A Tutorial on Network Weathermaps

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I. Introduction

The **INANNA** is an open-source software written by Mark Meiss from Indiana University. It is a valuable visualization tool that co-exists with the MRTG tool. Using MRTG alone, we can already see the current bandwidth consumption for each link. But, it is hard to see the overall picture of the network. Thus, the weathermaps was used for **visualizing the overall network** in form we usually call a **network weathermap**.

In PREGINET, we use this tool as a front-end to **MRTG**. The whole network is subdivided into three small regions (Luzon, Visayas and Mindanao). By clicking the image map, it will take you to these separate weathermaps and the other smaller networks found in that region. To make the page more dynamic, we can use a javascript for showing the graph when you hover your mouse over the link.

The weathermap represents the traffic or bandwidth consumption for each link using **colored representation**. When a link is fully utilized (100% utilized), the color of the link is RED. When the color is GREEN, it means our link is under utilized (less traffic).

There have been some changes in the original code of the INANNA but the authors did not share it to the net. So, what we are using in ASTI is the old version of it. You can search for an updated version of the code on the net but the installation below may no longer be valid.

See: http://noc.asti.dost.gov.ph/weathermap/pregi/index.php for a sample weathermap of PREGINET. Click on the image map on the left to zoom in.

II. How does the weathermap system works?

A. The INANNA Components & Requirements

The INANNA software just like any other open-source packages contains docus, bin, README's etc. In INANNA, the **bin** is the directory where the executable perl programs reside and also your config files. The **history** directory stores the archive of images. This directory gets larger every minute coz it contains the gif files of weathermaps. This archive is used for generating "movies" of the weathermaps.

These are the requirements for having a working weathermap system:

1. A server where your network monitoring tools (especially MRTG) is installed.
2. The server must be a web server.
3. Knowledge in Vi, Perl, PHP, MsPaint, and basic unix for installing and troubleshooting the weathermap system.

B. Directory Structure

The INANNA software can be installed in any directory but it is better to install it in **/usr/local/weathermap.** Inside this directory are the following files and subdirectories:

Sample content of the /usr/local/weathermap:

```
LICENSE
README
doc
MANIFEST
bin
    /asti
        /asti-bw.txt
        /asti-inanna.conf
        /asti-collector.pl
        /asti-inanna.pl
    /mindanao
    /luzon
    /pregi
    /visayas
history
    /asti
    /mindanao
    /luzon
    /pregi
/visayas
```

asti-bw.txt - This is the file which contains the links and their corresponding bandwidth or speeds.
asti-inanna.conf – This contains the configurations needed by the **inanna.pl**. This is where you will tell the inanna.pl what image to use, where to locate the clock and time, where to superimpose the colored links using your indicated coordinates, the color of the background etc.
asti-collector.pl – This is the perl script that gets information from MRTG logs. You just edit this file to tell where to open the mrtg log files.
asti-inanna.pl – This is the main perl script in INANNA. This can be edited if you want. In this file, you can change the output of the html page by changing the headers or footers, javascript, some image map coordinates not included in the .conf file.

C. Configurations

Here is a sample asti-inanna.config

```
param collector         /usr/local/weathermap/bin/asti/asti-collector.pl
param template          /usr/local/apache/www/weathermap/asti/asti13.gif
param prefix           /usr/local/apache/www/weathermap/asti/index
param archive           /usr/local/weathermap/history/asti
param legend            lower right
param legend title      Line Utilization
param colors            10
param scale             linear relative 10 90
param title            ASTI Network Weathermap
param background        0xFFFFFF
param time             642 80
param clock             707 94 40 down
param refresh           300

palette 1       0       255     0
palette 5.5     255     255     0
palette 10      255     0       0

################################################
# DOST-BELL
link dost_bell.out arrow 271 406 251 389
link dost_bell.out percent 268 380 absolute
link dost_bell.out style full point
link dost_bell.out width 8
area dost_bell.out url http://noc.asti.dost.gov.ph/mrtg/asti-net/dost_bell/dost_bell.html
area dost_bell.out polygon 268 409 246 395 225 373 229 367 255 382 274 403

link dost_bell.in arrow 227 370 251 389
link dost_bell.in percent 243 360 absolute
link dost_bell.in style full point
link dost_bell.in width 8

################################################
# ASTI-BICUTAN
link bicutan.out arrow 326 422 394 422
link bicutan.out percent 342 430 absolute
link bicutan.out style full point
link bicutan.out width 8
area bicutan.out url http://noc.asti.dost.gov.ph/mrtg/asti-net/bicutan/bicutan.html
area bicutan.out polygon 460 426 394 430 327 426 326 418 394 413 460 418

link bicutan.in arrow 460 422 394 422
link bicutan.in percent 419 430  absolute
link bicutan.in style full point
link bicutan.in width 8

################################################
```

