

LTE-U: A POLITE TECHNOLOGY



What is LTE-U?

LTE Unlicensed (LTE-U) is a new technology designed to make more effective use of unlicensed spectrum over long distances and at high speeds. It is designed to co-exist with Wi-Fi while providing an efficiency upgrade.



Why was LTE-U designed?

Wi-Fi was designed 20 years ago for small networks operating at megabit speeds. With 1,000 times faster networks, there's a need for closer coordination between devices, which LTE-U provides. LTE-U also integrates Wi-Fi and cellular networks better.



Can LTE-U co-exist with Wi-Fi?

Yes. LTE-U is designed to be at least as good in Wi-Fi. A report from the LTE-U Forum – Verizon, Alcatel-Lucent, Ericsson, Qualcomm, and Samsung – shows that LTE-U is a better neighbor to Wi-Fi than Wi-Fi is to itself.



How is LTE-U a polite technology?

LTE-U adopts three basic etiquette protocols:

LTE-U listens before it talks.

LTE-U scans the unlicensed spectrum with a special listening module and selects the most lightly used channel. It waits for the channel to be idle before transmitting and resolves collisions by increasing the listening time before transmitting again.

LTE-U takes turns.

LTE-U also has an “adaptive duty cycle” that allows it to take turns with other users without degrading Wi-Fi performance. It uses a technique known as Carrier-Sensing Adaptive Transmission (CSAT) to sense traffic on a particular channel, such as Wi-Fi data, and measures how frequently it's occurring. CSAT then tells LTE-U to schedule bursts of traffic during those time intervals when other traffic is not present. This adaptive duty cycle allows LTE-U to take turns with Wi-Fi devices in much the same way Wi-Fi access points take turns using unlicensed spectrum today.

LTE-U has an on/off switch.

Since LTE-U allows carriers to combine licensed and unlicensed spectrum, it only uses unlicensed spectrum when it's needed. When there is not enough data traffic to warrant using the unlicensed spectrum, LTE-U simply stops transmitting on the unlicensed spectrum, opening it up for others to use.



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