Measuring Delay with smokeping

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## Papeete, French Polynesia

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Introduction

- Based on RRDTool (the same author)

- Measures ICMP delay and can measure status of services such as HTTP, DNS, SMTP, SSH, LDAP, etc.

- Allows you to define ranges on statistics and generate alarms.

- Written in Perl for portability

- Relatively easy to install. In Debian it's very simple.
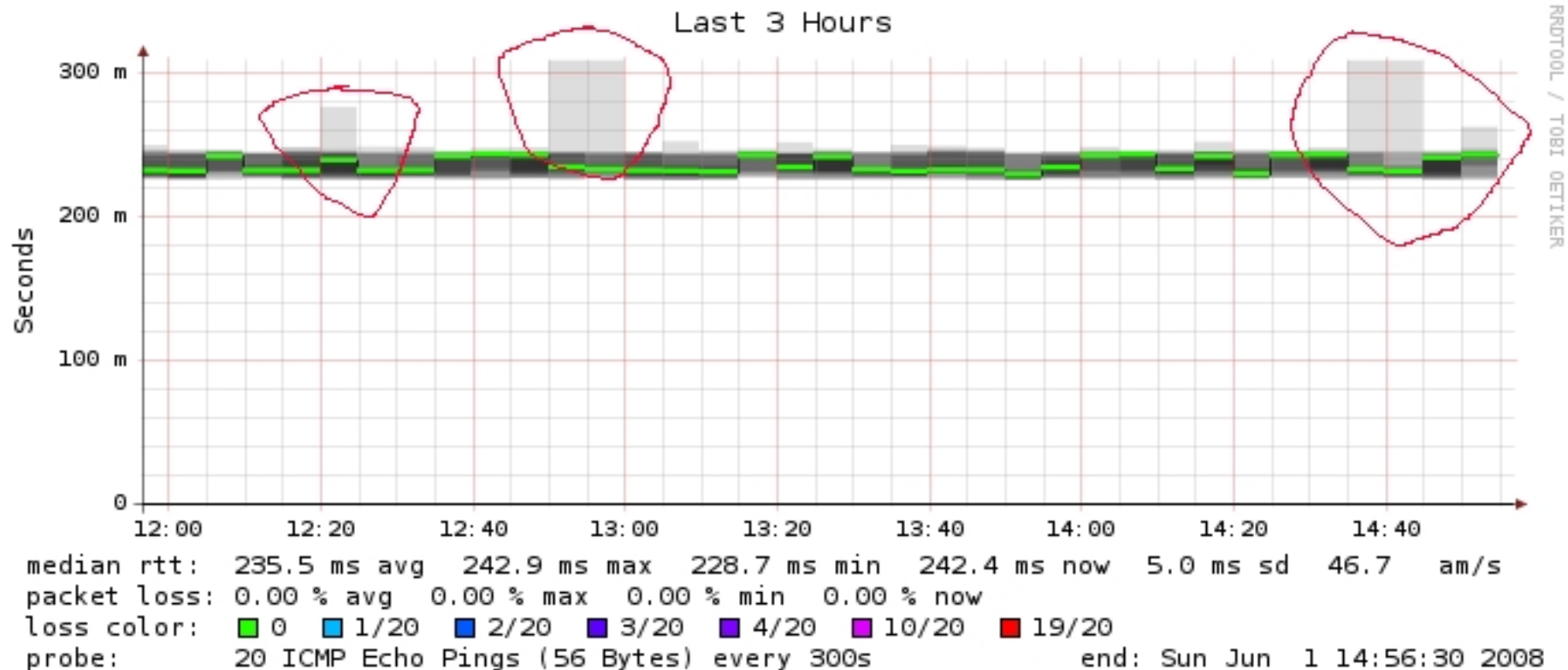
How to Read Smokeping Graphs

- Smokeping sends multiples tests (pings), makes note of RTT, orders these and selects the median.

- The different values of RTT are shown graphically as lighter and darkers shades of grey (the "smoke"). This conveys the idea of variable round trip times or *jitter*.

