802.11ac Wave 2 is an evolution of the 802.11ac Wi-Fi standard, introducing several enhancements and new features to further improve performance, capacity, and reliability. It builds upon the foundation of 802.11ac Wave 1 and was ratified by the IEEE in 2016. Here are some key features of 802.11ac Wave 2:

- **Multi-User MIMO (MU-MIMO)**: Building on the MU-MIMO introduced in 802.11ac Wave 1, Wave 2 extends support for MU-MIMO to the downstream direction as well. This means that not only the access point (AP) can transmit to multiple clients simultaneously, but the clients can also transmit to the AP simultaneously, improving overall network efficiency and throughput.

- **Increased Spatial Streams**: 802.11ac Wave 2 supports a higher number of spatial streams compared to Wave 1, allowing for even greater data rates. While Wave 1 supported up to four spatial streams, Wave 2 can support up to eight spatial streams, further increasing throughput for compatible devices.

- **Channel Bonding and Wider Channels**: Wave 2 continues to support channel bonding, allowing for the aggregation of adjacent channels to increase bandwidth. Additionally, it introduces support for even wider channels, with 160 MHz channel width, enabling even higher data rates for compatible devices.

- **Enhanced Beamforming**: Beamforming technology in Wave 2 is further improved, allowing for more precise targeting of signals to specific devices. This enhances coverage, reliability, and performance, especially for devices located at the edge of the network coverage area.

- **Support for 5 GHz and 2.4 GHz Bands**: While 802.11ac primarily operates in the 5 GHz band, Wave 2 continues to support operation in the 2.4 GHz band for backward compatibility with older devices. However, most of the performance enhancements are focused on the 5 GHz band.

- **Advanced Modulation Techniques**: Wave 2 introduces new modulation techniques such as 1024-QAM (Quadrature Amplitude Modulation), which increases the efficiency of data transmission, allowing for higher data rates compared to previous modulation schemes.

- **Widespread Adoption**: 802.11ac Wave 2 has seen significant adoption in both consumer and enterprise environments due to its performance improvements and

enhanced features. It provides the necessary capabilities to support demanding applications and high-density deployments.

Overall, 802.11ac Wave 2 represents a significant advancement in Wi-Fi technology, offering even higher data rates, improved capacity, and better performance compared to its predecessors. It addresses the growing demand for wireless connectivity in modern networks, supporting a wide range of applications and devices.

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