BGP Route Injection

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Agenda

- Route Injection concepts
- Flow Spec Concepts
- Other Flow Spec tools

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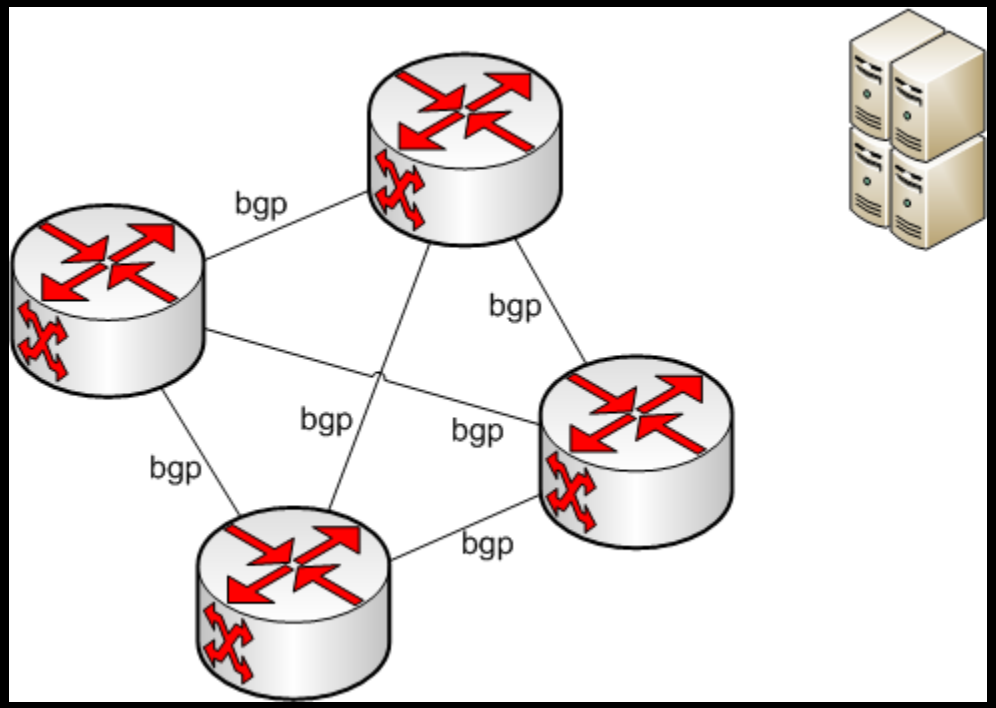
Injection?



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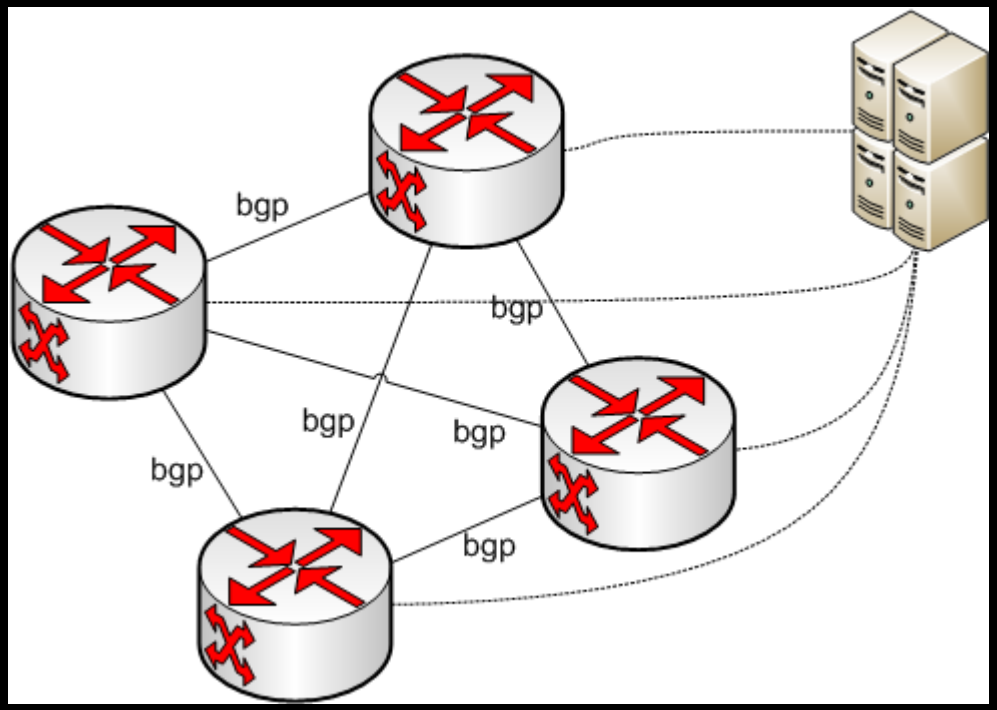