III. Installation

1. Prepare the final network diagram that will be used for the weathermap. It can be a gif file or jpeg file. Let's call it **bicutan.gif.** Put this file in the **/usr/local/apache/www/weathermap** or in any directory under your web server.
2. Gather the following materials or packages:
    i. **weathermapv0.tar.gz**
    ii. **Perl 5.004 or later**
    iii. **UCD SNMP 3.5**
    iv. **Perl SNMP 1.8a4**
    v. **GD 1.3**
    vi. **Perl GD 1.18**
    vii. **GIFMerge**
    viii. **MRTG 2.5.3 (not needed if working already)**

3. Log-on to the server as root and follow the instructions below.
    i. Check if the packages stated above are already installed in your server. If not, search and download the said packages from the net and install them. Note that these packages are pre-requisites of the INANNA program in order to run properly.
    ii. If all the packages have been installed, gunzip the weathermapv0.tar.gz into **/usr/local/weathermap.**

```
root# cd /usr/local
root# cp weathermapv0.tar.gz ./
root# gunzip weathermapv0.tar.gz
root# tar –xvf weathermapv0.tar
root# mv weathermapv0 weathermap
```

After the above commands, we are now ready to edit the necessary files. First, list the links to be included in the weathermap.

- Edit the **pregi-bw.txt: (See example below)**

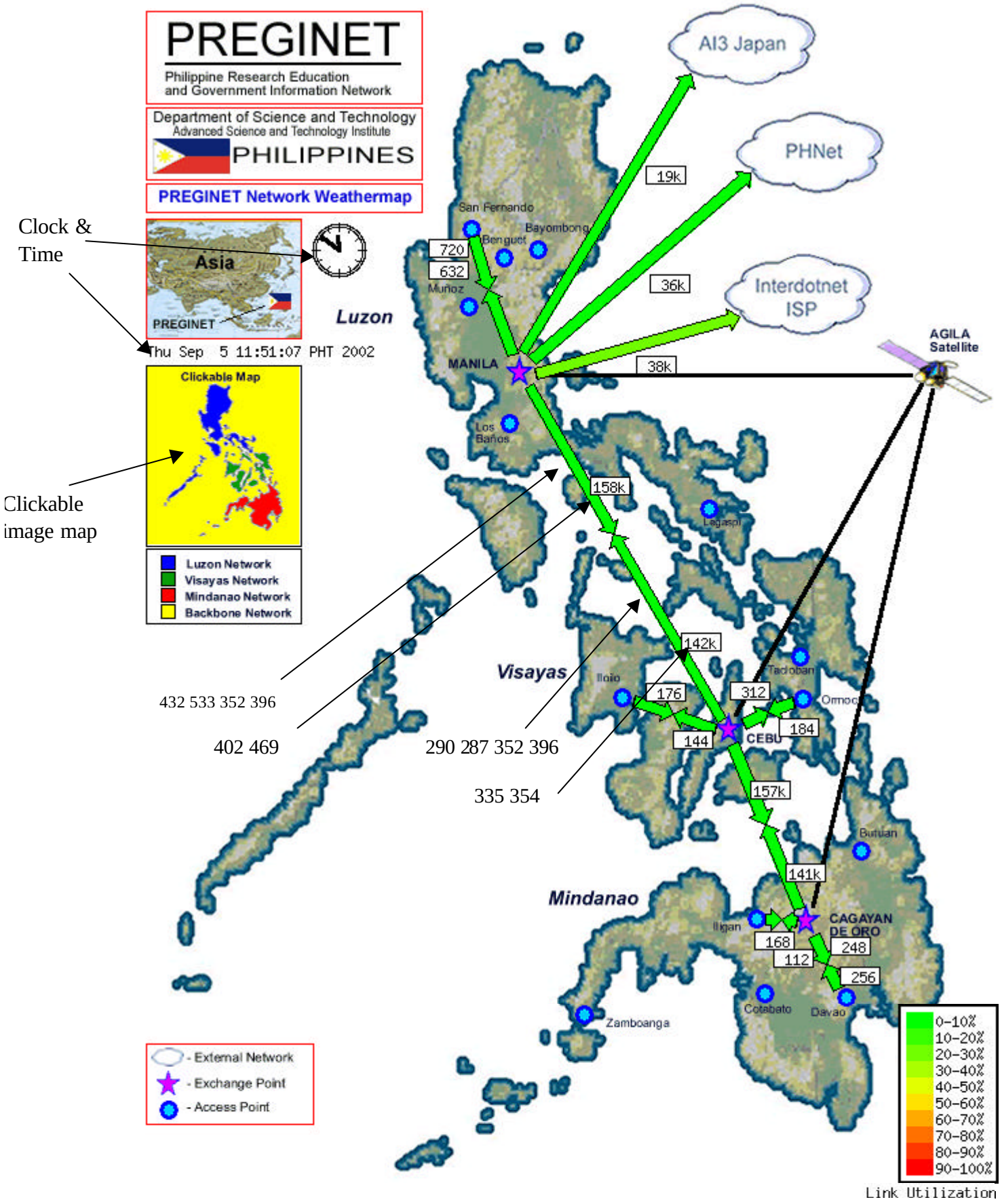
```
cebu-cdo        2000000      up
cebu-ilo        2000000      up
cebu-dost7      10000000     up
cebu-asti       4096000      up
cdo-dvo         200000       up
dvo-dost11      10000000     up
asti-phnet      512000       up
asti-ai3net     10000000     up
interdotnet     128000       up
cbu-ormoc       1000000      up
ormoc-tac       1000000      up
cdo-iligan      1000000      up
dmmmsu          512000       up
```

