TrafDump v.118

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Abstract

This documents outlines main features, installation proceedings and known problems for TrafDump.

Contents

Chapter 1

Project overview

TrafDump was designed as a network evaluation benchmark application, aiming at identifying bottlenecks, network environment constraints and limitations, and providing comprehensive and complete results.

The application supports the following modes of operation:

- **Quick Test** – this performs a quick test of the environment, evaluating only the multicast capabilities for 400, 800, 1200, 1600 and 2000 Kbps transfers. After the test, a PDF report is generated with overall results;
- **Full Test** – this performs a full test of the environment, evaluating the TCP throughput for each client, multicast capabilities for bandwidth from 400 up to 4000 Kbps, with step of 100 Kbps. The resulting PDF report contains both the overall and detailed results for each test.
- **Estimate TCP** – this runs the TCP Throughput test, estimating both the upload and download capabilities of the clients.
- **Estimate multicast** – this runs a multicast test, estimating the reception quality (message loss), and sustained transfer rate. This test can be performed for both individual bandwidths (such as, for example, 1000 Kbps), and for bandwidth interval (for example, from 1000 to 2000 Kbps, with step of 100 Kbps).
- **Estimate broadcast** – this is essentially the same as the multicast test, with the difference that broadcasting messages are used instead of multicast ones.

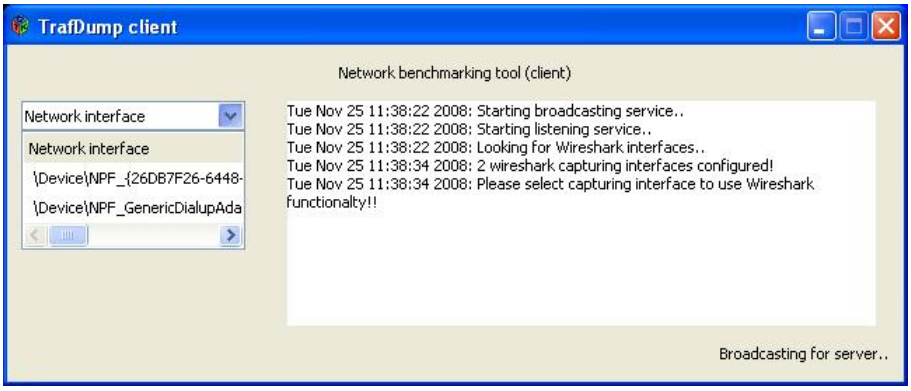

Figure 1.1: Trafdump client interface: network card selection

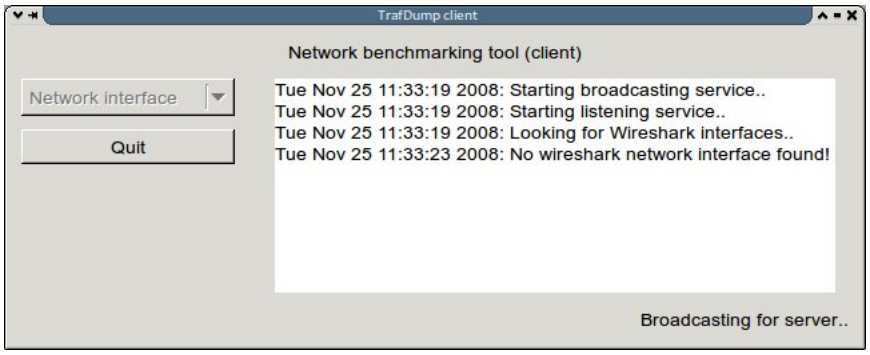

Figure 1.2: Trafdump client interface: traffic capture not available

- **Wireshark integration** – this allows a more detailed evaluation of the environment, by running a wireshark application on each client for traffic analysis. After the execution, and resulting files are retrieved for posterior analysis. If wireshark is not installed on the clients, this does nothing.

  Note that in order to use wireshark, it is necessary to select the network card for the capturing, as shown on figure 1. If wireshark is not installed, or the user has no privileges to perform traffic capturing, the options is not available and the network card selection box is disabled (figure 1).

For each test, different sets of client machines can be selected. By default, when a client connects to the trafdump application, it is selected. To deselect a client, simply click on its icon. Active clients are marked as blue, and inactive as black, as shown on figure 1.

