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Minimiziing the Volume of Traffic in Truck Exchange Communication Network in Nigeria

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ABSTRACT

This paper focuses on Reduction of Volume of Traffic in Truck Exchange Communication Network in Nigeria. During the data collection procedure, the volume of traffic in truck exchange was measured for some period of times as expressed in terms of unsuccessful calls. This procedure can also be applied to primary exchange to further solve problem of inter connectivity between the major carriers like Nitel and other Global system for mobile communication such as MTN and Airtel. Traffic is phenomenon relating to the movement of object from one place to another. The result data collected were from Enugu Centre. In this paper global positioning system (gps) were deployed which has the ability to measure coordinates and elevations. Raytracer were also incorporated which record the entire traffic network

Keywords : Raytracer, Truck Exchange, Operating and Maintenance Centre

I. INTRODUCTION

The limitation of transmission channels in truck communication system poses a great problem such as area of power control, handover procedures and discontinuous transmission network at a particular period in time.

The measurement and analysis of truck exchange with Enugu Centre (ENUSC) is aimed at analyzing the measurement taken at exchange. It is very important that adhoc information is made available at all time. Before now traffic measurement were being done manually at the carrier Rooms by using headphone to monitor at the channel point for traffic [1]. This method is almost obsolete and error hidden, it is therefore important to have a system with a minimum error in traffic measurement. This research is therefore designed to analyze and address the problem. Associated with traffic measurement and analysis in the Nigeria telecommunication industry which has been experience at certain period when there is need for system auditing [2]. It is pertinent at this point to analyze communication in order to ascertain. The true measure of telecommunication means communication at a distance [3]. It has been stressed now and again by eminent scholar that telecommunication is the engine room of a vibrant economy. Traffic measurement is a product of its measurement and analysis. It is interesting to note that traffic measurement and analysis is also important in railway, seaport and road management. Tele traffic in this paper means the movement of calls and message from one location to another which means it is from some to destination through the carrier processes.[4]

Transmission Network

The Natural Transmission Network was fashioned to have two major routes such as toll and truck exchanges that routes through the following media macrowaves Radio link in the range of 2-6 GH_Z bank, coaxial cable link witching in the range 450 to 200MHz band and jelly filled cable directly buried.

II. METHODS AND MATERIAL

The aim of this paper is to unfold the best method of carrying out system forecasting in the area of equipment development and expansion. It also looked

at the interconnectivity problems between private operators and the major carriers in terms of call origination and termination as to provide data for the telecommunication clearing house. It provides solution to the prediction of peak period for the different exchanges in different localities bringing out the viability of such exchanges. It also gives a clear picture on the bottle neck encountered in deciding the best way to achieve maximum answer seizure ratio and call completion rate on the different network. The traffic data used were obtained from the ray tracers operation and maintenance terminals.

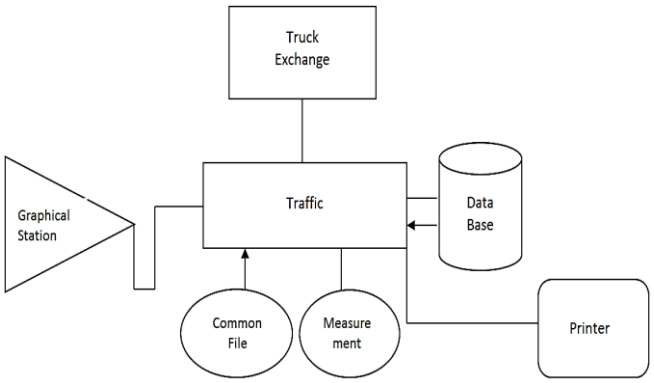

Figure 1. block diagram of truck exchange.

Traffic Measured At Enugu Secondary Center
Date of Measurement :- 20/10/2013
Measurement Time/Interval :-

Table 1 : Shows the traffic data collection point measurement in an electronic Trunk Exchange of Enugu Secondary Centre.

