

Comparative Evaluation of Available Bandwidth Estimation Tools (PRTG and OAUMENTMON) in a Campus-Wide Area Network.

Azeez Nureni Ayofe^{1*}, O. Osunade², Azeez Raheem Ajetola¹, Sulaimon Bashir Adebayo³, and Funsho Abdulwahab Atanda²

¹Department of Maths and Computer Science, College of Natural and Applied Science, Fountain University, Osogbo, Osun State, Nigeria.

²Department of Computer Science, University of Ibadan, Nigeria.

³Department Computer Science, Faculty of Science, Al-Hikmah University, Ilorin, Kwara State, Nigeria.

E-mail: nurayhn@yahoo.ca *; o.osunade@mail.ui.edu.ng; ajeazeez@yahoo.com; bashirsulaimon2003@yahoo.co.uk; abdulwahabfu@yahoo.co.uk

ABSTRACT

In recent years, there has been a strong interest in measuring the available bandwidth of network paths. Several methods and techniques have been proposed and various measurement tools have been developed and evaluated. However, there have been few comparative studies with regard to the actual performance of these tools. This project presents a study of available bandwidth measurement techniques for both PRTG and OAUNETMON and undertakes a comparative analysis in terms of accuracy, intrusiveness and response time of active probing tools. Finally, measurement errors and uncertainty of the tools are analyzed and overall conclusions were made.

(Keywords: network paths, comparative study, available bandwidth, intrusiveness, response time, probing tools)

INTRODUCTION

Active bandwidth estimation tools can not only provide network operators with useful information on network characteristics and performance, but also can enable end users (and user applications) to perform independent network auditing, load balancing, and server selection tasks, among many others, without requiring access to network elements or administrative resources.

Application users on high-speed networks perceive the network as an end-to-end connection between resources of interest to them. Discovering the least congested end-to-end path to distributed resources is important for optimizing network utilization. Therefore, users and

application designers need tools and methodologies to monitor network conditions and to rationalize their performance expectations.

Several network characteristics related to performance are measured in bits per second: capacity, available bandwidth, bulk transfer capacity, and achievable TCP throughput. Although, these metrics appear similar, they are not, and knowing one of them does not generally imply that one can say anything about others.

Bandwidth estimation tools face increasingly difficult measurement challenges as link speeds increase and network functionality grows more complex. Consider the issue of time precision: on faster links, interval between packets decrease, rendering packet probe measurements more sensitive to timing errors. The nominal 1 μ s resolution of UNIX timestamps is acceptable when measuring 120 μ s gaps between 1500B packets on 100 Mb/s links but insufficient to quantify packet inter arrival time (IAT) variations of 12 μ s gaps on GigE links.

The research community is developing a set of metrics and techniques for active bandwidth measurement. Many of them are well understood and can provide accurate estimates under certain conditions.

Also, some partial measurement and evaluation studies of bandwidth estimation tools have been published but my attention has been drawn to the lack of publicly available comprehensive and comparative experimental results.

As we performed test over PRTG and OAUNETMON, comparative analysis procedures were being developed. Among these, a number of

generic criteria were highlighted. These criteria have been classified into two groups: a first set of criteria specified as simple numerical and scalar metrics that provide a partial comparison of tools performance, a second set of criteria that provide comparative evaluation of tools performance.

The first set includes metrics that can be useful to quickly choose or discard some techniques and tools according to simple constraints such as required time or allowed probe bandwidth, some of these metrics are the following:

- Total probe traffic generated;
- Maximum attainable accuracy;
- Total estimation time;
- Traffic IN;
- Traffic OUT.

The second set of criteria for comparative analysis between different techniques includes but is not limited to the following:

- Accuracy: maximum accuracy for a fixed time, maximum accuracy for a limited amount of probe traffic, dependency of accuracy on estimation time, and dependency of accuracy on probe traffic volume.
- Consistency of estimates
- Efficiency: required network load for a given accuracy, and required network load for a given estimation time.
- Estimation time: required time for a given accuracy.
- Dependency of accuracy, efficiency and estimation time on overall network load as well as overall machine (both sender and receiver) load.

PRTG and OAUNETMON monitor network and bandwidth usage as well as various other network parameters like memory and CPU usages, providing system administrators with live readings and periodical usage trends to optimize the efficiency, layout, and setup of leased lines, routers, firewalls, servers, and other network components.

This project provides a comparative study of two Available Bandwidth (ABw) techniques (PRTG and OAUNETMON) taking into account the

statistical conditions of the ABw, several improvement of OAUNETMON in terms of accuracy and efficiency, and a performance evaluation of OAUNETMON under a DiffServ environment.

The same study was carried out for PRTG and the results obtained were compared with OAUNETMON and recommendations were made only to know which among the two to choose when a bandwidth is to be measured in order to obtain accurate, reliable and up-to-date results.

RESEARCH JUSTIFICATION

The following are the contributions of this research work in particular:

- A well understood bandwidth analysis could be used to build multicast routing trees more efficiently and dynamically. Ideally, multicast routing trees would be built so that packets travel along a tree that minimizes duplicate packets and latency while maximizing bandwidth;
- To provide proactive problem detection, efficient troubleshooting and rapid problem solution concerning bandwidth especially when there is the need to improve on the low bandwidth of a network;
- To determine which among the tools is good for bandwidth measurement with a mean of getting detail results in terms of accuracy, reliability, intrusiveness and good response time;
- To quickly and easily set up and run a monitoring station for networks. With just a few mouse clicks a person can log the amount of data flowing through routers and leased line, monitors CPU utilization, analyze the traffic by type, or check disk space utilization;
- To monitor the bandwidth usage of leased lines, routers, and firewalls via SNMP, packet sniffing, or NetFlow;
- To be able to obtain a graphical overview as well as detail statistics of network usage;

- To have opportunity of storing and analyzing traffic in a switched network such as Fast Ethernet and Gigabit Ethernet.

RESEARCH AIM AND OBJECTIVES

The aim of this project work is to carry out a research work on the measurement of comparative evaluation of available bandwidth estimation tools in a campus Wide Area Network (PRTG and OAUNETMON).

The objectives of this research work include the following:

- To ease the deployment of platforms that takes the advantage of the huge amount of available experimental resources to provide a solid experimental basis for research on active bandwidth estimation.
- Assess to what extent current bandwidth estimation tools can be used as basis for providing a bandwidth estimation service for applications as well as networks operation.
- To give aggregate, detailed overview about the traffic patterns on the network of each tool and to recommend the one that is more acceptable in terms of intrusiveness, reliable and consistent.
- To evaluate available bandwidth measurement tools (PRTG and OAUNETMON) and undertake a comparative analysis in terms of accuracy, intrusiveness and response time of active probing tools.
- Know the challenges facing a low bandwidth network and to probably proffer suggestions on how best to manage such to give a better performance.

RESEARCH METHODOLOGY

To compare the performance of the measurement tools studied; OAUNETMON and PRTG, a set of experiments were carried out on an isolated network that comprises three Cisco 1700 series routers that is SNMP enabled connected through

FastEthernet links. The network built for tests, comprise sender and receiver hosts, belonging to different LANs on which several cross-traffic sources are active.

The used hosts are equipped with Debian Linux and have the same hardware configuration. A couple of hosts are used as the sender and the receiver part of the measurement tool, while the other hosts are used as the source and the destination for the cross-traffic. The choice of an isolated network is motivated by the need to totally control the network under test.

The methodology adopted so far include the following:

- An extensive review of relevant and related literatures on previous work done in projects comparing bandwidth measuring tools;
- Running of the two bandwidth measuring tools on the same network with equal number of system;
- Implementation of these measuring tools (OAUNETMON and PRTG) on the same operating system;
- Conducting two series of reproducible laboratory test in a fully controlled environment using two different sources of cross-traffic;
- Experimenting on high-speed paths in real networks where I had a complete knowledge of link capacities and had access to SNMP counters for independent cross-traffic verification;
- Obtaining the final results for both the OAUNETMON and PRTG after a consistent and reliable period to avoid doubt in the statistical value and graphical interpretation values obtained;
- Comparing the accuracy and other operational characteristics of the tools, and analyze factors impacting their performance;
- Then, based on the data collected from the above studies, recommendations and suggestion on improving the performance of the bandwidth networks will also be made.

Our research takes one step further the testing and comparing publicly (PRTG and OAUNETMON) for available bandwidth estimation. First, I conducted two series of reproducible laboratory tests in a fully controlled environment using two different sources of cross-traffic. Second, I experimented on high-speed paths in real networks where there is a complete knowledge of link capacities and had access to SNMP counters for independent cross traffic verification. Finally, I compare the accuracy and other operational characteristics of the tools, and analyze factors impacting their performance.

OVERVIEW OF PRTG - PAESSLER ROUTER TRAFFIC GRAPHER

PRTG Traffic Grapher is an easy to use Windows application for monitoring and classifying bandwidth usage. It provides system administrators with live readings and long-term usage trends for their network devices. PRTG is mainly used for bandwidth usage monitoring, but may also be used to monitor many other aspects of a network such as memory and CPU utilization.

With PRTG Traffic Grapher the user receives comprehensive bandwidth and network usage data that helps to optimize the efficiency of the network. Understanding bandwidth and resource consumption is the key to better network management: Avoid bandwidth and server performance bottlenecks; Find out what applications or what servers use up your bandwidth; Deliver better quality of service to your users by being proactive; Reduce costs by buying bandwidth and hardware according to actual load.

The Freeware Edition of PRTG Traffic Grapher is completely free for personal and commercial use and may be downloaded for free. PRTG Traffic Grapher is designed to run on a Windows machine in your network for 24 hours every day, and constantly records the network usage parameters. The recorded data is stored in an internal database for later reference. Using an easy to use Windows interface you can configure the monitored sensors as well as create usage reports. For remote access PRTG Traffic Grapher comes with a built-in web server to provide access to graphs and tables.

All common methods for network usage data acquisition are supported: SNMP: Simple Network Management Protocol is the basic

method of gathering bandwidth and network usage data. It can be used to monitor bandwidth usage of routers and switches port-by-port as well as device readings like memory, CPU load etc. Packet Sniffing: With its built-in Packet Sniffer PRTG can inspect all network data packets passing the network card to calculate the bandwidth usage. NetFlow: The NetFlow protocol is supported by most Cisco routers to measure bandwidth usage.

How to Choose a Method of Data Acquisition:

There are four methods of Data Acquisition when using PRTG for measuring bandwidth. They are:

- SNMP Monitoring;
- Packet Sniffing;
- Netflow Monitoring;
- Latency Monitoring.

PRTG Network Monitor System Architecture:

PRTG Network Monitor consists of three main parts:

PRTG Core Server: The central part of a PRTG installation is the "Core Server" that includes data storage, web server, report engine and notification system.

- PRTG Probe: A "Probe" performs the actual monitoring. It receives its configuration from the Core Server, runs the monitoring processes and delivers monitoring results back to the Core Server. A Core Server can manage an unlimited number of Probes in order to achieve multi location monitoring.
- PRTG Web Interface: The user interface is completely web-based. The users access the configuration and monitoring results using a standard web browser.

Core and probe are Windows services which are run by the Windows system without the requirement for a user to be logged in.

The monitoring system runs on the Linux operating system. Monitoring was done using open source IPTraf software. A wrapper script was used to start the IPTraf program with suitable command line arguments to sort the output of IPTraf based on IP address and protocol and it creates suitable inputs for PRTG and Webalizer.

After starting up IPTraff and initializing some variables, the wrapper script is responsible for processing the summary information from IPTraff into suitable log formats both for PRTG and Webaliser. The software aims at doing the processing very fast and as such it is not complicated. In order to maintain system stability and minimize memory leaks, the software restarts every 24 hours. Other script used are run_prtg, prt看_reader, run_webaliser and webaliser_caller.

OAUNETMON OVERVIEW

The developed non intrusive traffic monitoring and analysis system (OAUNETMON) is different from similar tools because it is non intrusive. It uses open source software and has the capability to show traffic information on Global, host and protocol basis. It can keep historical information about network usage. It can also give a graphical overview as well as a detailed statistics. It has the ability to monitor and analyze traffic in a switched network such as Fast Ethernet and Gigabit Ethernet. Apart from monitoring and analyzing network traffic, OAUNETMON can also carry out proxy log analysis using Webalizer.

The Obafemi Awolowo University Network Monitoring (OAUNETMON) Experiment was conducted with the aim of monitoring live network without adversely imparting on the performance and also to identify and monitor traffic patterns (both speed and volume) on the basis of host (IP address), protocol and time of the day.

For this experiment, open source software was used for the reason of ease modification and cost. On a high-speed network, the system may not be able to handle all packets in time. If the processing speed or the system itself operates at speed insufficient to capture all packets, the analysis result is unreliable.

The project was to set up a single monitoring station that will monitor all the traffic. The figure below shows the architecture of OAUNETMON as it was used to monitor the traffic on the University of Ibadan Network.

RESULTS AND DISCUSSION

The results obtained for both the PRTG and OAUNETMON are presented in the tables below.

For each of the tools there is a corresponding value for the following:

- i. bandwidth Traffic IN (kbyte and kbit/second);
- ii. Bandwidth Traffic OUT (kbyte and kbit/second);
- iii. Sum of Bandwidth Traffic IN and Bandwidth Traffic OUT (kbyte and kbit/second);
- iv. Coverage (%);
- v. Total volume for parameters from i-iv above;
- vi. The Average for parameters from i-iv above.

Each of the above parameters are properly observed and studied into detail for each of the tools and conclusions were drawn from their characteristics.

It is important to note that all the hardware requirements for both tools were the same in order to obtain dependable and consistent results on the same network.

For OAUNETMON the results were obtained at every five (5) minutes interval for a complete day. But for PRTG, the results obtained indicate a daily values for each of the parameters stated above.

Hence, the Totals for 10-June-08 from 9:30 PM to 11-June-08 till 9:30 PM indicate a daily average as it was obtained for PRTG which is on daily basis. The values obtained for each of the tools were used to determine the bandwidth requirements for the network.

