

Measuring Delay with



Network Design and Operations
24 July 2009

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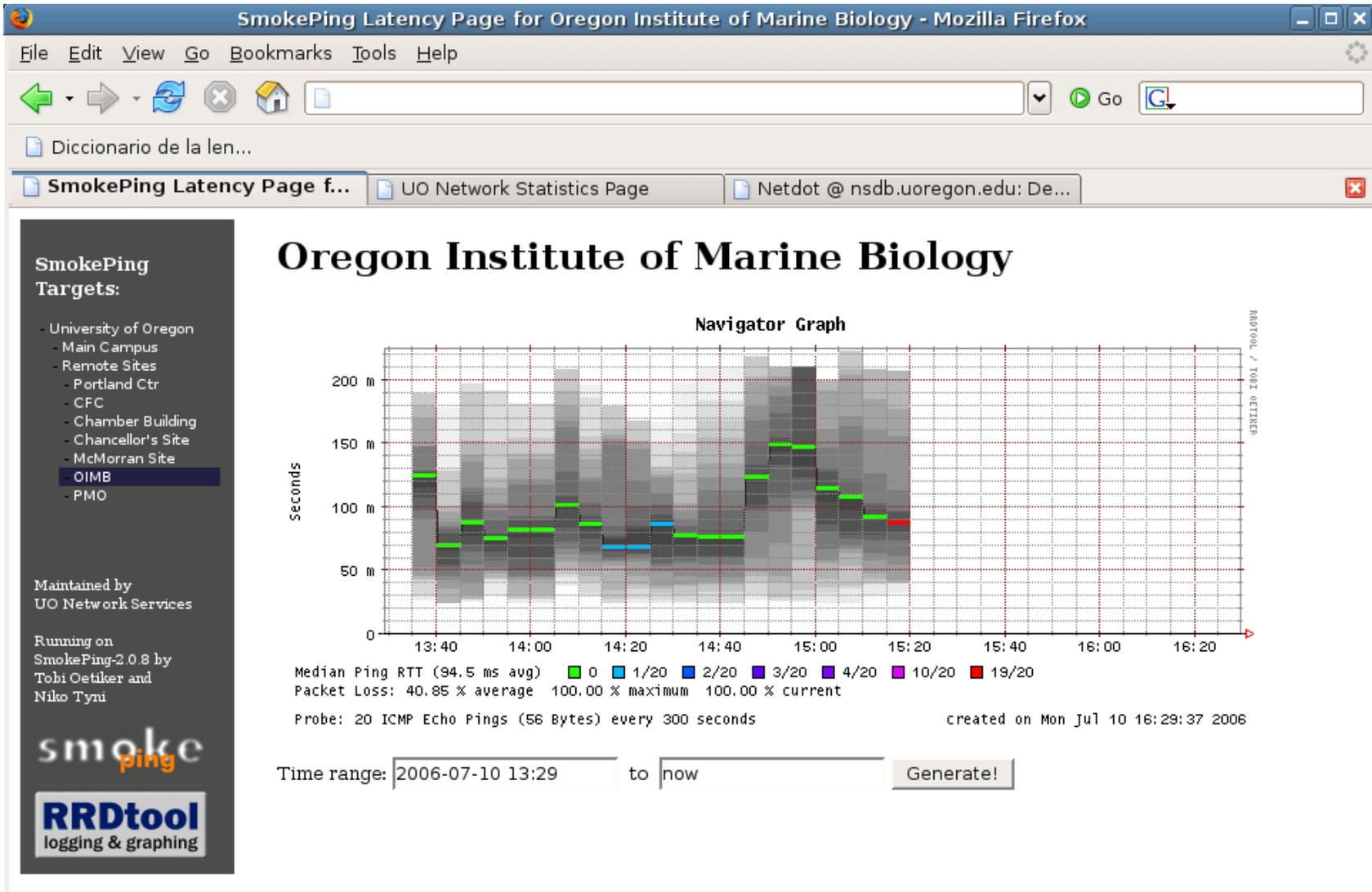
Introduction

