BLEKINGE INSTITUTE OF TECHNOLOGY

Installation Documentation

TCP Evaluation in Semi-Live Streams

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1. GLOSSARY AND ABBREVIATION:

RTT – Round Trip Time
The total time taken for a data unit to reach destination from source and the acknowledgement from destination to reach the source.

SST – Socket Setup Time
The time taken for the three-way handshake to be executed.

ACK – Acknowledgement
The packet indicating the acknowledgement number of the packet received.

SEQ – Sequence Number
The number assigned to the data packet, which is being sent to destination.

MySQL – Structured Query Language
Used for storing and managing data in relational database management system.

PHP – Hypertext Preprocessor
It is a server side scripting language for creating dynamic Web pages.

HTML – Hypertext Markup Language
This protocol defines how messages are transmitted and formatted and interaction with the web pages.

RRD tool – Round Robin Database Tool
The RRD tool handles time series data which includes RRD data for graphical representation of the retrieved or stored data.

TCP – Transfer Control Protocol
A Standard way in which the communication between two systems takes place.

SSH – Secure Socket Shell
A UNIX based command interface protocol for securely getting access to a remote computer.

DPMI – Distributed Passive Measurement Infrastructure
Efficient use of passive monitoring equipment providing up-to-date and relevant data.

GUI – Graphical User Interface
An interface that allows users to interact with electronic devices through graphical icons.

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2. PACKAGES INCLUDED FOR THE TOOL:

- TCP packet retrieving package
- RTT calculation
- Socket Setup Time calculation
- Data Rate per Stream
- Data export
- Statistics computation
- Web GUI

3. OTHER DOCUMENTS ATTACHED:

- Project Proposal v1.1
- Project Specification v1.3
- Software Requirements Specification v1.4
- Design Document v1.3
- Acceptance Test Plan v1.2
- Developer Documentation v1.1
- User Documentation v1.1

4. PREREQUISTES REQUIRED:

- DPMI setup
- MySQL server
- MySQL Database
- SNMP
- RRD tool
- APACHE
- PHP
- phpmyadmin
- SSH
- PERL Modules

5. PRE INSTALLATION REQUIREMENTS FOR TOOL:

- The software packages must be installed on the consumers localhost.

5.1: libcap_utils

For the installation of libcap_utils, the following steps are to be followed:

- Open the terminal and run the following command:

  sudo apt-get install git

- After installing Git, it should be cloned via the terminal command:

  git clone http://github.com/DPMI/libcap_utils.git

- Go to the libcap_utils folder and run the following commands:

  cd libcap_utils

  apt-get install autoconf

apt-get install build-essential autoconf libtool rrdtool librrd-dev libxml2-dev pkg-config libpcap-dev libssl-dev

autoreconf --install mkdir

build

cd build

../configure

make

make install

exit

5.2: Apache

For the installation of Apache, run the following terminal command:

sudo apt-get install apache2

For restarting apache2 server,

Sudo /etc/init.d/apache2 restart

5.3: MySQL

For the installation of MySQL server, run the following terminal command:

sudo apt-get install mysql-server

The user can set a password for the database and press Enter.

5.4: RRD tool

For the installation of RRD tool, run the following terminal commands:

sudo su

apt-get install libpango1.0-dev libxml2-dev

wget http://oss.oetiker.ch/rrdtool/pub/rrdtool-1.4.7.tar.gz

tar -zxvf rrdtool-1.4.7.tar.gz

cd rrdtool-1.4.7
mkdir /tmp/rrdbuild
export BUILD_DIR=/tmp/rrdbuild
mkdir /opt/rrdtool-1.4.7
export INSTALL_DIR=/opt/rrdtool-1.4.7
./configure –prefix=$INSTALL_DIR && make && make install
apt-get install rrdtool
apt-get install php5-rrd

5.5: PHP MyAdmin

For the installation of phpmyadmin, run the following terminal command:

sudo apt-get install phpmyadmin

Press Space for selecting the apache server and click Enter. Then configure database for phpmyadmin by selecting 'Yes' from the dialogue box. The user can set a password for phpmyadmin.