RESULTS OBTAINED

The discussion on the results obtained from these experimental works was analyzed under the following criteria:

- i. The Network Coverage characteristics of each of the tools;
- ii. Daily results characteristics;

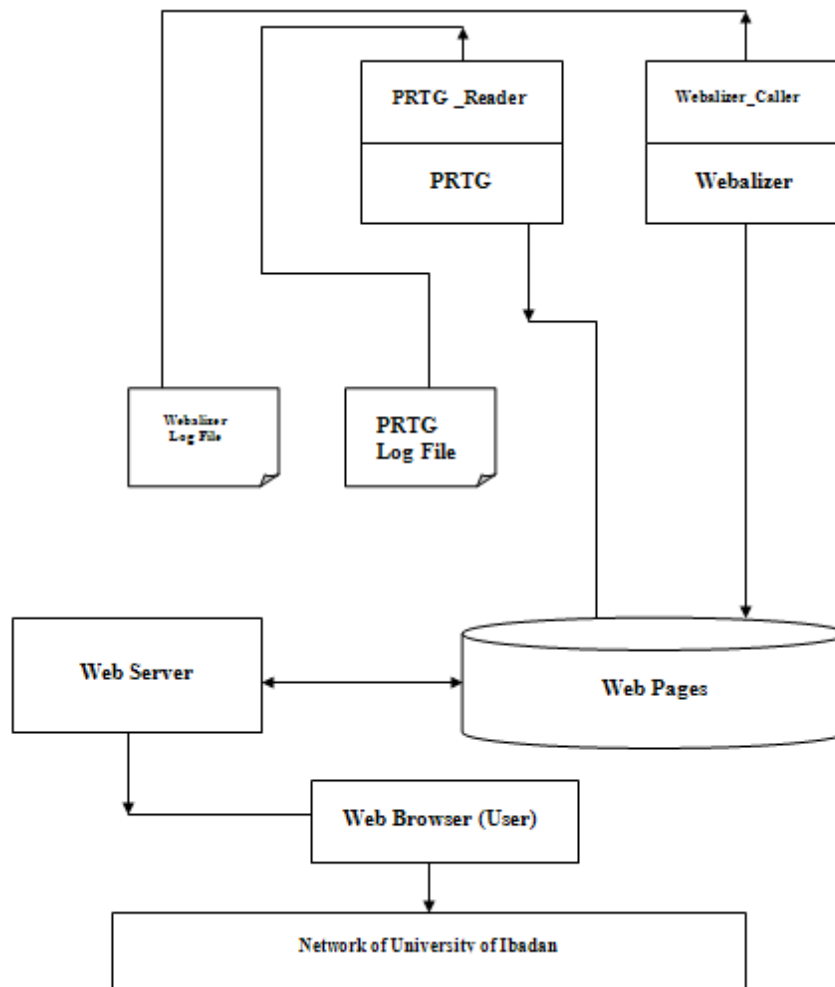


Figure 1: Design Architecture of PRTG.

- iii. Speed required for implementing each of the tools;
- iv. Speed required in generating the output;
- v. Code size and
- vi. Bandwidth requirement for the network the tools analyzed.

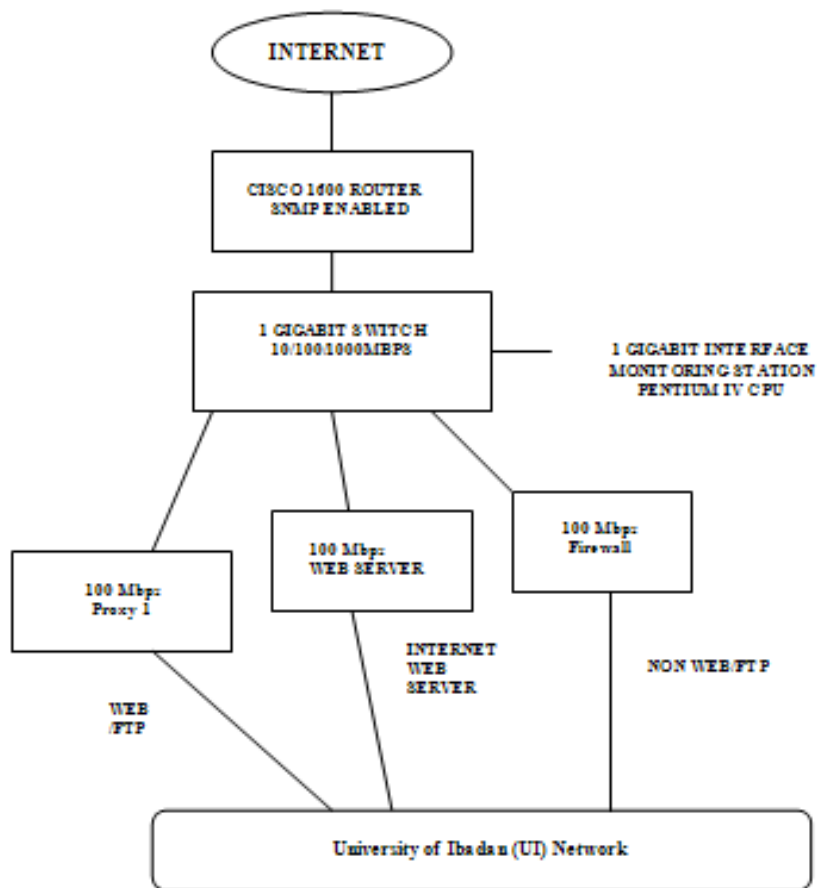
The Network Coverage: The network coverage value tells whether the monitoring was on all the time and covered the complete time period.

From the table above, the result shows that OAUNETMON has nearly 100% network coverage unlike PRTG with poor network coverage characteristics. This feature

undoubtedly shows efficiency and reliability in OAUNETMON which is a characteristic to rely on for any bandwidth measuring tool in order to obtain accurate result.

Daily Result Characteristics: The daily results obtained shows that PRTG did not give any result for few days. In OAUNETMON, this did not arise. For each of the day, the results were fully and the required data were recorded. Daily Result Characteristics indicates that OAUNETMON is still far better in relying on the precision of the result unlike PRTG which omitted some results in most of its daily readings.

Speed Required for Implementing the Tools: When both PRTG and OAUNETMON were both implemented on the network, it was clearly



Oaunetmon Traffic Monitoring Setup at University of Ibadan

Figure 2: Design Architecture of OAUNETMON.

observed and noticed that OAUNETMON runs faster; two times the time required by PRTG to be implemented on the same network.

Speed Required in Generating the Output: Of course, when the speed used by a particular tool is faster than the other, what this mean invariably is that the time when the output will be generated shall definitely be different. OAUNETMON takes the opportunity of having a better running time to generate its result in a better time than PRTG. It was noticed that 3 minutes after OAUNETMON would have started generating its results that PRGT will just begin displaying its result on the same network.

Code Size: PRTG has a better advantage over OAUNETMON in this regard. The size of code required for implementation on the network for

PRTG is 7,302kb whereas OAUNETMON has 8,323kb.

Bandwidth Requirement: There are two approaches to getting bandwidth in this case:

- i. Comparing the average Total Volume Bandwidth obtained for both the PRTG and OAUNETMON;
- ii. Comparing the Random Selection of Bandwidth obtained for PRTG and a daily bandwidth obtained for OAUNETMON.

Comparing the average Total Volume Bandwidth:

a. For OAUNETMON: This is an important parameter for determining the efficiency,

dependability, accuracy and precision of any bandwidth measuring tool.

From 10-June-08 9:30 pm to 11-June-08 9:25pm-9:30pm as shown on the statistical table obtained for OAUNETMON and which was obtained at 5 minutes interval the following values were obtained:

- i. Total Volume for Bandwidth Traffic IN (Kbyte) = 2, 202,013.789
- ii. Total Volume for Bandwidth Traffic OUT (Kbyte) = 933, 737.354

Therefore, the amount of bandwidth required in this case is calculated as follow:

Bandwidth = (Total Volume for Bandwidth Traffic IN (Kbyte)/8) Mbps
 = (2,202,013.789/8) Mbps
 = 275251.723625 Mbps is the Bandwidth required using OAUNETMON.

b. For PRTG: From 23-May-08 to 01-Mar-08, the following results were obtained from PRTG:

- (i) Total volume for Bandwidth Traffic IN (Kbytes) = 484,585,022.150
- (ii) Total volume for Bandwidth Traffic OUT (Kbytes) = 413,246,247.382

To calculate the equivalent bandwidth requirement as we have in OAUNETMON for PRTG, the following procedures are to be followed:

Bandwidth/per day = Total volume for bandwidth Traffic IN (Kbyte)/Total number of days
 =484,585,022.150/74
 =6548446.24527

Hence, the bandwidth required by PRTG = (6548446.24527/8) Mbps = 818555.78 Mbps

From the calculation shown above, it is clear that the bandwidth required when OAUNETMON was used is better compare to bandwidth required by PRTG.

The bandwidth required by the OAUNETMON is 275251.723625 Mbps while the bandwidth required by the PRTG is 818555.78 Mbps which is almost four times bandwidth required by the OAUNETMON.

Comparing the Random Bandwidth Values:

For OAUNETMON, from the result shown above, it is noted that the Total Volume for the Bandwidth Traffic IN is 2,202,013.789 Kbyte and Total Volume for the Bandwidth Traffic OUT is 933,737.354Kbyte. But for the PRTG, since there is more than a day value for Total Volume of Bandwidth Traffic IN and Bandwidth Traffic OUT, the analysis is therefore base on randomly selection of values.

For example, on 23rd May,2008 the Bandwidth Traffic IN is 2,106,288.017Kbyte and the Bandwidth Traffic OUT is 1,185,471.328Kbyte for PRTG and this is better than OAUNETMON. But on 30th April,2008 and 29th April,2008 the Bandwidth Traffic OUT for PRTG are 4,585,835.226Kbyte and 2,887,869.427Kbyte respectively. In this case, the Bandwidth requirement for PRTG is poor when compare to OAUNETMON.This approach shows that neither OAUNETMON requires less/higher bandwidth nor PRTG requires such. There is no definite conclusion with this approach.

Finally, with analysis of the two approaches to bandwidth requirement of the two bandwidth measuring tools, it is noted that OAUNETMON is better in bandwidth requirement than PRTG.

The table below gives a better interpretation of the above parameters used in analyzing the differences between the PRTG and OAUNETMON.

Table 1: The Characteristic Features of PRTG and OAUNETMON as Demonstrated on the Network.

	NETWORK COVERAGE (%)	SPEED OF RUNNING SECONDS	RATE OF GENERATING OUTPUT	CODE SIZE (KB)	DAILY RESULT FEATURES	BANDWIDTH REQUIREMENT
PRTG	91	57	Slower	7,302	Omission of results were noticed	Higher
OAUNETMON	99	26	Faster	8,323	Full results	Lower

SUMMARY

Some partial measurement and evaluation studies of bandwidth estimation tools have been published; nonetheless, my attention has been drawn to lack of publicly available comprehensive and comparative experimental results. Additionally, there is lack of common and consistent practices and procedures to test available active bandwidth measurement tools.

With this new research carried out on comparative analysis of both PRTG and OAUNETMON, it is therefore a great advantage for both the network operators and user applications to make use of a better tool in order to get a better network auditing load balancing and a good server selection as well as the realization of other aims within which this research was carried out.

CONCLUSION

We have presented the systematic comparative analysis of active bandwidth estimation tools (PRTG and OAUNETMON) performed over a broad range of tools, scenario (both emulated and real) as well as experimental conditions, which results are publicly available.

Techniques tools ton estimate capacity, available bandwidth and bulk transfer capacity have been studied jointly. Furthermore, we have tried to analyze and to explain errors and uncertainties observed on the tools we have studied.

The results obtained shown that OAUNETMON is the least intrusive, reliable, consistence and dependable and in some cases can be very slow through with better accuracy and precision when compare to PRTG.

Finally, OAUNETMON offers the best performance with regard to the criteria studied:

- i. The Network Coverage characteristics of each of the tools;

- ii. Daily results characteristics;
- iii. Speed required for implementing each of the tools;
- iv. Speed required in generating the output;
- v. Code size and
- vi. Bandwidth requirement for the network and the tools analyzed.

The study presented in this project was on the small number of criteria that seemed to be the most important. However, this study must be completed by considering other parameters and by evaluating the measurement tools on real networks settings.

As a result from the tests carried out, a number of failure conditions for the analyzed tools have been identified, as well as the dependency of the estimates accuracy on factors such as system load and network properties.

FUTURE WORK

We have seen a great challenge to this project; apart from making a comparative study to these bandwidth tools, what stands to be a challenging issue now is how to develop a tool that will compute available bandwidth at different time of the day.

This, undoubtedly will give, overtime, statistics of usage pattern (peak an off peak) and to try to investigate why the network is not utilizing the maximum capacity of all times and what could be consuming the unused bandwidth.

Carrying out this project will go a long way in explaining into detail the concept of bandwidth utilization and management. It will assist the network manager understand full how the available bandwidth can optimized.

