WHAT IS CLAIMED IS:

1. A method, comprising:

receiving a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces;

receiving a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and

determining whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

2. The method of claim 1, further comprising receiving a control channel on the second component carrier, the control channel encoded with the control information format.

3. The method of claim 1, wherein the first component carrier and the second component carrier are the same component carrier.

4. The method of claim 1, wherein the first component carrier and the second component carrier are different component carriers.

5. The method of claim 1, wherein the control information format is configured to control downlink grants.

6. The method of claim 5, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) formats 1, 1A, 1B, 1C, 1D, 2, 2A and 2B transmitted via a physical downlink control channel (PDCCH).

7. The method of claim 1, wherein the control information format is configured to control uplink grants.

8. The method of claim 7, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) format 0 transmitted via a physical downlink control channel (PDCCH).

9. The method of claim 1, wherein the cross-carrier indicator is not located in the one or more common search spaces.

10. The method of claim 1, wherein the cross-carrier indicator is located in a subset of the plurality of user-specific search spaces associated with a subset of the plurality of component carriers.

11. The method of claim 1, wherein the cross-carrier indicator is located in each of the plurality of user-specific search spaces.

12. The method of claim 1, wherein the cross-carrier indicator is used for unicast traffic and not used for broadcast traffic.

13. The method of claim 1, wherein the cross-carrier indicator comprises a carrier indicator field (CIF) consisting of three bits.

14. The method of claim 13, wherein the CIF is located at a beginning of the control information.

15. The method of claim 13, wherein the CIF is user specific and comprises a distinct value for each component carrier.

16. The method of claim 13, wherein the CIF is component carrier specific and values of the CIF for two or more component carriers comprise a same value if the control information for the two or more component carriers are located on different component carriers.

17. The method of claim 1, wherein the plurality of search spaces comprises at least one common search space and at least one user-specific search space, wherein the common search space includes downlink control information (DCI) formats of two

different sizes without carrier indicators, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and cross-carrier control is not enabled for broadcast traffic via carrier indicators.

18. The method of claim 1, wherein the plurality of search spaces comprises at least one common search space and at least one user-specific search space, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and not enabled for broadcast traffic via carrier indicators.

19. The method of claim 1, wherein the plurality of search spaces comprise at least one common search space and at least one user-specific search space, wherein the common search space includes DCI formats of two different sizes with carrier indicators and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

20. The method of claim 1, wherein the plurality of search spaces comprise at least one common search space and at least one user-specific search space, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes two DCI formats with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

21. The method of claim 1, wherein the plurality of search spaces comprise at least one common search space and at least one user-specific search space, wherein the common search space includes DCI formats of three sizes, comprising DCI formats of two sizes with carrier indicators and a DCI format of a third size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

22. The method of claim 1, wherein the plurality of search spaces comprise at least one common search space and at least one user-specific search space, wherein the common search space includes DCI formats of four sizes, comprising DCI format of a first two sizes with carrier indicators and DCI formats of a second two sizes without carrier indicators, and the user specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

23. An apparatus, comprising:

means for receiving a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces;

means for receiving a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and

means for determining whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

24. An apparatus, comprising:

a processor; and

a memory comprising processor executable code that, when executed by the processor, configures the apparatus to:

receive a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces;

receive a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and

determine whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

25. The apparatus of claim 24, further configured to receive a control channel on the second component carrier, the control channel encoded with the control information format.

26. The apparatus of claim 24, wherein the first component carrier and the second component carrier are the same component carrier.

27. The apparatus of claim 24, wherein the first component carrier and the second component carrier are different component carriers.

28. The apparatus of claim 24, wherein the control information format is configured to control downlink grants.

29. The apparatus of claim 24, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) formats 1, 1A, 1B, 1C, 1D, 2, 2A and 2B transmitted via a physical downlink control channel (PDCCH).

30. The apparatus of claim 24, wherein the control information format is configured to control uplink grants.

31. The apparatus of claim 30, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) format 0 transmitted via a physical downlink control channel (PDCCH).

32. The apparatus of claim 24, wherein the cross-carrier indicator is not located in the one or more common search spaces.

33. The apparatus of claim 24, wherein the cross-carrier indicator is located in a subset of the plurality of user-specific search spaces associated with a subset of the plurality of component carriers.

