TEAM CYMRU™

UTRS Roadmap

Unwanted Traffic Removal Service
v2.0 and beyond

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Agenda

- What is Team Cymru
- UTRS v1 and what “UTRS” is…
- UTRS v2 and introduce BGP FlowSpec
- UTRS v3
- Nimbus Threat Monitor and other Community Services

Team Cymru (pronounced come-ree)

Mission: To Save and Improve Human Lives

- Founded 2005
- Free services to ISPs, hosting providers and CSIRTs
- Work with 138+ CSIRT teams in 86+ countries
- Free tools used millions of queries per day

Community Services

Restricted Events

Underground Economy

Regional Internet Security Events (RISE)

Free Tools / Services

- NimbusTM
- BOGON Reference
- Malware Hash Registry
- Unwanted Traffic Removal Service (UTRS)
- Dragon News Bytes (threat news feed)

CSIRT Assistance

138 CSIRT Teams

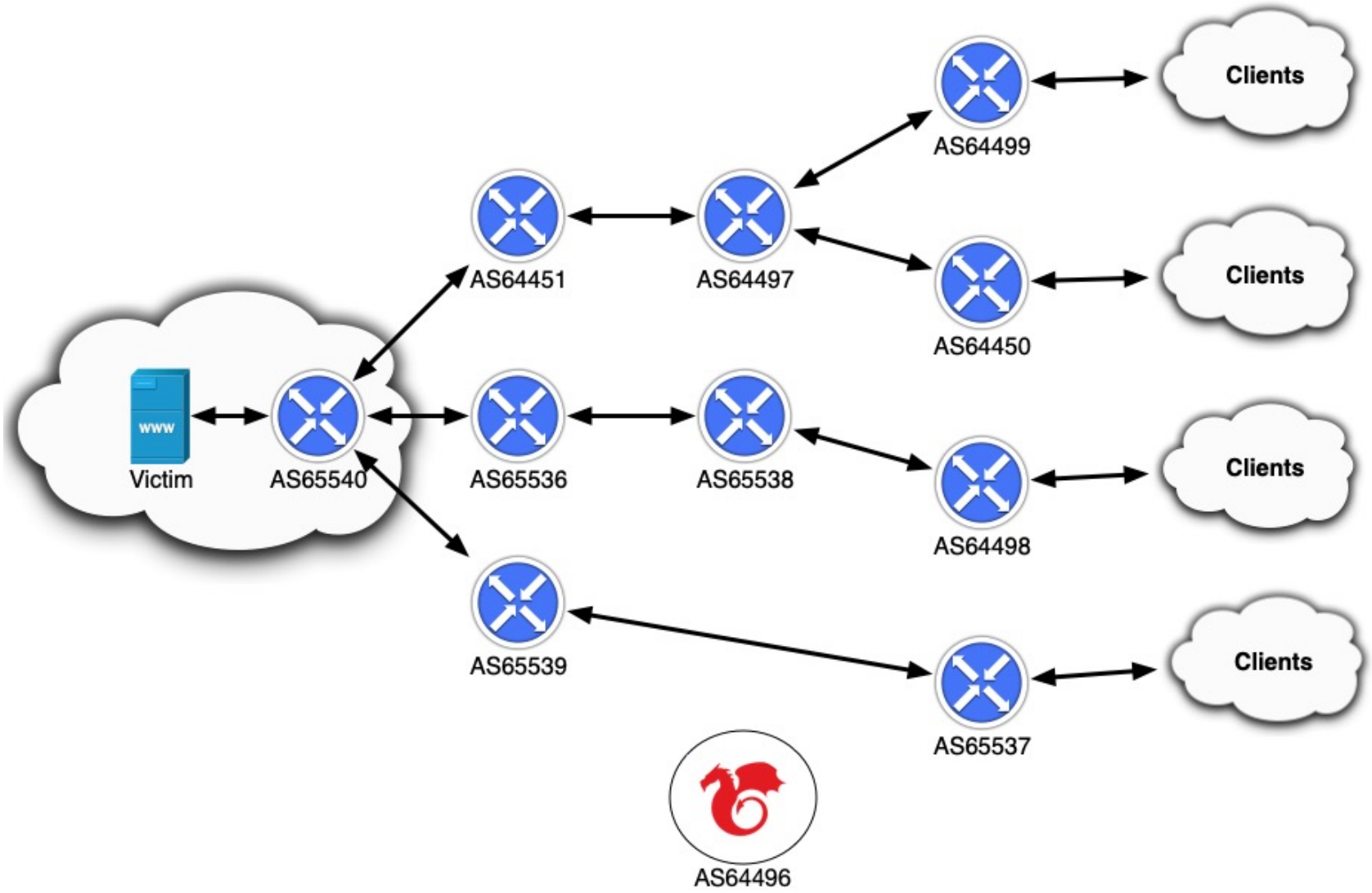
52% of IPV4

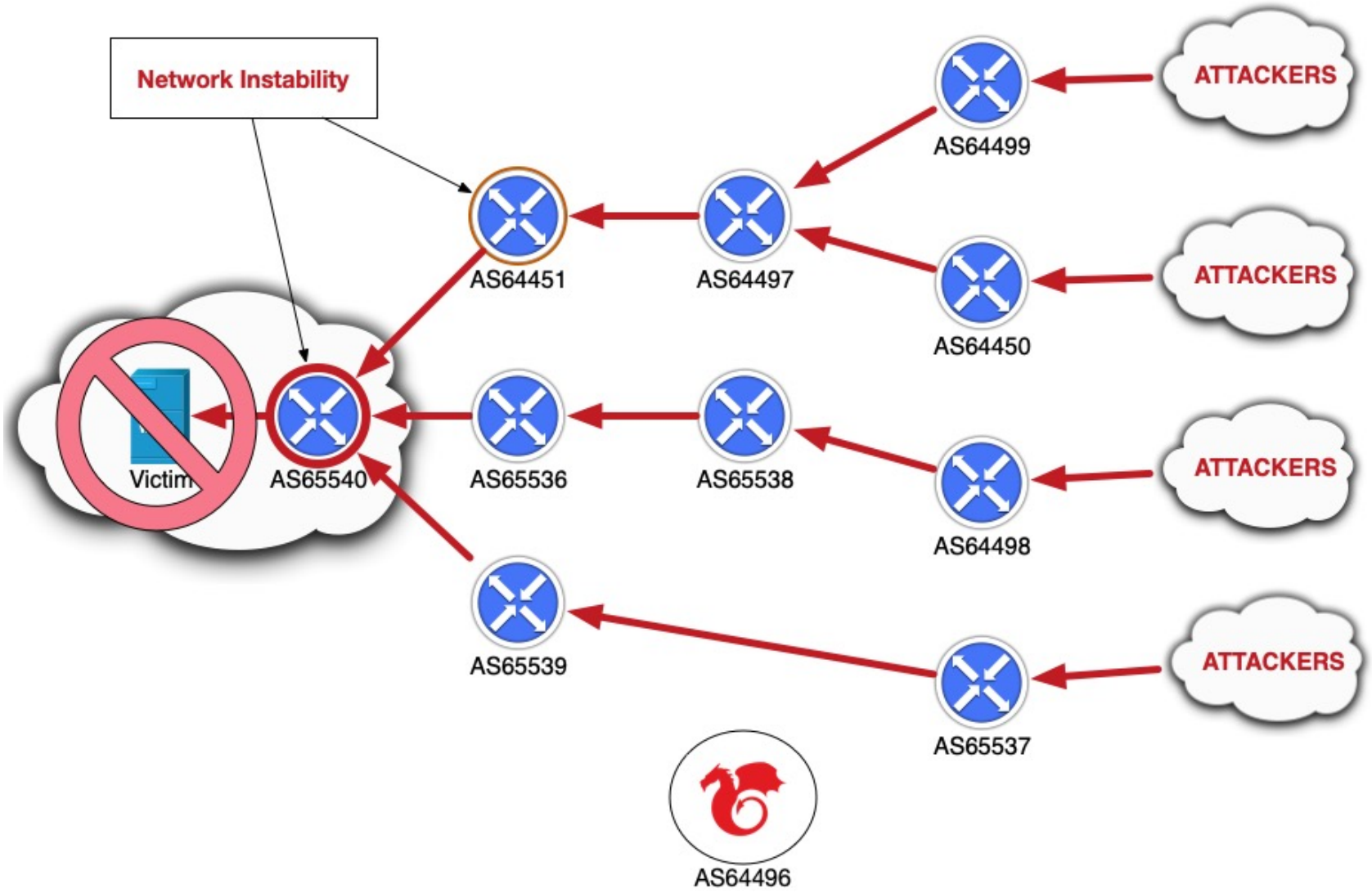
75% of IPV6

What is UTRS?

Unwanted Traffic Removal Service

- Uses BGP, but to send “distress” signal
- Builds on RTBH (Remote Triggered Black Hole)
- Victim network asks TC to ask all our UTRS peers to *stop sending traffic*
  - *Much wider range*
- Completes the attack – at least in Version 1


Clients
AS64499
AS64451
AS64497
Clients
AS64450
www
Victim
AS65540
AS65536
AS65538
Clients
AS64498
AS65539
Clients
AS65537
AS64496