APPENDIX A:
PRTG (365 Days, Daily Averages) (Port eth0 on ILS_UB_HQ (192.168.1.108))

EU-All							
	Bandwidth Traffic IN		Bandwidth Traffic OUT		Sum		Coverage
	kbyte	kbit/second	kbyte	kbit/second	kbyte	kbit/second	%
23-May-08	2,106,288.017	222.106	1,185,471.328	125.296	3,291,759.345	347.402	90
22-May-08	2,111,767.906	201.648	1,134,034.561	108.286	3,245,802.467	309.934	99
21-May-08	1,156,425.634	110.656	980,899.654	93.731	2,137,325.288	204.386	99
20-May-08	1,100,376.266	104.779	845,927.200	80.752	1,946,303.466	185.531	99
19-May-08	1,172,403.956	112.312	780,200.885	74.618	1,952,604.841	186.930	99
18-May-08	305,403.539	34.438	676,208.362	76.409	981,611.901	110.847	84
17-May-08	313,182.169	29.864	709,983.545	67.841	1,023,165.714	97.705	99
16-May-08	1,722,924.121	164.401	1,000,296.279	95.548	2,723,220.400	259.948	99
15-May-08							
14-May-08							
13-May-08							
12-May-08	630,095.999	151.392	352,962.781	84.659	983,058.780	236.051	39
11-May-08	83,975.048	16.653	133,626.315	26.576	217,601.363	43.230	48
10-May-08	278,976.499	26.640	475,403.507	45.298	754,380.006	71.938	99
09-May-08	1,641,910.169	156.681	837,923.685	79.677	2,479,833.854	236.359	100
08-May-08	2,119,885.485	210.762	806,299.843	80.070	2,926,185.328	290.832	95
07-May-08	1,778,256.035	169.323	918,893.983	87.557	2,697,150.019	256.880	100
06-May-08	1,948,605.931	190.425	894,334.371	87.649	2,842,940.302	278.074	97
05-May-08	1,319,948.766	125.946	877,441.770	83.836	2,197,390.535	209.782	99
04-May-08	415,412.601	39.878	444,188.153	42.761	859,600.754	82.639	99
03-May-08	503,700.527	48.066	692,603.083	65.813	1,196,303.610	113.879	100
02-May-08							
01-May-08	616,604.829	58.555	527,284.338	50.073	1,143,889.167	108.628	100
30-Apr-08	4,585,835.226	437.294	1,039,137.069	99.159	5,624,972.295	536.453	99
29-Apr-08	2,887,869.427	274.989	951,225.132	90.579	3,839,094.559	365.568	100
28-Apr-08	1,602,598.807	153.092	774,051.733	73.885	2,376,650.540	226.977	99
27-Apr-08	387,424.971	36.894	564,716.425	53.695	952,141.396	90.589	100
26-Apr-08	1,361,944.881	129.958	595,129.822	56.472	1,957,074.703	186.430	100
25-Apr-08							
24-Apr-08							
23-Apr-08	1,986,441.020	189.024	1,014,687.353	96.421	3,001,128.372	285.444	100
22-Apr-08	2,140,859.609	204.565	859,924.498	82.050	3,000,784.107	286.615	99
21-Apr-08	1,689,287.058	161.466	899,727.330	85.823	2,589,014.388	247.289	99
20-Apr-08	367,058.181	35.074	491,014.187	47.042	858,072.367	82.115	99
19-Apr-08	507,686.155	48.309	585,278.922	55.689	1,092,965.077	103.998	100
18-Apr-08	2,263,876.515	215.420	1,002,871.958	95.557	3,266,748.473	310.976	100
17-Apr-08	2,346,397.532	224.839	906,584.482	86.326	3,252,982.015	311.165	99
16-Apr-08	1,072,254.408	117.848	707,749.167	77.786	1,780,003.575	195.634	86
15-Apr-08	2,110,445.863	201.531	928,602.542	88.483	3,039,048.405	290.014	99
14-Apr-08	1,960,671.290	187.216	897,870.414	85.614	2,858,541.704	272.830	99
13-Apr-08	466,234.452	44.240	430,426.484	40.842	896,660.937	85.082	100
12-Apr-08	707,771.313	67.206	591,979.584	56.407	1,299,750.897	123.612	100
11-Apr-08	1,991,134.793	189.983	810,722.540	77.305	2,801,857.333	267.288	99
10-Apr-08	2,394,248.503	229.496	836,752.776	80.349	3,231,001.279	309.845	99
09-Apr-08	35,449.317	26.071	40,822.806	30.184	76,272.123	56.254	13
08-Apr-08	2,034,357.429	194.008	838,187.540	80.047	2,872,544.969	274.056	99

PRTG (365 Days, Daily Averages) (Port eth0 on ILS_UB_HQ (192.168.1.108) Continued

07-Apr-08	1,132,741.182	108.689	686,376.890	65.977	1,819,118.071	174.666	99
06-Apr-08	328,578.308	31.156	206,173.464	19.550	534,751.771	50.706	100
05-Apr-08	442,366.944	42.118	287,512.086	27.300	729,879.030	69.419	100
04-Apr-08	1,881,358.718	179.265	839,884.943	79.974	2,721,243.661	259.239	100
03-Apr-08	1,104,450.724	107.683	826,639.251	80.450	1,931,089.975	188.133	97
02-Apr-08	1,889,068.856	179.880	906,987.195	86.485	2,796,056.052	266.365	100
01-Apr-08	1,925,211.773	183.195	886,654.811	84.488	2,811,866.584	267.684	100
31-Mar-08	1,527,146.251	145.857	931,532.156	89.250	2,458,678.407	235.107	99
30-Mar-08	402,913.278	40.608	487,487.175	49.277	890,400.453	89.885	94
29-Mar-08	703,041.038	68.856	542,138.075	53.192	1,245,179.113	122.049	97
28-Mar-08	797,195.977	76.564	725,407.528	69.842	1,522,603.505	146.406	99
27-Mar-08	1,172,655.153	120.496	719,662.426	74.060	1,892,317.579	194.556	92
26-Mar-08	2,382,232.041	272.059	559,311.304	63.795	2,941,543.345	335.854	83
25-Mar-08	2,724,947.819	260.010	842,817.400	80.701	3,567,765.220	340.711	99
24-Mar-08	295,450.423	28.054	364,265.656	34.564	659,716.079	62.618	100
23-Mar-08	263,971.731	25.030	306,132.768	29.028	570,104.499	54.058	100
22-Mar-08	505,623.744	47.945	563,780.362	53.459	1,069,404.106	101.404	100
21-Mar-08	355,604.616	48.627	676,555.130	92.935	1,032,159.746	141.562	69
20-Mar-08	2,413,235.865	229.635	2,722,846.426	259.997	5,136,082.291	489.631	99
19-Mar-08	2,442,768.039	233.747	2,413,320.247	231.257	4,856,088.286	465.004	99
18-Mar-08							
17-Mar-08							
16-Mar-08							
15-Mar-08	1,051,427.457	99.976	479,044.392	45.535	1,530,471.849	145.511	100
14-Mar-08	1,755,054.849	178.583	846,694.748	86.374	2,601,749.597	264.958	93
13-Mar-08	2,037,902.770	195.397	1,068,146.076	101.636	3,106,048.846	297.032	99
12-Mar-08	1,299,091.723	123.612	946,891.010	89.786	2,245,982.732	213.398	100
11-Mar-08	1,805,656.623	174.586	816,850.685	79.421	2,622,507.308	254.008	98
10-Mar-08	1,916,713.642	183.027	1,249,072.650	119.019	3,165,786.292	302.046	99
09-Mar-08	372,334.107	35.614	278,638.275	26.661	650,972.383	62.275	99
08-Mar-08	738,441.341	70.143	429,290.031	40.749	1,167,731.372	110.892	100
07-Mar-08	1,320,729.085	140.469	586,256.318	62.409	1,906,985.403	202.878	89
06-Mar-08							
05-Mar-08	2,026,126.451	195.267	766,208.854	73.206	2,792,335.306	268.472	99
04-Mar-08	1,900,349.569	181.200	710,060.683	67.611	2,610,410.252	248.811	100
03-Mar-08	1,712,543.115	163.177	661,672.571	63.172	2,374,215.687	226.349	99
02-Mar-08	368,804.102	34.971	350,524.100	33.237	719,328.201	68.208	100
01-Mar-08	671,504.904	67.659	318,082.938	32.109	989,587.842	99.768	94
Totals for 01-Mar-08 - 23-May-08							
Total Volume	484,585,022.150		413,246,247.382		897,831,269.532		
Average	1,461,465.233	137.205	1,251,273.788	117.475	1,356,369.510	254.680	91

APPENDIX B:
Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108))

EU-All							
	Bandwidth Traffic IN		Bandwidth Traffic OUT		Sum		Coverage
	kbyte	kbit/second	kbyte	kbit/second	kbyte	kbit/second	%
23-May-08 9:50 PM - 9:55 PM	7,392.491	296.191	2,694.890	107.864	10,087.381	404.055	68
23-May-08 9:45 PM - 9:50 PM	10,425.563	284.735	3,312.612	90.474	13,738.175	375.209	100
23-May-08 9:40 PM - 9:45 PM	6,547.684	178.825	2,942.196	80.352	9,489.880	259.178	100
23-May-08 9:35 PM - 9:40 PM	1,509.397	41.223	4,183.557	114.254	5,692.954	155.478	100
23-May-08 9:30 PM - 9:35 PM	2,191.498	59.852	4,685.463	127.961	6,876.961	187.814	100
23-May-08 9:25 PM - 9:30 PM	1,997.977	54.569	3,430.278	93.685	5,428.255	148.254	100
23-May-08 9:20 PM - 9:25 PM	3,257.241	88.962	3,676.995	100.420	6,934.236	189.382	100
23-May-08 9:15 PM - 9:20 PM	3,278.934	89.549	3,857.676	105.361	7,136.609	194.910	100
23-May-08 9:10 PM - 9:15 PM	1,730.686	47.269	3,202.007	87.457	4,932.692	134.725	100
23-May-08 9:05 PM - 9:10 PM	1,807.706	49.371	3,325.296	90.815	5,133.002	140.186	100
23-May-08 9:00 PM - 9:05 PM	1,432.573	39.125	3,531.809	96.455	4,964.382	135.580	100
23-May-08 8:55 PM - 9:00 PM	1,418.174	38.732	2,842.918	77.644	4,261.092	116.376	100
23-May-08 8:50 PM - 8:55 PM	2,278.427	77.861	3,020.214	82.480	5,298.641	160.341	90
23-May-08 8:45 PM - 8:50 PM	1,047.149	28.599	4,356.420	118.983	5,403.569	147.582	100
23-May-08 8:40 PM - 8:45 PM	1,099.378	30.027	5,502.876	150.285	6,602.254	180.313	100
23-May-08 8:35 PM - 8:40 PM	3,290.164	89.861	4,857.038	166.091	8,147.202	255.953	90
23-May-08 8:30 PM - 8:35 PM	3,826.017	104.493	5,966.037	162.934	9,792.054	267.427	100
23-May-08 8:25 PM - 8:30 PM	2,171.297	59.301	4,949.123	135.171	7,120.420	194.472	100
23-May-08 8:20 PM - 8:25 PM	2,269.332	61.980	4,712.345	128.696	6,981.677	190.676	100
23-May-08 8:15 PM - 8:20 PM	4,328.004	118.199	5,594.603	152.790	9,922.606	270.989	100
23-May-08 8:10 PM - 8:15 PM	3,688.334	100.736	6,922.159	189.034	10,610.493	289.770	100
23-May-08 8:05 PM - 8:10 PM	4,332.444	118.316	6,423.026	175.421	10,755.471	293.737	100
23-May-08 8:00 PM - 8:05 PM	4,363.626	119.180	6,713.502	183.360	11,077.128	302.540	100
23-May-08 7:55 PM - 8:00 PM	3,781.697	103.283	5,054.992	138.067	8,836.689	241.350	100
23-May-08 7:50 PM - 7:55 PM	3,068.389	83.799	4,718.695	128.873	7,787.084	212.672	100
23-May-08 7:45 PM - 7:50 PM	1,497.715	40.902	6,387.854	174.460	7,885.568	215.362	100
23-May-08 7:40 PM - 7:45 PM	3,850.649	105.173	7,881.520	215.268	11,732.169	320.441	100
23-May-08 7:35 PM - 7:40 PM	3,573.339	97.595	6,572.527	179.498	10,145.866	277.093	100
23-May-08 7:30 PM - 7:35 PM	4,690.943	128.111	5,152.502	140.716	9,843.445	268.828	100
23-May-08 7:25 PM - 7:30 PM	7,051.847	192.582	5,318.850	145.250	12,370.696	337.831	100
23-May-08 7:20 PM - 7:25 PM	4,455.678	121.674	7,582.655	207.071	12,038.333	328.745	100
23-May-08 7:15 PM - 7:20 PM	3,367.113	91.951	4,337.200	118.442	7,704.313	210.393	100
23-May-08 7:10 PM - 7:15 PM	3,599.118	98.286	6,428.523	175.547	10,027.642	273.834	100
23-May-08 7:05 PM - 7:10 PM	4,454.551	121.651	2,801.007	76.494	7,255.558	198.145	100
23-May-08 7:00 PM - 7:05 PM	3,402.000	92.907	2,861.560	78.147	6,263.560	171.054	100
23-May-08 6:55 PM - 7:00 PM	4,475.909	122.226	2,192.117	59.863	6,668.026	182.090	100
23-May-08 6:50 PM - 6:55 PM	2,553.242	69.725	1,850.949	50.547	4,404.191	120.272	100
23-May-08 6:45 PM - 6:50 PM	3,913.773	106.876	3,032.364	82.807	6,946.138	189.682	100
23-May-08 6:40 PM - 6:45 PM	4,842.949	132.254	1,800.654	49.172	6,643.604	181.425	100
23-May-08 6:35 PM - 6:40 PM	3,931.884	107.370	1,930.177	52.710	5,862.061	160.080	100
23-May-08 6:30 PM - 6:35 PM	3,150.644	86.042	1,867.069	50.987	5,017.713	137.029	100
23-May-08 6:25 PM - 6:30 PM	2,311.597	63.124	1,864.593	50.919	4,176.189	114.043	100
23-May-08 6:20 PM - 6:25 PM	2,852.881	77.913	2,612.005	71.332	5,464.886	149.245	100
23-May-08 6:15 PM - 6:20 PM	4,562.070	124.583	4,604.706	125.748	9,166.776	250.331	100
23-May-08 6:10 PM - 6:15 PM	2,998.824	81.893	4,389.213	119.867	7,388.037	201.760	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

