Network Diagnostics Tool

Prerequisites

When running the tool on Linux make sure the following packages are installed on the machine:

* sqlite3
* python (pandas, numpy, matplotlib)
* sysstat, iostat, vmstat

Running the Network Diagnostics Tool

To run the tool, use command line to navigate to the project directory and execute **runNetDiagnosticsTool.sh**

This script will run the tool that is responsible for monitoring several network and system statistics, logging their output in a csv file, and later storing the collected data in an SQLite database.

When running the script, you should provide a TARGET IP as an argument (set the target address to another IP on the network you want to perform diagnostics on). If no argument is provided, then the target will be set to a default IP address.

After runNetDiagnosticsTool.sh has completed, all output csv files are available in the ‘Data’ directory, as well as the database file; **NetDiagnostics.db**

To allow for the expansion of the data collection, the script does not restore the database, therefore if you wish to reset the database prior to running the tool you must navigate to the ‘Data’ directory and execute the **reset\_db.sh** script.

Network Diagnostics Tool Flow

The **runNetDiagnosticsTool.sh** executes the build output of the project.

Tool design is detailed in *NetDiagnosticsTool*\_*Report*.

Data Analysis and Visualization

1. After data collection has completed, open the Analysis directory
2. Run the **data\_analysis.py** script
3. Basic analysis will be performed on the database, presumable network issues are logged in the console
4. Also in the Analysis directory, run the **visualize\_trends.py** script
5. Images with visualized trends (bandwidth usage, ping latency) are saved in the same directory and can be viewed after script has completed

Known Issues

* Tool assumes it is consistently monitoring the same network every time it is run, therefore the collected data is always stored in the same database and tables. Further development of the tool should include the ability to support monitoring multiple network connections.
* Inability to configure the intervals and time frame of data collection without changing the bash scripts used by the Tool (values are currently hard-coded)