 or the child network node.

1 57. The apparatus of claim 56, wherein the transmission regulation
2 information comprises a range of beam directions, a set of beam widths, or a transmission
3 power.

1 58. The apparatus of claim 34, further comprising:
2 means for allocating a control channel for the relay device to resources of the
3 first subset of resources.

1 59. The apparatus of claim 58, wherein the control channel is associated
2 with the communications via the first or second subsets of resources.

1 60. The apparatus of claim 58, further comprising:
2 means for allocating a second control channel for the relay device to resources
3 of the second subset of resources.

1 61. The apparatus of claim 60, further comprising:
2 means for determining a direction table for the resources of the second subset
3 of resources based at least in part on control channel configurations for the parent network
4 node and the child network node.

1 62. The apparatus of claim 34, further comprising:
2 means for receiving an indication of a control channel allocation for a control
3 channel for the relay device, wherein the control channel is associated with the
4 communications via the first or second subsets of resources.

1 63. The apparatus of claim 34, further comprising:

2 means for scheduling communications for a slot of the first subset of resources
3 independent of the first and second resource configurations; and
4 means for communicating with the one or more devices during the slot of the
5 first subset of resources according to the scheduled communications.

1 64. The apparatus of claim 34, further comprising:
2 means for receiving the first resource configuration via a semi-static cell-
3 specific message, a semi-static user equipment (UE)-specific message, or a group-common
4 control channel.

1 65. The apparatus of claim 64, wherein:
2 the semi-static cell-specific message is received via a system information
3 block (SIB);
4 the semi-static UE-specific message is received via radio resource control
5 (RRC) signaling; and
6 the group-common control channel is received via a group-common physical
7 downlink control channel (GC-PDCCH) and comprises a slot format indicator (SFI).

1 66. A non-transitory computer-readable medium storing code for wireless
2 communications, the code comprising instructions executable by a processor to:
3 identify, at a relay device, a set of resources partitioned into a first subset of
4 resources for the relay device and a second subset of resources for a parent network node and
5 a child network node in communication with the relay device;
6 receive, from the parent network node, a first resource configuration for a slot
7 of the second subset of resources;
8 receive, from the child network node, a second resource configuration for the
9 slot of the second subset of resources;
10 schedule communications in the slot of the second subset of resources based at
11 least in part on the first and second resource configurations; and
12 communicate with one or more devices during the slot of the second subset of
13 resources according to the scheduled communications.