34. The apparatus of claim 24, wherein the cross-carrier indicator is located in each of the plurality of user-specific search spaces.

35. The apparatus of claim 24, wherein the cross-carrier indicator is used for unicast traffic and not used for broadcast traffic.

36. The apparatus of claim 24, wherein the cross-carrier indicator comprises a carrier indicator field (CIF) consisting of three bits.

37. The apparatus of claim 36, wherein the CIF is located at a beginning of the control information.

38. The apparatus of claim 36, wherein the CIF is user specific and comprises a distinct value for each component carrier.

39. The apparatus of claim 36, wherein the CIF is component carrier specific and values of the CIF for two or more component carriers comprise a same value if the control information for the two or more component carriers are located on different component carriers.

40. The apparatus of claim 24, wherein the common search space includes downlink control information (DCI) formats of two different sizes without carrier indicators, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and cross-carrier control is not enabled for broadcast traffic via carrier indicators.

41. The apparatus of claim 24, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and not enabled for broadcast traffic via carrier indicators.

42. The apparatus of claim 24, wherein the common search space includes DCI formats of two different sizes with carrier indicators and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

43. The apparatus of claim 24, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes two DCI formats with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

44. The apparatus of claim 24, wherein the common search space includes DCI formats of three sizes, comprising DCI formats of two sizes with carrier indicators and a DCI format of a third size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

45. The apparatus of claim 24, wherein the common search space includes DCI formats of four sizes, comprising DCI formats of a first two sizes with carrier indicators and DCI formats of a second two sizes without carrier indicators, and the user specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

46. A computer program product, embodied on a non-transitory computer readable storage medium, comprising:

program code for receiving a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces;

program code for receiving a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and

program code for determining whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

47. A method, comprising:

transmitting a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces; and

transmitting a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier and to provide a determination of whether the cross-carrier indicator is present in the control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

48. The method of claim 47, further comprising transmitting a control channel on the second component carrier, the control channel encoded with the control information format.

49. The method of claim 47, wherein the first component carrier and the second component carrier are the same component carrier.

50. The method of claim 47, wherein the first component carrier and the second component carrier are different component carriers.

51. The method of claim 47, wherein the control information format is configured to control downlink grants.

52. The method of claim 51, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) formats 1, 1A, 1B, 1C, 1D, 2, 2A and 2B transmitted via a physical downlink control channel (PDCCH).

53. The method of claim 47, wherein the control information format is configured to control uplink grants.

54. The method of claim 53, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) format 0 transmitted via a physical downlink control channel (PDCCH).

55. The method of claim 47, wherein the cross-carrier indicator is not located in the one or more common search spaces.

56. The method of claim 47, wherein the cross-carrier indicator is located in a subset of the plurality of user-specific search spaces associated with a subset of the plurality of component carriers.

57. The method of claim 47, wherein the cross-carrier indicator is located in each of the plurality of user-specific search spaces.

58. The method of claim 47, wherein the cross-carrier indicator is used for unicast traffic and not used for broadcast traffic.

59. The method of claim 47, wherein the cross-carrier indicator comprises a carrier indicator field (CIF) consisting of three bits.

60. The method of claim 59, wherein the CIF is located at a beginning of the control information.

61. The method of claim 59, wherein the CIF is user specific and comprises a distinct value for each component carrier.

62. The method of claim 59, wherein the CIF is component carrier specific and values of the CIF for two or more component carriers comprise a same value if the control information for the two or more component carriers are located on different component carriers.

63. The method of claim 47, wherein the common search space includes downlink control information (DCI) formats of two different sizes without carrier indicators, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and cross-carrier control is not enabled for broadcast traffic via carrier indicators.

64. The method of claim 47, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and not enabled for broadcast traffic via carrier indicators.

65. The method of claim 47, wherein the common search space includes DCI formats of two different sizes with carrier indicators and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

66. The method of claim 47, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes two DCI formats with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

67. The method of claim 47, wherein the common search space includes DCI formats of three sizes, comprising DCI formats of two sizes with carrier indicators and a DCI format of a third size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

68. The method of claim 47, wherein the common search space includes DCI formats of four sizes, comprising DCI format of a first two sizes with carrier indicators and DCI formats of a second two sizes without carrier indicators, and the user specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

69. An apparatus, comprising:

means for transmitting a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a

plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces; and

means for transmitting a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier and to provide a determination of whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

70. An apparatus, comprising:

a processor; and

a memory comprising processor executable code that, when executed by the processor, configures the apparatus to:

transmit a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces; and

transmit a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier and to provide a determination of whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

71. The apparatus of claim 70, further configured to receive a control channel on the second component carrier, the control channel encoded with the control information format.

