CLAIMS

1. A method of wireless communication of a first node, comprising:

transmitting a report to a central unit (CU), wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node;

receiving a semi-static resource allocation from the CU based on the report, and one or more resources conditions for using allocated resources of the semi-static resource allocation; and

communicating with a second node based on the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

2. The method of claim 1, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU), and wherein the one or more transmission direction combinations comprise at least one of MT transmission and DU transmission, MT transmission and DU reception, MT reception and DU transmission, or MT reception and DU reception.

3. The method of claim 1, further comprising:

performing a local interference measurement of one or more beams for communicating with the second node; and

wherein the report includes the local interference measurement.

4. The method of claim 3, wherein the at least one multiplexing capability is for SDM FD, and the one or more beams comprise a transmission beam and a reception beam of the first node.

5. The method of claim 4, further comprising modifying at least one of the transmission beam or the reception beam based on the local interference measurement.

6. The method of claim 3, wherein the at least one multiplexing capability is for SDM HD, and the one or more beams comprise a plurality of transmission beams of the first node or a plurality of reception beams of the first node.

7. The method of claim 1, wherein the at least one multiplexing capability condition comprises at least one of:

one or more beams to be used for SDM; or

a link budget of the first node.

8. The method of claim 1,

wherein the communicating with the second node is based on the one or more resource conditions.

9. The method of claim 8, wherein the first node is a parent node and the second node is a child node, and wherein the one or more resource conditions identify at least one expected behavior of the parent node with respect to the allocated resources for communicating with the child node.

10. The method of claim 9, wherein the allocated resources comprise one of hard resources or soft resources.

11. The method of claim 8, wherein the first node is a child node and the second node is a parent node, and wherein the one or more resource conditions identify at least one expected behavior of the child node with respect to the allocated resources for communicating with the parent node.

12. The method of claim 1, further comprising:

transmitting a change request to the CU to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled based on the modified semi-static resource allocation.

13. A method of wireless communication at a central unit (CU), comprising:

receiving a report from a first node, wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node; and

transmitting to the first node a semi-static resource allocation based on at least the report for communication of the first node with a second node; and

transmitting to the first node one or more resource condition for using allocated resources of the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

14. The method of claim 13, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU), and wherein the one or more transmission direction combinations comprise at least one of MT transmission and DU transmission, MT transmission and DU reception, MT reception and DU transmission, or MT reception and DU reception.

15. The method of claim 13, further comprising:

transmitting to the second node an indication of the at least one multiplexing capability or the at least one multiplexing capability condition.

16. The method of claim 13, wherein the at least one multiplexing capability condition comprises at least one of:

one or more beams to be used for SDM; or

a link budget of the first node.

17. The method of claim 13,

wherein the communication of the first node with the second node is based on the one or more resource conditions.

18. The method of claim 17, wherein the first node is a parent node and the second node is a child node, and wherein the one or more resource conditions identify at least one expected behavior of the parent node with respect to the allocated resources for communicating with the child node.

19. The method of claim 18, wherein the allocated resources comprise one of hard resources or soft resources.

20. The method of claim 17, wherein the first node is a child node and the second node is a parent node, and wherein the one or more resource conditions identify at least one expected behavior of the child node with respect to the allocated resources for communicating with the parent node.

21. The method of claim 13, further comprising:

receiving a change request from the first node to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled for the first node based on the modified semi-static resource allocation.

22. An apparatus for wireless communication, the apparatus being a first node, comprising:

means for transmitting a report to a central unit (CU), wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node;

means for receiving a semi-static resource allocation from the CU based on the report, and one or more resource conditions for using allocated resource of the semi-static resource allocation; and

means for communicating with a second node based on the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

23. The apparatus of claim 22, further comprising:

means for performing a local interference measurement of one or more beams for communicating with the second node; and

wherein the report includes the local interference measurement.

24. The apparatus of claim 23, wherein the at least one multiplexing capability is for SDM FD, and the one or more beams comprise a transmission beam and a reception beam of the first node.

25. The apparatus of claim 24, further comprising means for modifying at least one of the transmission beam or the reception beam based on the local interference measurement.

26. The apparatus of claim 22,

wherein the communicating with the second node is based on the one or more resource conditions.

27. The apparatus of claim 22,

wherein the means for transmitting is further configured to transmit a change request to the CU to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled based on the modified semi-static resource allocation.

28. An apparatus for wireless communication, the apparatus being a central unit (CU), comprising:

means for receiving a report from a first node, wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node; and

means for transmitting to the first node a semi-static resource allocation based on at least the report for communication of the first node with a second node;

means for transmitting, to the first node, one or more resource condition for using allocated resource of the semi-static resource condition, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

29. The apparatus of claim 28, wherein the means for transmitting is further configured to transmit to the second node an indication of the at least one multiplexing capability or the at least one multiplexing capability condition.

30. The apparatus of claim 28,

wherein the communication of the first node with the second node is based on the one or more resource conditions.

31. The apparatus of claim 28,

wherein the means for receiving is further configured to receive a change request from the first node to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled for the first node based on the modified semi-static resource allocation.