TIME	**TRUCKS**		**CALLS**				**DERL**
	Provided	**Faculty**	**Attempt**	**Busy**	**Answered**	**No reply**	
A	**B**	**C**	**E**	**G**	**H**	**I**	**L**
0.00-01.00	246	0	1227	113	202	155	310
01.00-02.00	184	0	2454	535	555	702	1046
02.00-03.00	2352	47	1862	414	652	544	1104
03.00-04.00	246	0	628	113	141	204	213
04.00-05.00	122	0	1445	317	513	346	706
05.00-06.00	3156 804	1082 124	4037 542	1337 128	1398 157	787 128	2622 348
06.00-07.00	586	31	2505	339	874	519	1212
07.00-08.00	928	78	1434	303	414	334	1032
08.00-09.00	1516	217	42979	864	3436	4754	6888
09.00-10.00	122	0	141	32	56	32	71
10.00-11.00	494	47	427	72	104	69	249
11.00-12.00	649	310	1137	173	216	163	418
12.00-13.00	618	0	426	100	106	78	156
13.00-14.00	369	0	550	107	194	97	179
14.00-15.00	494	0	553	199	174	113	284
15.00-16.00	308	0	631	111	171	136	299
16.00-17.00	62	15	441	37	86	139	189
17.00-18.00	45	0	0	0	0	0	0
18.00-19.00	30 556	21 186	136 310	15 16	14 78	21 129	39 126
19.00-20.00	60	0	0	0	0	0	0
20.00-21.00	60 65	0 0	0 216	0 14	0 23	0 153	0 80
21.00-22.00	65	0	0	0	0	0	90
22.00-23.00	91	91	0	0	0	0	0
23.00-24.00	618 897	0 217	2458 1202	93 414	686 410	947 254	962 1107
24.00-25.00	183	0	175	23	77	51	95
25.00-26.00	9	5	39	213	0	9	10
26.00-27.00	15	13	47	3	3	9	5
27.00-28.00	18	15	2	0	1	0	0
28.00-29.00	15	9	103	30	12	22	28

III. RESULTS AND DISCUSSION

Data Presentation

The call traffic data collection which include all provided, Fault Attempt, Busy, Answered, No reply and Deri shown in table 1. The table shows the data scoped from the traffic measured at the transit exchange for some period of time. The choice of putting them in table is to easy the task of calculation and for easy understanding and analysis.

IV. CONCLUSION

In this paper, it was observed from traffic data measured, that heavy traffic occurs Mostly in Enugu from 9:00 – 11:00 as a result of economics and social activities. It was also found that the Genetic algorithm is a suitable optimization tool for Yagi-Uda antenna. A gain of 14.02dB is obtained from the Genetic algorithm for an 8-element Yagi-Uda antenna showing a higher gain that the standard 8 element Yagi Uda antenna. This gain optimized antenna shows a gain ration 8.62dB and almost an 8 percent pain bandwidth with a sharper drop in the lower part of frequency band.

V. REFERENCES

[1] Ferrel g, introduction to telecommunication principle, Kinston group publisher London.

[2] Robert g.n(1993)telecommunication systems, mcgraw hill Ny,London

[3] Siemens Review journal (1994),theory of network planning and forecasting

[4] Titi o.e(1999) A new approach to telecommunication admistration (p10-37).

[5] Nauwealers,B.K.J.C., and De Capelle, A.R.E., Integrals for the Mutual Coupling between Dipoles or Between Slots (1988); with or without Complex Conjugate? IEEE Transaction On Antennas And Propagation, Vol. 36, No. 10.

[6] Pistolkors, A.A, The radiation resistance of beam antennas (1929), Proc. IRE, Vol.

[7] Philip, R.G., Bernhard, S., and Gabriel, M. R., A 24-GHz High – Gain Yagi Uda Antenna Array (2004), IEEE Transactions On Antennas And Propagation, Vol. 52, No. 5.