



US 20230232282A1

(19) **United States**(12) **Patent Application Publication****BELUR RAMACHANDRA et al.**(10) **Pub. No.: US 2023/0232282 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **MULTI-USER (MU) COMMUNICATION IN A WIRELESS MESH NETWORK**(52) **U.S. Cl.**CPC ..... *H04W 28/16* (2013.01); *H04L 5/0007* (2013.01); *H04W 40/24* (2013.01); *H04W 84/18* (2013.01)(71) Applicant: **QUALCOMM Incorporated**, San Diego, CA (US)(72) Inventors: **Vinod BELUR RAMACHANDRA**, Chennai (IN); **Xiaolong HUANG**, Santee, CA (US); **Shanmuganathan PALANISAMY**, Chennai (IN); **Rajakumar Ebenezer DEVAIRAKKAM**, Chennai (IN)

(57)

**ABSTRACT**

This disclosure provides systems, methods, and apparatus, including computer programs encoded on computer storage media, for implementing multi-user (MU) communication in a wireless mesh network. A first mesh node or a network management unit may collect information from various mesh nodes and form MU association groups based on the information. An MU association group may include an MU group head that coordinates MU group communication to or from member mesh nodes that are in the MU association group. For example, the MU group head may coordinate orthogonal frequency division multiple access (OFDMA) resource unit allocations, or MU multiple-input-multiple-output (MU-MIMO) spatial stream configurations, among other examples. Different MU association groups may be formed for uplink or downlink traffic. The creation of MU association groups may enable a wireless mesh network to realize the advantages of MU group communication within the flexible topology of a mesh environment.

(21) Appl. No.: **17/998,342**(22) PCT Filed: **Jun. 30, 2021**(86) PCT No.: **PCT/US2021/040022**

§ 371 (c)(1),

(2) Date: **Nov. 9, 2022**(30) **Foreign Application Priority Data**

Jul. 3, 2020 (IN) ..... 202021028332

**Publication Classification**(51) **Int. Cl.***H04W 28/16* (2006.01)*H04L 5/00* (2006.01)*H04W 40/24* (2006.01)