72. The apparatus of claim 70, wherein the first component carrier and the second component carrier are the same component carrier.

73. The apparatus of claim 70, wherein the first component carrier and the second component carrier are different component carriers.

74. The apparatus of claim 70, wherein the control information format is configured to control downlink grants.

75. The apparatus of claim 70, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) formats 1, 1A, 1B, 1C, 1D, 2, 2A and 2B transmitted via a physical downlink control channel (PDCCH).

76. The apparatus of claim 70, wherein the control information format is configured to control uplink grants.

77. The apparatus of claim 76, wherein the control information format comprises at least LTE Rel-8 and Rel-9 downlink control information (DCI) format 0 transmitted via a physical downlink control channel (PDCCH).

78. The apparatus of claim 70, wherein the cross-carrier indicator is not located in the one or more common search spaces.

79. The apparatus of claim 70, wherein the cross-carrier indicator is located in a subset of the plurality of user-specific search spaces associated with a subset of the plurality of component carriers.

80. The apparatus of claim 70, wherein the cross-carrier indicator is located in each of the plurality of user-specific search spaces.

81. The apparatus of claim 70, wherein the cross-carrier indicator is used for unicast traffic and not used for broadcast traffic.

82. The apparatus of claim 70, wherein the cross-carrier indicator comprises a carrier indicator field (CIF) consisting of three bits.

83. The apparatus of claim 82, wherein the CIF is located at a beginning of the control information.

84. The apparatus of claim 82, wherein the CIF is user specific and comprises a distinct value for each component carrier.

85. The apparatus of claim 82, wherein the CIF is component carrier specific and values of the CIF for two or more component carriers comprise a same value if the control information for the two or more component carriers are located on different component carrier.

86. The apparatus of claim 70, wherein the common search space includes downlink control information (DCI) formats of two different sizes without carrier indicators, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and cross-carrier control is not enabled for broadcast traffic via carrier indicators.

87. The apparatus of claim 70, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and not enabled for broadcast traffic via carrier indicators.

88. The apparatus of claim 70, wherein the common search space includes DCI formats of two different sizes with carrier indicators and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

89. The apparatus of claim 70, wherein the common search space includes a DCI format of a first size with a carrier indicator and a DCI format of a second size without a carrier indicator, and the user-specific search space includes two DCI formats with carrier indicators, wherein cross-carrier control is enabled for unicast traffic and broadcast traffic.

90. The apparatus of claim 70, wherein the common search space includes DCI formats of three sizes, comprising DCI formats of two sizes with carrier indicators and a DCI format of a third size without a carrier indicator, and the user-specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

91. The apparatus of claim 70, wherein the common search space includes DCI formats of four sizes, comprising DCI format of a first two sizes with carrier indicators and DCI formats of a second two sizes without carrier indicators, and the user specific search space includes DCI formats of at least two different sizes with carrier indicators, wherein the method is backward compatible with LTE Rel-8 broadcast traffic and unicast traffic.

92. A computer program product, embodied on a non-transitory computer readable storage medium, comprising:

program code for transmitting a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces; and

program code for transmitting a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and to provide a determination of whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier.

93. A method, comprising:

formatting control information, in a control channel of a communications carrier, with a cross-carrier control indicator; and

scrambling the control information with a scrambling code, wherein the scrambling code is selected based on a format of the control information and a location of the control information within a plurality of search spaces in the control channel.

94. The method of claim 93, wherein the plurality of search spaces in the control channel comprises a plurality of user-specific search spaces and a plurality of common search spaces.

95. The method of claim 94, wherein:

a first plurality of control information formats is associated with a first scrambling code and the plurality of common search spaces, and

a second plurality of control information formats, including the first plurality of control information formats, is associated with a second scrambling code and the plurality of user-specific search spaces, wherein the second scrambling code is different from the first scrambling code.