23-May-08 6:05 PM - 6:10 PM	1,637.610	44.721	1,965.479	53.672	3,603.089	98.393	100
23-May-08 6:00 PM - 6:05 PM	2,761.824	75.419	1,440.279	39.333	4,202.104	114.752	100
23-May-08 5:55 PM - 6:00 PM	6,265.551	171.103	1,781.516	48.650	8,047.066	219.753	100
23-May-08 5:50 PM - 5:55 PM	5,949.396	162.469	4,123.418	112.601	10,072.814	275.070	100
23-May-08 5:45 PM - 5:50 PM	7,905.934	215.892	5,408.977	147.716	13,314.910	363.608	100
23-May-08 5:40 PM - 5:45 PM	8,064.535	220.230	4,904.730	133.936	12,969.266	354.167	100
23-May-08 5:35 PM - 5:40 PM	9,739.578	265.964	4,914.303	134.207	14,653.881	400.171	100
23-May-08 5:30 PM - 5:35 PM	7,247.993	197.938	4,277.263	116.809	11,525.256	314.748	100
23-May-08 5:25 PM - 5:30 PM	12,834.627	350.494	6,694.621	182.814	19,529.248	533.308	100
23-May-08 5:20 PM - 5:25 PM	13,914.813	379.980	3,203.058	87.471	17,117.871	467.450	100
23-May-08 5:15 PM - 5:20 PM	11,070.431	302.327	4,022.602	109.848	15,093.032	412.174	100
23-May-08 5:10 PM - 5:15 PM	12,179.980	332.628	8,199.330	223.919	20,379.311	556.547	100
23-May-08 5:05 PM - 5:10 PM	11,464.318	313.094	6,899.021	188.421	18,363.340	501.515	100
23-May-08 5:00 PM - 5:05 PM	11,572.363	316.034	7,149.692	195.260	18,722.056	511.295	100
23-May-08 4:55 PM - 5:00 PM	13,018.556	355.529	6,876.170	187.772	19,894.726	543.300	100
23-May-08 4:50 PM - 4:55 PM	15,315.924	418.255	6,855.248	187.206	22,171.172	605.461	100
23-May-08 4:45 PM - 4:50 PM	15,946.745	435.467	7,526.548	205.532	23,473.293	640.999	100
23-May-08 4:40 PM - 4:45 PM	16,576.738	452.686	6,521.732	178.099	23,098.471	630.784	100
23-May-08 4:35 PM - 4:40 PM	16,353.579	446.577	6,685.212	182.557	23,038.791	629.134	100
23-May-08 4:30 PM - 4:35 PM	17,088.597	466.664	8,603.230	234.941	25,691.827	701.605	100
23-May-08 4:25 PM - 4:30 PM	16,758.050	457.637	8,463.854	231.143	25,221.903	688.780	100
23-May-08 4:20 PM - 4:25 PM	14,760.625	403.090	8,051.979	219.880	22,812.604	622.970	100
23-May-08 4:15 PM - 4:20 PM	16,575.313	452.632	8,136.890	222.206	24,712.202	674.838	100
23-May-08 4:10 PM - 4:15 PM	15,637.590	427.039	8,988.932	245.466	24,626.521	672.505	100
23-May-08 4:05 PM - 4:10 PM	16,904.450	461.635	8,438.639	230.454	25,343.089	692.089	100
23-May-08 4:00 PM - 4:05 PM	16,851.497	460.189	7,528.192	205.577	24,379.689	665.766	100
23-May-08 3:55 PM - 4:00 PM	17,482.949	477.449	8,003.997	218.584	25,486.946	696.033	100
23-May-08 3:50 PM - 3:55 PM	17,960.687	490.479	8,475.888	231.464	26,436.574	721.943	100
23-May-08 3:45 PM - 3:50 PM	17,727.789	484.119	8,679.938	237.036	26,407.728	721.155	100
23-May-08 3:40 PM - 3:45 PM	18,077.429	493.667	9,221.043	251.830	27,298.472	745.497	100
23-May-08 3:35 PM - 3:40 PM	17,670.723	482.545	8,488.408	231.798	26,159.131	714.342	100
23-May-08 3:30 PM - 3:35 PM	17,838.792	487.134	8,010.832	218.764	25,849.624	705.898	100
23-May-08 3:25 PM - 3:30 PM	17,130.077	467.796	7,681.071	209.751	24,811.148	677.548	100
23-May-08 3:20 PM - 3:25 PM	17,778.610	485.507	8,091.323	220.962	25,869.934	706.469	100
23-May-08 3:15 PM - 3:20 PM	17,894.271	488.665	7,783.216	212.548	25,677.486	701.213	100
23-May-08 3:10 PM - 3:15 PM	18,028.391	492.344	8,894.344	242.891	26,922.734	735.236	100
23-May-08 3:05 PM - 3:10 PM	18,223.082	497.645	8,428.340	230.165	26,651.422	727.810	100
23-May-08 3:00 PM - 3:05 PM	17,104.501	467.082	7,448.552	203.409	24,553.053	670.491	100
23-May-08 2:55 PM - 3:00 PM	16,274.594	444.449	7,448.631	203.411	23,723.225	647.860	100
23-May-08 2:50 PM - 2:55 PM	16,847.133	460.070	7,512.151	205.152	24,359.284	665.222	100
23-May-08 2:45 PM - 2:50 PM	16,163.218	441.378	7,153.977	195.364	23,317.194	636.743	100
23-May-08 2:40 PM - 2:45 PM	14,942.885	408.068	6,838.551	186.750	21,781.436	594.818	100
23-May-08 2:35 PM - 2:40 PM	13,310.996	363.491	7,240.489	197.733	20,551.485	561.224	100
23-May-08 2:30 PM - 2:35 PM	11,786.594	321.885	10,978.355	299.802	22,764.949	621.687	100
23-May-08 2:25 PM - 2:30 PM	12,208.742	333.402	5,770.390	157.575	17,979.132	490.978	100
23-May-08 2:20 PM - 2:25 PM	15,411.972	420.864	6,480.795	176.981	21,892.767	597.844	100
23-May-08 2:15 PM - 2:20 PM	15,922.963	434.832	5,938.171	162.157	21,861.134	596.989	100
23-May-08 2:10 PM - 2:15 PM	16,002.076	436.992	5,037.269	137.560	21,039.345	574.553	100
23-May-08 2:05 PM - 2:10 PM	15,405.680	420.692	4,085.008	111.552	19,490.688	532.243	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

23-May-08 2:00 PM - 2:05 PM	15,417.742	421.035	3,417.416	93.324	18,835.158	514.360	100
23-May-08 1:55 PM - 2:00 PM	15,260.040	416.715	3,642.389	99.465	18,902.429	516.180	100
23-May-08 1:50 PM - 1:55 PM	15,730.809	429.570	2,714.703	74.137	18,445.512	503.707	100
23-May-08 1:45 PM - 1:50 PM	15,163.347	414.088	3,085.247	84.251	18,248.594	498.339	100
23-May-08 1:40 PM - 1:45 PM	15,181.517	414.584	3,529.212	96.381	18,710.729	510.965	100
23-May-08 1:35 PM - 1:40 PM	16,143.597	440.872	3,174.039	86.678	19,317.636	527.550	100
23-May-08 1:30 PM - 1:35 PM	15,968.669	436.066	3,265.935	89.191	19,234.604	525.256	100
23-May-08 1:25 PM - 1:30 PM	15,283.659	417.388	2,849.392	77.813	18,133.051	495.200	100
23-May-08 1:20 PM - 1:25 PM	12,511.059	427.044	2,813.313	76.825	15,324.372	503.869	90
23-May-08 1:15 PM - 1:20 PM	14,860.148	405.808	2,990.709	81.672	17,850.857	487.480	100
23-May-08 1:10 PM - 1:15 PM	15,704.585	428.854	3,291.407	89.886	18,995.992	518.741	100
23-May-08 1:05 PM - 1:10 PM	15,355.829	419.372	3,928.736	107.291	19,284.565	526.664	100
23-May-08 1:00 PM - 1:05 PM	15,754.984	430.230	4,656.396	127.155	20,411.380	557.385	100
23-May-08 12:55 PM - 1:00 PM	15,485.411	422.897	6,019.457	164.382	21,504.868	587.280	100
23-May-08 12:50 PM - 12:55 PM	16,205.107	442.522	6,515.038	177.916	22,720.146	620.438	100
23-May-08 12:45 PM - 12:50 PM	16,615.702	453.750	6,287.899	171.719	22,903.602	625.468	100
23-May-08 12:40 PM - 12:45 PM	17,105.822	467.119	6,727.063	183.706	23,832.885	650.824	100
23-May-08 12:35 PM - 12:40 PM	15,648.500	427.337	7,292.524	199.141	22,941.024	626.478	100
23-May-08 12:30 PM - 12:35 PM	17,202.208	469.751	6,953.361	189.892	24,155.569	659.643	100
23-May-08 12:25 PM - 12:30 PM	16,978.197	463.664	7,034.446	192.100	24,012.644	655.764	100
23-May-08 12:20 PM - 12:25 PM	16,171.931	441.660	7,280.244	198.819	23,452.175	640.479	100
23-May-08 12:15 PM - 12:20 PM	16,019.034	437.470	5,508.241	188.030	21,527.275	625.500	90
23-May-08 12:10 PM - 12:15 PM	17,138.938	468.085	6,678.861	182.402	23,817.800	650.487	100
23-May-08 12:05 PM - 12:10 PM	16,999.851	464.240	7,494.623	204.674	24,494.474	668.914	100
23-May-08 12:00 PM - 12:05 PM	16,211.260	442.705	7,244.619	197.840	23,455.879	640.545	100
23-May-08 11:55 AM - 12:00 PM	17,644.801	481.837	6,392.566	174.571	24,037.367	656.408	100
23-May-08 11:50 AM - 11:55 AM	17,681.079	482.860	6,560.940	179.181	24,242.020	662.041	100
23-May-08 11:45 AM - 11:50 AM	16,907.879	461.729	7,485.524	204.412	24,393.403	666.140	100
23-May-08 11:40 AM - 11:45 AM	16,372.094	447.127	6,811.993	186.031	23,184.087	633.158	100
23-May-08 11:35 AM - 11:40 AM	17,486.261	477.539	7,365.266	201.128	24,851.526	678.667	100
23-May-08 11:30 AM - 11:35 AM	17,438.291	476.213	7,143.004	195.065	24,581.295	671.278	100
23-May-08 11:25 AM - 11:30 AM	16,669.197	455.211	6,872.356	187.674	23,541.554	642.884	100
23-May-08 11:20 AM - 11:25 AM	16,160.826	441.313	7,304.858	199.485	23,465.685	640.798	100
23-May-08 11:15 AM - 11:20 AM	17,027.965	464.992	5,854.294	199.893	22,882.259	664.886	90
23-May-08 11:10 AM - 11:15 AM	17,864.110	487.858	6,798.589	185.678	24,662.699	673.536	100
23-May-08 11:05 AM - 11:10 AM	16,915.051	461.971	5,982.586	204.265	22,897.637	666.236	90
23-May-08 11:00 AM - 11:05 AM	16,187.449	442.055	7,219.444	197.152	23,406.894	639.207	100
23-May-08 10:55 AM - 11:00 AM	17,020.721	464.841	5,420.092	184.498	22,440.813	649.340	90
23-May-08 10:50 AM - 10:55 AM	15,236.324	416.081	6,747.166	184.267	21,983.490	600.348	100
23-May-08 10:45 AM - 10:50 AM	17,120.432	467.549	6,951.258	189.835	24,071.689	657.383	100
23-May-08 10:40 AM - 10:45 AM	16,819.432	459.329	6,511.040	177.813	23,330.472	637.141	100
23-May-08 10:35 AM - 10:40 AM	16,837.286	459.831	7,177.897	196.037	24,015.184	655.869	100
23-May-08 10:30 AM - 10:35 AM	17,731.689	484.242	7,350.718	200.737	25,082.407	684.979	100
23-May-08 10:25 AM - 10:30 AM	15,851.244	432.859	6,597.637	180.171	22,448.881	613.031	100
23-May-08 10:20 AM - 10:25 AM	17,298.441	472.394	6,069.690	165.754	23,368.132	638.148	100
23-May-08 10:15 AM - 10:20 AM	17,277.971	471.867	11,684.717	319.092	28,962.688	790.959	100
23-May-08 10:10 AM - 10:15 AM	17,305.437	472.570	6,576.572	179.596	23,882.009	652.166	100
23-May-08 10:05 AM - 10:10 AM	16,802.024	458.838	6,029.822	164.660	22,831.847	623.498	100
23-May-08 10:00 AM - 10:05 AM	16,729.282	456.836	6,036.264	164.847	22,765.546	621.683	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

23-May-08 9:55 AM - 10:00 AM	15,260.285	453.633	13,752.293	375.554	29,012.578	829.188	96
23-May-08 9:50 AM - 9:55 AM	14,342.111	444.670	6,759.744	184.592	21,101.855	629.262	94
23-May-08 9:45 AM - 9:50 AM	16,247.876	443.720	6,016.569	164.309	22,264.445	608.029	100
23-May-08 9:40 AM - 9:45 AM	16,068.351	438.817	5,082.113	173.498	21,150.464	612.315	90
23-May-08 9:35 AM - 9:40 AM	17,165.390	468.776	6,291.671	171.822	23,457.061	640.598	100
23-May-08 9:30 AM - 9:35 AM	17,993.090	491.348	6,798.513	185.657	24,791.603	677.005	100
23-May-08 9:25 AM - 9:30 AM	17,521.830	478.495	6,688.938	182.665	24,210.769	661.159	100
23-May-08 9:20 AM - 9:25 AM	17,990.012	491.296	6,300.077	172.057	24,290.089	663.353	100
23-May-08 9:15 AM - 9:20 AM	17,803.501	486.170	6,719.704	183.505	24,523.205	669.675	100
23-May-08 9:10 AM - 9:15 AM	17,796.964	486.008	5,650.187	154.298	23,447.150	640.306	100
23-May-08 9:05 AM - 9:10 AM	16,391.017	447.599	11,928.349	325.734	28,319.365	773.333	100
23-May-08 9:00 AM - 9:05 AM	16,437.750	448.890	4,548.521	124.213	20,986.271	573.103	100
23-May-08 8:55 AM - 9:00 AM	17,050.774	465.615	4,727.296	129.095	21,778.070	594.711	100
23-May-08 8:50 AM - 8:55 AM	17,104.911	467.125	4,456.740	121.707	21,561.651	588.832	100
23-May-08 8:45 AM - 8:50 AM	16,787.572	458.428	5,811.424	158.696	22,598.996	617.124	100
23-May-08 8:40 AM - 8:45 AM	13,320.105	454.697	4,940.610	134.921	18,260.716	589.618	90
23-May-08 8:35 AM - 8:40 AM	16,193.723	442.241	4,732.227	129.234	20,925.949	571.475	100
23-May-08 8:30 AM - 8:35 AM	15,297.357	417.762	3,510.967	95.882	18,808.324	513.644	100
23-May-08 8:25 AM - 8:30 AM	16,315.219	445.544	3,728.869	101.833	20,044.088	547.377	100
23-May-08 8:20 AM - 8:25 AM	14,392.655	393.068	4,640.122	126.719	19,032.777	519.787	100
23-May-08 8:15 AM - 8:20 AM	13,406.794	366.119	3,145.527	85.902	16,552.321	452.022	100
23-May-08 8:10 AM - 8:15 AM	7,856.260	214.550	2,644.700	72.228	10,500.960	286.777	100
23-May-08 8:05 AM - 8:10 AM	6,016.646	164.306	2,114.664	57.752	8,131.311	222.058	100
23-May-08 8:00 AM - 8:05 AM	7,537.720	205.844	1,246.464	34.039	8,784.184	239.883	100
23-May-08 7:55 AM - 8:00 AM	4,724.044	129.011	1,510.295	41.244	6,234.339	170.255	100
23-May-08 7:50 AM - 7:55 AM	2,950.914	80.585	1,563.676	42.704	4,514.590	123.289	100
23-May-08 7:45 AM - 7:50 AM	2,662.705	72.714	819.203	22.371	3,481.908	95.086	100
23-May-08 7:40 AM - 7:45 AM	445.384	12.163	659.617	18.013	1,105.001	30.176	100
23-May-08 7:35 AM - 7:40 AM	286.773	7.831	561.069	15.322	847.843	23.153	100
23-May-08 7:30 AM - 7:35 AM	325.765	8.896	401.739	10.971	727.504	19.867	100
23-May-08 7:25 AM - 7:30 AM	312.332	8.530	737.984	20.154	1,050.316	28.684	100
23-May-08 7:20 AM - 7:25 AM	401.258	10.958	876.329	23.932	1,277.587	34.890	100
23-May-08 7:15 AM - 7:20 AM	691.927	18.896	1,156.308	31.579	1,848.234	50.475	100
23-May-08 7:10 AM - 7:15 AM	558.710	15.258	969.820	26.485	1,528.530	41.743	100
23-May-08 7:05 AM - 7:10 AM	1,223.735	33.419	1,295.404	44.242	2,519.140	77.662	90
23-May-08 7:00 AM - 7:05 AM	524.933	14.337	1,008.590	27.544	1,533.522	41.881	100
23-May-08 6:55 AM - 7:00 AM	593.344	16.203	614.991	16.794	1,208.335	32.998	100
23-May-08 6:50 AM - 6:55 AM	424.175	11.584	559.303	15.273	983.478	26.857	100
23-May-08 6:45 AM - 6:50 AM	355.366	9.705	423.610	11.568	778.977	21.273	100
23-May-08 6:40 AM - 6:45 AM	466.510	12.739	572.734	15.640	1,039.244	28.379	100
23-May-08 6:35 AM - 6:40 AM	672.138	18.356	731.594	19.979	1,403.731	38.336	100
23-May-08 6:30 AM - 6:35 AM	654.158	17.864	810.563	22.136	1,464.721	40.000	100
23-May-08 6:25 AM - 6:30 AM	584.397	15.958	713.513	19.485	1,297.910	35.443	100
23-May-08 6:20 AM - 6:25 AM	641.547	17.521	947.934	25.887	1,589.480	43.408	100
23-May-08 6:15 AM - 6:20 AM	1,173.314	32.041	1,512.188	41.296	2,685.503	73.337	100
23-May-08 6:10 AM - 6:15 AM	156.394	4.271	349.113	9.534	505.507	13.805	100
23-May-08 6:05 AM - 6:10 AM	267.303	7.300	1,163.836	31.783	1,431.139	39.083	100
23-May-08 6:00 AM - 6:05 AM	471.155	12.867	1,098.921	30.012	1,570.076	42.878	100
23-May-08 5:55 AM - 6:00 AM	589.798	16.106	745.787	20.366	1,335.585	36.472	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