- 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

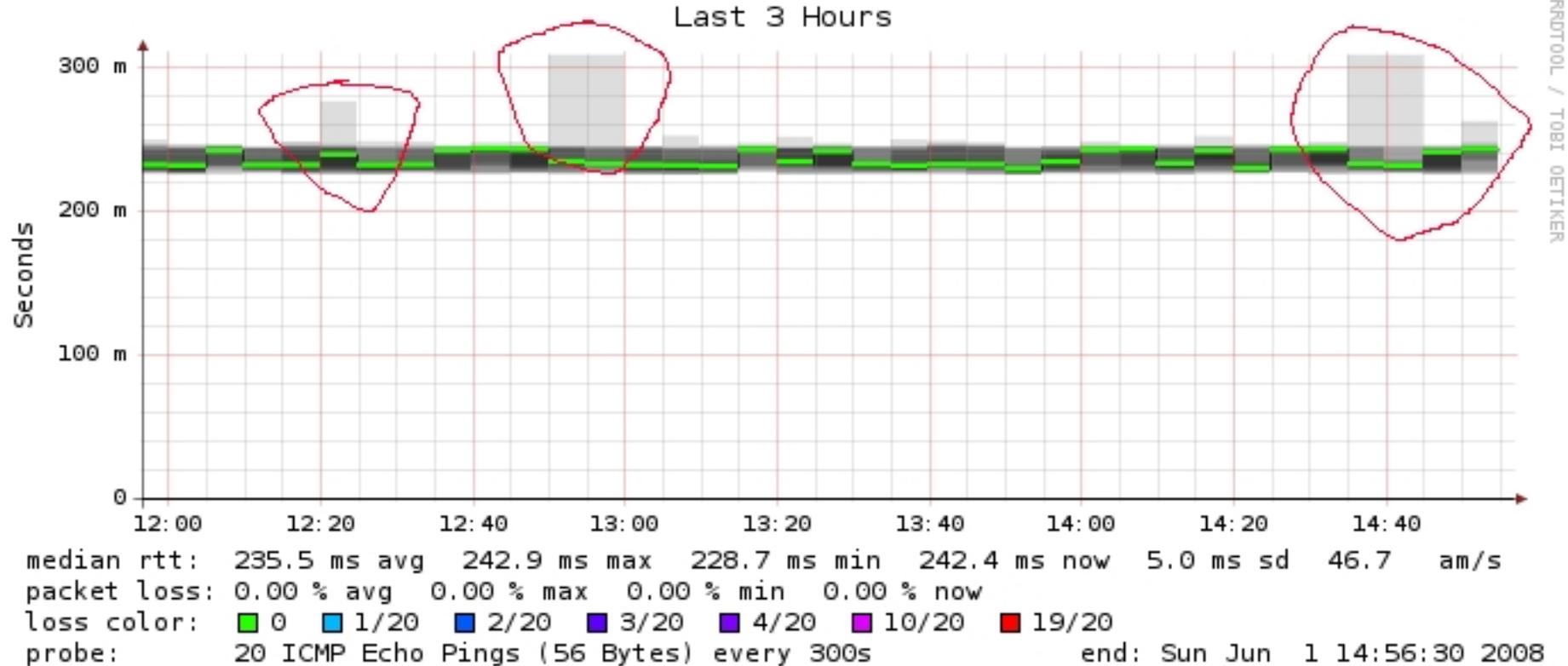
- Smokeping sends multiples tests (pings), makes note of RTT, orders these and selects the median.
- The different values of RTT are shown graphically as lighter and darker shades of grey (the “smoke”). This conveys the idea of variable round trip times or *jitter*.
- The number of lost packets (if any) changes the color of the horizontal line across the graph.

The “Smoke” and the “Pings”



Another Examples

African Network Operators Group



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

FreeBSD:

- `portinstall -PP smokeping`
- Configure **`/usr/local/etc/smokeping/config.d/*`**
- Change Smokeping's appearance here:
 - **`/usr/local/etc/smokeping/basepage.html`**
- Restart the service:
 - **`/usr/local/etc/init.d/smokeping restart`**
 - **`/usr/local/etc/init.d/smokepring reload`**

Smokeping: Installation

Debian/Ubuntu:

- `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 file:
`/usr/local/etc/smokeping/config`
- It contains:
 - 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: 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

```
*** 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

```
*** General ***

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

# Please edit this to suit your installation
owner      = netmanage@noc.mgmt.conference.apricot.net
contact    = netmanage@localhost
cgiurl     = http://noc/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

You generally do not need to edit this part of the *config* file near the top:

```
sendmail = /usr/sbin/sendmail
imgcache = /usr/local/smokeping/htdocs/img
imgurl    = img
datadir   = /usr/local/var/smokeping
piddir    = /usr/local/var/smokeping
cgiurl    = http://localhost/smokeping/cgi-bin
smokemail = /usr/local/etc/smokeping/smokemail
tmail     = /usr/local/etc/smokeping/tmail
# specify this to get syslog logging
syslogfacility = local0
```

Configuration: 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

```
*** 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 = /

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

Configuration: Slaves

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

Configuration: Targets

We will look at a sample configuration file that we use for the server

<http://nsrc.org/>

```
*** 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

- Performance and Availability

```
++ 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.

References

- Smokeping website:
<http://oss.oetiker.ch/smokeping/>
- Sample site:
<http://fushizen.net/cgi-bin/smokeping.cgi>
- Good examples:
http://oss.oetiker.ch/smokeping/doc/smokeping_examples.en.html