

End to end 5G for super, superfast mobile

November 24 2014

A collaboration between NEC Electronics Samsung and several academic centres in China and Iran, is investigating how software-defined cellular networking might be used to give smart phone users the next generation of super-superfast broadband, 5G. They provide details in the *International Journal of Communication Networks and Distributed Systems*.

Currently, the fourth generation of mobile phone connection technology, 4G, in as far as it has been adopted provides broadband-type connectivity for enabled devices such as smart phones, tablet computers, laptops and other gadgets through two standards: the Mobile WiMAX standard (first used in South Korea in 2007), and the first-release Long Term Evolution (LTE) standard (in Oslo, Norway and Stockholm, Sweden since 2009). Peak speeds were set in the standards at 100 megabits per second (Mbit/s) for mobile users and ten times that for static, domestic 5G users, 1 gigabit per second. 100 Mbit/s is three times faster than the earlier 3G system but users commonly do not see data transfer at such high rates, downloads are usually at best 10 Mbit/s.

As yet there is no single standard for 5G although various systems are being touted based on rebuilding the cellular networks to be super-efficient and exploiting different frequencies with their capacity for greater data rates. The hope is to be able to achieve download speeds of perhaps 10 Gbit/s.

Ming Lei of Samsung Research and Development Institute China, Lei Jiang of NEC Laboratories, both in Beijing are working with colleagues

at the University of Electronic Science and Technology of China in Chengdu, Beijing Jiaotong University and the University of Kurdistan. They have assessed the latest developments aimed at 5G systems and have proposed their own novel end-to-end (E2E) software-defined [cellular network](#) (SDCN) architecture which they say offers flexibility, scalability, agility and efficiency. Moreover, it will be sustainable for providers as well as profitable.

They are currently building a demonstration system that will allow them to utilise several promising technologies in their architecture for 5G including cloud computing, network virtualisation, network functions virtualisation and dynamic service chaining. The approach, they suggest could overcome bandwidth shortage problems, improve quality of service so avoiding delays and data loss, as well as reducing the vast number of error-prone network nodes needed for such a system.

More information: Lai, J., Jiang, L., Lei, M., Abdollahpouri, A. and Fang, W. (2015) 'Software-defined cellular networking: a practical path towards 5G', Int. J. Communication Networks and Distributed Systems, Vol. 14, No. 1, pp.89-105.

Provided by Inderscience Publishers

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