23-May-08 5:50 AM - 5:55 AM	396.242	10.821	1,314.278	35.893	1,710.521	46.715	100
23-May-08 5:45 AM - 5:50 AM	309.692	8.458	1,436.483	39.229	1,746.176	47.687	100
23-May-08 5:40 AM - 5:45 AM	594.229	16.227	1,480.919	40.443	2,075.147	56.670	100
23-May-08 5:35 AM - 5:40 AM	509.646	13.918	1,513.573	41.335	2,023.220	55.252	100
23-May-08 5:30 AM - 5:35 AM	368.748	10.070	1,162.948	31.758	1,531.696	41.829	100
23-May-08 5:25 AM - 5:30 AM	631.399	17.243	790.158	21.578	1,421.558	38.821	100
23-May-08 5:20 AM - 5:25 AM	587.472	16.043	692.217	18.904	1,279.688	34.948	100
23-May-08 5:15 AM - 5:20 AM	264.156	7.214	481.395	13.146	745.551	20.360	100
23-May-08 5:10 AM - 5:15 AM	730.742	19.955	846.835	23.126	1,577.577	43.081	100
23-May-08 5:05 AM - 5:10 AM	223.413	6.101	534.685	14.601	758.098	20.702	100
23-May-08 5:00 AM - 5:05 AM	336.460	9.188	486.212	13.278	822.672	22.466	100
23-May-08 4:55 AM - 5:00 AM	656.618	17.932	1,035.834	28.289	1,692.452	46.221	100
23-May-08 4:50 AM - 4:55 AM	332.525	9.081	589.743	16.106	922.269	25.187	100
23-May-08 4:45 AM - 4:50 AM	304.269	8.310	505.693	13.810	809.962	22.119	100
23-May-08 4:40 AM - 4:45 AM	631.686	17.250	805.081	21.986	1,436.767	39.237	100
23-May-08 4:35 AM - 4:40 AM	402.151	10.983	688.632	18.807	1,090.783	29.790	100
23-May-08 4:30 AM - 4:35 AM	309.803	8.460	530.396	14.484	840.198	22.945	100
23-May-08 4:25 AM - 4:30 AM	312.898	8.545	571.492	15.607	884.391	24.152	100
23-May-08 4:20 AM - 4:25 AM	532.156	14.533	756.665	20.664	1,288.821	35.197	100
23-May-08 4:15 AM - 4:20 AM	1,082.840	29.571	1,573.736	42.978	2,656.576	72.549	100
23-May-08 4:10 AM - 4:15 AM	16,500.907	450.660	16,752.674	457.566	33,253.581	908.226	100
23-May-08 4:05 AM - 4:10 AM	4,871.397	133.026	5,150.007	140.644	10,021.404	273.670	100
23-May-08 4:00 AM - 4:05 AM	439.353	11.998	571.713	15.612	1,011.065	27.610	100
23-May-08 3:55 AM - 4:00 AM	958.076	26.165	1,194.956	32.634	2,153.032	58.799	100
23-May-08 3:50 AM - 3:55 AM	864.870	23.619	1,431.663	39.098	2,296.533	62.717	100
23-May-08 3:45 AM - 3:50 AM	1,107.081	30.234	1,599.739	43.688	2,706.820	73.922	100
23-May-08 3:40 AM - 3:45 AM	1,477.530	40.350	1,820.471	49.714	3,298.001	90.065	100
23-May-08 3:35 AM - 3:40 AM	824.326	22.510	2,543.971	69.474	3,368.297	91.985	100
23-May-08 3:30 AM - 3:35 AM	577.552	15.773	2,431.555	66.402	3,009.106	82.175	100
23-May-08 3:25 AM - 3:30 AM	273.606	7.472	1,299.279	35.481	1,572.886	42.953	100
23-May-08 3:20 AM - 3:25 AM	484.862	13.240	1,194.660	32.625	1,679.522	45.866	100
23-May-08 3:15 AM - 3:20 AM	174.200	4.757	559.283	15.273	733.483	20.030	100
23-May-08 3:10 AM - 3:15 AM	302.416	8.259	636.544	17.383	938.960	25.642	100
23-May-08 3:05 AM - 3:10 AM	281.720	7.693	696.312	19.016	978.031	26.709	100
23-May-08 3:00 AM - 3:05 AM	533.295	14.564	1,319.920	36.046	1,853.215	50.610	100
23-May-08 2:55 AM - 3:00 AM	750.537	20.497	3,072.334	83.906	3,822.871	104.403	100
23-May-08 2:50 AM - 2:55 AM	1,165.253	31.826	1,584.871	43.283	2,750.124	75.109	100
23-May-08 2:45 AM - 2:50 AM	2,107.827	57.571	2,635.988	71.992	4,743.815	129.563	100
23-May-08 2:40 AM - 2:45 AM	1,953.528	53.351	2,077.607	56.742	4,031.136	110.093	100
23-May-08 2:35 AM - 2:40 AM	748.151	20.434	970.002	26.493	1,718.153	46.926	100
23-May-08 2:30 AM - 2:35 AM	3,222.084	87.996	3,309.859	90.396	6,531.943	178.392	100
23-May-08 2:25 AM - 2:30 AM	2,937.647	80.233	7,469.735	204.001	10,407.383	284.234	100
23-May-08 2:20 AM - 2:25 AM	1,792.708	48.961	3,986.676	108.885	5,779.384	157.846	100
23-May-08 2:15 AM - 2:20 AM	725.278	19.810	7,565.247	206.616	8,290.525	226.426	100
23-May-08 2:10 AM - 2:15 AM	601.704	16.433	6,783.545	185.267	7,385.249	201.700	100
23-May-08 2:05 AM - 2:10 AM	412.521	11.266	3,232.209	88.273	3,644.730	99.539	100
23-May-08 2:00 AM - 2:05 AM	761.476	20.796	4,597.640	125.567	5,359.115	146.363	100
23-May-08 1:55 AM - 2:00 AM	387.964	10.595	6,438.560	175.857	6,826.523	186.452	100
23-May-08 1:50 AM - 1:55 AM	847.795	23.155	2,262.910	61.805	3,110.705	84.960	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

23-May-08 1:45 AM - 1:50 AM	755.251	20.626	5,391.791	147.256	6,147.042	167.883	100
23-May-08 1:40 AM - 1:45 AM	667.772	18.238	6,329.918	172.878	6,997.690	191.116	100
23-May-08 1:35 AM - 1:40 AM	671.934	18.351	2,219.855	60.627	2,891.789	78.978	100
23-May-08 1:30 AM - 1:35 AM	708.772	19.357	5,392.932	147.283	6,101.704	166.640	100
23-May-08 1:25 AM - 1:30 AM	1,632.143	44.579	5,093.332	139.105	6,725.475	183.684	100
23-May-08 1:20 AM - 1:25 AM	1,794.056	48.999	5,835.525	159.375	7,629.581	208.375	100
23-May-08 1:15 AM - 1:20 AM	1,612.257	44.031	5,603.623	153.037	7,215.880	197.068	100
23-May-08 1:10 AM - 1:15 AM	1,982.701	54.150	517.803	14.142	2,500.504	68.292	100
23-May-08 1:05 AM - 1:10 AM	1,839.183	50.227	4,308.209	117.659	6,147.392	167.885	100
23-May-08 1:00 AM - 1:05 AM	2,137.424	58.376	10,307.461	281.528	12,444.885	339.904	100
23-May-08 12:55 AM - 1:00 AM	2,240.448	61.191	3,611.963	98.650	5,852.411	159.842	100
23-May-08 12:50 AM - 12:55 AM	1,745.180	47.661	5,681.094	155.173	7,426.273	202.835	100
23-May-08 12:45 AM - 12:50 AM	2,004.222	54.736	7,366.993	201.215	9,371.215	255.951	100
23-May-08 12:40 AM - 12:45 AM	1,746.190	47.691	6,409.244	175.050	8,155.435	222.741	100
23-May-08 12:35 AM - 12:40 AM	2,104.770	57.480	2,845.879	77.727	4,950.648	135.207	100
23-May-08 12:30 AM - 12:35 AM	1,761.085	48.101	6,941.915	189.598	8,703.000	237.699	100
23-May-08 12:25 AM - 12:30 AM	1,609.420	43.957	6,853.204	187.163	8,462.624	231.120	100
23-May-08 12:20 AM - 12:25 AM	1,719.978	46.975	2,605.587	71.159	4,325.564	118.134	100
23-May-08 12:15 AM - 12:20 AM	1,844.355	50.370	7,063.906	192.924	8,908.262	243.294	100
23-May-08 12:10 AM - 12:15 AM	2,151.668	58.765	5,624.377	153.614	7,776.045	212.378	100
23-May-08 12:05 AM - 12:10 AM	1,879.669	51.338	1,913.977	52.270	3,793.646	103.607	100
23-May-08 12:00 AM - 12:05 AM	1,985.219	54.219	7,504.671	204.962	9,489.890	259.180	100
22-May-08 11:55 PM - 12:00 AM	2,396.343	65.449	6,680.271	182.452	9,076.614	247.902	100
22-May-08 11:50 PM - 11:55 PM	1,178.105	32.177	1,126.753	30.772	2,304.858	62.949	100
22-May-08 11:45 PM - 11:50 PM	1,730.979	47.274	1,428.152	39.005	3,159.132	86.278	100
22-May-08 11:40 PM - 11:45 PM	2,124.051	58.010	897.963	24.524	3,022.014	82.534	100
22-May-08 11:35 PM - 11:40 PM	2,120.314	57.906	1,213.704	33.148	3,334.019	91.054	100
22-May-08 11:30 PM - 11:35 PM	1,938.861	52.949	697.768	19.058	2,636.629	72.007	100
22-May-08 11:25 PM - 11:30 PM	1,410.242	38.515	586.293	16.012	1,996.535	54.528	100
22-May-08 11:20 PM - 11:25 PM	533.801	14.579	641.812	17.529	1,175.612	32.107	100
22-May-08 11:15 PM - 11:20 PM	621.679	16.979	577.038	15.760	1,198.717	32.739	100
22-May-08 11:10 PM - 11:15 PM	1,799.474	49.146	6,678.704	182.404	8,478.178	231.549	100
22-May-08 11:05 PM - 11:10 PM	1,391.628	38.007	1,477.757	40.359	2,869.385	78.366	100
22-May-08 11:00 PM - 11:05 PM	1,704.322	46.549	6,343.538	173.256	8,047.860	219.804	100
22-May-08 10:55 PM - 11:00 PM	2,427.676	66.303	3,278.734	89.540	5,706.410	155.843	100
22-May-08 10:50 PM - 10:55 PM	2,367.278	64.651	1,434.244	39.170	3,801.522	103.821	100
22-May-08 10:45 PM - 10:50 PM	2,898.762	79.171	2,698.906	73.710	5,597.668	152.882	100
22-May-08 10:40 PM - 10:45 PM	3,446.117	94.118	6,992.954	190.986	10,439.071	285.104	100
22-May-08 10:35 PM - 10:40 PM	3,143.233	85.851	3,062.676	83.645	6,205.909	169.497	100
22-May-08 10:30 PM - 10:35 PM	2,939.503	80.279	4,750.767	129.749	7,690.270	210.028	100
22-May-08 10:25 PM - 10:30 PM	3,228.150	88.159	6,619.226	180.779	9,847.376	268.938	100
22-May-08 10:20 PM - 10:25 PM	2,775.473	75.796	3,840.497	104.885	6,615.970	180.682	100
22-May-08 10:15 PM - 10:20 PM	3,273.030	89.393	4,192.880	114.516	7,465.910	203.910	100
22-May-08 10:10 PM - 10:15 PM	3,649.114	99.658	7,474.403	204.135	11,123.518	303.793	100
22-May-08 10:05 PM - 10:10 PM	3,253.299	88.855	10,016.888	273.573	13,270.187	362.428	100
22-May-08 10:00 PM - 10:05 PM	4,070.845	111.180	8,031.443	219.334	12,102.288	330.514	100
22-May-08 9:55 PM - 10:00 PM	3,467.970	94.718	10,028.195	273.891	13,496.165	368.609	100
Totals for 22-May-08 9:55 PM - 23-May-08 9:55 PM							
Total Volume	2,190,707.659		1,295,858.132		3,486,565.791		
Average	7,643.721	209.035	4,535.770	123.804	6,089.745	332.839	99

