Abstract

The challenges of new communication architecture are to offer better quality of service (QoS) in internet Network. A large diversity of services based on packet switching in 3G network and beyond 3G leads dramatic changes in the characteristics and parameter of data traffic. Deployment of application server and resource server has been proposed to support both high data rates and quality of service (QoS) for Next Generation Network (NGN). One important
generalization of the Next Generation Network is, it’s a queue of network. It is expected that traffic in NGN will undergo both quantitative and qualitative changes. Such networks can model problems of contention that arise when a set of resources is shared. With the rapid transformation of the Internet into a commercial infrastructure, demands for service quality have rapidly developed. In this paper, few components of NGN reference architecture have been taken and system is evaluated in terms of queuing network. This paper gives a comparative analysis of three queuing systems FIFO, PQ and WFQ. Packet end to end delay and packet delay variation is evaluated through simulation. Results have been evaluated for a light load and heavy load condition. Result shows WFQ has better quality comparing with other techniques in a voice based services where as PQ a technique is better in Video based services. Simulation is done using OPNET.

References

- Balogh, T.; Medvecky, M.; “Performance evaluation of WFQ, WF2Q+ and WRR queue scheduling algorithms “,Telecommunications and Signal Processing (TSP), 2011 34th International Conference 2011 , Page(s): 136 - 140
- B.R haverkort, R Marie, G Rubino and K.S Trivedi, “ Performability Modelling: Techniques and Tools, Wiley, New York,2001
- “FIFO (First in First out)”, http://www.daxnetworks.com/Technology/TechDost/TD-032206.pdf
- G Bolch,S.Greiner,H.De Meer "Modelling and Performance evaluation with computer science Applications. Wiley, New York 1998.
- I Akyildiz, “Exact product form solution for queuing networs with blocking,” IEEE Trans Comput. 36(1), 122-25 1987.
- J.P Buzen “Computational algorithm for closed queuing networks with exponential servers” Commun. ACM
  - pp 527-531
- Kumar, S.; Kumar, P.R.; Performance bounds for queueing networks and scheduling policies IEEE Transactions Volume 39, Issue 8, Aug. 1994 pp 1600 – 1611
- Mong-Fong Homg; Wei-Tsong Lee; Kuan-Rong Lee; Yau-Hwang Kuo; An adaptive approach to weighted fair queue with QoS enhanced on IP network Proceedings of IEEE Region 10 International Conference on Volume: 1 2001 , Page(s): 181 – 186
- Mohammad Mirza Golam Rashed and Mamun Kabir” a comparative study of different queuing techniques in voip, video conferencing and file transfer” daffodil international university journal of science and technology, volume 5, issue 1, january 2010 pp 37-47.
- Neill Weilkinson “Next Generation Network, Services Technologies and Strategies” john willey and sons ltd pp 167-170.
- Network World,”Weighted Fair Queuing” http://www.networkworld.com/details/659.html
- Pascal Lorenz, “QOS in Next Generation Network. 26th International Conference Interfaces ITI 2004, June 7-10.
- P.J Burke,”output of a queuing system” page(s): 699-704.
- Thomas G. Robertazzi “Computer Network and System. 3rd edition, pages 20-85.
- Taddia, C.; Mazzini, G.; On the Jitter Performance of FIFO and Priority Queues Mixture IEEE 17th International Symposium on 2006, Page(s): 1 – 5
- Yu Ge, Winston seah “A method to efficiently integrate Internet Telephony calls signaling with dynamic resource negotiation. Computer Networks Vol 50, Issue 17 Pages 3334-3352.

**Index Terms**

Computer Science

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**Keywords**

QoS-Quality of service  NGN-Next generation network  FIFO  PQ  WFQ