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# disclaimer: half-baked ideas

# Biggest DDoS Attack on Record Hits Github

*The IT infrastructure that powered Wednesday's attack is ripe for abuse, security firms say.*

By Michael Kan March 1, 2018 7:40PM EST

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# Biggest Github

*The IT infrastructu*

By Michael Ka

ars TECHNICA BIZ & IT TECH SCIENCE POLICY CARS GAMING & CULTUR

*RECORD FLOODS —*

# US service provider survives the biggest recorded DDoS in history

Nearly 100,000 memcached servers are imperiling the stability of the Internet.

DAN GOODIN - 3/5/2018, 1:24 PM

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# Biggest Github

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y of the Internet.

ARBOR NETWORKS
The Security Division of NETSCOUT

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# NETSCOUT Arbor Confirms 1.7 Tbps DDoS Attack; The Terabit Attack Era Is Upon Us

Carlos Morales on March 5, 2018.

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ZDNet VIDEOS SMART CITIES WINDOWS 10 CLOUD INNOVATION SECURITY TECH PRO MORE NEWSLETTERS ALL WRIT

JUST IN WHAT IS V2X COMMUNICATION? CREATING CONNECTIVITY FOR THE AUTONOMOUS CAR ERA

# Brazil hit by 30 DDoS attacks per hour in 2017

The country is part of a global ranking of the five nations most targeted by cybercriminals, says study.

By Angelica Mari for Brazil Tech | February 21, 2018 -- 14:59 GMT (06:59 PST) | Topic: Security

N
1.

Terabit Attack Era is Upon Us

Carlos Morales on March 5, 2018.

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IP spoofing is a
well-known problem

a key component
of such DDoS attacks

# *addressing* spoofing

- attempts to eliminate spoofing, not adopted
- IETF BCPs 38-84, ISOC MANRS
- scrubbing centers (eg Akamai, Cloudflare, Level 3 Anti-DDoS)
- measure use of source address validation (against spoofing)
- the Spoofer project

methodology and corresponding tools
to detect spoofed traffic
in network traces

enable SAV compliance tests
for **IXP** networks

# more on expected results

- methodology and the analysis results of the prevalence, causes, and impact of IP source spoofing (observed in IXPs)
- create a tool that enables IXPs to perform compliance tests on SAV, make it available to networking community
- longitudinal measurement about adoption of SAV and filtering after we deployed our tool

# what could go wrong?


# what could go wrong?

- no collaboration from network operators
- no access to commercial traffic and client information
- coarse-grained data only, eg no flow information
- anonymized data
- overwhelming resource demands to transfer, storage and process data