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

	EU-All						
	Bandwidth Traffic IN		Bandwidth Traffic OUT		Sum		Coverage
	kbyte	kbit/second	kbyte	kbit/second	kbyte	kbit/second	%
11-Jun-08 9:25 PM - 9:30 PM							
11-Jun-08 9:20 PM - 9:25 PM	2,682.603	73.255	4,316.602	117.876	6,999.204	191.131	100
11-Jun-08 9:15 PM - 9:20 PM	1,759.552	48.051	834.492	22.788	2,594.044	70.839	100
11-Jun-08 9:10 PM - 9:15 PM	1,352.468	36.933	544.521	14.870	1,896.988	51.803	100
11-Jun-08 9:05 PM - 9:10 PM	3,034.875	82.878	906.337	24.751	3,941.212	107.629	100
11-Jun-08 9:00 PM - 9:05 PM	2,208.492	60.313	1,188.424	32.458	3,396.916	92.771	100
11-Jun-08 8:55 PM - 9:00 PM	816.757	27.882	914.550	24.977	1,731.307	52.859	90
11-Jun-08 8:50 PM - 8:55 PM	590.345	16.122	1,367.301	37.339	1,957.646	53.461	100
11-Jun-08 8:45 PM - 8:50 PM	393.472	10.747	894.789	24.439	1,288.261	35.185	100
11-Jun-08 8:40 PM - 8:45 PM	1,633.116	44.596	1,716.385	46.870	3,349.501	91.467	100
11-Jun-08 8:35 PM - 8:40 PM	1,475.065	40.284	2,117.903	57.839	3,592.969	98.123	100
11-Jun-08 8:30 PM - 8:35 PM	889.948	24.302	1,565.104	42.741	2,455.052	67.042	100
11-Jun-08 8:25 PM - 8:30 PM	1,303.892	35.610	989.711	27.028	2,293.603	62.637	100
11-Jun-08 8:20 PM - 8:25 PM	1,087.421	29.696	5,454.391	148.951	6,541.812	178.647	100
11-Jun-08 8:15 PM - 8:20 PM	2,330.171	63.633	3,620.583	98.869	5,950.754	162.503	100
11-Jun-08 8:10 PM - 8:15 PM	3,547.254	96.880	4,404.507	150.366	7,951.761	247.245	90
11-Jun-08 8:05 PM - 8:10 PM	3,115.899	85.090	6,678.342	182.375	9,794.241	267.466	100
11-Jun-08 8:00 PM - 8:05 PM	2,996.190	81.819	4,996.217	136.439	7,992.407	218.258	100
11-Jun-08 7:55 PM - 8:00 PM	1,674.573	45.732	2,582.266	70.518	4,256.839	116.249	100
11-Jun-08 7:50 PM - 7:55 PM	2,734.528	74.676	5,487.092	149.839	8,221.620	224.515	100
11-Jun-08 7:45 PM - 7:50 PM	1,713.326	46.787	4,727.910	129.112	6,441.236	175.899	100
11-Jun-08 7:40 PM - 7:45 PM	1,784.344	48.728	5,888.733	160.812	7,673.077	209.540	100
11-Jun-08 7:35 PM - 7:40 PM	2,820.159	77.014	4,555.744	124.406	7,375.903	201.421	100
11-Jun-08 7:30 PM - 7:35 PM	1,261.985	43.081	4,275.608	116.760	5,537.594	159.842	90
11-Jun-08 7:25 PM - 7:30 PM	1,497.066	40.881	6,094.835	166.441	7,591.901	207.322	100
11-Jun-08 7:20 PM - 7:25 PM	1,454.992	39.734	6,446.089	176.039	7,901.081	215.772	100
11-Jun-08 7:15 PM - 7:20 PM	2,929.979	80.013	4,242.455	115.851	7,172.434	195.864	100
11-Jun-08 7:10 PM - 7:15 PM	3,005.590	82.081	2,352.327	80.313	5,357.917	162.394	90
11-Jun-08 7:05 PM - 7:10 PM	2,748.511	93.820	4,467.885	122.007	7,216.396	215.827	90
11-Jun-08 7:00 PM - 7:05 PM	3,728.255	101.813	5,860.436	160.040	9,588.690	261.853	100
11-Jun-08 6:55 PM - 7:00 PM	3,988.399	136.154	5,029.333	137.348	9,017.732	273.502	90
11-Jun-08 6:50 PM - 6:55 PM	7,385.549	201.688	2,407.064	65.733	9,792.613	267.421	100
11-Jun-08 6:45 PM - 6:50 PM	7,711.464	210.581	1,291.348	35.264	9,002.812	245.845	100
11-Jun-08 6:40 PM - 6:45 PM	6,835.098	186.656	1,695.441	46.300	8,530.539	232.956	100
11-Jun-08 6:35 PM - 6:40 PM	7,909.958	216.002	2,034.307	55.552	9,944.265	271.554	100
11-Jun-08 6:30 PM - 6:35 PM	7,885.581	215.350	1,455.771	39.755	9,341.352	255.105	100
11-Jun-08 6:25 PM - 6:30 PM	7,172.375	195.860	1,769.134	48.312	8,941.509	244.173	100
11-Jun-08 6:20 PM - 6:25 PM	9,060.071	247.417	1,923.273	52.520	10,983.345	299.937	100
11-Jun-08 6:15 PM - 6:20 PM	7,489.879	204.537	1,513.988	41.345	9,003.867	245.882	100
11-Jun-08 6:10 PM - 6:15 PM	8,069.566	220.375	2,120.976	58.074	10,190.542	278.449	100
11-Jun-08 6:05 PM - 6:10 PM	8,947.601	244.337	2,441.906	83.087	11,389.507	327.425	90
11-Jun-08 6:00 PM - 6:05 PM	9,776.241	266.974	4,672.688	127.600	14,448.930	394.574	100
11-Jun-08 5:55 PM - 6:00 PM	9,777.165	298.415	4,337.482	118.450	14,114.647	416.865	95
11-Jun-08 5:50 PM - 5:55 PM	11,560.618	348.781	2,904.073	79.311	14,464.691	428.092	95
11-Jun-08 5:45 PM - 5:50 PM	13,390.462	365.698	2,548.376	69.592	15,938.838	435.290	100
11-Jun-08 5:40 PM - 5:45 PM	13,523.056	369.294	2,888.678	78.888	16,411.733	448.182	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

11-Jun-08 5:35 PM - 5:40 PM	13,048.154	356.313	2,998.402	81.879	16,046.557	438.193	100
11-Jun-08 5:30 PM - 5:35 PM	12,517.307	341.852	2,289.489	62.527	14,806.796	404.378	100
11-Jun-08 5:25 PM - 5:30 PM	14,108.941	385.281	2,416.354	65.989	16,525.296	451.270	100
11-Jun-08 5:20 PM - 5:25 PM	14,479.901	395.424	2,274.139	62.103	16,754.040	457.527	100
11-Jun-08 5:15 PM - 5:20 PM	14,672.719	400.690	2,604.560	71.129	17,277.278	471.819	100
11-Jun-08 5:10 PM - 5:15 PM	14,729.636	402.244	3,211.063	87.689	17,940.698	489.933	100
11-Jun-08 5:05 PM - 5:10 PM	14,905.162	407.037	5,043.184	137.717	19,948.346	544.755	100
11-Jun-08 5:00 PM - 5:05 PM	15,053.362	411.085	6,318.415	172.546	21,371.777	583.631	100
11-Jun-08 4:55 PM - 5:00 PM	15,692.602	428.541	5,665.738	154.728	21,358.340	583.269	100
11-Jun-08 4:50 PM - 4:55 PM	14,752.794	402.890	3,931.950	107.379	18,684.744	510.269	100
11-Jun-08 4:45 PM - 4:50 PM	15,858.331	433.067	4,724.793	129.027	20,583.124	562.094	100
11-Jun-08 4:40 PM - 4:45 PM	15,584.813	425.598	5,030.151	137.370	20,614.965	562.968	100
11-Jun-08 4:35 PM - 4:40 PM	16,597.437	453.266	5,467.482	149.314	22,064.919	602.580	100
11-Jun-08 4:30 PM - 4:35 PM	16,264.770	444.181	8,306.332	226.833	24,571.102	671.014	100
11-Jun-08 4:25 PM - 4:30 PM	15,758.298	430.335	7,923.801	216.387	23,682.099	646.722	100
11-Jun-08 4:20 PM - 4:25 PM	17,149.662	468.331	6,174.886	168.627	23,324.548	636.958	100
11-Jun-08 4:15 PM - 4:20 PM	16,044.327	438.132	5,450.263	148.838	21,494.590	586.970	100
11-Jun-08 4:10 PM - 4:15 PM	16,272.190	444.384	5,435.635	148.434	21,707.825	592.818	100
11-Jun-08 4:05 PM - 4:10 PM	15,613.894	426.392	6,179.812	168.767	21,793.705	595.159	100
11-Jun-08 4:00 PM - 4:05 PM	16,726.188	456.782	5,802.085	158.446	22,528.273	615.228	100
11-Jun-08 3:55 PM - 4:00 PM	15,861.356	433.150	4,603.174	125.714	20,464.530	558.864	100
11-Jun-08 3:50 PM - 3:55 PM	16,717.716	456.536	4,573.173	124.882	21,290.889	581.418	100
11-Jun-08 3:45 PM - 3:50 PM	16,748.766	457.399	12,042.802	328.882	28,791.567	786.280	100
11-Jun-08 3:40 PM - 3:45 PM	16,286.786	444.767	6,516.886	177.972	22,803.672	622.740	100
11-Jun-08 3:35 PM - 3:40 PM	15,343.587	419.010	5,233.217	142.902	20,576.804	561.912	100
11-Jun-08 3:30 PM - 3:35 PM	17,092.794	466.794	11,159.753	304.756	28,252.547	771.550	100
11-Jun-08 3:25 PM - 3:30 PM	15,665.464	427.800	5,030.077	137.368	20,695.541	565.168	100
11-Jun-08 3:20 PM - 3:25 PM	15,451.791	421.965	5,100.989	139.296	20,552.780	561.261	100
11-Jun-08 3:15 PM - 3:20 PM	15,851.428	432.893	6,677.198	182.350	22,528.626	615.243	100
11-Jun-08 3:10 PM - 3:15 PM	16,934.882	462.466	6,762.056	184.662	23,696.938	647.128	100
11-Jun-08 3:05 PM - 3:10 PM	11,155.226	437.598	6,296.372	171.944	17,451.598	609.542	85
11-Jun-08 3:00 PM - 3:05 PM	14,946.150	452.121	6,842.704	186.870	21,788.854	638.991	95
11-Jun-08 2:55 PM - 3:00 PM	16,409.265	448.127	6,343.104	173.215	22,752.369	621.342	100
11-Jun-08 2:50 PM - 2:55 PM	16,450.905	449.264	6,204.439	169.445	22,655.345	618.709	100
11-Jun-08 2:45 PM - 2:50 PM	16,849.293	460.129	6,758.667	184.581	23,607.960	644.710	100
11-Jun-08 2:40 PM - 2:45 PM	16,646.637	454.640	6,730.754	183.825	23,377.391	638.465	100
11-Jun-08 2:35 PM - 2:40 PM	16,418.712	448.400	6,082.184	166.112	22,500.896	614.512	100
11-Jun-08 2:30 PM - 2:35 PM	16,882.075	461.055	5,979.084	163.291	22,861.159	624.345	100
11-Jun-08 2:25 PM - 2:30 PM	17,303.381	472.545	6,632.541	181.137	23,935.922	653.682	100
11-Jun-08 2:20 PM - 2:25 PM	17,236.334	470.714	9,595.800	262.047	26,832.134	732.761	100
11-Jun-08 2:15 PM - 2:20 PM	16,106.284	439.838	7,107.651	194.099	23,213.936	633.937	100
11-Jun-08 2:10 PM - 2:15 PM	16,456.804	449.395	5,258.653	143.606	21,715.457	593.001	100
11-Jun-08 2:05 PM - 2:10 PM	15,523.682	423.928	4,273.023	116.686	19,796.705	540.614	100
11-Jun-08 2:00 PM - 2:05 PM	15,720.641	429.336	3,857.852	105.352	19,578.492	534.688	100
11-Jun-08 1:55 PM - 2:00 PM	16,036.063	437.921	3,694.050	100.879	19,730.112	538.800	100
11-Jun-08 1:50 PM - 1:55 PM	14,551.037	397.380	3,699.414	101.025	18,250.451	498.405	100
11-Jun-08 1:45 PM - 1:50 PM	16,495.617	450.455	8,032.282	219.349	24,527.899	669.805	100
11-Jun-08 1:40 PM - 1:45 PM	15,867.133	433.322	5,001.900	136.599	20,869.033	569.921	100
11-Jun-08 1:35 PM - 1:40 PM	15,969.799	436.111	4,473.123	122.150	20,442.922	558.261	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