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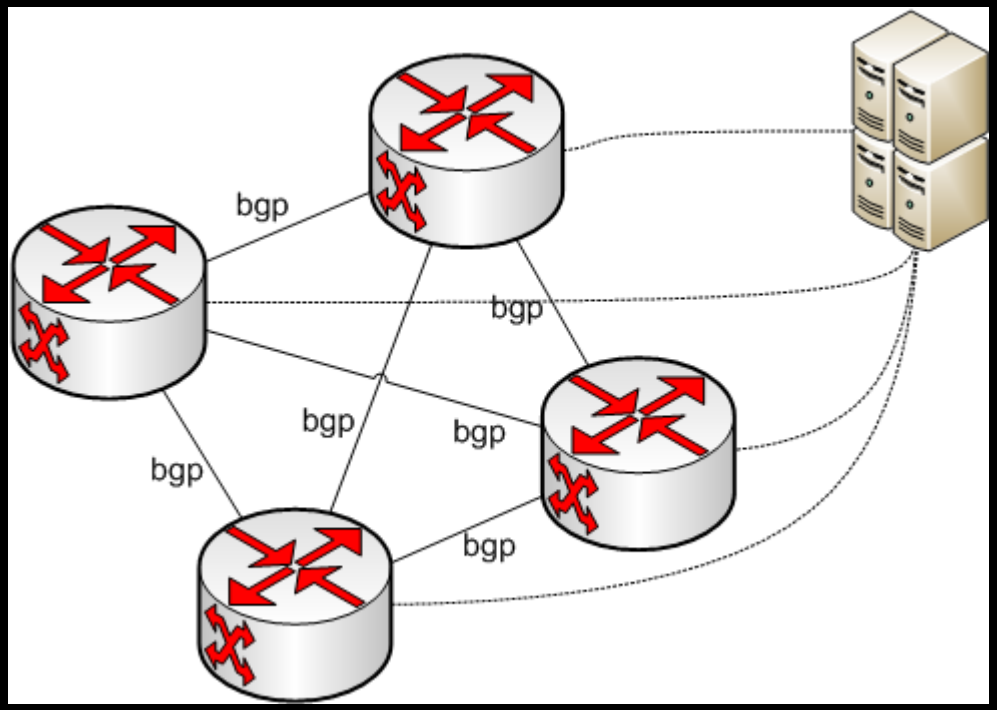
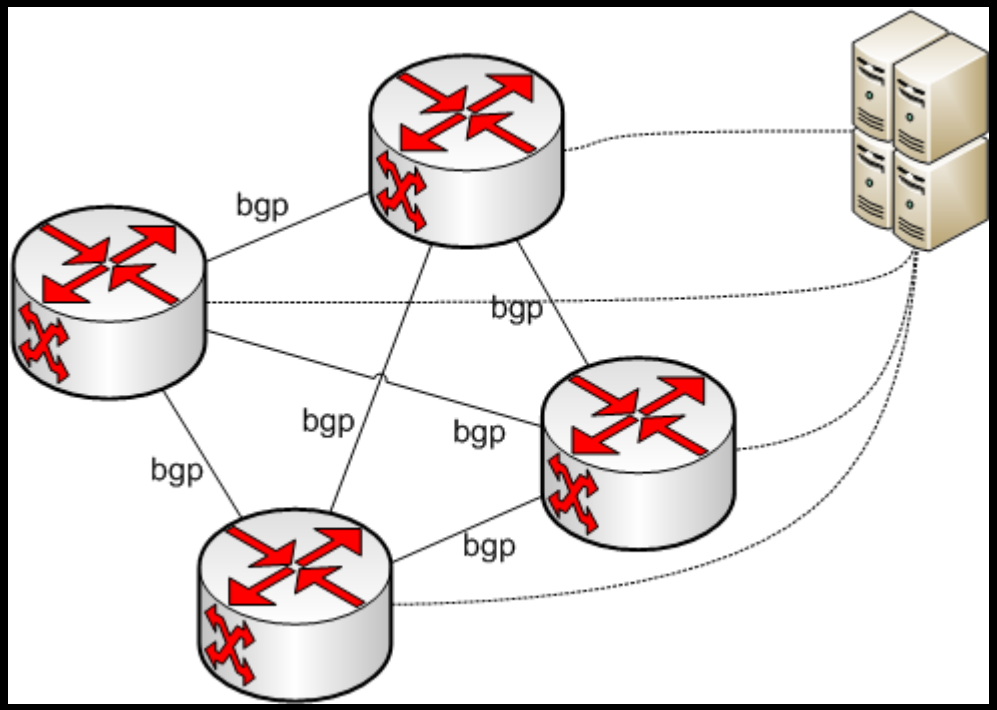


