

Sangdao Prontaweechoksakul 2012: A Study of IPv4 Addresses Allocation and Utilization within Kasetsart University. Master of Science (Computer Science), Major Field: Computer Science, Department of Computer Science. Thesis Advisor: Assistant Professor Sukumal Kritisin, Ph.D. 96 pages.

This research is a study on IPv4 address allocation and utilization at Kasetsart University. Referenced the previous study of Visible Internet by Heidemann, et al., we did a few experiments in order to understand IP addresses usage characteristics within the university. Kasetsart University was assigned a class B block address -- 158.108.0.0/16 for its domain. The university consists of five campuses throughout Thailand. Many campus computers are using private address behind firewalls.

The research has studied /24 ($2^8 = 256$) blocks which are allocated to departments or organizations of the university. We used both active and Passive Probing which used Internet Control Message Protocol (ICMP) and Transmission Control Protocol (TCP) on various ports. The experimental results show that only 49.80% of allocated IP addresses are used and to find IP addresses, using TCP is more visible than using ICMP. We also analyzed the address characteristics, such as, availability, volatility, and uptime. The evaluations show that, IP addresses as the following characteristics: 3.95 % is always stable; 10.04 % is sometimes stable; 16.49 % is intermittent; 19.32 % is underutilized; and finally 50.20 % is unclassifiable.

Student's signature

Thesis Advisor's signature