Making BGP filtering an habit: Impact on policies

draft-cardona-filtering-threats-00

JuanCamilo.Cardona@imdea.org
Pierre.Francois@imdea.org

Agenda

- Local filtering can do harm
- Remotely triggered filtering can do harm

- Still it's needed and used
- Let's be aware and conscious about it

Local filtering as an habit?

Overlapping prefixes...

- *"They make me forward to my transit instead of my peer/customer",*
- *"I'm loosing money due to their games"*
- It is frustrating to forward traffic with which you could get more ROI, indeed.
- *"They violate my policy"*

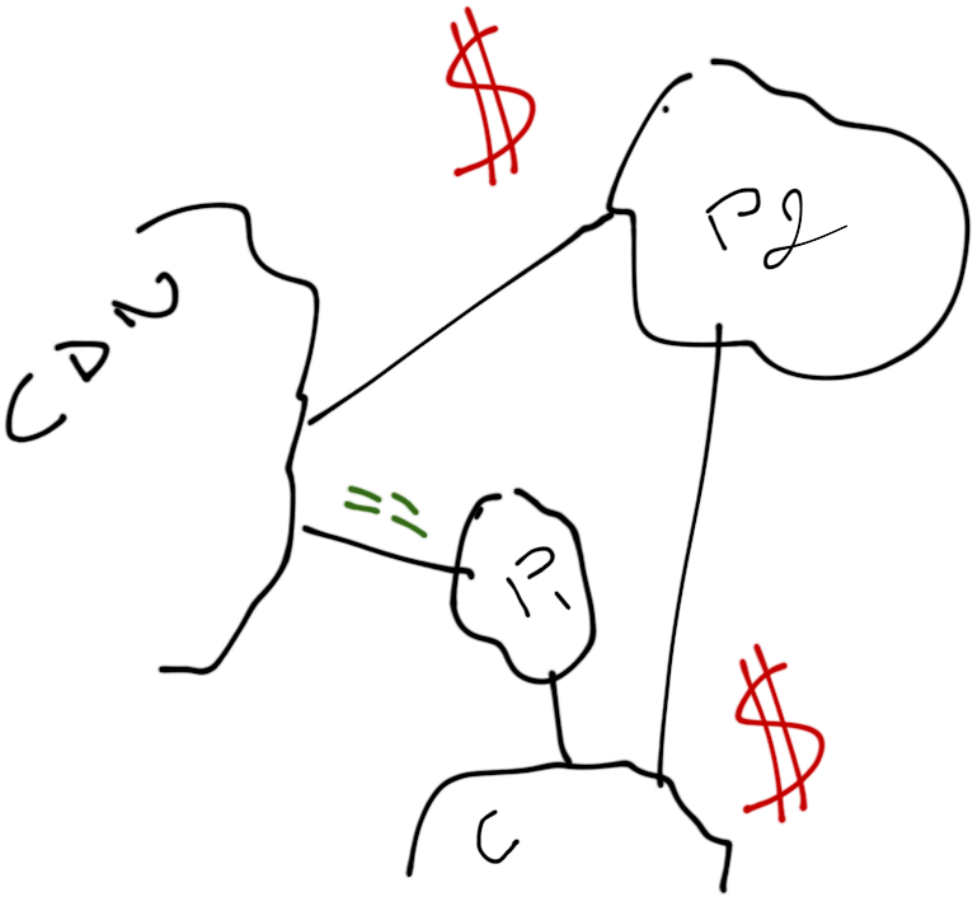
Ignoring overlapping prefixes?

- People get serious about filtering
- See INIT7 talk at RIPE63
  - Demo'ing bill reduction through filtering
  - Filter out prefixes at transit to get through peers via a covering prefix
- Requests to vendors for automated filtering features

Why does it take place?