Anycast

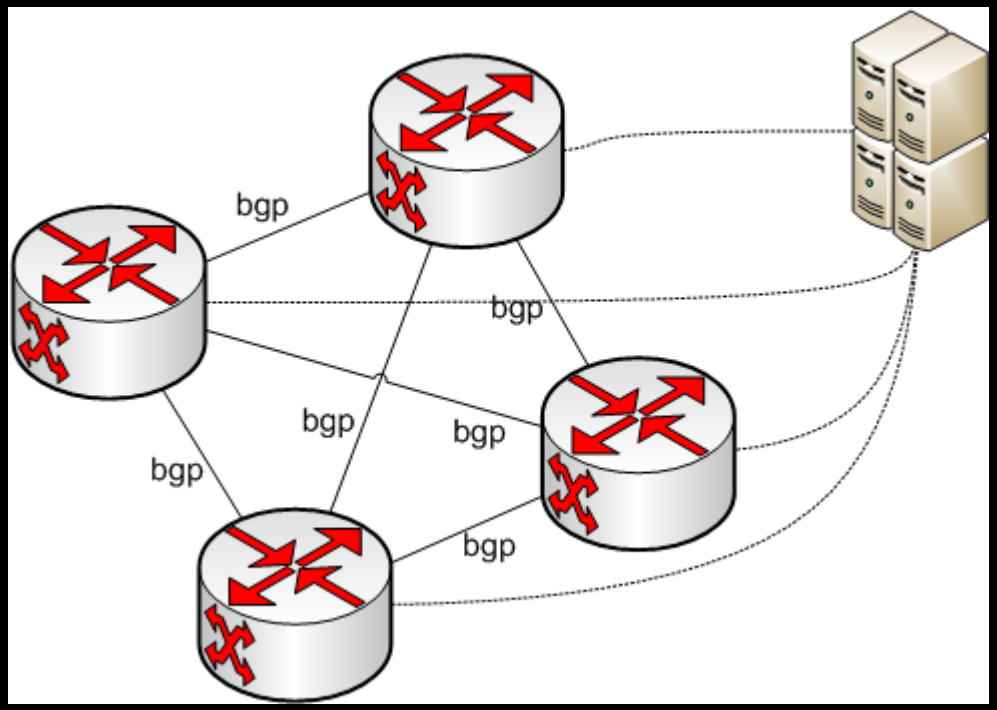
Injection?



Suspend Service

Anycast

Injection?

