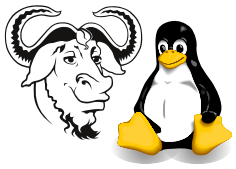

Higher Diploma in Computer Systems Administration
(41300)

Systems and Network Management CMT3335

Practical Assignment: Using Cricket to Monitor Broadcast and Multicast Network Traffic

Report Submission Deadline: 5 pm, Monday 5 August 2002, to Departmental Office *and* a soft copy by email to `nicku@vtc.edu.hk`

Your task is to create a web-based system that monitors broadcast and multicast network traffic using Cricket and SNMP. You are required to provide monitoring of the following:

- monitor incoming and outgoing network traffic on *all network interfaces* of your computer;
- monitor incoming and outgoing traffic which is *not unicast* on *all network interfaces* of your computer.

All network traffic is to be monitored in units of *bits per second*. Kilobits or megabits per second are okay. One kilobit per second is 2^{10} bits per second; one megabit per second is 2^{20} bits per second.

You are required to submit a report showing screenshots of your work, including a hard copy of the Cricket setup that you wrote to achieve this, and a written description of how it works. At least one of your screenshots should show a short-term graph with at least six hours of data collected by your system.

To do this, you will need to have the agent running on your machine, configured with access to the MIB-2 tree. You should have done this already; the process is described in the handout entitled *SNMP Agent and the Set Operation*.

For each of the two variables you monitor, you should provide:

- at least one set of graphs, monitoring the data over a daily, weekly, monthly and annual basis;
- meaningful labels to the graphs; for example, the graph for Internet network traffic should be labelled something like: "Internet network traffic" rather than as "`3`" or "`ppp0`". The axes of the graphs should also be labelled properly.
- meaningful names on the links to the graphs.

For each network interface, there should be one set of graphs for the broadcast and multicast data, and another set for the total network traffic.

Note that the Net-SNMP agent does not implement the deprecated `ifInNUcastPkts` or `ifOutNUcastPkts` managed objects in the `mib-2 ifTable`. To implement the requirement for monitoring non-unicast network traffic, you will need Cricket to perform some arithmetic with the data from the available managed objects in the `mib-2 ifTable`.

You should also demonstrate in your report that the data in your graphs is meaningful by comparing it with the output from programs such as `ifconfig`. Perform the necessary

calculations to indicate that the network traffic shown in your graph is consistent with the output of `ifconfig`.

Please note that I have revised the first Cricket document quite a lot, with some useful description of the way that Cricket works, and its configuration. It is available at `http://nicku.org/snm/lab/cricket/cricket.pdf`.

Marks will be allocated according to this scheme:

Work	***Mark Allocated***
Meaningful titles and labelling	10%
Implementation of total network traffic at each interface	10%
Implementation of total non-unicast network traffic at each interface	25%
Comparison between data displayed in the graph and data obtained elsewhere from the computer, with calculations showing that the data is consistent	20%
Written description showing how your system works, and how you designed it	35%

You should be able to explain what you did and why. Your work must be original. You may use any operating system. Screenshots in Linux may be made using `import`, part of the ImageMagick software package.