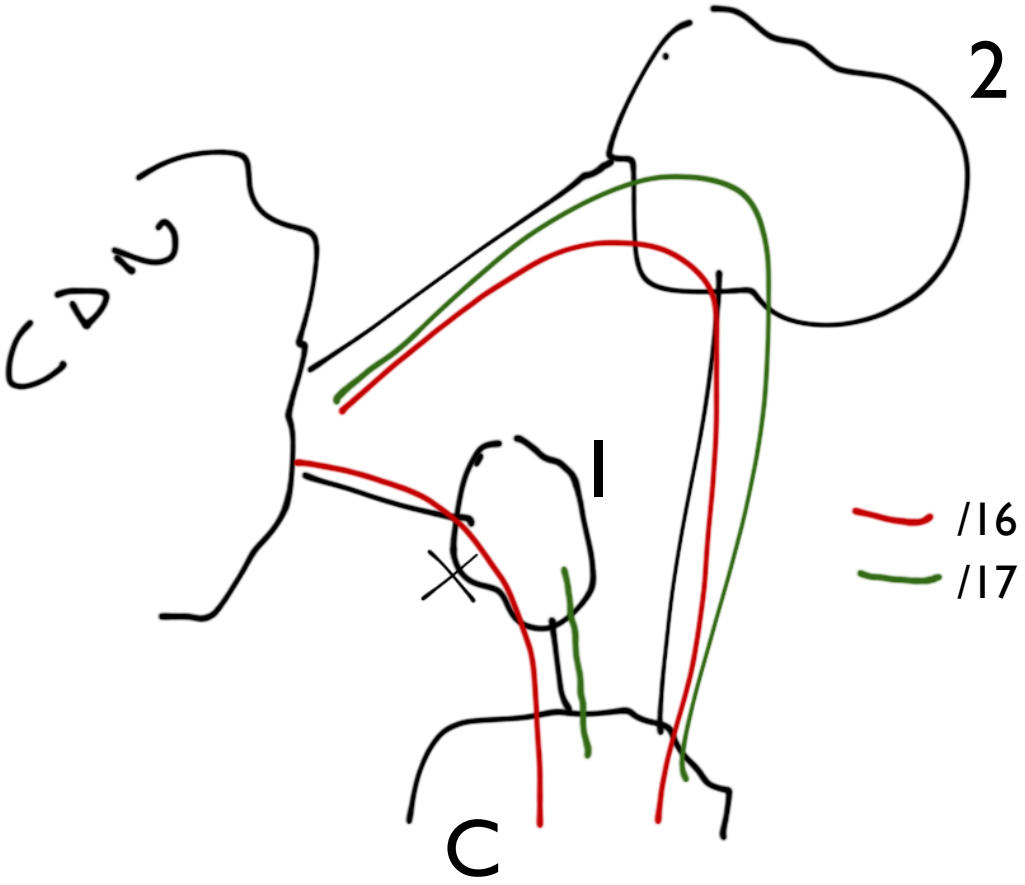
- What are the reasons for an ISP or a CDN to receive more specific prefixes from providers only, while there is a covering prefix at a peer ?