Network Instability
ATTACKERS
AS64499
AS64451
AS64497
ATTACKERS
AS64450
Victim
AS65540
AS65536
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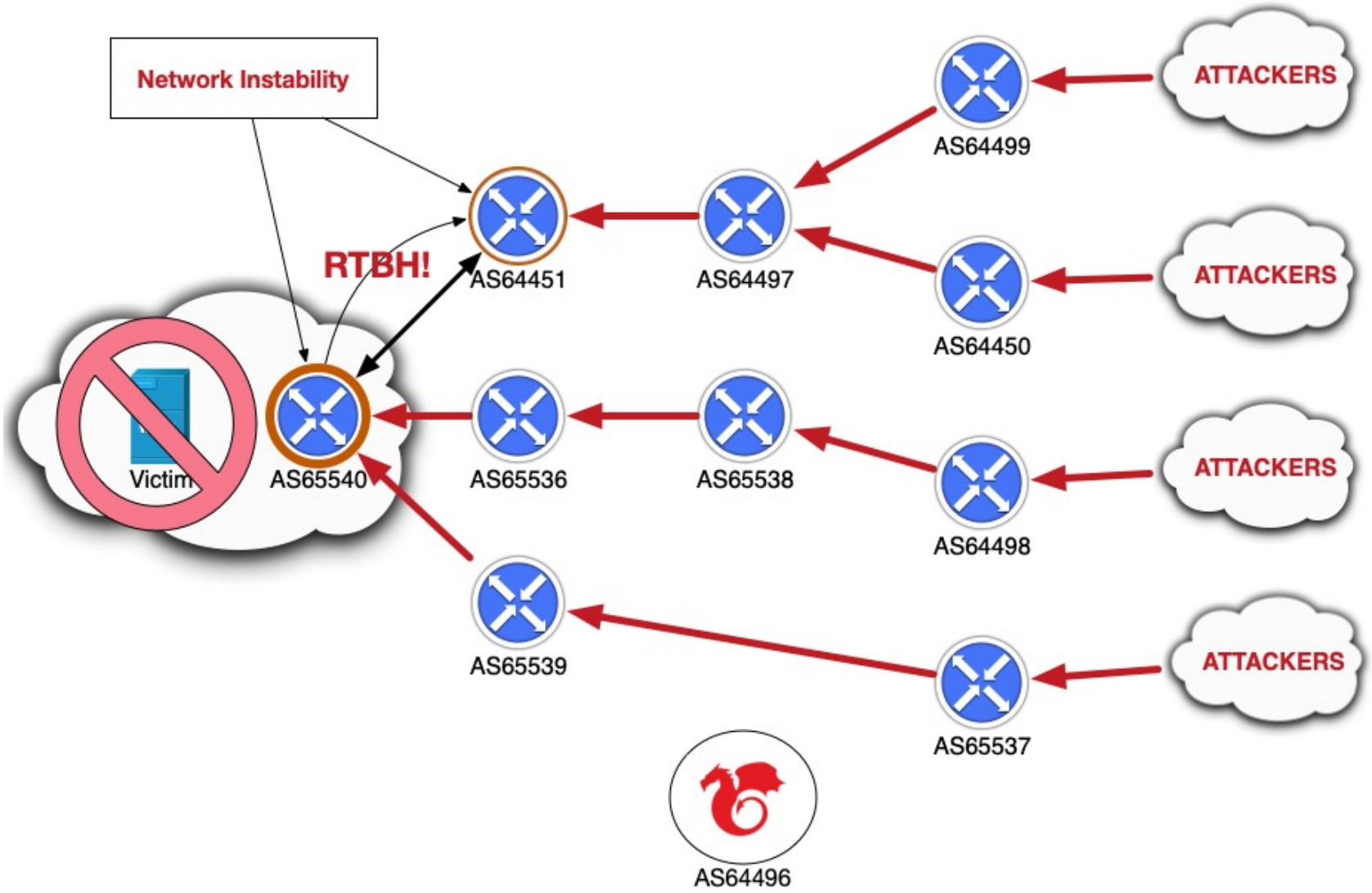
ATTACKERS
AS64498
AS65539
ATTACKERS
AS65537
AS64496


