

Campus Network Design Workshop

Introduction to NfSen

This document is a result of work by the Network Startup Resource Center (NSRC at <http://www.nsrc.org>). This document may be freely copied, modified, and otherwise re-used on the condition that any re-use acknowledge the NSRC as the original source.



UNIVERSITY OF OREGON



What is NfSen

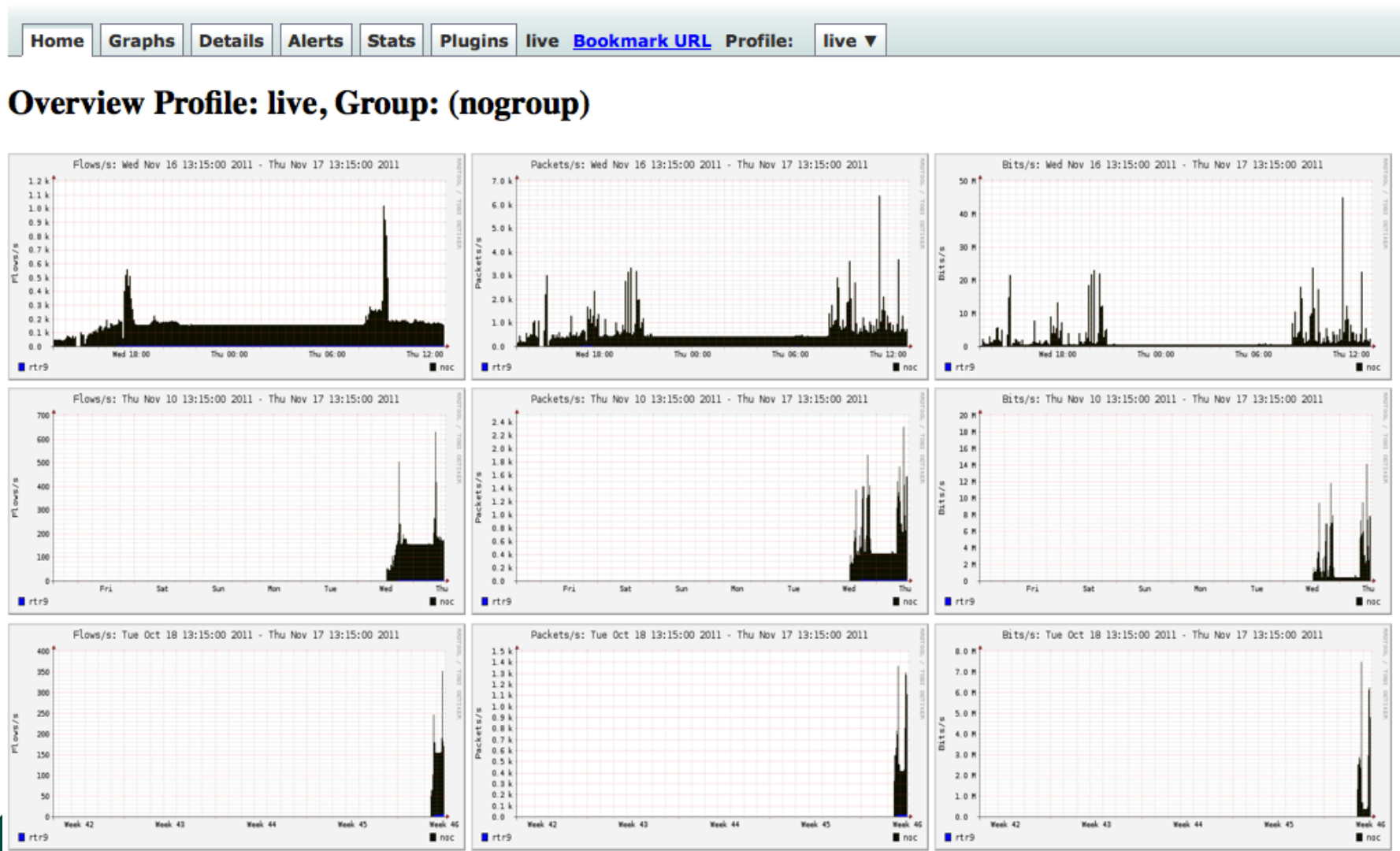
- Is a graphical (Web Based) front end to NfDump
- NfDump tools collect and process netflow data on the command line
- NfSen allows you to:
 - Easily navigate through the netflow data.
 - Process the netflow data within the specified time span.
 - Create history as well as continuous profiles.
 - Set alerts, based on various conditions.
 - Write your own plugins to process netflow data on a regular interval.