Reference context 1



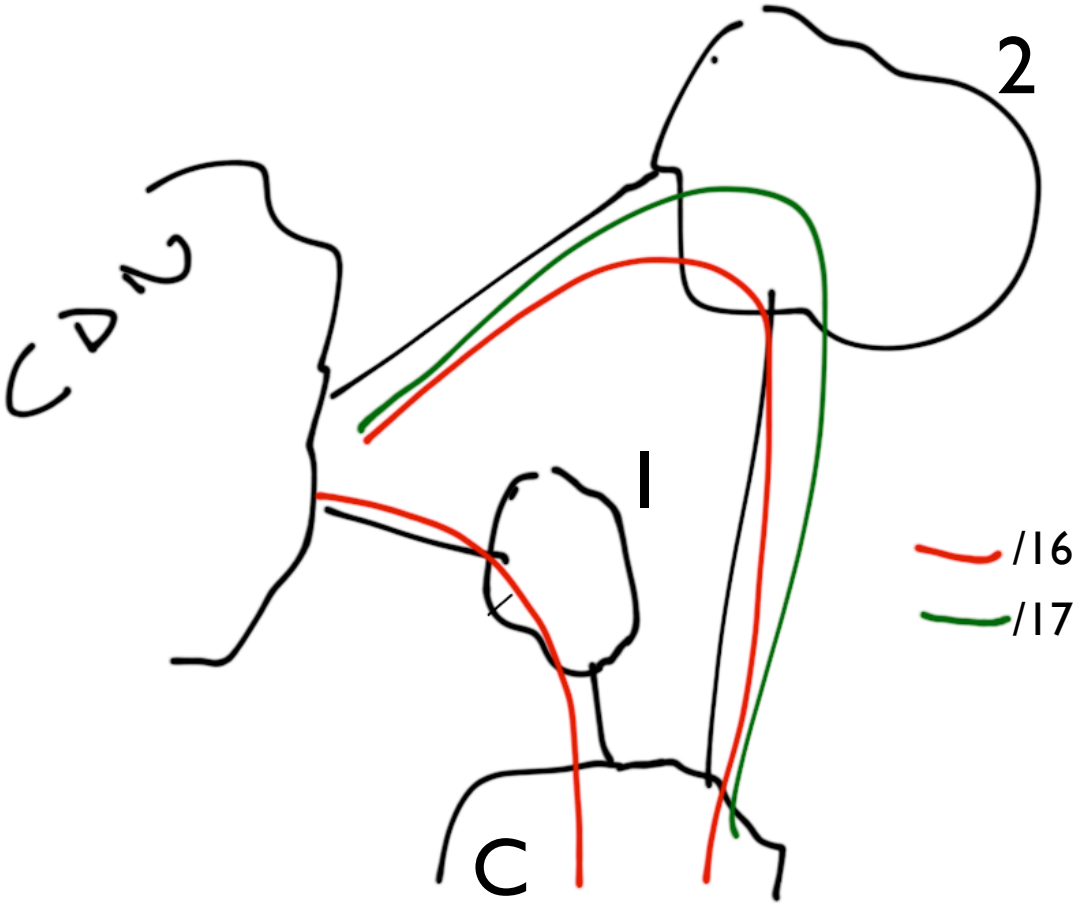
- Destination Eyeball ISP C
- C in customer base of Peer P1
- C in customer base of Provider P2

Case 1
No export



- C tags NO_EXPORT when advertising the more specific to peer P1
  - C does not want the entire incoming traffic shares for the /17 to be delivered by P1
  - C gives traffic shares to P1 only for the single homed customers of P1. **C Expects to receive the rest from P2**
- Can you bypass the TE needs of C?

Case II
Selective advertisement



- C does not advertise the /17 to P1
  - C does not want to allow the incoming traffic shares for the /17 to be delivered by P1
  - P1 is only allowed to deliver its own customer traffic to C
- Can you bypass the TE needs of C?

Impact of bypassing more specifics

- Disrespect of your peers' customers traffic engineering requirements/needs
- Up to now, this is a business discussion on who should decide about Internet end-to-end paths...
- The games being played doing so can turn bad for some ISPs

BGP : control plane

- Policy-constrained path selection in BGP...
  Flexible
  Per-prefix granularity

- *"A BGP-router's **route processor** will pick a path towards a given destination **prefix** by applying the following rules"*