- The number of lost packets (if any) changes the color of the horizontal line across the graph.

The "Smoke" and the "Pings"
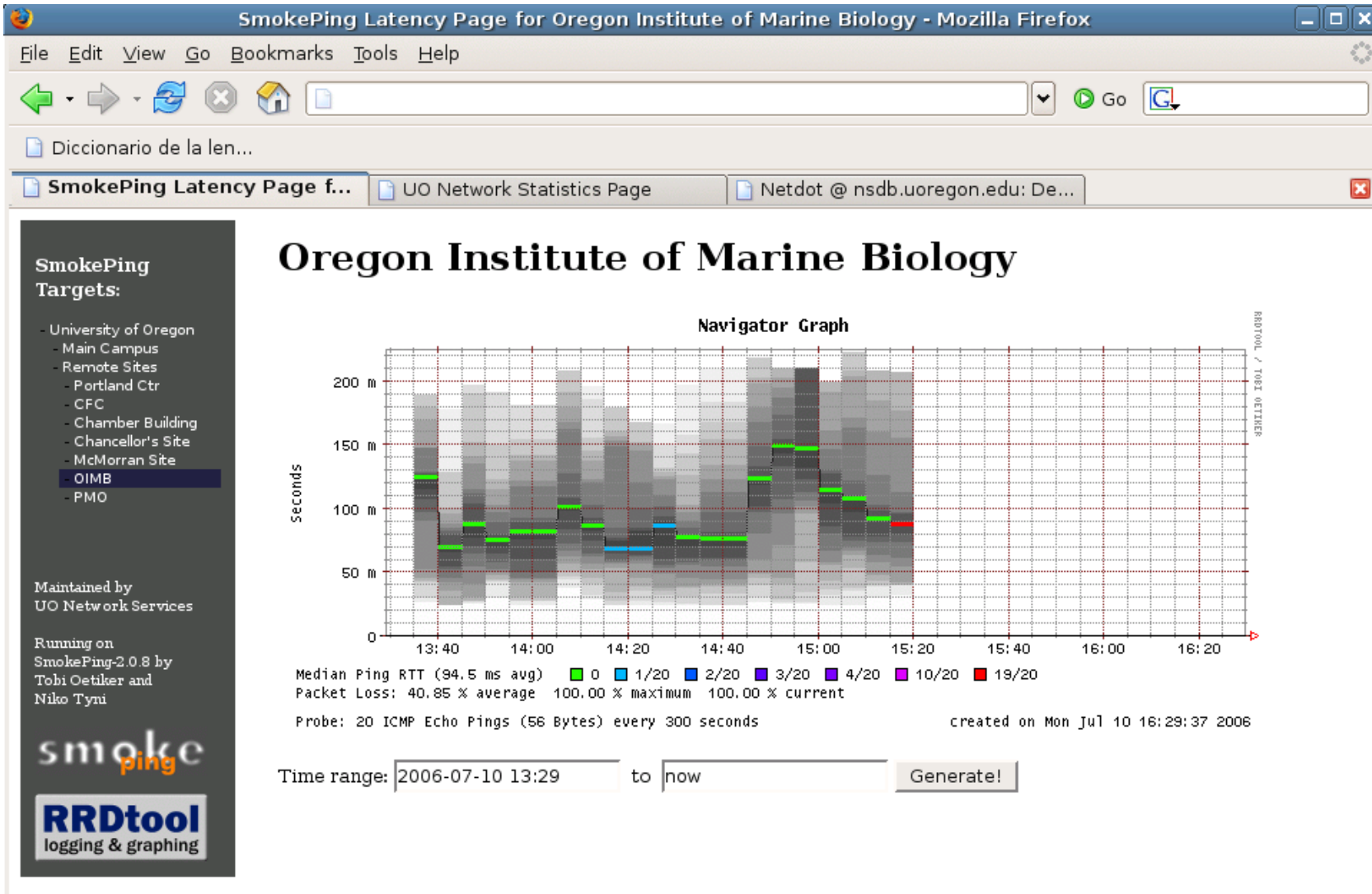
Another Examples