Network Instability
RTBH!
Victim
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ATTACKERS
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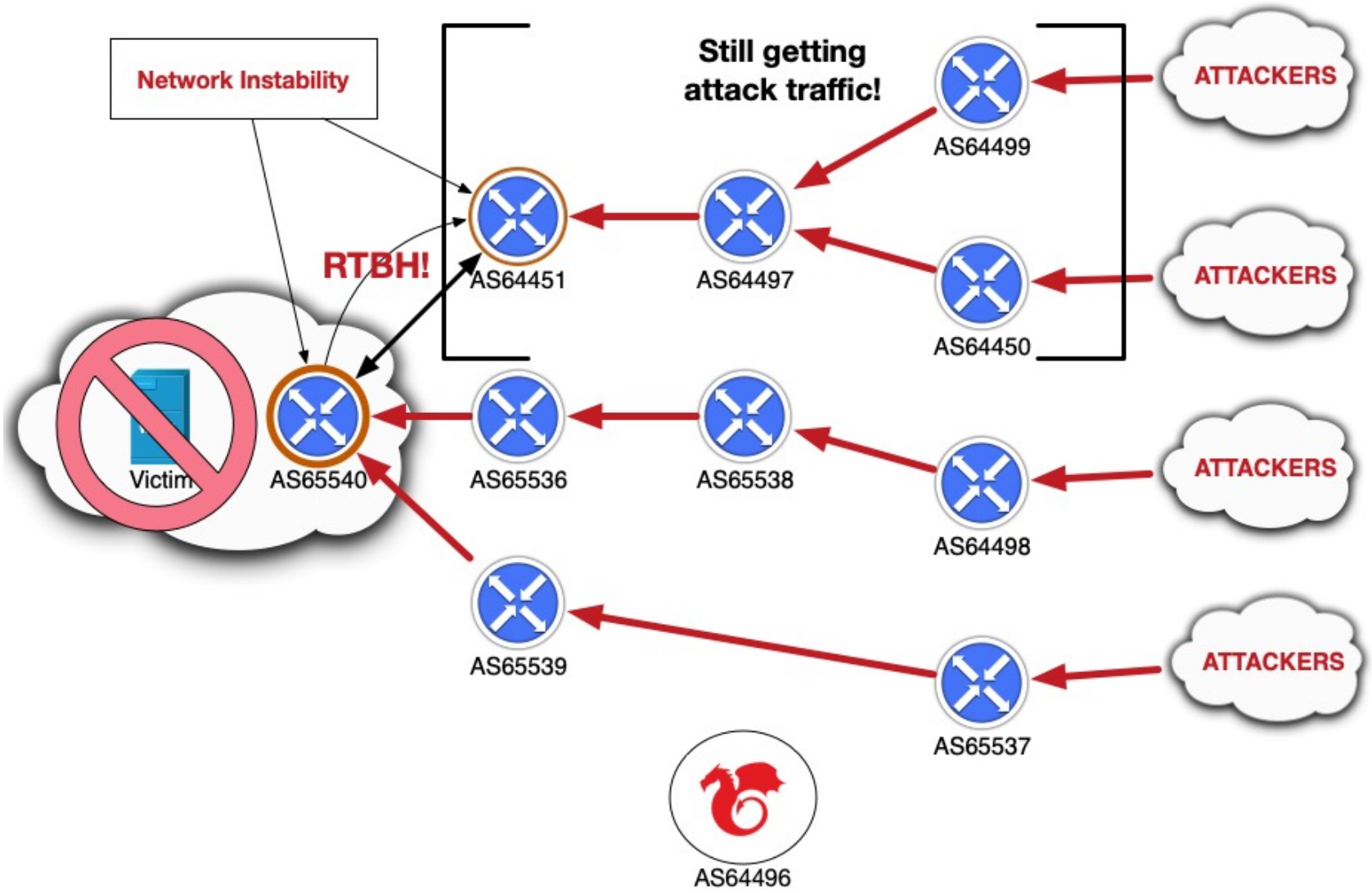
Network Instability
Still getting
attack traffic!
RTBH!
AS64451
AS64497
AS64499
