

Industrial Talk 6: 5G, Wifi6 and Emerging Network Technologies (HUAWEI)

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5G NETWORK

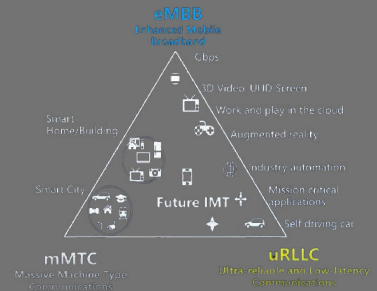
5G is the next generation of wireless technology systems. it provides speeds faster than any previous generation, comparable to those delivered via optic fibers



EFFECTS OF 5G

THE EFFECT OF 5G ON THESE SECTORS COULD BE TRANSFORMATIONAL FOR THREE PRIMARY REASONS ONCE IT BECOMES WIDELY AVAILABLE:

1. 5G devices have a lower latency, allowing greater data streams to be transmitted faster.
2. 5G DEVICES ARE MORE RELIABLE, ALLOWING FOR IMPROVED DATA TRANSFER UNDER HARSH CONDITIONS.
3. 5G IS MORE FLEXIBLE THAN WI-FI, ENABLING IT TO SUPPORT A LARGER RANGE OF DEVICES, SENSORS, AND APPLICATIONS AND WEARABLES.



5G SPEED

5G is designed to deliver peak data rates up to 20 Gbps based on IMT-2020 requirements

WIFI 6



WiFi 6 (802.11ax) is the latest generation of WiFi. Building off of the 802.11ac standard for wireless network transmissions, WiFi 6 promises faster throughput speeds, less bandwidth congestion, and WiFi spectrum efficiency.

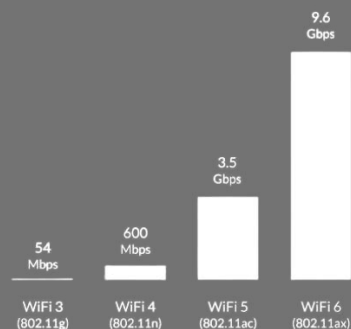
WIFI 6 ADVANTAGE

There are many significant improvements that are incorporated into WiFi 6 that will make it much more useful to wireless users around the world. Let's take a closer look at some of the advantages of using WiFi 6 technology.

1. Greater data transfer speed: Each generation of WiFi has provided greater data transfer speed and WiFi 6 is no exception. The theoretical speed of WiFi 6 is 10Gbps
2. Increased battery life: Another important benefit afforded by the move to WiFi 6 is the increased battery life that devices accessing a WiFi 6 network will enjoy
3. Better performance in congested area: One way this is accomplished is with a technology known as Orthogonal Frequency Division Multiple Access (OFDMA). This allows a wireless channel to be divided into a number of sub-channels that can each be used to carry data for a different device. This allows a single access point to communicate with more devices simultaneously.

WIFI 6 SPEED

WiFi 6 delivers faster speeds than the previous two generations of WiFi, but how much faster is it exactly? WiFi 6 is capable of a maximum throughput speed of 9.6 Gbps, compared to 3.5 Gbps on WiFi 5 and 600Mbps on WiFi 4



HUAWEI TECHNOLOGIES

Huawei AirEngine Wi-Fi 6

- **LIGHTNING SPEED: 10 GBPS AND BEYOND**
HUAWEI AIRENGINE APS ARE THE INDUSTRY'S ONLY TO PROVIDE 16 SPATIAL STREAMS AND A THROUGHPUT RATE OF UP TO 10.75 GBPS, DELIVERING FIBER-LIKE NETWORK EXPERIENCE FOR HEAVY-TRAFFIC SERVICES SUCH AS AR/VR AND 4K VIDEO.
- **MORE STABLE COVERAGE: BLIND-SPOT-FREE FULL COVERAGE**
HUAWEI AIRENGINE APS HAVE 16 BUILT-IN SMART ANTENNAS AND USE THE 5G BEAMFORMING ALGORITHM, ACHIEVING A 20% GREATER COVERAGE DISTANCE AND STRONGER SIGNALS THAN TRADITIONAL ANTENNAS. THE END RESULT IS BLIND-SPOT-FREE FULL COVERAGE,
- **MORE STABLE APPLICATIONS: ASSURED APPLICATION EXPERIENCE**
HUAWEI AIRENGINE APS USE THE FIRST-OF-ITS-KIND DYNAMIC TURBO TECHNOLOGY TO DYNAMICALLY DETECT APPLICATION TYPES AND IMPLEMENT HQOS, ACHIEVING ULTRA-LOW 10 MS LATENCY FOR KEY APPLICATIONS AND ENSURING SMOOTH EXPERIENCE OF REAL-TIME APPLICATIONS SUCH AS AR/VR AND VOICE.
- **MORE STABLE ROAMING: LOSSLESS ROAMING**
LEVERAGING SMARTRADIO LOSSLESS ROAMING TECHNOLOGY, HUAWEI PROACTIVELY OPTIMIZES THE TRADITIONAL ROAMING PROCESS AND ENABLES MOBILE TERMINALS RUNNING HUAWEI EMU OR MAGICUI TO IMPLEMENT MILLISECOND-LEVEL LOSSLESS ROAMING. THIS ENSURES SMOOTH EXPERIENCE OF OFFICE APPLICATIONS SUCH AS VIDEO CONFERENCING AND MANY MORE

Unique Benefits of Huawei

AirEngine Wi-Fi 6

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HUAWEI SMART ANTENNA

Smart antennas (also known as adaptive array antennas, digital antenna arrays, multiple antennas and, recently, MIMO) are antenna arrays with smart signal processing algorithms used to identify spatial signal signatures such as the direction of arrival (DOA) of the signal, and use them to calculate beamforming vectors which are used to track and locate the antenna beam on the mobile/target

Smart antenna technology concentrates energy on the receive end by adjusting the transmit parameters on the transmit end to enhance signal coverage and increase wireless Access Point (AP) capacity.

Smart antennas are implemented using beamforming and antenna array technologies. Both technologies leverage combinations of multiple antennas to improve the beams of the transmit signals, thereby improving wireless user experience. By combining the advantages of the two technologies, smart antennas achieve better benefits.

Beamforming Technology

Beamforming, also called transmit Beamforming (TxBF), is a technology that transmits signals to STAs in an energy-focused and directional fashion. It comprehensively improves the quality of signals received by STAs and increases the throughput. Beamforming has been supported since Wi-Fi 4 (802.11n). It can be implemented using multiple common antennas.

In a multi-antenna system, when signals transmitted by different antennas arrive at a location, zero-energy signals may occur if two beams have equal attenuation but opposite phases. Beamforming technology enables two beams to be superimposed with the best effect by pre-compensating the phases of transmit antennas. This approach improves the strength of signals received by STAs, thereby improving user experience.