11-Jun-08 1:30 PM - 1:35 PM	16,027.253	437.695	6,368.688	173.931	22,395.940	611.625	100
11-Jun-08 1:25 PM - 1:30 PM	15,774.971	430.791	3,328.195	90.891	19,103.166	521.682	100
11-Jun-08 1:20 PM - 1:25 PM	15,669.188	427.888	3,182.851	86.922	18,852.039	514.809	100
11-Jun-08 1:15 PM - 1:20 PM	16,178.109	441.814	3,744.259	102.250	19,922.368	544.064	100
11-Jun-08 1:10 PM - 1:15 PM	12,728.287	434.513	3,143.198	85.836	15,871.485	520.349	90
11-Jun-08 1:05 PM - 1:10 PM	9,329.559	427.592	1,619.953	74.262	10,949.512	501.854	60
11-Jun-08 1:00 PM - 1:05 PM							
11-Jun-08 12:55 PM - 1:00 PM	15,457.038	448.624	4,968.636	211.686	20,425.674	660.310	79
11-Jun-08 12:50 PM - 12:55 PM	17,112.944	467.360	7,063.915	192.911	24,176.859	660.271	100
11-Jun-08 12:45 PM - 12:50 PM	16,349.896	446.491	5,392.248	147.254	21,742.145	593.745	100
11-Jun-08 12:40 PM - 12:45 PM	16,270.575	444.325	6,106.266	166.747	22,376.841	611.072	100
11-Jun-08 12:35 PM - 12:40 PM	17,206.711	469.874	7,654.093	209.022	24,860.804	678.895	100
11-Jun-08 12:30 PM - 12:35 PM	17,945.840	490.090	7,630.389	208.381	25,576.229	698.471	100
11-Jun-08 12:25 PM - 12:30 PM	17,177.140	489.274	5,622.171	192.023	22,799.311	681.297	88
11-Jun-08 12:20 PM - 12:25 PM	14,053.499	456.217	8,141.685	222.352	22,195.184	678.569	92
11-Jun-08 12:15 PM - 12:20 PM	17,290.303	472.172	5,867.548	160.239	23,157.851	632.411	100
11-Jun-08 12:10 PM - 12:15 PM	17,561.446	479.593	7,299.433	199.343	24,860.879	678.936	100
11-Jun-08 12:05 PM - 12:10 PM	17,089.522	466.705	7,172.214	195.875	24,261.736	662.580	100
11-Jun-08 12:00 PM - 12:05 PM	17,789.559	485.838	6,636.971	181.258	24,426.529	667.096	100
11-Jun-08 11:55 AM - 12:00 PM	17,544.606	479.149	6,171.305	168.529	23,715.911	647.678	100
11-Jun-08 11:50 AM - 11:55 AM	18,035.386	492.503	6,667.555	182.093	24,702.940	674.596	100
11-Jun-08 11:45 AM - 11:50 AM	18,038.271	492.581	5,872.574	160.371	23,910.845	652.953	100
11-Jun-08 11:40 AM - 11:45 AM	18,254.595	498.505	7,070.102	193.067	25,324.696	691.573	100
11-Jun-08 11:35 AM - 11:40 AM	18,247.126	498.301	6,324.521	172.719	24,571.646	671.020	100
11-Jun-08 11:30 AM - 11:35 AM	18,270.821	498.965	5,897.132	161.042	24,167.953	660.007	100
11-Jun-08 11:25 AM - 11:30 AM	17,696.865	483.259	5,017.320	137.015	22,714.186	620.274	100
11-Jun-08 11:20 AM - 11:25 AM	16,886.549	461.146	5,220.679	142.564	22,107.228	603.710	100
11-Jun-08 11:15 AM - 11:20 AM	17,144.315	468.185	3,970.216	108.424	21,114.531	576.610	100
11-Jun-08 11:10 AM - 11:15 AM	16,985.938	463.891	5,752.253	157.096	22,738.191	620.987	100
11-Jun-08 11:05 AM - 11:10 AM	17,413.747	475.591	6,210.766	169.612	23,624.513	645.203	100
11-Jun-08 11:00 AM - 11:05 AM	16,205.186	442.524	5,432.634	148.362	21,637.819	590.886	100
11-Jun-08 10:55 AM - 11:00 AM	16,921.638	462.151	7,284.624	198.952	24,206.262	661.103	100
11-Jun-08 10:50 AM - 10:55 AM	17,205.010	469.858	4,144.736	113.190	21,349.746	583.049	100
11-Jun-08 10:45 AM - 10:50 AM	17,298.810	472.436	4,792.949	130.893	22,091.759	603.328	100
11-Jun-08 10:40 AM - 10:45 AM	16,685.640	455.660	5,781.888	157.895	22,467.527	613.554	100
11-Jun-08 10:35 AM - 10:40 AM	16,665.404	455.107	7,188.950	196.332	23,854.354	651.439	100
11-Jun-08 10:30 AM - 10:35 AM	16,618.204	453.818	8,783.334	239.852	25,401.538	693.670	100
11-Jun-08 10:25 AM - 10:30 AM	16,091.641	439.438	9,093.354	248.334	25,184.995	687.772	100
11-Jun-08 10:20 AM - 10:25 AM	16,432.791	448.770	9,173.055	250.494	25,605.846	699.264	100
11-Jun-08 10:15 AM - 10:20 AM	15,998.184	436.872	8,089.056	220.900	24,087.239	657.772	100
11-Jun-08 10:10 AM - 10:15 AM	16,069.162	438.810	7,908.320	215.964	23,977.482	654.774	100
11-Jun-08 10:05 AM - 10:10 AM	16,088.667	439.372	7,086.034	193.509	23,174.701	632.881	100
11-Jun-08 10:00 AM - 10:05 AM	15,648.159	427.328	7,677.344	209.650	23,325.503	636.977	100
11-Jun-08 9:55 AM - 10:00 AM	15,765.859	430.570	6,821.160	186.276	22,587.020	616.846	100
11-Jun-08 9:50 AM - 9:55 AM	15,742.516	429.904	8,086.438	220.828	23,828.954	650.733	100
11-Jun-08 9:45 AM - 9:50 AM	15,922.434	434.803	8,711.570	237.900	24,634.004	672.703	100
11-Jun-08 9:40 AM - 9:45 AM	15,679.914	428.180	9,092.194	248.286	24,772.108	676.466	100
11-Jun-08 9:35 AM - 9:40 AM	16,601.702	453.352	7,854.245	214.509	24,455.947	667.861	100
11-Jun-08 9:30 AM - 9:35 AM	15,961.637	435.903	7,005.553	191.317	22,967.189	627.220	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

11-Jun-08 9:25 AM - 9:30 AM	16,727.607	456.806	7,875.308	215.063	24,602.915	671.868	100
11-Jun-08 9:20 AM - 9:25 AM	16,137.159	440.711	8,217.346	224.418	24,354.505	665.129	100
11-Jun-08 9:15 AM - 9:20 AM	16,122.024	440.297	5,656.451	154.474	21,778.476	594.772	100
11-Jun-08 9:10 AM - 9:15 AM	16,192.465	442.192	5,395.364	147.339	21,587.829	589.531	100
11-Jun-08 9:05 AM - 9:10 AM	16,386.444	447.489	7,285.180	198.954	23,671.624	646.443	100
11-Jun-08 9:00 AM - 9:05 AM	15,995.154	436.803	7,507.286	205.019	23,502.440	641.823	100
11-Jun-08 8:55 AM - 9:00 AM	15,582.392	425.532	5,558.705	151.800	21,141.097	577.331	100
11-Jun-08 8:50 AM - 8:55 AM	15,634.933	426.981	5,812.854	158.740	21,447.787	585.721	100
11-Jun-08 8:45 AM - 8:50 AM	16,062.345	438.638	4,590.956	125.372	20,653.301	564.010	100
11-Jun-08 8:40 AM - 8:45 AM	11,306.855	385.957	4,015.038	137.058	15,321.894	523.015	80
11-Jun-08 8:35 AM - 8:40 AM	15,559.998	424.948	4,571.336	124.836	20,131.334	549.785	100
11-Jun-08 8:30 AM - 8:35 AM	15,041.358	410.743	3,547.446	96.875	18,588.805	507.618	100
11-Jun-08 8:25 AM - 8:30 AM	12,433.280	394.612	3,652.978	99.761	16,086.258	494.373	93
11-Jun-08 8:20 AM - 8:25 AM	12,751.439	370.609	2,523.362	68.909	15,274.802	439.518	97
11-Jun-08 8:15 AM - 8:20 AM	13,935.576	380.560	2,931.281	80.049	16,866.857	460.608	100
11-Jun-08 8:10 AM - 8:15 AM	12,544.065	342.571	2,667.951	72.858	15,212.017	415.429	100
11-Jun-08 8:05 AM - 8:10 AM	12,862.982	351.269	2,394.417	65.390	15,257.399	416.659	100
11-Jun-08 8:00 AM - 8:05 AM	8,240.274	225.029	1,598.382	43.646	9,838.656	268.676	100
11-Jun-08 7:55 AM - 8:00 AM	5,301.769	144.788	882.961	24.112	6,184.729	168.900	100
11-Jun-08 7:50 AM - 7:55 AM	1,010.346	27.591	765.464	20.903	1,775.810	48.494	100
11-Jun-08 7:45 AM - 7:50 AM	490.900	13.406	531.425	14.512	1,022.325	27.918	100
11-Jun-08 7:40 AM - 7:45 AM	333.529	9.108	419.931	11.468	753.460	20.576	100
11-Jun-08 7:35 AM - 7:40 AM	987.151	26.958	1,202.931	32.850	2,190.082	59.808	100
11-Jun-08 7:30 AM - 7:35 AM	291.596	7.963	272.681	7.446	564.276	15.409	100
11-Jun-08 7:25 AM - 7:30 AM	524.147	14.314	699.624	19.106	1,223.771	33.420	100
11-Jun-08 7:20 AM - 7:25 AM	1,396.743	38.144	772.133	21.085	2,168.876	59.229	100
11-Jun-08 7:15 AM - 7:20 AM	1,165.770	31.836	1,892.177	51.672	3,057.946	83.509	100
11-Jun-08 7:10 AM - 7:15 AM	1,234.586	33.714	1,639.485	44.773	2,874.071	78.487	100
11-Jun-08 7:05 AM - 7:10 AM	683.108	18.656	1,004.284	27.425	1,687.393	46.081	100
11-Jun-08 7:00 AM - 7:05 AM	601.787	16.434	658.531	17.983	1,260.318	34.417	100
11-Jun-08 6:55 AM - 7:00 AM	545.434	14.894	599.655	16.376	1,145.089	31.271	100
11-Jun-08 6:50 AM - 6:55 AM	1,369.344	37.396	1,436.847	39.237	2,806.190	76.633	100
11-Jun-08 6:45 AM - 6:50 AM	241.533	6.596	306.941	8.382	548.475	14.978	100
11-Jun-08 6:40 AM - 6:45 AM	222.878	6.086	350.801	9.580	573.679	15.666	100
11-Jun-08 6:35 AM - 6:40 AM	335.975	9.175	1,319.505	36.034	1,655.479	45.209	100
11-Jun-08 6:30 AM - 6:35 AM	851.049	23.240	848.696	23.177	1,699.745	46.417	100
11-Jun-08 6:25 AM - 6:30 AM	329.310	8.994	463.027	12.644	792.337	21.638	100
11-Jun-08 6:20 AM - 6:25 AM	436.198	11.912	450.186	12.294	886.384	24.206	100
11-Jun-08 6:15 AM - 6:20 AM	803.434	21.941	1,072.461	29.289	1,875.895	51.231	100
11-Jun-08 6:10 AM - 6:15 AM	555.478	15.169	792.502	21.643	1,347.979	36.811	100
11-Jun-08 6:05 AM - 6:10 AM	440.191	12.021	736.132	20.103	1,176.323	32.124	100
11-Jun-08 6:00 AM - 6:05 AM	211.051	5.763	298.237	8.144	509.288	13.908	100
11-Jun-08 5:55 AM - 6:00 AM	167.580	4.576	338.646	9.248	506.227	13.824	100
11-Jun-08 5:50 AM - 5:55 AM	228.409	6.238	761.246	20.789	989.655	27.027	100
11-Jun-08 5:45 AM - 5:50 AM	350.853	9.581	520.621	14.218	871.474	23.799	100
11-Jun-08 5:40 AM - 5:45 AM	218.440	5.965	286.260	7.817	504.700	13.782	100
11-Jun-08 5:35 AM - 5:40 AM	621.024	16.960	756.574	20.660	1,377.599	37.620	100
11-Jun-08 5:30 AM - 5:35 AM	769.342	21.009	944.258	25.786	1,713.600	46.795	100
11-Jun-08 5:25 AM - 5:30 AM	463.131	12.648	732.575	20.006	1,195.706	32.653	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