AS64450
ATTACKERS
ATTACKERS
Victim
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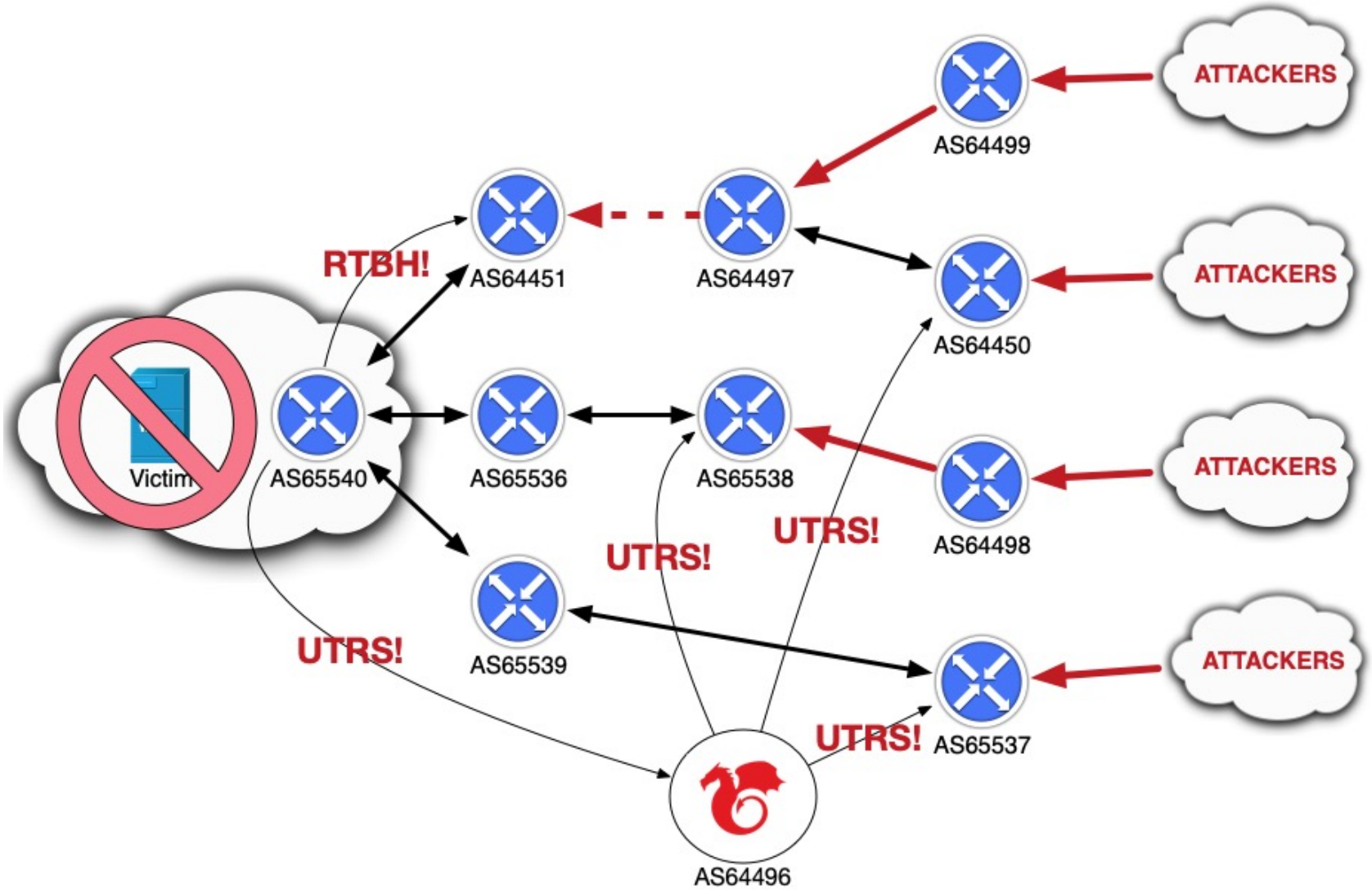
ATTACKERS
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ATTACKERS
AS64498
UTRS!
UTRS!
UTRS!
AS65539
ATTACKERS
AS65537
UTRS!
AS64496