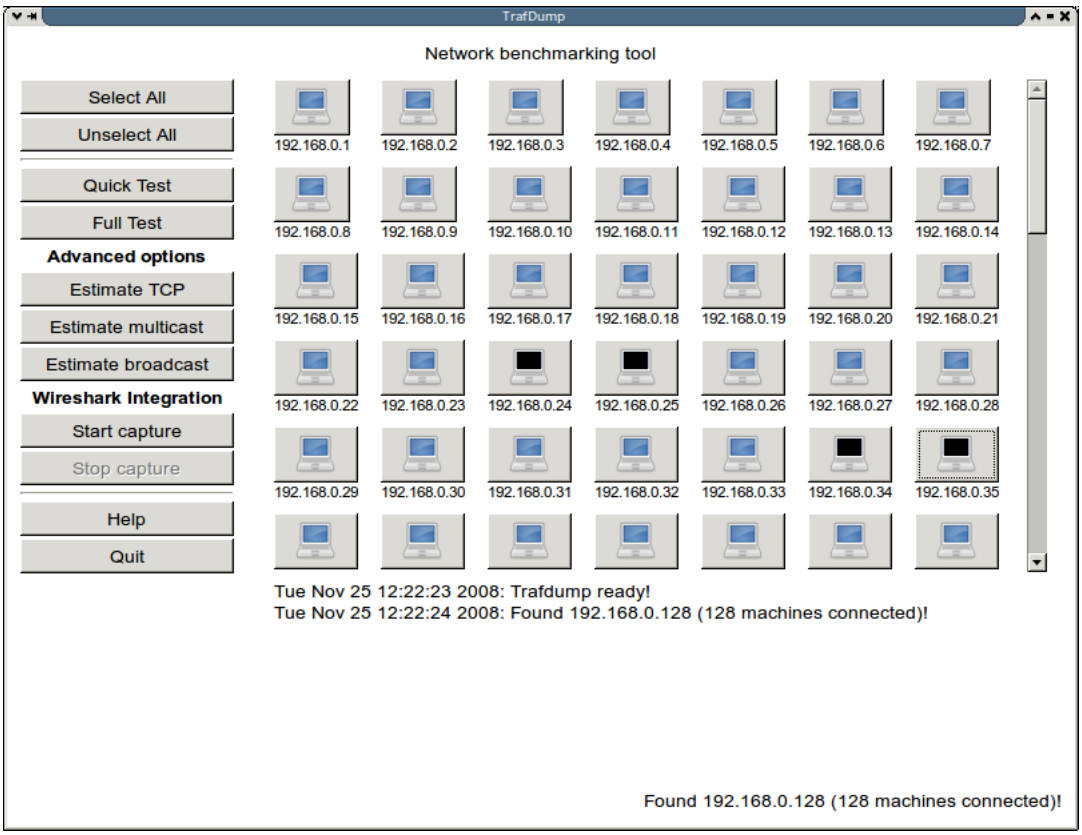

Figure 1.3: Trafdump interface: client selection

In case of a network communication failure with one of the clients, its state will automatically change to deselected. If mouse is passed over its icon, a short message will appear with the description of last communication error.

The results of all experiments are saved into independent directories, named according to the experiment description plus a time stamp (for example, **Quick experiment.122827281**). This allows running different experiments with the same name. Among with PDF reports, individual results in PNG and CSV format are also saved and can be used for detailed evaluation.

Chapter 2

Installation

TrafDump was developed in a cross-platform way, with the goal of covering the most widely available platforms. Currently, the application is supported on Microsoft Windows and Linux environments, running at least on a pentium-3 500 MHz with 256 MB of RAM.

The application was written in *python* [1] 2.5, but it is also known to work with *python* 2.4 and 2.6. Graphical interface was written in *PyGTK* [2], using *GTK* toolkit [3]. Chart are created using *Matplotlib* [4], and PDF reports are generated with *ReportLab* [5] libraries. If you intend to use the traffic capturing capabilities of the application, it is also necessary to install the *WireShark* [6] application. Please note that the *Wireshark* uses additional 90 MB of disk space, and delays the startup of client application by a few seconds. Therefore, we do not recommend the usage of this application for production use.

Binary version of TrafDump includes all the necessary libraries in a compact way. Therefore, while the binary distribution of TrafDump requires 40 MB disk space, the installation of all libraries would require more that 180 MB. The installation of libraries is only required when using source version of the application.

TrafDump is distributed in two versions: one compacted with *7zip* [7], and using a common *ZIP* file. The *7zip* version is recommended, as the distribution file is

[1] http://www.python.org/
[2] http://www.pygtk.org/
[3] http://www.gtk.org/
[4] http://matplotlib.sourceforge.net/
[5] http://www.reportlab.org/
[6] http://www.wireshark.org/
[7] http://www.7zip.org/

roughly 50% smaller.

To use the application, uncompress the distribution files, and execute *trafdump.exe* on server machine, and *client.exe* on each client. When using source version, the corresponding files are *trafdump.py* and *client.py*.

In order to allow communication between main application and clients, certify the following ports are open in your firewall:

- **TCP port 10000**: used for communication between clients and the main application;
- **UDP port 10000**: used for clients discovery;
- **UDP port 10001**: used for multicast experiments;
- **UDP port 10002**: used for broadcast experiments.

Chapter 3

Known issues

The following issues are known in this version of TrafDump:

- When clients go offline, the main application won't detect it until next experiment. This will be fixed in future versions.
- Detailed experiment description (such as the wireless parameters, user name, and additional user notes) is not available in this version. This will be fixed in future versions.
- When many clients are used for an experiment, the resulting PDF file may contain very long text lines. This will be fixed in future versions.
- Very big charts may result in low readability. This will be fixed in the next versions.
- After an experiment is finished, resulting graphics or PDF files are not automatically displayed. This will be fixed in the next versions.
- (Linux) if main application window loses focus, or when no mouse or keyboard activity is performed for a long time, the window may stop being refreshed. To work around this problem, simply move the mouse. This will be fixed in the next versions.
- (Linux) if the current user doesn't have the writing permissions to the directory where client is running, tshark application won't be able to capture traffic, even when running by root user. This can be temporarily solved by running "chmod 777 ." on a current directory, or changing the directory owner to root.