11-Jun-08 5:20 AM - 5:25 AM	343.307	9.376	1,035.721	28.285	1,379.027	37.661	100
11-Jun-08 5:15 AM - 5:20 AM	302.006	8.247	450.716	12.309	752.722	20.556	100
11-Jun-08 5:10 AM - 5:15 AM	231.925	6.334	331.169	9.043	563.094	15.377	100
11-Jun-08 5:05 AM - 5:10 AM	77.712	2.122	297.925	8.136	375.637	10.258	100
11-Jun-08 5:00 AM - 5:05 AM	950.449	25.956	1,157.204	31.603	2,107.653	57.559	100
11-Jun-08 4:55 AM - 5:00 AM	910.931	24.876	1,008.833	27.550	1,919.764	52.426	100
11-Jun-08 4:50 AM - 4:55 AM	996.543	27.216	1,129.459	30.845	2,126.002	58.061	100
11-Jun-08 4:45 AM - 4:50 AM	444.827	12.147	598.639	16.348	1,043.466	28.496	100
11-Jun-08 4:40 AM - 4:45 AM	180.060	4.917	347.281	9.484	527.341	14.401	100
11-Jun-08 4:35 AM - 4:40 AM	256.209	6.997	220.578	6.023	476.787	13.020	100
11-Jun-08 4:30 AM - 4:35 AM	742.559	20.277	884.233	24.148	1,626.792	44.425	100
11-Jun-08 4:25 AM - 4:30 AM	296.373	8.093	367.699	10.041	664.072	18.135	100
11-Jun-08 4:20 AM - 4:25 AM	501.535	13.696	589.135	16.088	1,090.670	29.784	100
11-Jun-08 4:15 AM - 4:20 AM	292.147	7.979	398.854	10.892	691.002	18.871	100
11-Jun-08 4:10 AM - 4:15 AM	302.054	8.248	325.602	8.892	627.655	17.140	100
11-Jun-08 4:05 AM - 4:10 AM	922.669	25.197	1,037.016	28.319	1,959.685	53.516	100
11-Jun-08 4:00 AM - 4:05 AM	198.140	5.411	524.224	14.316	722.363	19.727	100
11-Jun-08 3:55 AM - 4:00 AM	353.933	9.665	668.150	18.246	1,022.083	27.911	100
11-Jun-08 3:50 AM - 3:55 AM	443.921	12.123	469.688	12.826	913.608	24.949	100
11-Jun-08 3:45 AM - 3:50 AM	1,694.106	46.263	1,602.165	43.751	3,296.271	90.015	100
11-Jun-08 3:40 AM - 3:45 AM	1,089.714	29.758	1,440.566	39.342	2,530.280	69.101	100
11-Jun-08 3:35 AM - 3:40 AM	1,041.113	28.431	1,077.803	29.432	2,118.916	57.863	100
11-Jun-08 3:30 AM - 3:35 AM	718.933	19.633	942.614	25.742	1,661.547	45.375	100
11-Jun-08 3:25 AM - 3:30 AM	326.901	8.927	399.003	10.896	725.904	19.823	100
11-Jun-08 3:20 AM - 3:25 AM	333.855	9.117	596.579	16.293	930.435	25.411	100
11-Jun-08 3:15 AM - 3:20 AM	191.432	5.228	319.523	8.725	510.955	13.953	100
11-Jun-08 3:10 AM - 3:15 AM	266.008	7.264	300.287	8.200	566.295	15.465	100
11-Jun-08 3:05 AM - 3:10 AM	1,019.275	27.834	1,179.071	32.198	2,198.347	60.032	100
11-Jun-08 3:00 AM - 3:05 AM	492.934	13.462	534.883	14.607	1,027.816	28.069	100
11-Jun-08 2:55 AM - 3:00 AM	641.821	17.527	883.489	24.127	1,525.311	41.653	100
11-Jun-08 2:50 AM - 2:55 AM	405.335	11.069	585.287	15.983	990.622	27.052	100
11-Jun-08 2:45 AM - 2:50 AM	824.555	22.517	892.617	24.376	1,717.172	46.893	100
11-Jun-08 2:40 AM - 2:45 AM	336.222	9.182	1,706.854	46.612	2,043.076	55.794	100
11-Jun-08 2:35 AM - 2:40 AM	1,027.063	28.049	1,131.557	30.903	2,158.620	58.953	100
11-Jun-08 2:30 AM - 2:35 AM	261.549	7.143	452.646	12.361	714.194	19.503	100
11-Jun-08 2:25 AM - 2:30 AM	828.379	22.623	1,789.418	48.870	2,617.797	71.493	100
11-Jun-08 2:20 AM - 2:25 AM	158.722	4.334	232.517	6.350	391.238	10.684	100
11-Jun-08 2:15 AM - 2:20 AM	150.704	4.116	302.198	8.252	452.902	12.368	100
11-Jun-08 2:10 AM - 2:15 AM	235.265	6.425	354.296	9.675	589.561	16.100	100
11-Jun-08 2:05 AM - 2:10 AM	441.796	12.065	696.175	19.011	1,137.971	31.076	100
11-Jun-08 2:00 AM - 2:05 AM	198.549	5.422	267.885	7.316	466.434	12.738	100
11-Jun-08 1:55 AM - 2:00 AM	790.445	21.585	1,000.142	27.313	1,790.587	48.898	100
11-Jun-08 1:50 AM - 1:55 AM	888.675	24.270	1,027.831	28.069	1,916.506	52.339	100
11-Jun-08 1:45 AM - 1:50 AM	266.990	7.291	345.488	9.435	612.479	16.726	100
11-Jun-08 1:40 AM - 1:45 AM	998.062	27.256	1,258.451	34.365	2,256.513	61.622	100
11-Jun-08 1:35 AM - 1:40 AM	700.471	19.129	4,838.299	132.122	5,538.770	151.252	100
11-Jun-08 1:30 AM - 1:35 AM	391.439	10.689	5,745.290	156.900	6,136.729	167.590	100
11-Jun-08 1:25 AM - 1:30 AM	414.492	11.319	1,339.320	36.576	1,753.813	47.895	100
11-Jun-08 1:20 AM - 1:25 AM	378.858	10.346	1,375.147	37.554	1,754.006	47.900	100

**Oaunetmon Statistical Detail (24 Hours, 5 Minute Averages)
(Port eth0 on ILS_UB_HQ (192.168.1.108) - Continued**

11-Jun-08 1:15 AM - 1:20 AM	1,132.984	30.942	2,041.649	55.756	3,174.634	86.698	100
11-Jun-08 1:10 AM - 1:15 AM	392.233	10.711	1,414.689	38.633	1,806.923	49.344	100
11-Jun-08 1:05 AM - 1:10 AM	288.883	7.889	1,097.220	29.962	1,386.103	37.851	100
11-Jun-08 1:00 AM - 1:05 AM	474.374	12.954	1,409.087	38.481	1,883.461	51.436	100
11-Jun-08 12:55 AM - 1:00 AM	356.790	9.744	1,444.765	39.454	1,801.555	49.198	100
11-Jun-08 12:50 AM - 12:55 AM	1,366.621	37.322	2,611.188	71.310	3,977.810	108.632	100
11-Jun-08 12:45 AM - 12:50 AM	580.208	15.845	673.051	18.380	1,253.259	34.225	100
11-Jun-08 12:40 AM - 12:45 AM	375.350	10.250	616.131	16.825	991.480	27.075	100
11-Jun-08 12:35 AM - 12:40 AM	906.596	24.759	1,122.462	30.654	2,029.058	55.412	100
11-Jun-08 12:30 AM - 12:35 AM	466.861	12.749	654.938	17.885	1,121.799	30.634	100
11-Jun-08 12:25 AM - 12:30 AM	611.071	16.687	786.396	21.475	1,397.467	38.163	100
11-Jun-08 12:20 AM - 12:25 AM	693.004	18.926	796.907	21.762	1,489.911	40.688	100
11-Jun-08 12:15 AM - 12:20 AM	466.479	12.738	594.609	16.238	1,061.088	28.976	100
11-Jun-08 12:10 AM - 12:15 AM	248.083	6.775	495.989	13.545	744.072	20.319	100
11-Jun-08 12:05 AM - 12:10 AM	175.586	4.795	385.570	10.530	561.156	15.325	100
11-Jun-08 12:00 AM - 12:05 AM	382.694	10.451	590.193	16.118	972.888	26.570	100
10-Jun-08 11:55 PM - 12:00 AM	380.101	10.380	532.724	14.548	912.824	24.928	100
10-Jun-08 11:50 PM - 11:55 PM	209.280	5.716	399.771	10.918	609.052	16.633	100
10-Jun-08 11:45 PM - 11:50 PM	269.304	7.354	3,448.221	94.163	3,717.524	101.517	100
10-Jun-08 11:40 PM - 11:45 PM	446.770	12.201	3,553.953	97.053	4,000.723	109.254	100
10-Jun-08 11:35 PM - 11:40 PM	956.138	26.112	1,165.095	31.818	2,121.232	57.930	100
10-Jun-08 11:30 PM - 11:35 PM	576.111	15.733	1,275.522	34.831	1,851.634	50.564	100
10-Jun-08 11:25 PM - 11:30 PM	234.197	6.396	1,219.412	33.300	1,453.609	39.696	100
10-Jun-08 11:20 PM - 11:25 PM	1,023.217	27.943	1,623.133	44.324	2,646.350	72.266	100
10-Jun-08 11:15 PM - 11:20 PM	689.325	18.825	847.350	23.142	1,536.675	41.967	100
10-Jun-08 11:10 PM - 11:15 PM	1,917.671	52.370	551.471	15.060	2,469.142	67.430	100
10-Jun-08 11:05 PM - 11:10 PM	4,085.717	111.571	1,406.877	38.420	5,492.594	149.991	100
10-Jun-08 11:00 PM - 11:05 PM	3,106.152	84.824	342.115	9.342	3,448.268	94.167	100
10-Jun-08 10:55 PM - 11:00 PM	3,236.466	88.383	609.885	16.656	3,846.351	105.039	100
10-Jun-08 10:50 PM - 10:55 PM	4,154.426	113.447	1,561.380	42.639	5,715.806	156.086	100
10-Jun-08 10:45 PM - 10:50 PM	10,224.853	279.244	1,126.553	30.765	11,351.405	310.009	100
10-Jun-08 10:40 PM - 10:45 PM	13,273.413	362.465	1,835.542	50.129	15,108.955	412.594	100
10-Jun-08 10:35 PM - 10:40 PM	12,160.410	332.082	743.359	20.300	12,903.770	352.382	100
10-Jun-08 10:30 PM - 10:35 PM	9,112.125	248.838	945.901	25.831	10,058.026	274.669	100
10-Jun-08 10:25 PM - 10:30 PM	6,094.479	166.420	1,717.019	46.889	7,811.497	213.309	100
10-Jun-08 10:20 PM - 10:25 PM	5,330.322	145.563	941.104	25.699	6,271.427	171.262	100
10-Jun-08 10:15 PM - 10:20 PM	4,921.268	134.392	898.440	24.535	5,819.708	158.927	100
10-Jun-08 10:10 PM - 10:15 PM	5,157.299	140.843	884.243	24.148	6,041.542	164.991	100
10-Jun-08 10:05 PM - 10:10 PM	5,656.080	154.459	1,341.987	36.648	6,998.067	191.107	100
10-Jun-08 10:00 PM - 10:05 PM	6,089.714	166.301	799.530	21.834	6,889.244	188.135	100
10-Jun-08 9:55 PM - 10:00 PM	6,033.354	164.756	820.266	22.400	6,853.619	187.156	100
10-Jun-08 9:50 PM - 9:55 PM	5,417.511	147.949	1,062.707	29.022	6,480.218	176.971	100
10-Jun-08 9:45 PM - 9:50 PM	3,424.052	93.509	1,692.754	46.227	5,116.806	139.735	100
10-Jun-08 9:40 PM - 9:45 PM	2,992.075	81.706	1,369.004	37.387	4,361.079	119.093	100
10-Jun-08 9:35 PM - 9:40 PM	2,495.119	68.142	1,552.380	42.396	4,047.499	110.538	100
10-Jun-08 9:30 PM - 9:35 PM	3,473.005	94.839	1,255.444	34.284	4,728.449	129.124	100
Totals for 10-Jun-08 9:30 PM - 11-Jun-08 9:30 PM							
Total Volume	2,202,013.789		933,737.354		3,135,751.144		
Average	7,750.054	213.180	3,281.348	89.979	5,515.701	303.159	99

REFERENCES

1. Hong, J., Kwon, S., and Kim. 1999. "WebTrafMon: Web-Based Internet Intranet Network Traffic Monitoring and Analysis System". *Elsevier Computer Communications*. 22(14):1333-1342.
2. Deri, L. and Suin, S. 2000. "Practical Network Security: Experiences with NTOP". *Computer Networks*. 34:873-880.
www.ingentaconnect.com/content/els/13891286/2000/.../art00158
3. Case, J., Fedor, M., Schoffstall, M., and Davin, J. 1990. "RFC1157/STD15: A Simple Network Management Protocol (SNMP)". Internet RFC May 1990. ietfreport.isoc.org/all-ids/draft-ietf-ppvpn-tc-mib-00.txt
4. Abiona, O.O., C.E. Onime, A.I. Oluwaranti, E.R. Adagunodo, L.O Kehinde, and S.M Radicella. "Development of a Non-Intrusive Network Traffic Monitoring and Analysis System." *African Journal of Science and Technology*. 7(2).
<http://www.ansti.org/volume/Abiona-Paper.pdf>.
5. Oetiker, T. and Rand, D. 1994-1998. MRTG: Multi Router Traffic Grapher. <http://ee-staff.ethz.ch/oetiker/webtools/mrtg>.
6. Ahmed Ait Ali, Fabien Michaut, and Francis Lepage. "End-to-End Available Bandwidth Measurement Tools: A Comparative Evaluation of Performances".
www.informatik.unilrier.de/~ley/db/.../Lepage:Francis.html
7. Kevin Lai and Mary Baker. 2000. "Measuring Link Bandwidths using a Deterministic Model of Packet Delay". *Proceedings of the conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*. 283-294. August 28-September 01, 2000. Stockholm, Sweden
8. Fraiwan, M. and G. Manimaran. 2008. "Scheduling Algorithms for Conducting Conflict-Free Measurements in Overlay Networks". *Computer Networks: The International Journal of Computer and Telecommunications Networking*. 52(15):2819-2830. October, 2008.
9. Dong-Yan Zhang , Meng-Zeng Hu, and Dong-Hui Fang. 2005. "Comparative Analysis of Available Bandwidth Estimation Tools". *Proceedings of the 9th WSEAS International Conference on Communications*. July 14-16, 2005. Athens, Greece
10. Kola, G. and Mary K. Vernon. 2006. "QuickProbe: Available Bandwidth Estimation in Two Roundtrips". *ACM SIGMETRICS Performance Evaluation Review*. 34(1) June 2006.
11. Chobanyan, A., M. Mutka, V. Mandrekar, and Ning Xi. 2008. "End-to-End Available Bandwidth as a Random Autocorrelated QoS-Relevant Time-Series". *Computer Networks: The International Journal of Computer and Telecommunications Networking*. 52(6):1220-1237. April, 2008
12. Heung Ki Lee, Varrian Hall, Ki Hwan Yum, Kyoung Ill Kim, and Eun Jung Kim. 2007. "Bandwidth Estimation in Wireless LANs for Multimedia Streaming Services". *Advances in Multimedia*. 1:9.
13. Muhammad Mukarram Bin Tariq, Amogh Dhamdhere, Constantinos Dovrolis, and Mostafa Ammar. 2005. "Poisson versus Periodic Path Probing (or, does PASTA matter?). *Proceedings of the Internet Measurement Conference 2005 on Internet Measurement Conference*. 10-10, October 19-21, 2005. Berkeley, CA
14. Bharambe, A.R., C. Herley, and V.N. Padmanabhan. 2005. "Some Observations on bitTorrent Performance". *ACM SIGMETRICS Performance Evaluation Review*. 33(1).
15. Jain, M., and C. Dovrolis. 2004. "Ten Fallacies and Pitfalls on End-to-End Available Bandwidth Estimation". *Proceedings of the 4th ACM SIGCOMM Conference on Internet Measurement*. October 25-27, 2004. Taormina, Sicily, Italy.
16. Péter HÁga , Krisztián Diriczi, Gábor Vattay, and István Csabai. 2007. "Granular Model of Packet Pair Separation in Poissonian Traffic". *Computer Networks: The International Journal of Computer and Telecommunications Networking*. 51(3):683-698. February, 2007.
17. Fraiwan, M. and G. Manimaran. 2008. "Link Stress Reduction in Topology-Aware Overlay Path Monitoring". *Computer Communications*. 31(10):2086-2093. June, 2008.

SUGGESTED CITATION

Ayofe, A.N., O. Osunade, A.R. Ajetola, S.B. Adebayo, and F.A. Atanda. 2009. "Comparative Evaluation of Available Bandwidth Estimation Tools (PRTG and OAUENTMON) in a Campus-Wide Area Network". *Pacific Journal of Science and Technology*. 10(2):429-452.



[Pacific Journal of Science and Technology](http://www.akamaiuniversity.us/PJST.htm)