

AS-STATS

GET THE MOST OUT OF LINX

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LINX 69

Joining LINX, an easy process ?

- Fill the paperwork
- Plug in the router
- Connect to the route servers
 - Some members stop here !
- ...
- PROFIT :D

Joining LINX, not an easy process ?

- Emailing the linx members
 - 356 NOCs to contact
 - with many different peering policies
 - with many unresponsive peering coordinators
- No one wants to send 300+ peering requests
 - No automation (roll your own)
 - Benefits are unclear
 - Is it worth the effort ?

Who will peer with you ?



Who will peer with you ?

Free beer for you tonight if you answered

"Patrick W. Gilmore"

But it is not the right answer

Who will peer with you ?

- Guess work !
 - You are the new kid on the switch
 - You are kind of expected to make the first move

Who will peer with you ?

- The content networks
 - Akamai, Yahoo, Microsoft, Google, Facebook
 - all have « open » peering policies
- Linx members with an open peering policy
 - <http://peeringdb.com/>
 - Generally small/medium networks
 - You want them as peers but are they a priority ?
- People seeing you via transit

Who should you peer with ?

- Networks you see via transit
 - Everyone if it is your first IX
 - Otherwise not as clear
- Networks you send/receive the most traffic to

How to find those « good » peers ?

- Look at traces between your networks
 - routers with full routing tables can display ASN
traceroute / traceroute as-number-lookup
 - <http://oppleman.com/dl/?file=ift-2.3.tar.gz>
use whois.ra.net to find the hops' ASN
- Use netflow to find out who matters to you
- Can Linx do more to help ?
 - Web tools to help you find and contact peers
 - Possibly – if you think it is important : tell them !

What is NetFlow ?

- A protocol defined by RFC 3954

What is NetFlow ?

- A protocol defined by RFC 3954
 - Not helpful !
- A way to know what traffic your router is forwarding
 - generating UDP packets
 - can include SRC/DST ASN of the packet

Where to use NetFlow ?

- Configure it on your EBGP peers
 - transit AND peering
 - with a full routing table
- Do not need an high sampling rate
 - you care about your TOP speakers
 - save yourself some router CPU cycles

NetFlow collectors

- Many exist
 - <http://www.networkuptime.com/tools/netflow/>
- Missing my favorite : as-stats
 - <https://neon1.net/as-stats/>
 - Last changelog shows two LINX members :D
 - accept sflow as well (foundry users rejoice !)
- Install it in one hour if you can use linux/*BSD
 - ... or two during the meeting today
 - someone else to do a demo later on ?

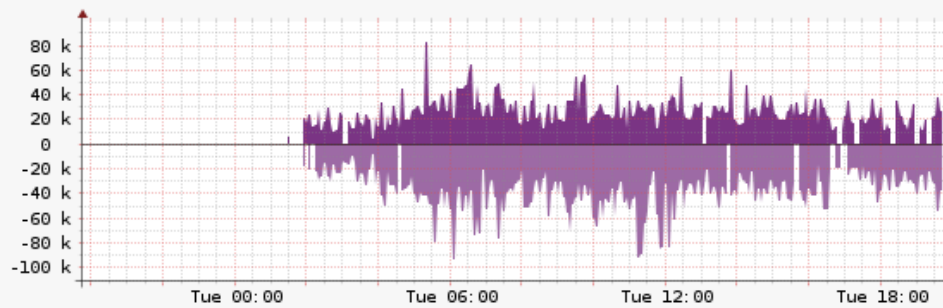
AS-STATS

- A netflow/sflow collector
 - Storing data in RRD files
- A cron program
 - order the ASNs by level of traffic exchanged
- A web interface to :
 - See your traffic per ASN
 - See your traffic per LINK

How as-stats look ? peers

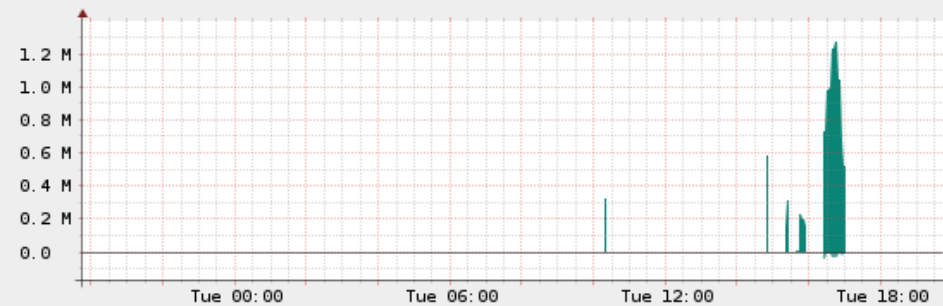
 **AS9498: BHARTI Airtel Ltd.**
~ 191.10 MB in / 273.69 MB out in the last 24 hours