UTRS v1.0

The live, production version

- Distributes RTBH requests
- IPv4 only
- Allows only /32s to be advertised
- 1206 configured sessions
- 1024 configured peers
- Free to use

UTRS v2.0

Coming VERY soon

- Adds IPv6 support!
- Adds ”larger prefix” support to fight carpet bombing
  - /25 for IPv4 and /49 for IPv6
- Allows RPKI validation for authorizing advertisements
  - Friendly to DDoS mitigation providers
- Adds “safe” BGP FlowSpec support!
  - This is a BIG deal, gets rid of “completing the attack”

BGP Flow Specification

RFC 8955

- Defines well known community

VERY powerful and enumerative!

- Rate limit, redirect, tag, etc
- Full suite of Boolean operators
- Specify prefixes, chain rules

And can crater routers

Many networks don’t accept it from peers

”Safe” BGP FlowSpec

Lab tested, network operator approved (in some cases)

MUST specify

- Source CIDR XOR Destination CIDR

MAY specify any combination of the following:

- Protocol (Explicit integers only)
- Source Port (Explicit integers only)
- Destination Port (Explicit integers only)

MUST set action to DROP (traffic-rate 0)

UTRS v3.0

Looking ahead

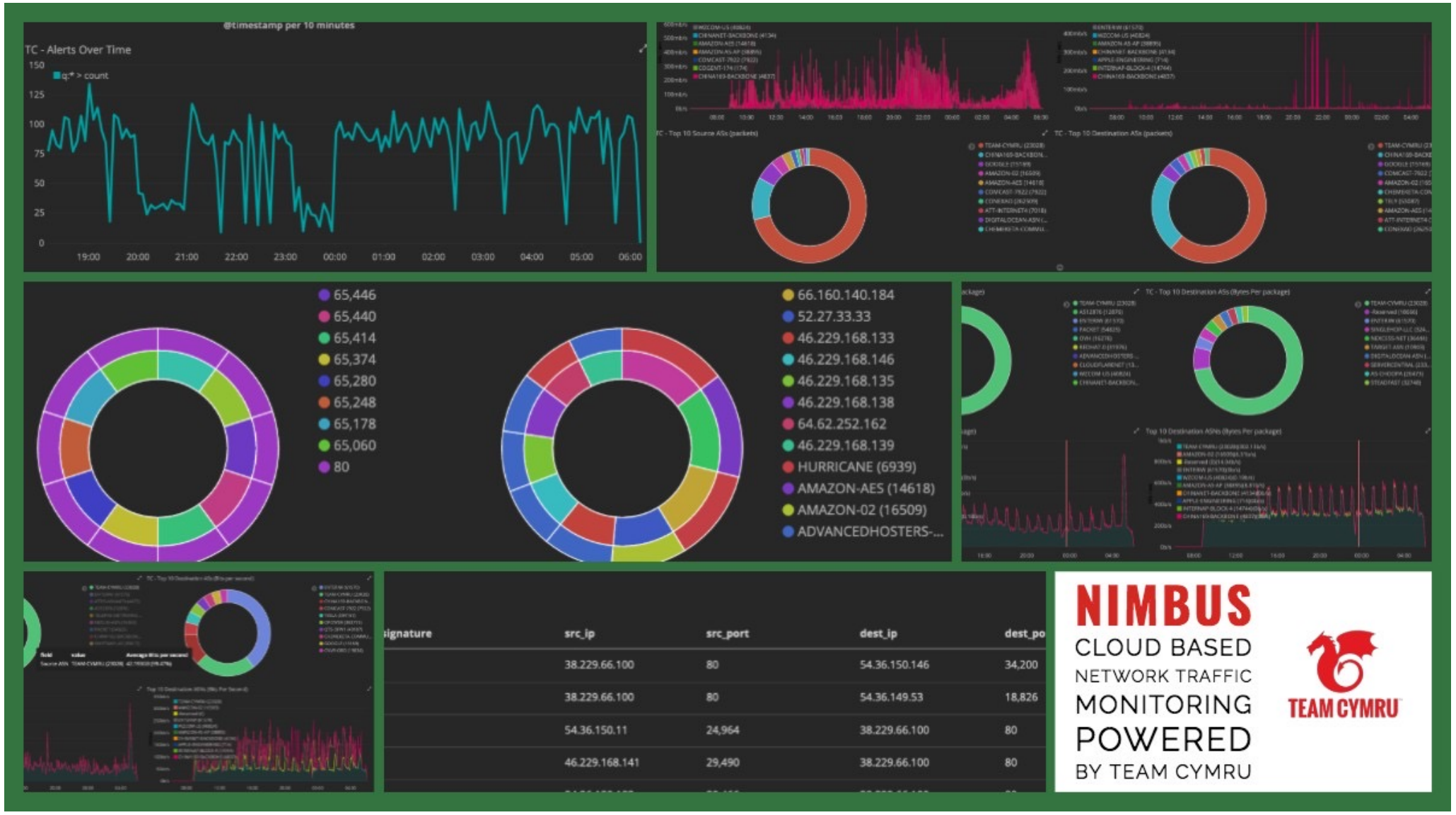
Use RPKI (Resource Public Key Infrastructure)

