CLAIMS

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

performing a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement measures transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

receiving a semi-static resource allocation from a central unit (CU) based on the at least one multiplexing capability of the first node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU);

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

communicating with a second node based on the semi-static resource allocation and the one or more resource conditions, wherein the 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 is with respect to one or more transmission direction combinations of the first node, the one or more transmission direction combinations comprising 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.

2. The method of claim 1, further comprising:

transmitting a report to the CU, wherein the report includes the 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;

wherein the semi-static resource allocation is received based on the report.

3. The method of claim 2,

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 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.

6. The method of claim 2, 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.

7. The method of claim 1, 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.

8. The method of claim 7, wherein the allocated resources comprise one of hard resources or soft resources.

9. The method of claim 1, 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.

10. 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.

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

receiving a report from a first node comprising a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement comprises measurements of transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

transmitting to the first node a semi-static resource allocation based on the at least one multiplexing capability of the first node for communication of the first node with the second node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU); and

transmitting, to the first node, one or more resource conditions for using allocated resources of the semi-static resource allocation, wherein the communication of the first node with the second node is based on the one or more resource conditions, 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;

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

12. The method of claim 11, further comprising:

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

13. The method of claim 11,

wherein the report includes the 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

wherein the semi-static resource allocation is transmitted based on the report.

14. 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.

15. The method of claim 11, 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.

16. The method of claim 15, wherein the allocated resources comprise one of hard resources or soft resources.

17. The method of claim 11, 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.

18. The method of claim 11, 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.

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

means for performing a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement measures transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

means for receiving a semi-static resource allocation from a central unit (CU) based on the at least one multiplexing capability of the first node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU);

wherein the means for receiving is further configured to receive, from the CU, one or more resource conditions for using allocated resources of the semi-static resource allocation; and

means for communicating with a second node based on the semi-static resource allocation and the one or more resource conditions, wherein the 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 is with respect to one or more transmission direction combinations of the first node, 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.

20. The apparatus of claim 19, further comprising:

means for transmitting a report to the CU, wherein the report includes the 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;

wherein the semi-static resource allocation is received based on the report.

21. The apparatus of claim 20,

wherein the report includes the local interference measurement.

22. The apparatus of claim 21, 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.

23. The apparatus of claim 19, further comprising:

means for 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.

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

means for receiving a report from a first node comprising a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement comprises measurements of transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node; and

means for transmitting to the first node a semi-static resource allocation based on the at least one multiplexing capability of the first node for communication of the first node with the second node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU);

wherein the means for transmitting is further configured to transmit, to the first node, one or more resource conditions for using allocated resources of the semi-static

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

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

25. The apparatus of claim 24, wherein the means for transmitting is further configured to transmit to the second node an indication of the at least one multiplexing capability.

26. The apparatus of claim 24,

wherein the report includes the 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

wherein the semi-static resource allocation is transmitted based on the report.

27. The apparatus of claim 24, further comprising:

means for 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.

28. 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:

perform a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement measures transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

receive a semi-static resource allocation from a central unit (CU) based on the at least one multiplexing capability of the first node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU);

receive, from the CU, 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 and the one or more resource conditions, wherein the 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 is with respect to one or more transmission direction combinations of the first node, 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.

29. The apparatus of claim 28, wherein the at least one processor is further configured to:

transmit a report to the CU, wherein the report includes the 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;

wherein the semi-static resource allocation is received based on the report.

30. The apparatus of claim 29,

wherein the report includes the local interference measurement.

31. The apparatus of claim 30, 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.

32. The apparatus of claim 30, 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.

33. The apparatus of claim 29, 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.

34. The apparatus of claim 28, 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.

35. The apparatus of claim 34, wherein the allocated resources comprise one of hard resources or soft resources.

36. The apparatus of claim 28, 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.

37. The apparatus of claim 28, 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.

38. 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 comprising a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement comprises measurements of transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

transmit to the first node a semi-static resource allocation based on the at least one multiplexing capability of the first node for communication of the first

node with the second node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU); and

transmit, to the first node, one or more resource conditions for using allocated resources of the semi-static resource allocation, wherein the communication of the first node with the second node is based on the one or more resource conditions, 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;

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

39. The apparatus of claim 38, wherein the at least one processor is further configured to:

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

40. The apparatus of claim 38,

wherein the report includes the 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

wherein the semi-static resource allocation is transmitted based on the report.

41. The apparatus of claim 40, 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.

42. The apparatus of claim 38, 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.

43. The apparatus of claim 42, wherein the allocated resources comprise one of hard resources or soft resources.

44. The apparatus of claim 38, 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.

45. The apparatus of claim 38, 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.

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

perform a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement measures transmit beams and receive beams at a first node to determine at least one multiplexing capability of the first node;

receive a semi-static resource allocation from a central unit (CU) based on the at least one multiplexing capability of a first node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU);

receive, from the CU, 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 and the one or more resource conditions, wherein the 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 is with respect to one or more transmission direction combinations of the first node, 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.

47. 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 comprising a local interference measurement of one or more beams for communicating with a second node, wherein the local interference measurement comprises measurements of transmit beams and receive beams at the first node to determine at least one multiplexing capability of the first node;

transmit to the first node a semi-static resource allocation based on the at least one multiplexing capability of the first node for communication of the first node with the second node, wherein the first node includes a mobile terminal (MT) and a distributed unit (DU); and

transmit, to the first node, one or more resource conditions for using allocated resources of the semi-static resource allocation, wherein the communication of the first node with the second node is based on the one or more resource conditions, 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;

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