  Weight
  Local-pref
  As Path Length
  IGP/Med

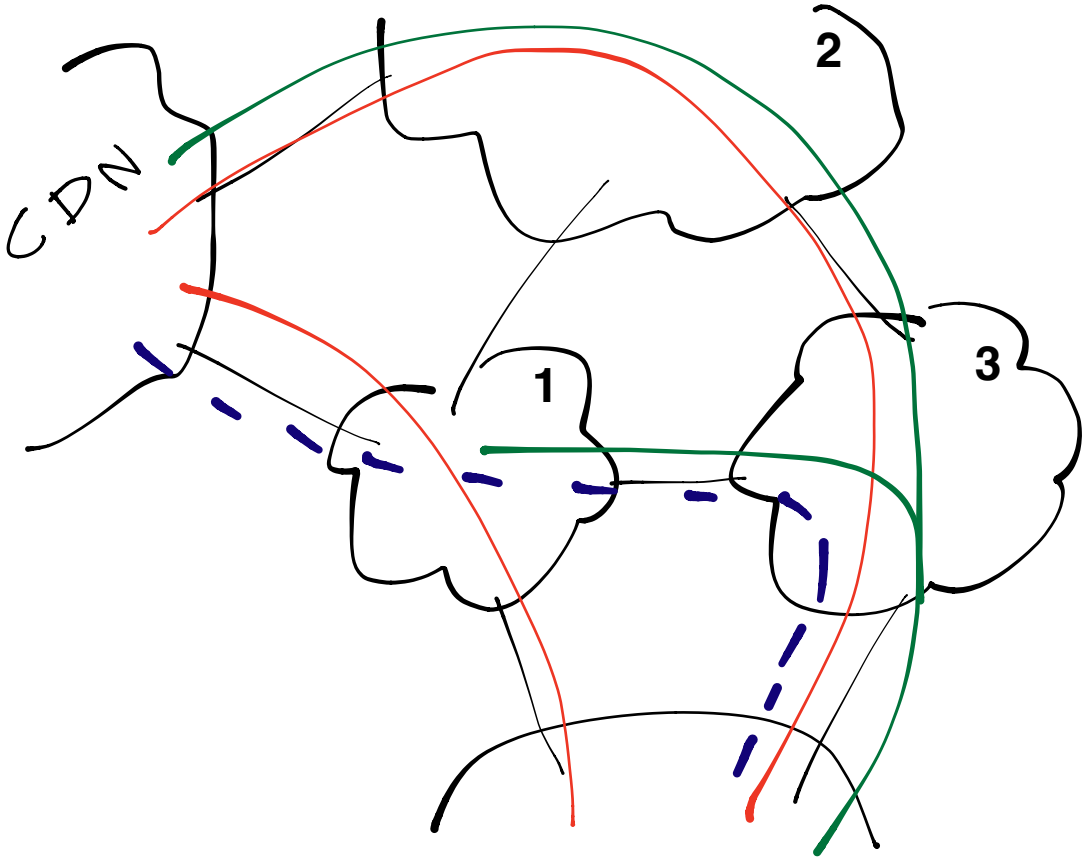
Data plane result of BGP

- ... dominated in the data-plane
- A **FIB** will pick a path towards a given destination **address** by applying the following rules

  Longest prefix match to get the prefix

  (
  Best path towards that prefix was picked based on
  Weight
  Local-pref
  As Path Length
  IGP/Med
  ...)

Policy violation at a peer



- P3 and P1 are peers
- CDN peers with P1
- C does not advertise the /17 to P1, Only to P3
- If you ignore the transit path, you violate P1's policy doing CDN-P1-P3

Take away

- Ignoring more specifics can do you good
  - vs. your peers, customers, and customers of your peers
  - With a risk of policy violation at your peers
  - Undistinguishable cases without gathering external data
- **Should not be done automatically with simplistic rules**
- **Peering and Customer contracts should accommodate those cases**