- Similar to ROAs, but block requests?
  (Signed message is the block request)

- “Discard Origin Authorizations” (DOA)?
  (Signed message delegates authority for block requests to another – UTRS)

What else? Your input and community input, please!

Nimbus Threat Monitor



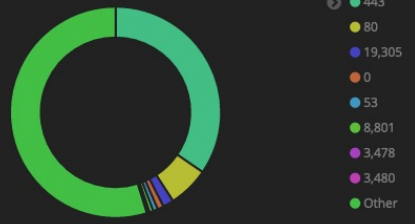
[TC - Alert] Alert Counts (numbers)

1.73 m

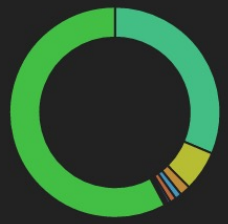
[TC - Alert] Top Protocols

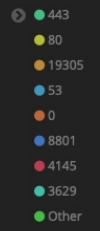
[TC - Alert] Top Channel

[TC - Alert] Top Source Ports

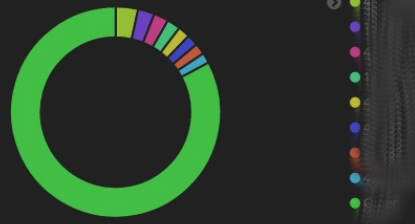


[TC - Alert] Top Destination Ports

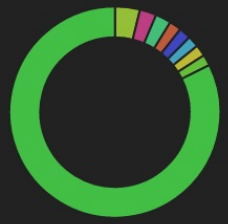




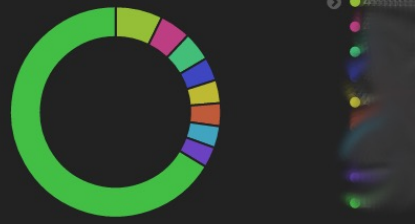
[TC - Alert] Top Source IP



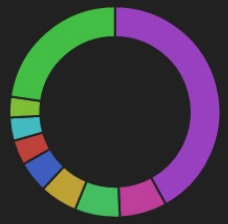
[TC - Alert] Top Destination IP



[TC - Alert] Top Alert IP



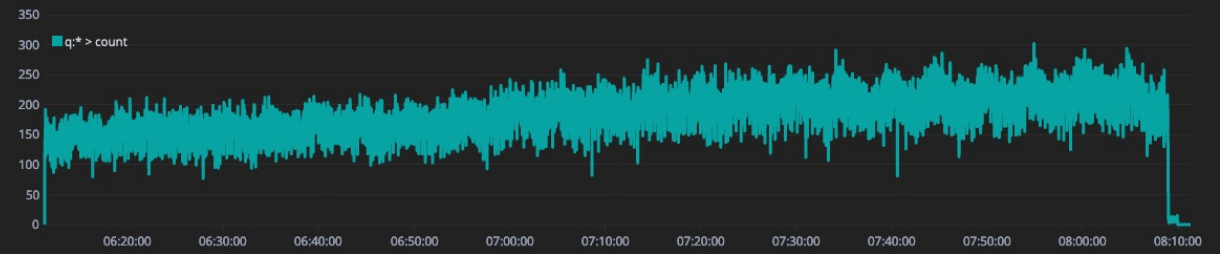
[TC - Alert] Top Alert ASNs



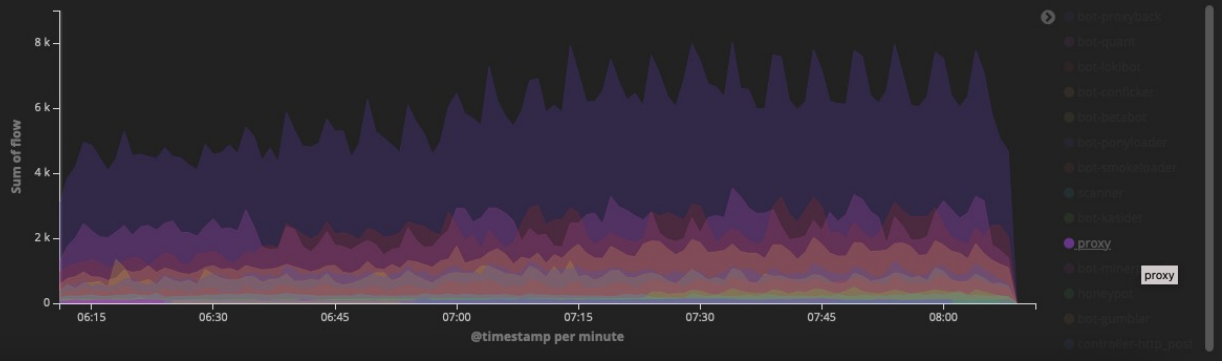
[TC - Alert] Top Signatures

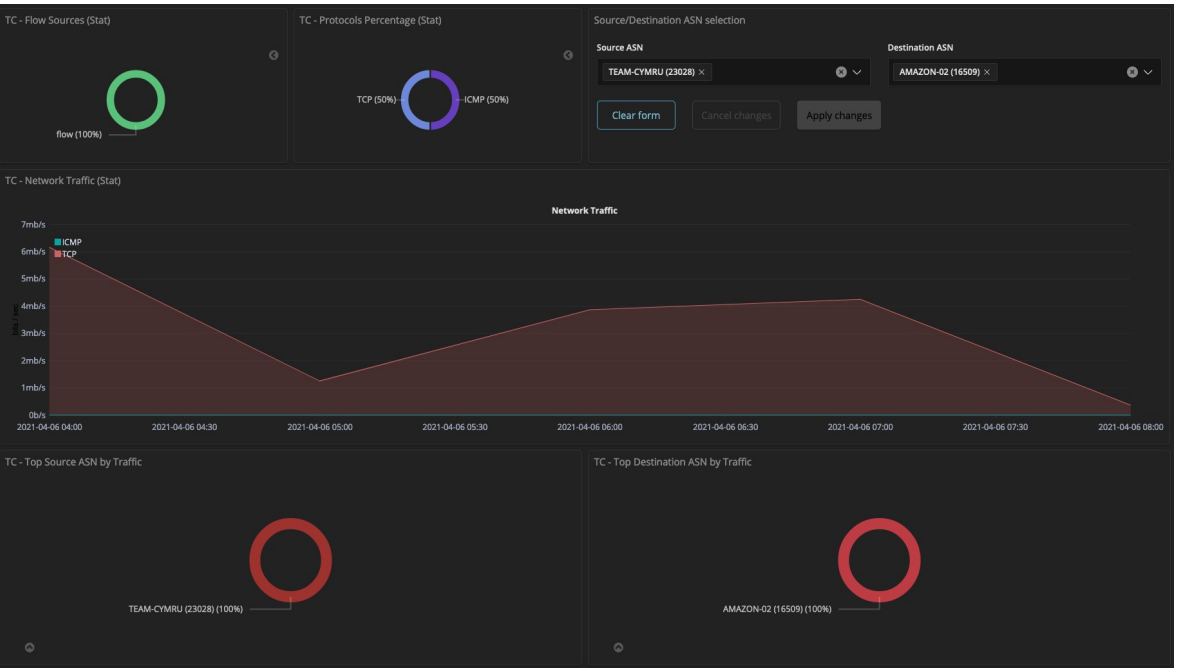
alert_signature: Descending	Sum of flow	Sum of bytes	Sum of pkts
bot-proxyback	691.558 k	1.395TB	2.142 b
bot-quant	274.825 k	542.458GB	804.376 m
bot-lokibot	249.326 k	588.384GB	770.454 m
bot-conficker	159.937 k	289.515GB	468.495 m
bot-ponyloader	107.159 k	194.36GB	307.276 m
bot-betabot	94.138 k	255.195GB	339.069 m
bot-smokeloader	63.572 k	98.679GB	173.904 m
scanner	27.882 k	2.195GB	29.31 m
bot-kasidet	19.144 k	59.799GB	72.156 m
proxy	10.526 k	2.444GB	10.923 m