NfSen structure

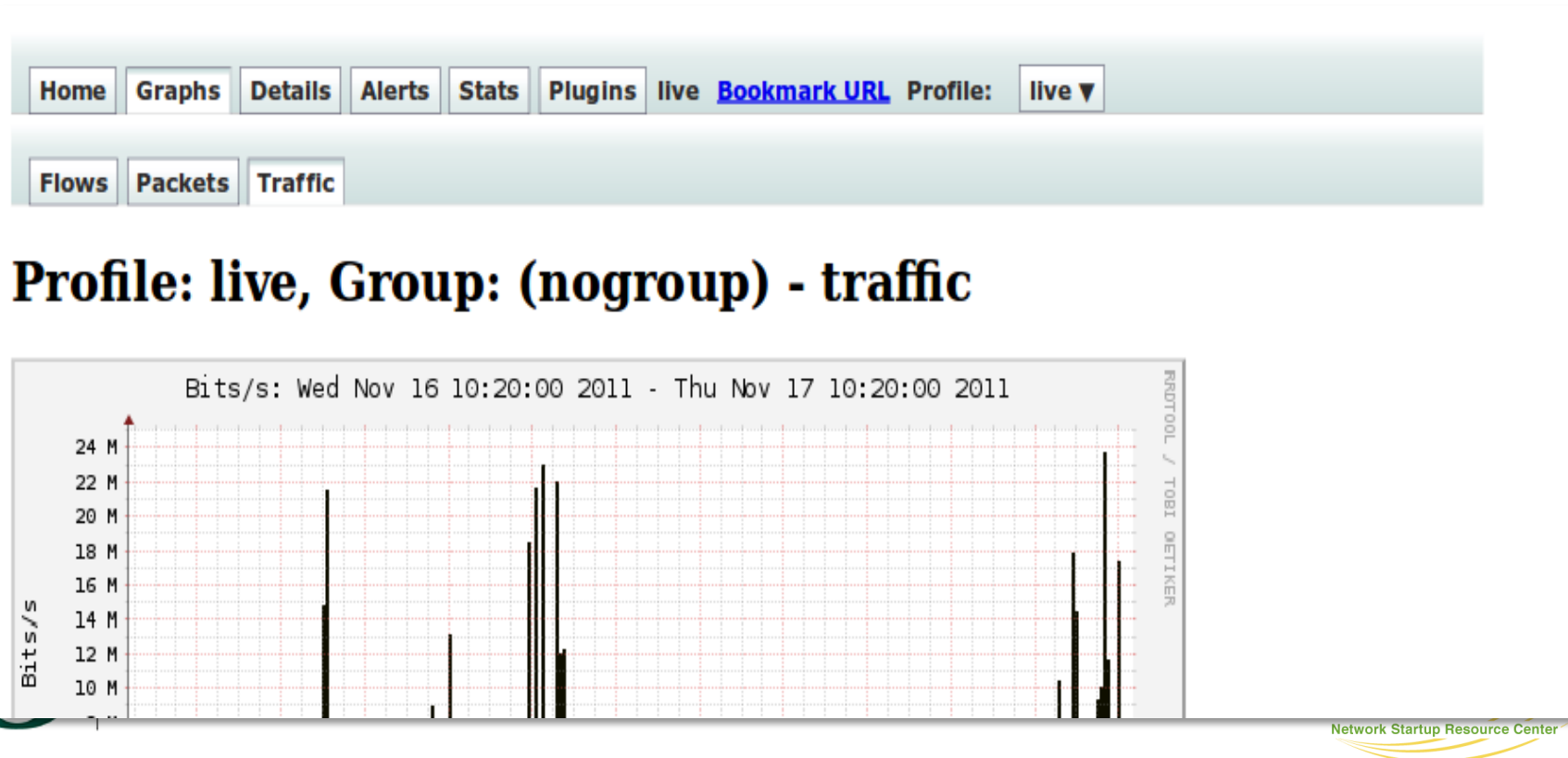
- Configuration file – nfsen.conf
- NfDump files – Netflow files containing collected flows stored in 'profiles-data' directory
 - NB: It is possible for other programs to read NFdump files but don't store them for too long as they can fill up your drive
- Actual graphs – stored in 'profiles-stat' directory

NfSen Home Screen



Graphs Tab

- Graphs of flows, packets and traffic based on interface with netflow activated
- NB: What is seen under Traffic should closely match what is under Cacti for the same interface