#197



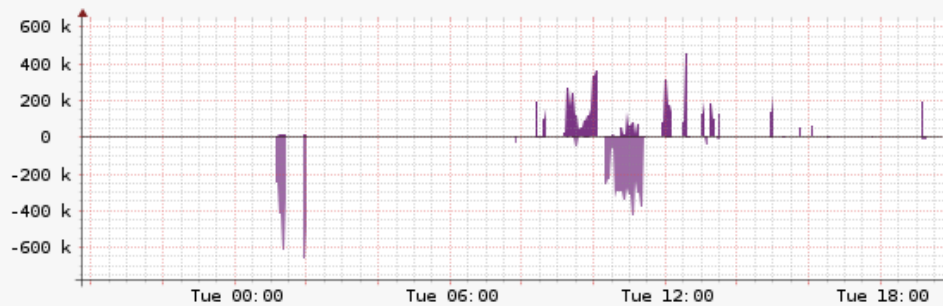
 **AS4436: nLayer Communications, Inc.**
~ 450.64 MB in / 9.30 MB out in the last 24 hours

#198

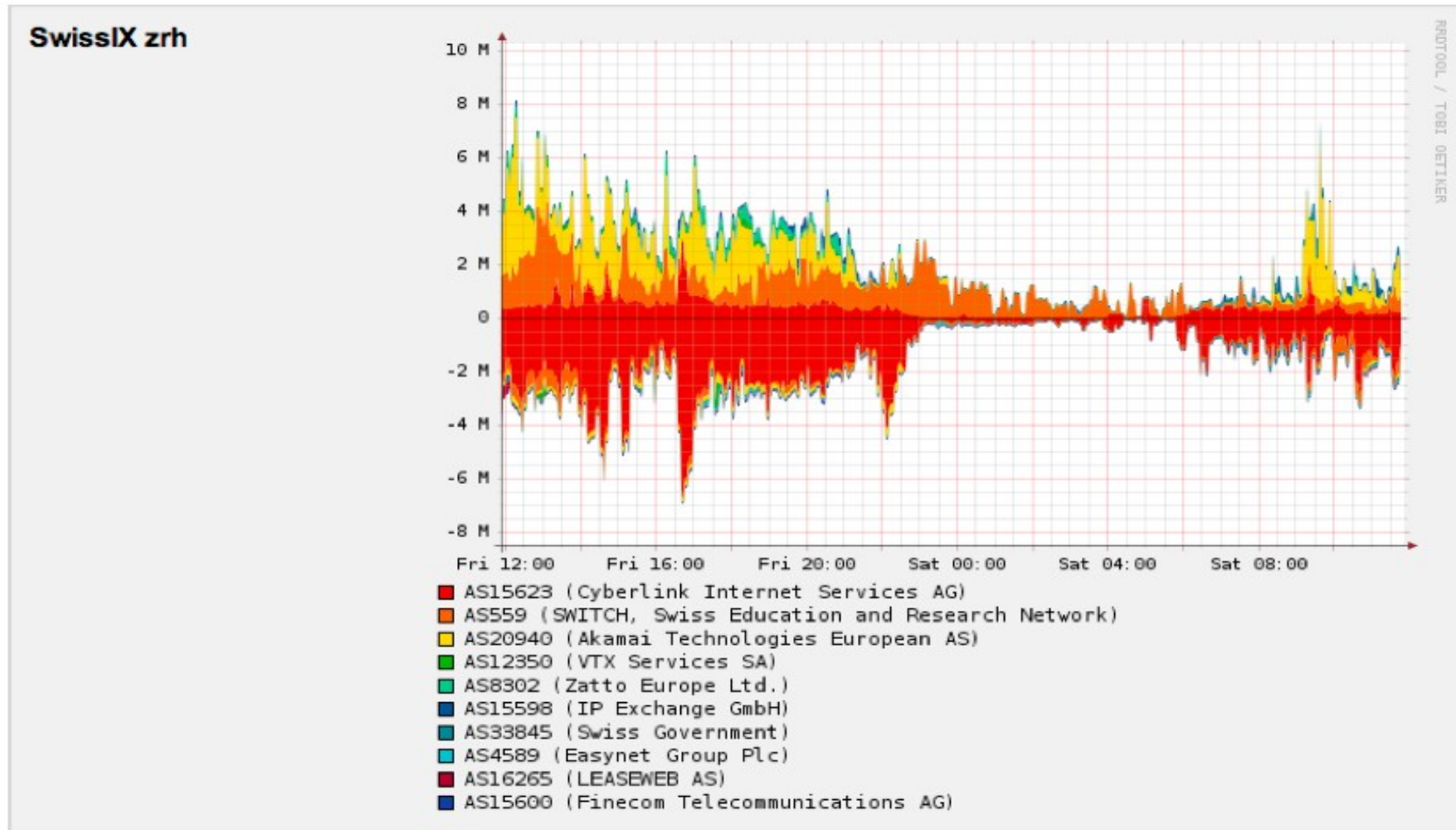


 **AS16293: Intercea UK AS number**
~ 217.21 MB in / 242.06 MB out in the last 24 hours

#199



How as-stats looks ? link



AS-STATS (configuration)