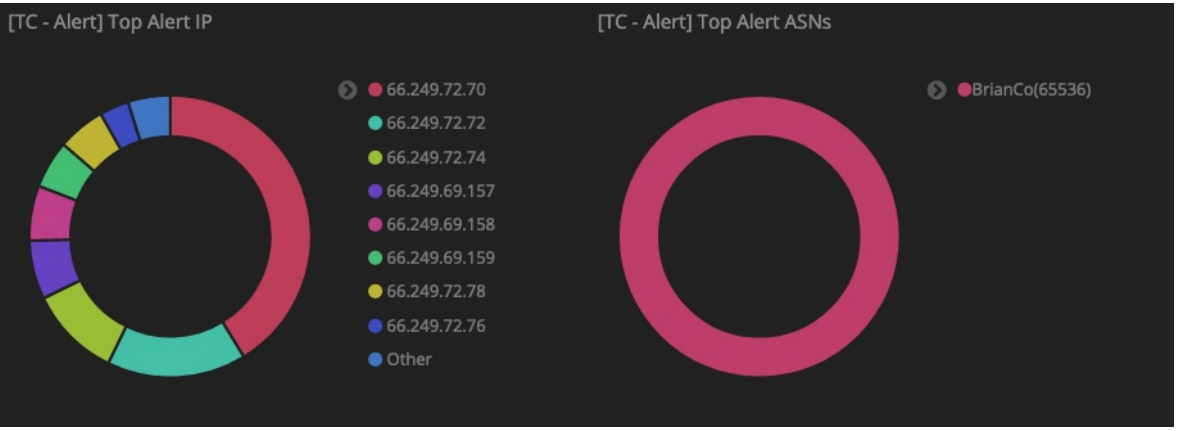
[TC - Alert] Alerts Over Time



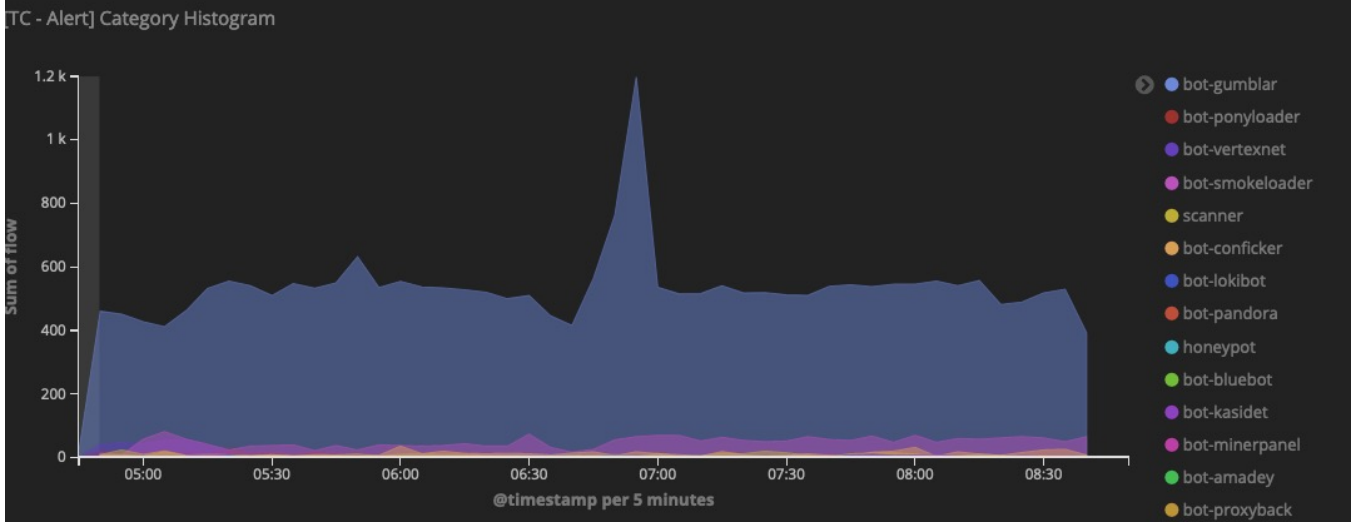
[TC - Alert] Category Histogram







alert_signature: Descending	Sum of flow	Sum of bytes	Sum of pkts
bot-gumblar	25.187 k	5.869GB	3.805 m
bot-smokeloader	2.27 k	240.279MB	121.789 k
bot-conficker	553	280.31MB	220.132 k
scanner	421	28.197KB	599
bot-ponyloader	358	3.034MB	3.95 k
bot-vertexnet	306	133.275MB	79.652 k
bot-kasidet	76	57.091MB	26.485 k
bot-lokibot	72	295.552KB	663
honeypot	36	4.817KB	37
bot-amadey	18	48.864KB	161



Other Community Services

- Dragon News Bytes
- BOGON Reference Project
- IP to ASN Mapping
- Malware Hash Registry (MHR)
- CSIRT Assistance Program (CAP)

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Thank you

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