Requirements

- The following packages are needed or recommended:

    - rrdtool http://oss.oetiker.ch/rrdtool/

    - fping http://www.fping.com/

    - echoping http://echoping.sourceforge.net/

    - speedyCGI http://www.daemoninc.com/SpeedyCGI/

    - Apache http://httpd.apache.org

    - Perl

Smokeping: Installation

- `apt-get install smokeping`

- Configure **/etc/smokeping/config.d/***

- Change Smokeping's appearance here:

  – **/etc/smokeping/basepage.html**

- Restart the service:

  – **/etc/init.d/smokeping restart**
  – **/etc/init.d/smokepring reload**

Smokeping: Instalation

You will find Smokeping running here:

`http://hostname/cgi-bin/smokeping.cgi`

Configuration

- The Smokeping configuration files are: /etc/smokeping/config.d/*

- They contain:

    – The locations of directories and components

    – Configuration of the probes used

    – Destination nodes and the format of the hierarchical Smokeping menu.

        • Each '+' adds a level to the hierarchy

- In addition *etc/smokeping/basepage.html* allows you to change the look and feel of the initial Smokeping web page.

Configuration Files

The listing of files in /etc/smokeping/config.d:

Alerts: Define patterns of response probes to generate an alert – i.e., send an email.

Database: How many seconds to wait and pings to send per probe. Define deviations for graphing.

General: Local installation owner, syslog facility to use, default URL to view pages, etc.

pathnames: Where programs, configurations and items are kept on the local system.

Configuration Files cont.

The listing of files in /etc/smokeping/config.d cont.

Presentation: Define the details of smokeping graphs and charts.

Probes: Available probes and where the binary resides.

Slaves: Define remote smokeping server instances and checks to report back to master server.

Targets: The file we care the most about. Define all targets you are monitoring, what services to monitor on each target and your display hierarchy on the main smokeping web page.

Configuration: Alerts

/etc/smokeping/config.d/Alerts

```
*** Alerts ***
to = netmanage@localhost
from = smokealert@noc.mgmt.conference.apritcot.net

+bigloss
type = loss
# in percent
pattern = ==0%,==0%,==0%,==0%,>0%,>0%,>0%
comment = suddenly there is packet loss

+someloss
type = loss
# in percent
pattern = >0%,*12*,>0%,*12*,>0%
comment = loss 3 times  in a row
```

Configuration: Database

/etc/smokeping/config.d/Database

```
*** Database ***

step    = 300
pings   = 20


# consfn mrhb steps total

AVERAGE  0.5   1  1008
AVERAGE  0.5  12  4320
    MIN  0.5  12  4320
    MAX  0.5  12  4320
AVERAGE  0.5 144   720
    MAX  0.5 144   720
    MIN  0.5 144   720
```

Configuration: General

/etc/smokeping/config.d/General

```
*** General ***

@include /etc/smokeping/config.d/pathnames

# Please edit this to suit your installation
owner    = inst@localhostt
contact  = inst@localhost
cgiurl   = http://localhost/cgi-bin/smokeping.cgi
mailhost = localhost
# specify this to get syslog logging
syslogfacility = local0
# each probe is now run in its own process
# disable this to revert to the old behaviour
# concurrentprobes = no
```

Configuration: pathnames

/etc/smokeping/config.d/pathnames

You generally do not need to edit this file:

```
sendmail = /usr/sbin/sendmail
imgcache = /var/www/smokeping
imgurl   = ../smokeping
datadir  = /var/lib/smokeping
dyndir   = /var/lib/smokeping/__cgi
piddir   = /var/run/smokeping
smokemail = /etc/smokeping/smokemail
tmail    = /etc/smokeping/tmail
precreateperms = 2775
```