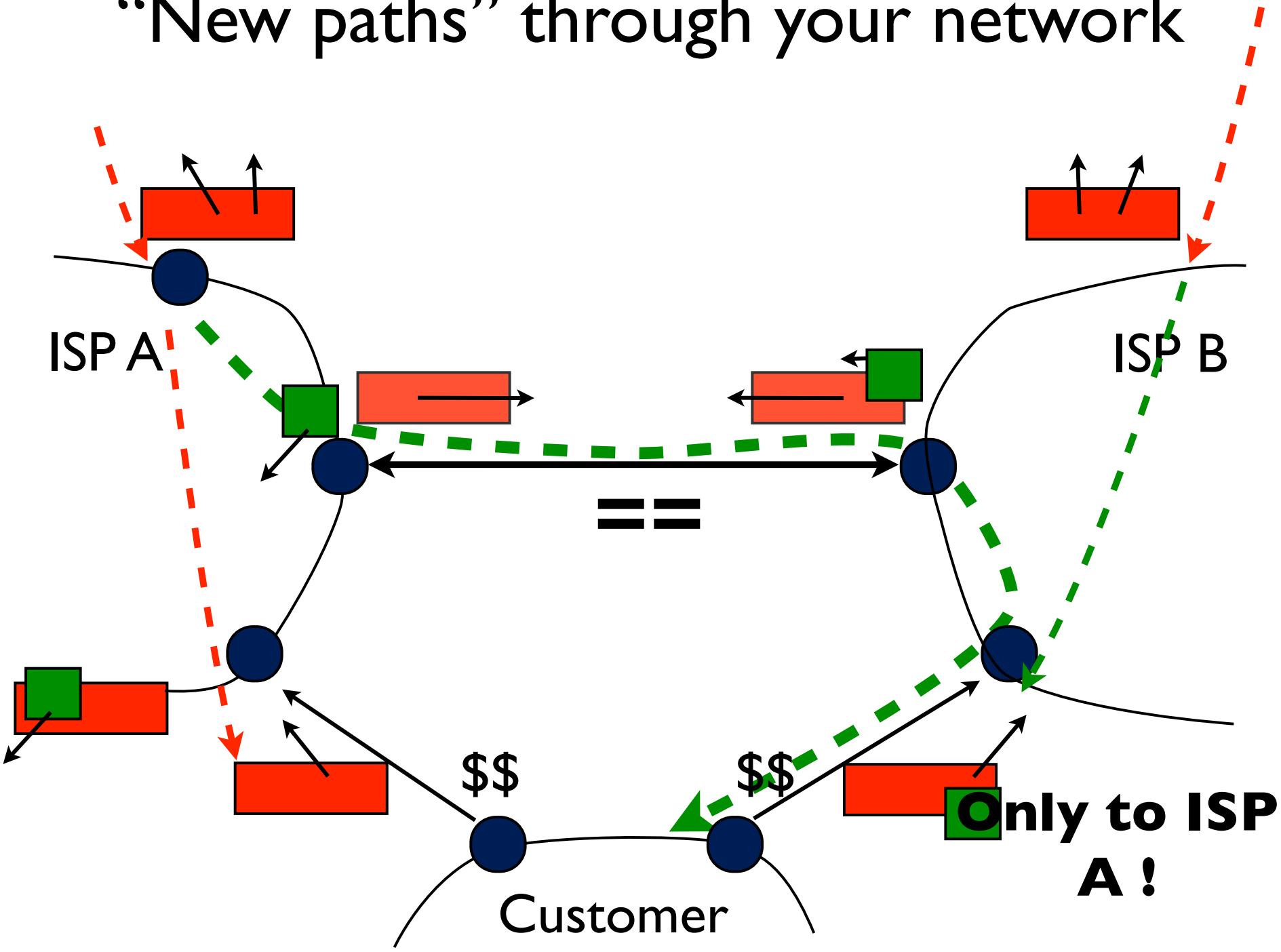
Remote triggered filtering

- Triggering the same mess from far...
- Example:
  Route propagation control offered by Sprint
  - Have to be a customer of Sprint
  - 65000:XXX : Do not advertise to ASXXX
    can be AOL, NTT, BT, Level3, GBLX, Verizon, AT&T, ...

Powerful complementary means to limit path knowledge towards yourself

- Selective advertisement, performed locally
- Selective propagation, triggered remotely

“New paths” through your network



This is annoying

- Policies can be violated, again
- Your flexible routing service can turn **you** into a transit thief when misused by **your** customers
- “Nothing breaks” when the violation takes place
- Ex. : Just consider the Tier-I clique...

So what can you do ?

- Forward differently
- Filter-out / Drop
- **Monitor !**

- WG DOC at IDR? GROW?
  - It's a warning about how BGP works by definition
  - It's a warning about what OPS do with BGP

Thank you!