5.6: PHP

For the installation of PHP, run the following terminal command:

sudo apt-get install php5

5.7: SNMP

For the installation of SNMP, run the following terminal command:

sudo apt-get install snmp
sudo apt-get install snmpd

5.8: SSH

For the installation of SSH server, run the following terminal command:

sudo apt-get install ssh
sudo apt-get install openssh-server

5.9: PERL MODULES

Perl modules can be installed by any of these three methods;

1. sudo su
   perl –MCPAN –e 'install Module::Name' #Module::Name is the required module to be installed
2. sudo su

perl –MCPAN –e shell
cpan>install Module::Name

3. sudo apt-get install cpanminus
   \curl –I http://cpanmin.us | perl – App::cpanminus
   cpanm Module::Name

a) DBI Module:

sudo su
perl –MCPAN –e 'install DBI'

b) DBD::MySql

sudo su
apt-get install libdbd-mysql
perl –MCPAN –e 'install DBI'

c) RRD::Simple

sudo su
apt-get install aptitude
aptitude update
aptitude install –f
aptitude install librrds-perl

It can be done in another way also:

wget http://search.cpan.org/CPAN/authors/id/N/NI/NICOLAW/RRD-Simple-1.44.tar.gz
tar zxfv RRD-Simple-1.44.tar.gz
cd RRD-Simple-1.44/
perl Makefile.PL
perl Build
perl Build install

perl –MCPAN –e 'install RRD::Simple'

d) Data::Dumper

sudo su
perl –MCPAN –e shell
cpan>install Data::Dumper

e) Net::SNMP

sudo su
perl –MCPAN –e 'install Net::SNMP'

f) Mail::Sender

sudo su
perl –MCPAN –e 'install Mail::Sender'

The user can assign default SMTP settings if needed.

g) List::MoreUtils

sudo su
perl –MCPAN –e 'install List::MoreUtils'

h) Experimental

sudo su
perl –MCPAN –e 'install experimental'

i) Net::SSH::Perl

sudo su
apt-get install libgmp-dev
apt-get install libnet-ssh-perl
perl –MCPAN –e shell

cpan>install XS

cpan>install Net::SSH::Perl

j) Net::SCP::Expect

sudo su

perl –MCPAN –e 'Net::SCP::Expect'

5.10: PREREQUISITES REQUIRED FOR TRAPS

In the folder /etc/snmp/ open the file "snmptrapd.conf". Add the following lines

snmpTrapdAddr udp:50162
disableAuthorization yes
authCommunity log,execute,net public
traphandle 1.3.6.1.4.1.41717.10.* /usr/bin/perl /path/to/et2536-vaga/project/web/backend.pl

Open the file snmpd in /etc/default/. Edit the line

TRAPDRUN=no to TRAPDRUN=yes

Restart the snmp server by using

sudo service snmpd restart

6. HOW TO INSTALL THE TOOL:

- The user system must be directly connected to the consumer of DPMI.

The consumer should have the libcap_utils and tshark installed as prerequisites.
The user should have the sshpass installed.
The file in the default location of the apache server can be changed to required path by following commands:

sudo nano /etc/apache2/sites-available/000-default.conf

and change the following line as choice of user:

/home/Ubuntu/

Also user must do

sudo nano /etc/apache2/apache2.conf

and the working path is seen as:

/home/Ubuntu/

Then restart the apache server using the following command:

sudo service apache2 restart

- The user must clear the browsing history after restarting the apache server.

- After extracting the files from the tar file the project2 folder from the file should be moved to the working directory according to the choice of the user

/home/ubuntu/

The user must do the following:

- Open a web server
- Type local host and open project 2
- Then open web in that folder
- Open 1.php file
- The login page will appear.

6.1 Database Configuration

- In your browser open http://localhost/phpmyadmin/
- Login with the specified username and password.
- Click on databases
- Create a new database called ENIGMA.
- Click on the new database you just created in the top menu click on Import.
- Check browse from my computer and click choose and browse for file ENIGMA.sql
- Import the ENIGMA.sql file into your database.

Open terminal and type the command "perl hes.pl" the tool and filter runs one after the other.

7. REFERENCES:

[1] Patrik Arlos, Markus Fiedler, and Arne A. Nilsson. *A Distributed Passive Measurement Infrastructure*, In Passive and Active Measurement Workshop (PAM05), US, 2005.

[2] Ian Sommerville, *SOFTWARE ENGINEERING*, 9th ed. Pearson Publications, 2011.