96. A method, comprising:

searching a plurality of search spaces in a control channel of a communications carrier for scrambled control information;

blind-decoding the plurality of search spaces with a plurality of descrambling codes to extract the control information; and

determining a presence of a cross-carrier control indicator based on a format of the control information and a location of the control information in the plurality of search spaces.

97. The method of claim 96, wherein the plurality of search spaces in the control channel comprises a plurality of common search spaces and a plurality of user-specific search spaces.

98. The method of claim 97, wherein:

a first plurality of control information formats is associated with a first descrambling code and the plurality of common search spaces, and

a second plurality of control information formats, including the first plurality of control information formats, is associated with a second descrambling code and the plurality of user-specific search spaces, wherein the second descrambling code is different from the first descrambling code.

99. An apparatus, comprising:

a processor; and

a memory comprising processor executable code that, when executed by the processor, configures the apparatus to:

format control information, in a control channel of a communications carrier, with a cross-carrier control indicator; and

scramble the control information with a scrambling code, wherein the scrambling code is selected based on a format of the control information and a location of the control information within a plurality of search spaces in the control channel.

100. The apparatus of claim 99, wherein the plurality of search spaces in the control channel comprises a plurality of user-specific search spaces and a plurality of common search spaces.

101. The method of claim 99, wherein:

a first plurality of control information formats is associated with a first scrambling code and the plurality of common search spaces, and

a second plurality of control information formats, including the first plurality of control information formats, is associated with a second scrambling code and the plurality of user-specific search spaces, wherein the second scrambling code is different from the first scrambling code.

102. An apparatus, comprising:

a processor; and

a memory comprising processor executable code that, when executed by the processor, configures the apparatus to:

search a plurality of search spaces in a control channel of a communications carrier for scrambled control information;

blind-decode the plurality of search spaces with a plurality of descrambling codes to extract the control information; and

determine a presence of a cross-carrier control indicator based on a format of the control information and a location of the control information in the plurality of search spaces.

103. The apparatus of claim 102, wherein the plurality of search spaces in the control channel comprises a plurality of common search spaces and a plurality of user-specific search spaces.

104. The apparatus of claim 103, wherein:

a first plurality of control information formats is associated with a first descrambling code and the plurality of common search spaces, and

a second plurality of control information formats, including the first plurality of control information formats, is associated with a second descrambling code and the plurality of user-specific search spaces, wherein the second descrambling code is different from the first descrambling code.

105. A computer program product, embodied on a non-transitory computer readable storage medium, comprising:

program code for formatting control information, in a control channel of a communications carrier, with a cross-carrier control indicator; and

program code for scrambling the control information with a scrambling code, wherein the scrambling code is selected based on a format of the control information and a location of the control information within a plurality of search spaces in the control channel.

106. A computer program product, embodied on a non-transitory computer readable storage medium, comprising:

program code for searching a plurality of search spaces in a control channel of a communications carrier for scrambled control information;

program code for blind-decoding the plurality of search spaces with a plurality of descrambling codes to extract the control information; and

program code for determining a presence of a cross-carrier control indicator based on a format of the control information and a location of the control information in the plurality of search spaces.

107. An apparatus, comprising:

means for formatting control information, in a control channel of a communications carrier, with a cross-carrier control indicator; and

means for scrambling the control information with a scrambling code, wherein the scrambling code is selected based on a format of the control information and a location of the control information within a plurality of search spaces in the control channel.

108. An apparatus, comprising:

means for searching a plurality of search spaces in a control channel of a communications carrier for scrambled control information;

means for blind-decoding the plurality of search spaces with a plurality of descrambling codes to extract the control information; and

means for determining a presence of a cross-carrier control indicator based on a format of the control information and a location of the control information in the plurality of search spaces.

WHAT IS CLAIMED IS:

1. A method, comprising:

receiving a plurality of component carriers configured for a wireless communication device, the plurality of component carriers comprising a plurality of search spaces comprising one or more common search spaces and a plurality of user-specific search spaces;

receiving a cross-carrier indicator configured to enable cross-carrier signaling for a first component carrier; and

determining whether the cross-carrier indicator is present in a control information format carried on a second component carrier, based on an association of the control information format with a search space on the second component carrier, wherein the cross-carrier indicator is located in a subset of the plurality of user-specific search spaces associated with a subset of the plurality of component carriers.