Details Page

- Most interesting page
- Can view present flow information or stored flow information
- Can view detailed Netflow information such as
 - AS Numbers (more useful if you have full routing table exported on your router)
 - Src hosts/ports, destination hosts and ports
 - Unidirectional or Bi-directional flows
 - Flows on specific interfaces
 - Protocols and TOS





Netflow traffic graphs organized by Protocol

Graph of Netflow traffic for all Protocols

Time period for flows being observed

Routers being monitored

Extended Netflow processing options

Alerts and Stats

- Alerts Page
 - Can create alerts based on set thresholds eg, increase or decrease of traffic
 - Emails can be sent once alarm is triggered
- Stats page
 - Can create graphs based on specific information
 - ASNs,
 - Host/Destination IPs/Ports
 - In/Out interfaces
 - Among others



Plugins

- Several plugins available:
 - Porttracker tracks the top 10 most active ports and displays a graph
 - Surfmap displays country based traffic based on a Geo-Locator
- More plugins available here
 - <http://sourceforge.net/apps/trac/nfsen-plugins/>

PortTracker

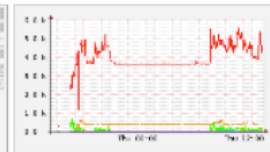
PortTracker

Port Tracker

TCP Packets



TCP Flows



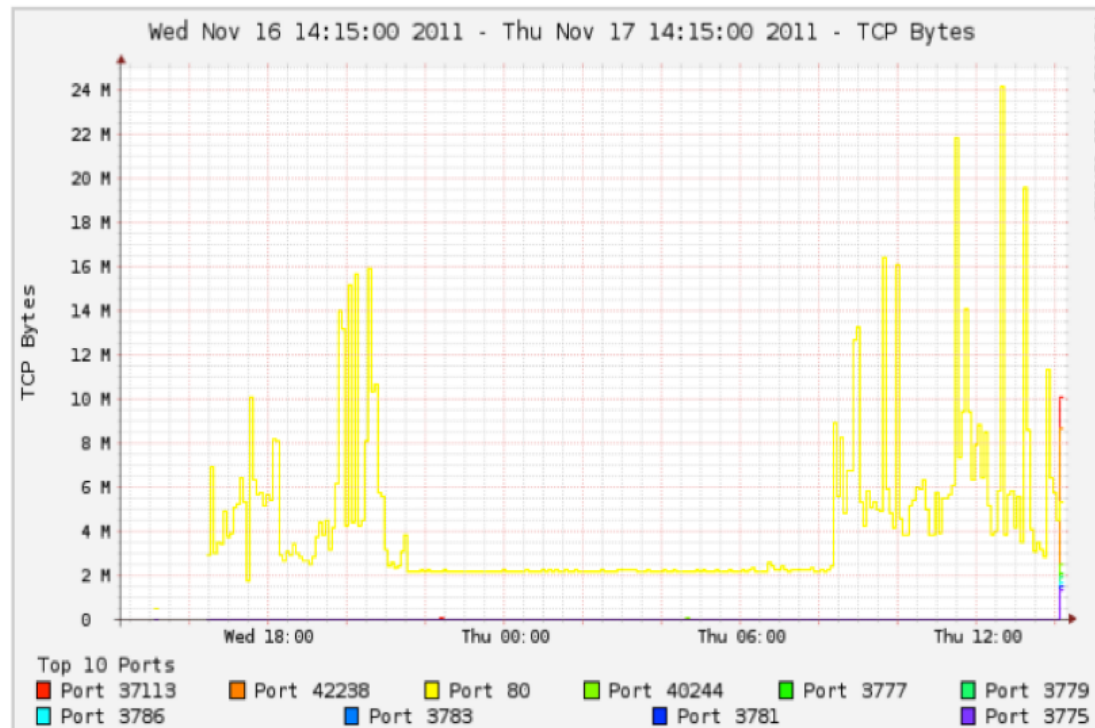
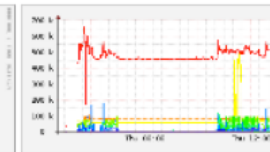
UDP Flows



UDP Packets



UDP Bytes



Show Top 10 Ports

☒ now ☐ 24 hours

Track Ports:

Add Delete

Skip Ports:

Add Delete

Time slot: 12:05
Version: 20110402

Map Satellite Hybrid

Classification based on: flows

[1, 1.75 > [1.75, 2.5 > [2.5, 3.25 > [3.25, 4]