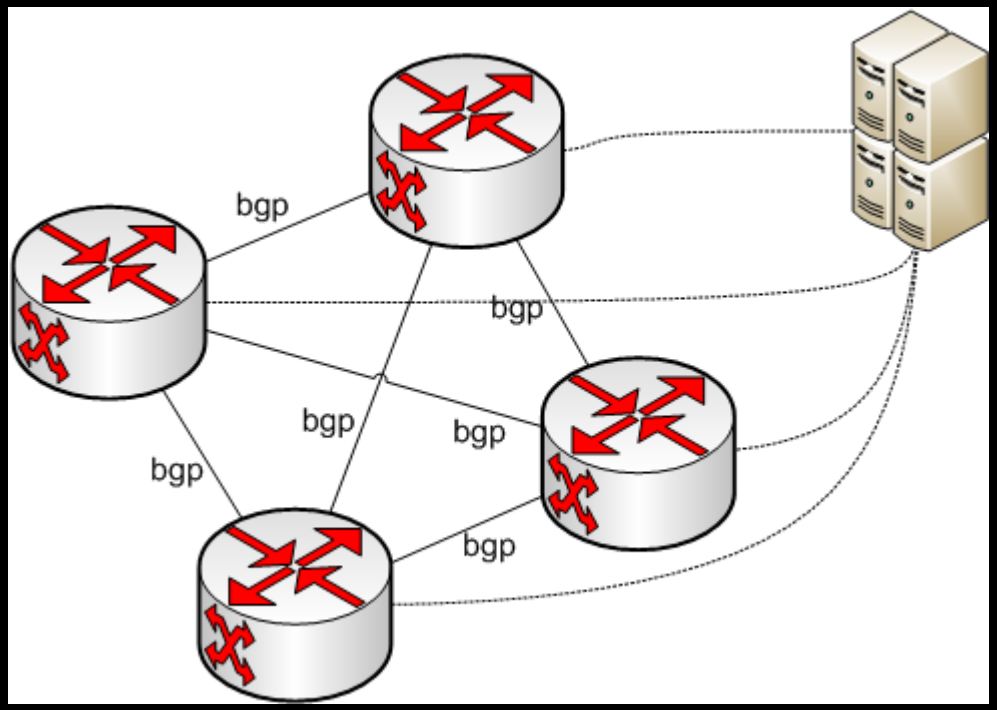


Suspend Service

Anycast

Compliance

Injection?