- Edit the **pregi-collector.pl: (**Change the red colored text)

```
$logfile = "/usr/local/apache/www/mrtg/pregi-net/$linkname/$linkname.log";
$errorfile = "/usr/local/apache/www/mrtg/pregi-net.err/$linkname/$linkname.log";
$bwfile = "/usr/local/weathermap/bin/asti/pregi-bw.txt";
```

- Edit the **pregi-inanna.pl: (see sample image below)** Open the image in MSPaint to get the coordinates where the links will be placed. See sample config and final image output below:

```
param collector         /usr/local/weathermap/bin/pregi-collector.pl
param template          /usr/local/apache/www/weathermap/bicutan.gif
param prefix           /usr/local/apache/www/weathermap/index
param archive           /usr/local/weathermap/history/
param legend            lower right
param legendtitle       Link Utilization
param colors            10
param scale             linear relative 10 90
param title             DOST Bicutan Network Weathermap
param background        0xffffff
param time              9 255
param clock             130 167 40 down
param refresh           300

palette 1       0       255     0
palette 5.5     255     255     0
palette 10      255     0       0

#####################################################################
#cebu-asti link
link cebu-asti.out arrow 432 533 352 396
link cebu-asti.out percent 402 469 absolute
link cebu-asti.out style full point
link cebu-asti.out width 8
area cebu-asti.out url http://noc.asti.dost.gov.ph/mrtg/pregi-net/cebu-asti/cebu-asti.html
area cebu-asti.out polygon 287 289 293 285 356 385 363 389 435 531 429 535 350 407 341 393

link cebu-asti.in arrow 290 287 352 396
link cebu-asti.in percent 335 354 absolute
link cebu-asti.in style full point
link cebu-asti.in width 8

#####################################################################
#cebu-cdo link
link cebu-cdo.out arrow 440 551 464 610
link cebu-cdo.out percent 453 578 absolute
link cebu-cdo.out style full point
link cebu-cdo.out width 9
area cebu-cdo.out url http://noc.asti.dost.gov.ph/mrtg/pregi-net/cebu-cdo/cebu-cdo.html
area cebu-cdo.out polygon 436 553 444 549 469 598 474 614 493 670 485 674 460 620 452 605

#area cebu-cdo.in
link cebu-cdo.in arrow 489 672 464 610
link cebu-cdo.in percent 479 639 absolute
link cebu-cdo.in style full point
link cebu-cdo.in width 8
```



You can read the detailed documentation in the **inanna.tar.gz** found in the package.

IV. Testing / Troubleshooting

To test the installed software:

```
root# cd /usr/local/weathermap/bin
root# ./pregi-inanna.pl pregi-inanna.conf
root#
```

Note:

- If it doesn't give an error, view now the weathermap in your web directory.

[Please email me some of your encountered errors and specify the command and output messages in the command-line.]

V. Related Links

http://noc.asti.dost.gov.ph
http://netmon.asti.dost.gov.ph