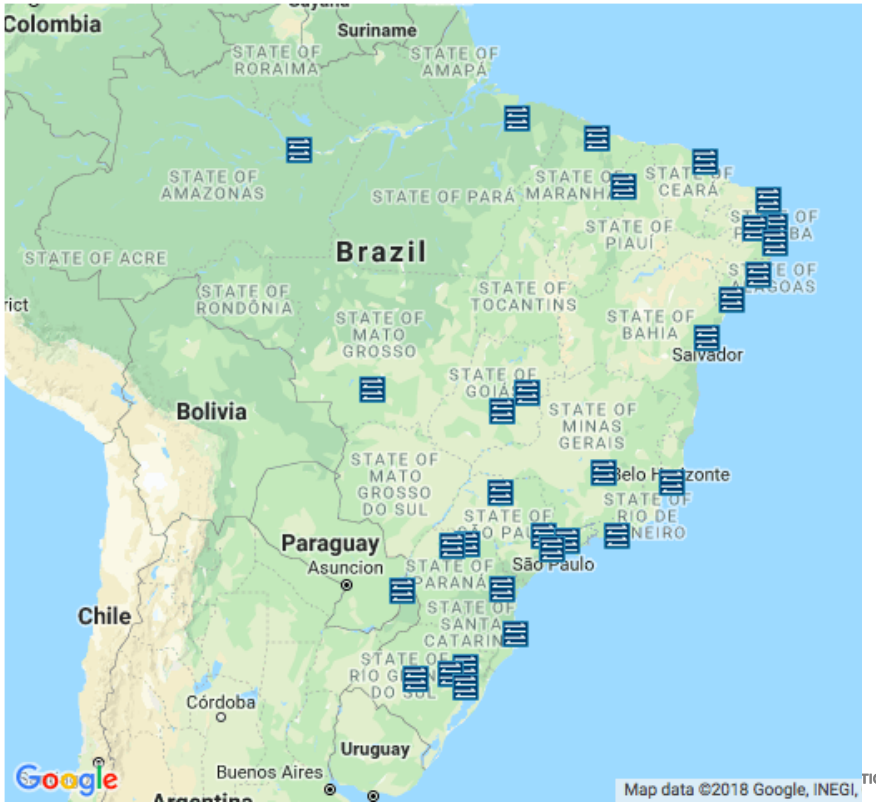
# current status

- access to detailed data from a large IXP
- expanding access to other vantage points
- developing a processing pipeline: transformation and processing (filtering and classification) of (i) bogon, (ii) unrouted, and (iii) AS-specific traffic

# where could we apply this?

# Brazilian IX.br ecosystem

- over **5.3k ASes**
- **30 IXPs** unevenly distributed in 27 states
- total of **~2,300** member ASes, **~1,650** distinct ones
- **~102** colocation facilities (directly connected to the IX.br)
- **~4.4 Tb/s** average traffic peak over the last 30 days for all IX.br ecosystem



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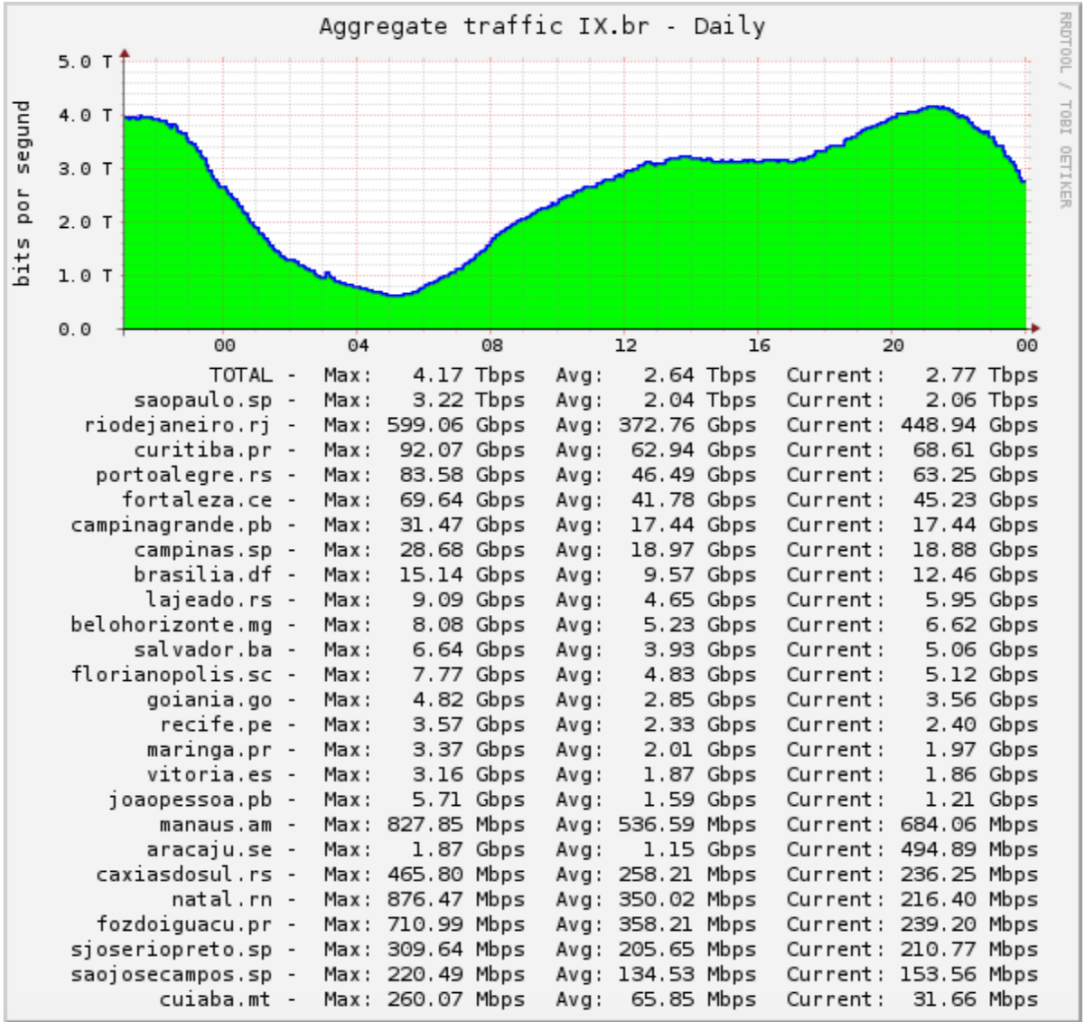


| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TOTAL | - | Max: | 4.17 Tbps | Avg: | 2.64 Tbps | Current: | 2.77 Tbps |
| saopaulo.sp | - | Max: | 3.22 Tbps | Avg: | 2.04 Tbps | Current: | 2.06 Tbps |
| riodejaneiro.rj | - | Max: | 599.06 Gbps | Avg: | 372.76 Gbps | Current: | 448.94 Gbps |
| curitiba.pr | - | Max: | 92.07 Gbps | Avg: | 62.94 Gbps | Current: | 68.61 Gbps |
| portoalegre.rs | - | Max: | 83.58 Gbps | Avg: | 46.49 Gbps | Current: | 63.25 Gbps |
| fortaleza.ce | - | Max: | 69.64 Gbps | Avg: | 41.78 Gbps | Current: | 45.23 Gbps |
| campinagrande.pb | - | Max: | 31.47 Gbps | Avg: | 17.44 Gbps | Current: | 17.44 Gbps |
| campinas.sp | - | Max: | 28.68 Gbps | Avg: | 18.97 Gbps | Current: | 18.88 Gbps |
| brasilia.df | - | Max: | 15.14 Gbps | Avg: | 9.57 Gbps | Current: | 12.46 Gbps |
| lajeado.rs | - | Max: | 9.09 Gbps | Avg: | 4.65 Gbps | Current: | 5.95 Gbps |
| belohorizonte.mg | - | Max: | 8.08 Gbps | Avg: | 5.23 Gbps | Current: | 6.62 Gbps |
| salvador.ba | - | Max: | 6.64 Gbps | Avg: | 3.93 Gbps | Current: | 5.06 Gbps |
| florianopolis.sc | - | Max: | 7.77 Gbps | Avg: | 4.83 Gbps | Current: | 5.12 Gbps |
| goiania.go | - | Max: | 4.82 Gbps | Avg: | 2.85 Gbps | Current: | 3.56 Gbps |
| recife.pe | - | Max: | 3.57 Gbps | Avg: | 2.33 Gbps | Current: | 2.40 Gbps |
| maringa.pr | - | Max: | 3.37 Gbps | Avg: | 2.01 Gbps | Current: | 1.97 Gbps |
| vitoria.es | - | Max: | 3.16 Gbps | Avg: | 1.87 Gbps | Current: | 1.86 Gbps |
| joaopessoa.pb | - | Max: | 5.71 Gbps | Avg: | 1.59 Gbps | Current: | 1.21 Gbps |
| manaus.am | - | Max: | 827.85 Mbps | Avg: | 536.59 Mbps | Current: | 684.06 Mbps |
| aracaju.se | - | Max: | 1.87 Gbps | Avg: | 1.15 Gbps | Current: | 494.89 Mbps |
| caxiasdosul.rs | - | Max: | 465.80 Mbps | Avg: | 258.21 Mbps | Current: | 236.25 Mbps |
| natal.rn | - | Max: | 876.47 Mbps | Avg: | 350.02 Mbps | Current: | 216.40 Mbps |
| fozdoiguacu.pr | - | Max: | 710.99 Mbps | Avg: | 358.21 Mbps | Current: | 239.20 Mbps |
| sjoseriopreto.sp | - | Max: | 309.64 Mbps | Avg: | 205.65 Mbps | Current: | 210.77 Mbps |
| saojosecampos.sp | - | Max: | 220.49 Mbps | Avg: | 134.53 Mbps | Current: | 153.56 Mbps |
| cuiaba.mt | - | Max: | 260.07 Mbps | Avg: | 65.85 Mbps | Current: | 31.66 Mbps |

# ix.br daily traffic breakdown

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# we need *validation*

- scientific contribution?
- confirm/challenge previous work?
- perform IPv6 analysis?
- correlate with IPv4 space grey-market address transfers?
- locate and investigate malicious ASes in BGP AS-Path?
- security hygiene best practices?
- …

# Using IXPs to Measure Improvements in Source Address Validation Filtering of Inter-Domain Traffic

Lucas Muller, **Marinho Barcellos**,
Bradley Huffaker, Matthew Luckie, kc claffy

**AIMS 2018**

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