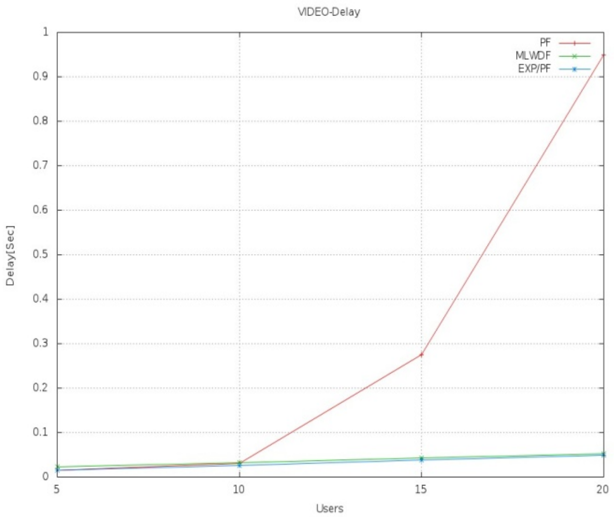

Figure 15: Video Delay

8. Conclusion

In this paper a new open source framework namely LTE-Simulator, has been implemented to study the output performance of LTE Cellular Network. Both for Developed and New Scenarios, of LTE network simulation and analysis of output performance are carried out.

New Error test model is implemented for checking the error caused during the transmission of data packets from transmitter to receiver.

Features covered by this simulator will allow both researchers and practitioners to test enhanced techniques for improving 4G cellular networks, such as new physical functionalities, innovative network protocols and architectures, high performance scheduling strategies, and so on. The open nature of this software can allow people interested in research in this field to contribute to the development of the framework, furnishing a reference platform for testing and comparing new solution for LTE systems. Effectiveness of the developed simulator has been verified with several simulations to study the scalability and the performance of the framework. In this paper we have verified all the six scenarios for both single cell and multi cell environments, we have developed one new scenario simulated and verified outputs. The specialty of this paper we can any number of users there is no limitation for only memory size has to large and as the number of users and simulations increases the time taken to perform simulations will increase.

9. Future Scope

- New cell topology Scenarios (micro cell, macro cell, Femto cell, etc) development, Implementation, simulation and outputs results verification for complex scenarios has to be carried out.
- New scheduling algorithms has to be developed, implemented and outputs results verification should be carried out
- New functionalities, algorithms for LTE protocol stalk like HARQ has to be developed for good spectral efficiency according 3GPP Specification.
- More New functionalities for protocol stalk layers (PHY, MAC.RLC, PDCP, and RRC) have to be developed according to 3GPP standards.

References

[1] C. Mehlf¨uhrer, M Wrulich, J.C. Ikuno, D. Bosanska, and M. Rupp, "Simulating the Long Term evolution physical layer," in Proc. Of the 17th Signal Processing Conf. EUSIPCO, Glasgow, Scotland, 2009

[2] J. C. Ikuno, M. Wrulich, and M. Rupp, "System level Simulation of LTE networks," in Proc. of IEEE Veh. Technol. Conf., VTC Spring, Taipei, Taiwan, May 2010.

[3] R. Basukala, H. M. Ramli, and K. Sandrasegaran, "Performance analysis of EXP/PF And M-LWDF in downlink 3GPP LTE system," in Proc. of First Asian Himalayas Int. Conf on Internet. AH-ICI, Kathmandu, Nepal, Nov. 2009.

[4] Gennaro Boggia, Pietro Camarada, "On accurate simulations of LTE Femto cells using an open source simulator" EURASIP J. Wireless Comm. Oct 10 2012.

[5] Alexandrescu, Modern C++ Design: Generic Programming and Design and Patterns Applied. Addison-Wesley Professional, 2001.

[6] "Video trace library," [OnLine] Available: http://trace.eas.asu.edu/.

[7] C. Wei, Z. Lili, and H. Zhiyi, "Second-order statistics of Improved Jakes' models for Rayleigh fading channels wireless Communications," in Proc.of Int. Conf. on Networking and Mobile Computing, WiCom, Shanghai, China, Sep. 2007, pp. 1108 –1111.

[8] M. S. Alouini and A. J. Goldsmith, "Area spectral efficiency of Cellular mobile radio Systems," IEEE Trans. Veh. Technol., vol. 48, no. 4, pp.1047 –1066, Jul. 1999.

[9] 3GPP, Tech. Specif. Group Radio Access Network Requirements for Evolved UTRA (E- UTRA) and Evolved UTRAN (E-UTRAN), 3GPP TS25.91

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