JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue

JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

TO ANALYSE THE TRAFFIC PERFORMANCE IN MANET

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Abstract:

The MANET is used in different scenarios as in city streets, in big shopping malls, university campus, in conferences and for specific military purposes having the mobility and scalability. There is need to study the routing protocol performance suitable in different scenarios of scalability and mobility. Researcher have carried out investigation on MANET routing protocols performance under different MANET scenario and compared the routing protocols while varying various parameters. As many routing protocols have been proposed for MANET, but none of them has a good performance in all scenarios due to different variance. The variance can be in network area size, node scalability, network traffic load, node mobility and mobility pattern. Considering these variances researcher has performed simulation experiments and results are summarized in detail in chapters.

The research describes in this dissertation focused on some MANET routing protocols performance and their comparison for a scenario point of view. The performance of a protocol may be good for throughput on the cost of other performance metrics. One has to understand the required bit rate as per application requirement and have to select proper routing protocol. The DSR and TORA are not good when an application required a great amount of connection like number of nodes. AODV operates well for moderate size of network. OLSR can fail to perform if only a small part of nodes in a network send and the rest only receive. For AODV and DSDV, delay and routing load increases if network area size increases and throughput decreases. One experiment is not going to fulfil the requirement of another scenario. One has to understand the performance of MANET through simulation as scenario-to-scenario MANET performance can varies.

Keywords: Introduction, Peer to Peer networking, Taguchi Method, Performance metrics for evaluation

I. INTRODUCTION:

Peer-to-peer networking is common on small local area networks (LANs) particularly home networks. Both wired and wireless home networks can be configured as peer-to-peer environments. Computers in a peer-to-peer network run the same networking protocols and software. Peer networks devices are often situated physically near one another and typically in homes, small businesses, and schools. Some peer networks, however, utilize the Internet and are geographically dispersed worldwide. Home networks that use broadband routers are hybrid peer-to-peer and client-server environments. The router provides centralized Internet connection sharing, but files, printer, and other resource sharing are managed directly between the local computers involved.

Internet-based peer-to-peer networks became popular in the 1990s due to the development of P2P file-sharing networks such as Napster. Technically, many P2P networks are not pure peer networks but rather hybrid designs as they utilize central servers for some functions such as search.

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performance in all scenarios due to different variance. The variance can be in network area size, node scalability, network traffic load, node mobility and mobility pattern.

There is a need to stress the storage system with a large number of requests. And the streams of requests are to be reproducible such that comparisons among different storage systems are fair. To satisfy these two requirements, traces from an operational P2P network were collected instead of just generating synthetic traces. It can be noticed that running the cache with real P2P clients would not give us enough traffic to stress the storage system, nor would it create identical situations across repeated experiments with different storage systems because of the high dynamics in P2P systems.

Table-6.1: Example for L_9 Orthogonal Array

$L_9(3^4)$Control Factors					
Experiment No.	Independent Variables				Performance Parameter Value
	Variable1	Variable2	Variable 3	Variable 4	
1	1	1	1	1	P1
2	1	2	2	2	P2
3	1	3	3	3	P3
4	2	1	2	3	P4
5	2	2	3	1	P5
6	2	3	1	2	P6
7	3	1	3	2	P7
8	3	2	1	3	P8
9	3	3	2	1	P9

Above table clearly signifies the Analysis of Adhoc Network and their respective performance in respect of parameter value as per data set collected. The independent variables are 4 in number and having different values as per their control factors. Total 9 experiments has been done to evaluate the performance in parameter values of their respective control factors. Such analysis clearly detects the exact performance of wireless communication using Adhoc Networking.

Taguchi Method for analysis

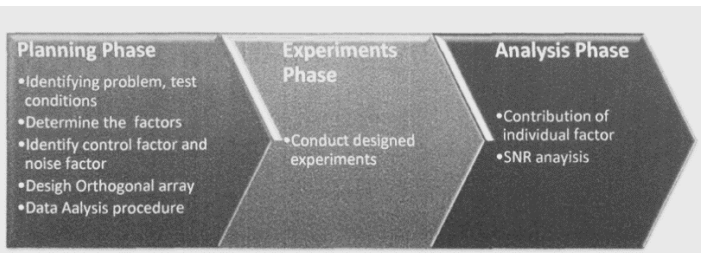

Fig 1: Activity in Taguchi Method

Taguchi method basically includes the three phases of activity which helps to analyse the performance of data sets with in wireless communication. It also results in the better accuracy of upto 92% as a whole.

III. Performance matrices for evaluation

To evaluate the performance, we use number of traffic generators then measure the load on the cache in terms of memory usage and CPU utilization with and without connection splicing. The logs show a reduction in the numberof threads created to manage connections and the memory used. The number of threads is reduced because upon splicing two TCP connections together, the kernel closes the local TCP sockets and directly forwards packets inside the kernel space, which relieves pCache from keeping two forwarding threads. A sample CPU utilization of 64 traffic generators with and without connection splicing.

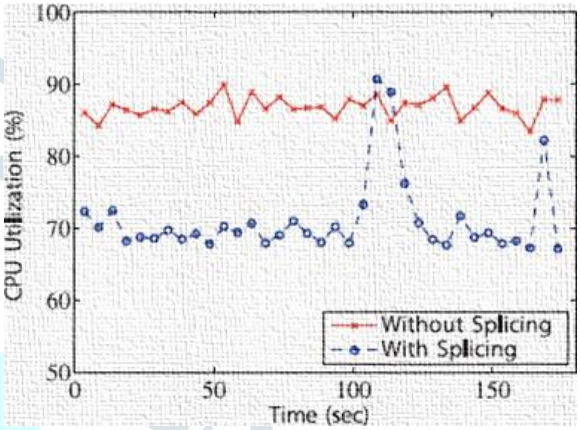

Fig 2: CPU Utilization with and without splicing

The above figure clearly shows that splicing reduces the CPU utilization by at least 10 percent. Furthermore, the experiments show that, without connection splicing, the CPU load increases when the number of traffic generators increases. However, with connectionsplicing, the CPU load is rather constant.

CONCLUSION:

In the study, a scattered data sharing method is proposed to both planned as wellas to unstructured P2P network. This P2P creates a two-tier hierarchy for improving the competence in terms of correct fast service. The data sharing and query reply are taken care when distributed. The distributed P2P network gives a good file sharing methodology and fast assistance among the networks. The three methods such as distributed, load balancing, file sharing and cooperative caching are used in this chapter for giving the better quality of traffic management on the Internet.

the performance gain from the connection splicing technique is evaluated, which is designed to tunnel non-P2P traffic through the cache without overloading it. To fully stress the pCache, we use traffic generators to create many TCP connections throughthe cache, where each traffic generator sends as fast as possible. We vary

the number of traffic generators. We measure the load on the cache in terms of memory usage and CPU utilization with and without connection splicing. The logs show a reduction in the numberof threads created to manage connections and the memory used. The number of threads is reduced because upon splicing two TCP connections together, the kernel closes the local TCP sockets and directly forwards packets inside the kernel space, which relieves pCache from keeping two forwarding threads.

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