Router IP

SNMP ifindex of the interface monitored

tag (used by RRD)

description (displayed on the web page)

color in HEX RGB

192.0.2.1	10	linx	LINX	0A8474
192.0.2.1	40	transit	T1	4E66A1

find your router interface SNMP ifindex

show snmp mib ifmib ifindex | include Ethernet

show interfaces | match "SNMP ifIndex"

AS-STATS (daemon)

- an example of a supervise script (for djb fans)

```
#!/bin/sh
```

```
exec \
```

```
  setuidgid nobody \
```

```
  /opt/as-stats/bin/netflow-asstatd.pl \
```

```
    -s 1000 \
```

```
    -r /srv/as-stats/rrd \
```

```
    -k /opt/as-stats/conf/netflow-knownlinks
```

AS-STATS (daemon)

- Reflect the locations you use in the program

`/* changes these values to suit your local configuration */`

```
$rrdpath = "/srv/as-stats/rrd";
```

```
$daystatsfile = "/srv/as-stats/txt/asstats_day.txt";
```

```
$rrdtool = "/usr/bin/rrdtool";
```

```
$asinfofile = "asinfo.txt";
```

```
$knownlinksfile = "/opt/as-stats/conf/netflow-knownlinks";
```

```
$outispositive = false;
```

AS-STATS (cron)

- cron.d/as-stats (runs hourly)

```
00 */1 * * * nobody \  
/opt/as-stats/bin/rrd-extractstats.pl \  
/srv/as-stats/rrd/ \  
/opt/as-stats/conf/netflow-knownlinks \  
/srv/as-stats/txt/asstats_day.txt \  

```

AS-STATS (apache)

```
<VirtualHost 192.0.2.123:80>  
  ServerName flow.domain.com  
  DocumentRoot /opt/as-stats/www  
  <Directory /opt/as-stats/www/>  
    Options Indexes FollowSymLinks MultiViews  
    AllowOverride All  
  </Directory>  
</VirtualHost>
```

Check file permissions, but – that's it !

Example (one way to do on Cisco)

```
ip cef
```

```
flow-sampler sampler-1000  
  mode random one-out-of 1000
```

```
interface GigabitEthernet0/1  
  ip address 195.66.224.235 255.255.254.0  
  no ip route-cache flow  
  no ip route-cache cef  
  no ip flow ingress  
  flow-sampler sampler-1000  
  flow-sampler sampler-1000 egress
```

```
interface Loopback 0  
  ip address 192.0.2.1 255.255.255.255
```

Example (Cisco cont.)

```
ip flow-cache timeout active 5
```

```
ip flow-export version 5 origin-as  
ip flow-export destination 192.0.2.123  
ip flow-export source loopback 0
```

```
ip flow-aggregation cache as  
  cache timeout active 5  
  export destination 192.0.2.123 9000  
  enabled
```

Example (Juniper)

```
> show interfaces ge-0/3/0 unit 123
description Linx;
vlan-id 123;
family inet {
    mtu 1500;
    address 195.66.224.235/23;
    sampling {
        input;
        output;
    }
}
/* http://thomas.mangin.com/#tag:link\_ipv6\_on\_juniper */
family inet6 {
    mtu 1500;
    address 2001:7F8:4::7814:1/64;
}
```


Example (Juniper cont.)

> show configuration forwarding-options

```
sampling {  
  input {  
    family inet {  
      rate 1000;  
      max-packets-per-second 7000;  
    }  
  }  
  output {  
    cflowd 192.0.2.123 {  
      port 9000;  
      source-address 192.0.2.1;  
      version 8;  
      aggregation {  
        autonomous-system;  
      }  
    }  
  }  
}
```

More information

<https://neon1.net/as-stats/as-stats-presentation-swinog16.pdf>

<http://www.netflow-analyser.co.uk/scrutinizer-netflow-sflow-analyser/support/activating-netflow.php>

<http://netflow.caligare.com/>

<http://www.cisco.com/en/US/docs/routers/7600/ios/12.2SXF/configuration/guide/nde.html>

<http://puck.nether.net/pipermail/cisco-nsp/2007-February/038498.html>

Questions ?