Making BGP filtering a habit: Impact on policies

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draft-cardona-filtering-threats-01
Motivation
Filtering overlapping prefixes

• A lot of overlapping prefixes in BGP
• Traffic enforced over the overlapping prefix
• Overlapping prefixes can be partially propagated
  – “They make me forward to my transit instead of my peer/customer”
  – “I’m loosing money due to their games”
• Natural reaction: Filter them
Example (local filtering)
Example (local filtering)
Example (local filtering)
Motivation

• ISPs have announced this practice
  – See INIT7 talk at RIPE63
• Requests for automatic filtering mechanisms

• Blindly filtering can affect neighboring ASes
Local filtering
Policy violation

CDN
AS1
AS2

Peering
Transit

1.1.0.0/16
1.1.0.0/17
Local filtering
Policy violation
Local filtering
Policy violation!

Policy violation!
Local filtering

Conclusions

• Local filtering can be beneficial for you
  – But can violate the policies of neighboring ASes
  – It is impossible for the “culprit” to distinguish among the cases without gathering external data

• A similar effect can be obtained when remote filtering is performed
Remote triggered filtering

Background

• Some large ISPs offer remote route propagation control using BGP communities
Remote triggered filtering

AS0

AS1

AS2

AS3

AS4

/16

/17
Remote triggered filtering
Remote triggered filtering

- AS0
- AS1
- AS2
- AS3
- AS4

Community 6500:0003:
- Not to AS3

Community 6500:0003
Remote triggered filtering

AS0 → AS1 → AS2 → AS3 → AS4

community 6500:0003: Not to AS3

community 6500:0003
Remote triggered filtering

AS4 -- AS3
AS1 -- AS2

Policy violation!

AS0

community 6500:0003

/16
/17
Impact of filtering

• Filtering can be useful for an ISP
  – We are not questioning this
• Might violate policies of neighboring ASes
• It should be done with care
• Not only for those who filter:
  – Contracts should cover such considerations
  – Detecting violations is not simple
What can ISPs do?

• How to detect a Policy violation:
  – Monitoring traffic
  – Analyze BGP data

• How to solve it:
  – Filter out traffic
  – Forward differently
  – Human interaction
Conclusion

• Filtering of overlapping prefixes can do harm
• It’s needed and used
• Let’s be aware and conscious about it
Next steps

• Consider feedback
• WG DOC?
Questions?

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Motivation & Background
Local filtering to enforce policy

AS1

10.0.0.0/22

AS0

10.0.0.0/24

10.0.0.0/22

10.0.0.0/22

10.0.0.0/22

10.0.0.0/22

10.0.0.0/24
Motivation & Background
Local filtering to reduce FIB size

CDN

AS1

AS0

AS2

Peering

Transit

1.1.0.0/16

1.1.0.0/17
Local filtering
From Peer to Peer

CDN

AS1

AS2

AS0

AS5

1.1.0.0/16

1.1.0.0/17

Peering

Transit
Local filtering
From Peer to Peer

Policy violation!