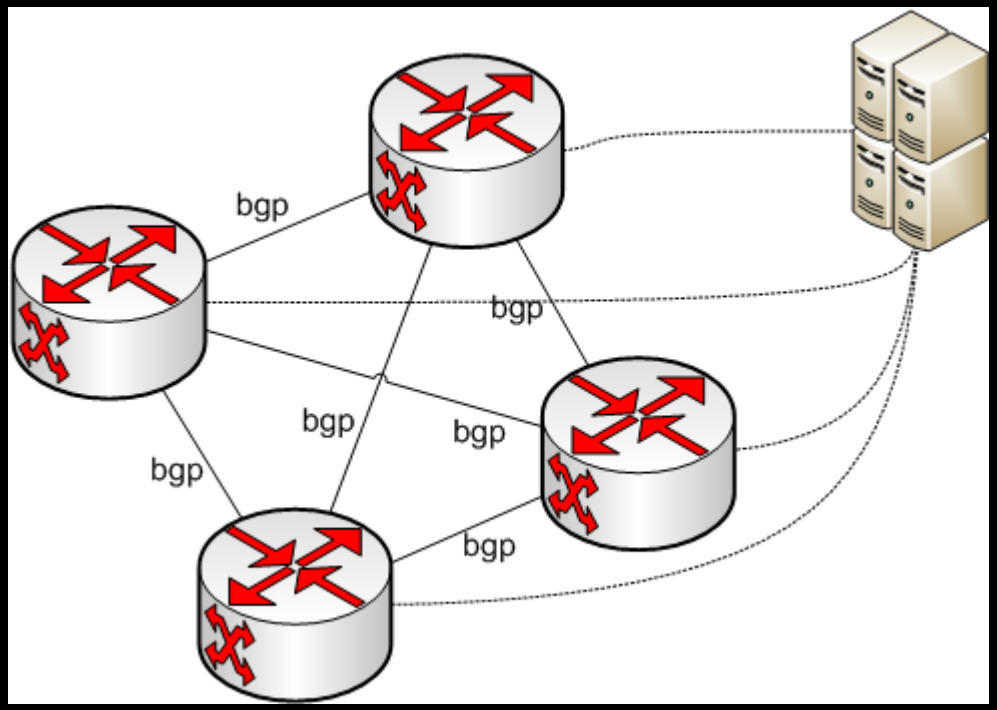
Suspend Service

Migration

Anycast

Compliance

Injection?



Suspend Service

Migration

Anycast

Compliance

Security / Flow Spec

EXA BGP Injector

- http://bgp.exa.org.uk/

- Simple, Juniper like configuration
- Injects prefixes with community, next-hop, and local-preference attributes
- iBGP or eBGP

- You may be doing this already with Quagga/BGPD/BIRD

EXA BGP Injector Config

- neighbor 192.0.2.1 {
  description “My router”;
  local-address 192.168.1.1;
  local-as 65000;
  peer-as 65000;
  static {
  route 10.0.1.0/24 next-hop 10.1.1.1 community 65000:10 local-preference 999;
  }
  }
- See http://bgp.exa.org.uk/ for better example

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BGP Flow Specification info

- Use BGP to distribute flow specification patterns, and use routers to filter traffic matching these flows.

BGP Flow Specification Method

- New NLRI Address Family for flow-spec.
- Express action, e.g. Accept, redirect, sample, discard using extended communities.
- Rules can be built against
  - Source and destination prefix and ports
  - Protocol (TCP, UDP, ICMP..)
  - ICMP Type and ICMP Code
  - TCP Flags (FIN, SYN, RST, PUSH, ACK, URGENT)
  - Packet Length
  - DSCP
  - Fragmentation (Don’t frag, Fragmented, Last)

BGP Flow Spec actions

- Limit traffic rate
- Discard traffic (traffic rate = 0)
- Redirect traffic into MPLS Tunnel

- No direct reconfiguration on router

BGP Flow Spec advantages

- Rapid rollout! Rule distribution layer is already in place on your network..
- Finally use those expensive ASICs for something (filtering)
- Uses protocols well understood by you and your NOC already

BGP Flow Spec Standards

- New RFC – 5575 – August 2009
- Implemented by :
  - Juniper
  - Arbor
  - Exa BGP Injector
  - Maybe more .... ?

- Bug your Cisco Rep about this feature today ☺

Example Uses

- **NOC** to stop Denial of Service. Ideally combined with Netflow tools.
- **Abuse Desks** to prevent spam from the outside or your own customers.
- **Enterprises** to enforce security policy
- **BOFH**, to slow down boss's Counterstrike games!

DOS Mitigation?

- Customer typically asks for filter/ACL to be applied on their ports
- Traffic must still traverse the backbone, not dropped at source.
- Brutal filter allows attack to succeed!
- Attack traffic is more intelligent – TCP SYN flood / UDP fragment attack
  = low PPS, high damage

Traditional response does not scale

- Lots of config generation/regeneration.
  - Slow to roll out
  - Risk of human error
  - Constant cat-and-mouse config race

- More automation = more time to party.

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Arbor

- You have just seen a complete presentation from Neotelecoms explaining this tool!

EXA BGP Example

```
static { ... }
        flow {
            route block-evil-spammer {
                match {
                    source 195.66.232.40/32;
                    port =25;
                }
                then {
                    discard;
            }
        }
```

Putting it all together

- 1) Identify attack vectors with Netflow scripts and tools.
- 2) Automatically generate configuration and filter specification with Exa BGP
- 3) ...
- 4) Profit

Future work

- Automation with more Netflow tools
- Better vendor support for Flowscan

- Inter provider flow-scan ?

Simple ☺

Any Questions ?

Any Answers ?

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