32. An apparatus for wireless communication, the apparatus being a first node, comprising:

a memory; and

at least one processor coupled to the memory and configured to:

transmit a report to a central unit (CU), wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node;

receive a semi-static resource allocation from the CU based on the report, and one or more resource conditions for using allocated resources of the semi-static resource allocation; and

communicate with a second node based on the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

33. The apparatus of claim 32, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU), and wherein the one or more transmission direction combinations comprise at least one of MT transmission and DU transmission, MT transmission and DU reception, MT reception and DU transmission, or MT reception and DU reception.

34. The apparatus of claim 32, wherein the at least one processor is further configured to:

perform a local interference measurement of one or more beams for communicating with the second node; and

wherein the report includes the local interference measurement.

35. The apparatus of claim 34, wherein the at least one multiplexing capability is for SDM FD, and the one or more beams comprise a transmission beam and a reception beam of the first node.

36. The apparatus of claim 35, wherein the at least one processor is further configured to modify at least one of the transmission beam or the reception beam based on the local interference measurement.

37. The apparatus of claim 34, wherein the at least one multiplexing capability is for SDM HD, and the one or more beams comprise a plurality of transmission beams of the first node or a plurality of reception beams of the first node.

38. The apparatus of claim 32, wherein the at least one multiplexing capability condition comprises at least one of:

one or more beams to be used for SDM; or

a link budget of the first node.

39. The apparatus of claim 32,

wherein the communicating with the second node is based on the one or more resource conditions.

40. The apparatus of claim 39, wherein the first node is a parent node and the second node is a child node, and wherein the one or more resource conditions identify at least one expected behavior of the parent node with respect to the allocated resources for communicating with the child node.

41. The apparatus of claim 40, wherein the allocated resources comprise one of hard resources or soft resources.

42. The apparatus of claim 39, wherein the first node is a child node and the second node is a parent node, and wherein the one or more resource conditions identify at least one expected behavior of the child node with respect to the allocated resources for communicating with the parent node.

43. The apparatus of claim 32, wherein the at least one processor is further configured to:

transmit a change request to the CU to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled based on the modified semi-static resource allocation.

44. An apparatus for wireless communication, the apparatus being a central unit (CU), comprising:

a memory; and

at least one processor coupled to the memory and configured to:

receive a report from a first node, wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node; and

transmit to the first node a semi-static resource allocation based on at least the report for communication of the first node with a second node;

transmit, to the first node, one or more resource condition for using allocated resources of the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

45. The apparatus of claim 44, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU), and wherein the one or more transmission direction combinations comprise at least one of MT transmission and DU transmission, MT transmission and DU reception, MT reception and DU transmission, or MT reception and DU reception.

46. The apparatus of claim 44, wherein the at least one processor is further configured to:

transmit to the second node an indication of the at least one multiplexing capability or the at least one multiplexing capability condition.

47. The apparatus of claim 44, wherein the at least one multiplexing capability condition comprises at least one of:

one or more beams to be used for SDM; or

a link budget of the first node.

48. The apparatus of claim 44,

wherein the communication of the first node with the second node is based on the one or more resource conditions.

49. The apparatus of claim 48, wherein the one or more resource conditions indicate whether the allocated resources are conditional or unconditional for the communication of the first node with the second node.

50. The apparatus of claim 48, wherein the first node is a parent node and the second node is a child node, and wherein the one or more resource conditions identify at least one expected behavior of the parent node with respect to the allocated resources for communicating with the child node.

51. The apparatus of claim 50, wherein the allocated resources comprise one of hard resources or soft resources.

52. The apparatus of claim 48, wherein the first node is a child node and the second node is a parent node, and wherein the one or more resource conditions identify at least one expected behavior of the child node with respect to the allocated resources for communicating with the parent node.

53. The apparatus of claim 44, wherein the at least one processor is further configured to:

receive a change request from the first node to modify the semi-static resource allocation;

wherein the at least one multiplexing capability is enabled for the first node based on the modified semi-static resource allocation.

54. A computer-readable medium storing computer executable code, the code when executed by a processor cause the processor to:

transmit a report to a central unit (CU), wherein the report includes at least one multiplexing capability of a first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node;

receive a semi-static resource allocation from the CU based on the report, and one or more resource conditions for using allocated resources of the semi-static resource allocation; and

communicate with a second node based on the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.

55. A computer-readable medium storing computer executable code, the code when executed by a processor cause the processor to:

receive a report from a first node, wherein the report includes at least one multiplexing capability of the first node or includes at least one multiplexing capability condition for the at least one multiplexing capability of the first node; and

transmit to the first node a semi-static resource allocation based on at least the report for communication of the first node with a second node;

transmit, to the first node, one or more resource condition for using allocated resources of the semi-static resource allocation, where in one or more resource conditions indicate whether the allocated resources are conditional or unconditional for communicating with the second node;

wherein the at least one multiplexing capability comprises at least one of Spatial Division Multiplexing (SDM) or Frequency Division Multiplexing (FDM), and wherein the SDM includes at least one of SDM Full Duplex (SDM FD) or SDM Half-Duplex (SDM HD); and

wherein the at least one multiplexing capability is with respect to one or more transmission direction combinations of the first node.