

PRESS RELEASE

TELEFÓNICA AND HUAWEI EXTENDS THE EVOLUTION OF LTE NETWORKS IN BOGOTÁ, MONTERREY AND RIO DE JANEIRO AFTER INITIAL DEVELOPMENTS IN MUNICH

Madrid, February 23rd, 2018.- Telefónica and Huawei have agreed on 4.5G evolution with first deployments in Bogotá, Monterrey and Rio de Janeiro. In this evolution to 4.5G, Telefónica is introducing 4x4 MIMO, 3x Carrier Aggregation (CA), 256-QAM and CloudAIR (Huawei's proprietary technology) into its networks.

With the increasing popularity of mobile video and online real-time gaming services, Telefónica smartphone data traffic keeps growing at a very fast pace. The 4.5G Evolution in the dense areas of these cities, which are flooded with massive amounts of data, will enhance mobile network capacity and performance, offering the ultimate user experience. With 4.5G Evolution, a downlink peak throughput up to 1Gbps can be achieved in the commercial network.

Together with Huawei, Telefónica plans to assess on 4.5G network technology firstly in the next few months within these selected cities to later consider 4.5G Evolution as well in other countries in 2018.

Juan Carlos García, Technology and Architecture Global Director at Telefónica, is confident in the abilities of the 4.5G Evolution. He said, "4.5G Evolution is a key step on the road to 5G. In the past two years, Telefónica and Huawei jointly achieved several industry first innovations under these technologies. Now it's time to transfer the innovation results to commercial, bringing the best user experience to our customers."

In order to test applications for the future 5G network today, Telefónica Deutschland and Huawei have implemented in Germany a 4.5G high-speed mobile radio network as part of their joint TechCity project, which achieves data rates of up to 1.65 GBit/s under laboratory conditions. For the field tests, the two companies have set up a 4.5G pilot network in Munich.

Besides the end user experience improvement, 4.5G Evolution will also enable new mobile services for Telefónica, such as HD video, WTTx, cellular IoT, critical communications as well as other new mobile services.

Edward Deng, President of Telefónica Global Account of Huawei, said "4.5G Evolution helps Telefónica enhance its businesses by introducing 5G technologies into existing LTE networks. The 5G-like services and the new business models that 5G will support can be quickly launched and developed".

New technologies of 4.5G Evolution, such as 4x4 MIMO, Carrier Aggregation, and 256 QAM, effectively improve network capacity. Specifically, 4x4 MIMO improves capacity, coverage and user experience without additional spectrum or base stations. Meanwhile, CloudAIR offers spectrum cloudification to allow different radio access technologies to share spectrum resources dynamically, which allows a

smooth network evolution. 4.5G Evolution will improve the MBB businesses today while keeping them on the road to a successful transition to 5G tomorrow.

About Telefónica

Telefónica is one of the largest telecommunications companies in the world by market capitalization and number of customers with a comprehensive offering and quality of connectivity that is delivered over world class fixed, mobile and broadband networks. As a growing company it prides itself on providing a differential experience based both on its corporate values and a public position that defends customer interests.

The company has a significant presence in 20 countries and 344 million accesses around the world. Telefónica has a strong presence in Spain, Europe and Latin America, where the company focuses an important part of its growth strategy. Telefónica is a 100% listed company, with more than 1.5 million direct shareholders. Its shares trade on the Spanish Stock Market and on those in London, New York, Lima, and Buenos Aires.

For more information: <http://www.telefonica.com>

About Huawei

Huawei is a leading global information and communications technology (ICT) solutions provider. Our aim is to enrich life and improve efficiency through a better-connected world, acting as a responsible corporate citizen, innovative enabler for the information society, and collaborative contributor to the industry. Driven by customer-centric innovation and open partnerships, Huawei has established an end-to-end ICT solutions portfolio that gives customers competitive advantages in telecom and enterprise networks, devices and cloud computing. Huawei's 180,000 employees worldwide are committed to creating maximum value for telecom operators, enterprises and consumers. Our innovative ICT solutions, products and services are used in more than 170 countries and regions, serving over one-third of the world's population. Founded in 1987, Huawei is a private company fully owned by its employees.

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