MySQL options

Log

Query

```
** nfdump -M /usr/local/var/nfsen/profiles-data/live  
' 7504 -T -r nfcapd.201106291205 -o long -c 10
```

Details | Help | About

nfsen 1.3.2

When to use NfSen

- Can be used for:
 - Forensic work: which hosts were active at a specific time
 - Viewing src/dst AS traffic, src/dst port/IP traffic among many other options
 - Identifying most active IPs or Protocols
- It is a tool to complement Cacti so that you can have more detailed info regarding the traffic
- With this information, you can make an informed decision eg:
 - You have a high amount of SMTP traffic, some machines could be sending out spam
 - 80% of your traffic is to ASN X. Perhaps its wise to connect directly with that network and save costs



Bidirectional vs Unidirectional traffic as seen via NfSen



UNIVERSITY OF OREGON



Unidirectional and Bidirectional

- Unidirectional shows flows from host A to B and then host B to host A
- Bidirectional shows flows between Host A and B combined
- Can be used with any of the other filters (src port, src host plus many more)
- List of filters can be found here:
 - <http://nfsen.sourceforge.net/#mozTocId652064>



Bidirectional

All None Display: Sum Rate

Netflow Processing

Source: noc
rtr9

Filter: host 71.200.202.189

Options: List Flows Stat TopN

Top: 10

Stat: Flow Records order by bytes

☒ bi-directional

Aggregate proto

srcPort srcIP

dstPort dstIP

Limit: Packets > 0

Output: auto / IPv6 long

Clear Form process

```
** nfdump -M /var/nfsen/profiles-data/live/noc -T -R 2011/11/17/nfcapd.201111170930:2011/11/17/nfcapd.201111170950 -n 10 -s record/bytes
nfdump filter:
host 71.200.202.189
Command line switch -s overwrites -a
Aggregated flows 1
Top 10 flows ordered by bytes:
Date flow start      Duration Proto      Src IP Addr:Port      Dst IP Addr:Port      Out Pkt      In Pkt      Out Byte      In Byte      Flows
2011-11-17 09:34:12.206 1037.378 UDP      10.10.0.51:51413 <-> 71.200.202.189:57912 20077      19436      21.3 M      16.7 M      27455

Summary: total flows: 27455, total bytes: 38.0 M, total packets: 39513, avg bps: 292911, avg pps: 38, avg bpp: 961
Time window: 2011-11-17 08:22:09 - 2011-11-17 09:54:59
Total flows processed: 1861268, flows skipped: 0, bytes read: 55186738
```



Unidirectional

All None Display: ☐ Sum ☒ Rate

Netflow Processing

Source: Filter: Options:

noc
rtr9
All Sources

host 71.200.202.189

and <none>

☐ List Flows ☒ Stat TopN

Top: 10

Stat: Flow Records order by bytes

☐ bi-directional

Aggregate ☒ proto ☒ srcPort ☒ dstPort

Limit: ☐ Packets > 0 -

Output: auto ☐ / IPv6 long

Clear Form process

```
** nfdump -M /var/nfsen/profiles-data/live/noc -T -R 2011/11/17/nfcapd.201111170930:2011/11/17/nfcapd.201111170950 -n 10 -s record/byte
nfdump filter:
host 71.200.202.189
Aggregated flows 2
Top 10 flows ordered by bytes:
Date flow start      Duration  Proto   Src IP Addr Src Pt   Dst IP Addr Dst Pt   Packets  Bytes  bps   Bpp  Flows
2011-11-17 09:34:12.380 1037.204  UDP    71.200.202.189 57912    10.10.0.51 51413    20077   21.3 M  164298 1060 14035
2011-11-17 09:34:12.206 1037.102  UDP    10.10.0.51 51413    71.200.202.189 57912    19436   16.7 M  128674 858 13420

Summary: total flows: 27455, total bytes: 38.0 M, total packets: 39513, avg bps: 292911, avg pps: 38, avg bpp: 961
Time window: 2011-11-17 08:22:09 - 2011-11-17 09:54:59
```

References

- NfSen
 - <http://nfsen.sourceforge.net>
- NfDump
 - <http://nfdump.sourceforge.net/>

Questions?

This document is a result of work by the Network Startup Resource Center (NSRC at <http://www.nsrc.org>). This document may be freely copied, modified, and otherwise re-used on the condition that any re-use acknowledge the NSRC as the original source.



UNIVERSITY OF OREGON