Configuration: Presentation

/etc/smokeping/config.d/Presentation

```
*** Presentation ***

template = /etc/smokeping/basepage.html

+ charts

menu = Charts
title = The most interesting destinations

++ stddev
sorter = StdDev(entries=>4)
title = Top Standard Deviation
menu = Std Deviation
format = Standard Deviation %f

++ max
sorter = Max(entries=>5)
title = Top Max Roundtrip Time
menu = by Max
format = Max Roundtrip Time %f seconds
```

Configuration: Probes

/etc/smokeping/config.d/Probes

```
*** Probes ***

+ FPing
binary = /usr/sbin/fping

+ DNS
binary = /usr/bin/dig
lookup = www.uoregon.edu
pings = 5
step = 180

+ EchoPingHttp
binary = /usr/bin/echoping
ignore_cache = yes
pings = 5
url = /

+ EchoPingHttps
binary = /usr/bin/echoping
pings = 5
url = /

+ EchoPingSmtp
binary = /usr/bin/echoping
forks = 5
```

Configuration: Slaves

/etc/smokeping/config.d/Slaves

```
# *** Slaves ***
#
## make sure this is not world-readable!
## secrets=/etc/smokeping/slave-secrets
#
# +slave1
# display_name=slave_name
# color=0000ff
```

Configuration: Targets

Sample from the file:
/etc/smokeping/config.d/Targets

We will look at our classroom
Targets configuration file on
the NOC box.

```
*** Targets ***

probe = FPing

menu = Top
title = Network Latency Grapher

+ UO
menu = University of Oregon
title = UO webserver
host = www.uoregon.edu

+ UTE
menu = UTE
title = Universidad Tecnologica
Equinoccial

++ HTTP
menu = HTTP
probe = EchoPingHttp

+++ www
menu = UTE web
host = www.ute.edu.ec

++ DNS
menu = DNS
probe = DNS

+++ dns
menu = UTE DNS
host = www.ute.edu.ec
```

Default Probe: Ping

- **Probing for delay and jitter (ping)**

- **Performance and availability probe of a server:**

Latency

```
+++ LocalMachine

menu = NOC

title = The NOC@netmanage

host = localhost

alerts = startloss,someloss,bigloss,rttdetect,hostdown
```

Another Type of Probe

- ## <u>Performance and Availability</u>

```
++ NOCsquid

menu = Squid on the NOC

title = www-cache / HTTP for noc@mgmt.conference.apricot.net

probe = EchoPingHttp

host = localhost

port = 8080

url = http://localhost/
```

More Types of Probes

More information available here:

`http://oss.oetiker.ch/smokeping/probe/index.en.html`

A few more probes...

- DNS
- HTTP(S)
- LDAP
- Whois
- SMTP

- CiscoRTTMonDNS
- CiscoRTTMonTcpCon
- Tacacs
- WebProxyFilter
- WWW-Cache

- Radius
- IOS
- FPing6
- Etc.

Exercises

- Configure your machine so that it monitors all of our classroom network...

    – The idea is:

- Add entries in /etc/smokeping/config.d/Targets for each classroom PC (pc101-pc106, pc201-pc205, noc)

- Add entries for the switches and routers (mgmt-sw1, mgmt-sw2, bb-gw1, bb-gw2, switch)

- Use ping (the default probe) for the switches and routers

- Use ping, and if you want, check http status for some pcs

- Most everything can be found at http://192.168.1.224/...

More Exercises

- If you finish the previous exercises, then add checks for other types of service like DNS, HTTPS, etc.

- You can add checks for machines outside of our network.

  – Make sure that ping is not blocked.

- Other possibilities include:

  – Email alerts send when certain conditions are met.

  – Adding a group of PCs by a single type of probe in a single graph – i.e. aggregate result graphs. Very useful for quickly reviewing a group of machines and a single service.

References

- Smokeping website:
  http://oss.oetiker.ch/smokeping/

- Good examples:

  http://oss.oetiker.ch/smokeping/doc/smokeping_examples.en.html