



AGH UNIVERSITY OF SCIENCE
AND TECHNOLOGY

Inter-ALTO Communication Protocol draft-dulinski-alto-inter-alto-protocol-00

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Inter-ALTO Communication Protocol Outline

- 1 Contents of the Draft**
- 2 Motivation
- 3 Parameters and Communities



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- **Motivation.**
- Definitions (parameters and communities).
- Request and response messages format.
- Considerations on:
 - Inter-ALTO server discovery,
 - Compatibility,
 - Scalability,
 - IANA actions,
 - Security.

- Motivation.
- **Definitions (parameters and communities).**
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- Considerations on:

- User ALTO server discovery.

- Security.

- Performance.

- Interoperability.

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 - Inter-ALTO server discovery,
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1 Contents of the Draft

2 Motivation

- Route Asymmetry
- Remote ISPs' Preferences
- Coordination of ISPs' Policies

3 Parameters and Communities

Motivation

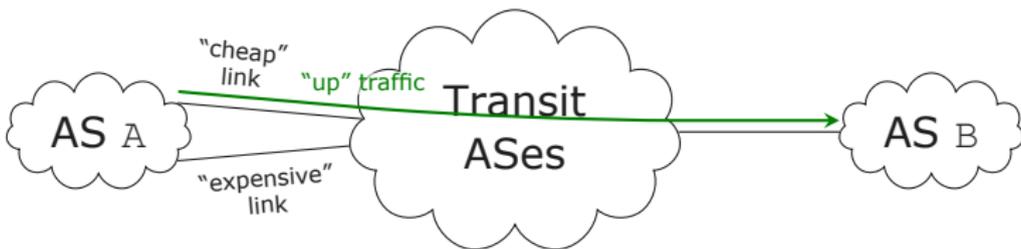
Route Asymmetry



- AS A knows only the “up” route (from BGP tables).
- Assume cost-based ranking.
- Peers from AS B are preferred while they shouldn't be if the P2P application mainly downloads.
- We've done some simulations (topology is in the [backup slides](#)) and... it works!

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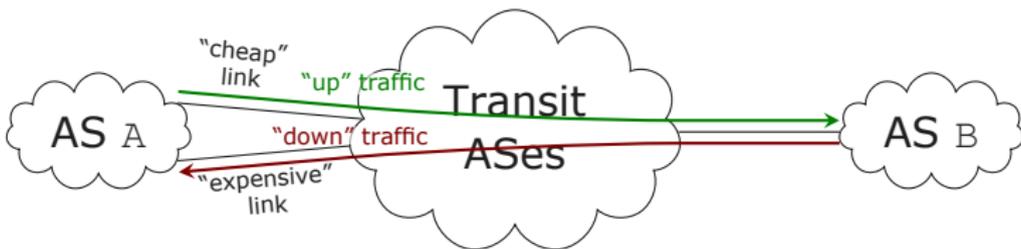
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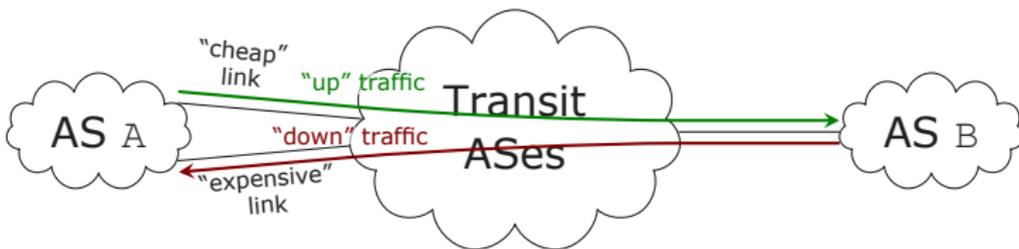
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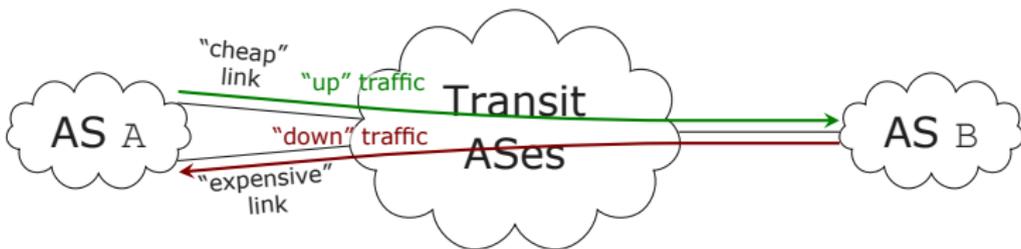
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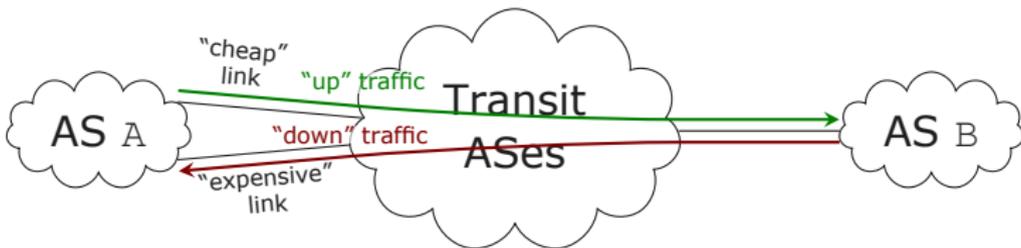
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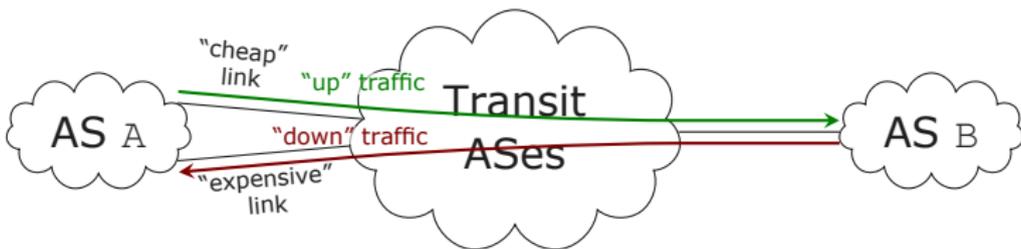
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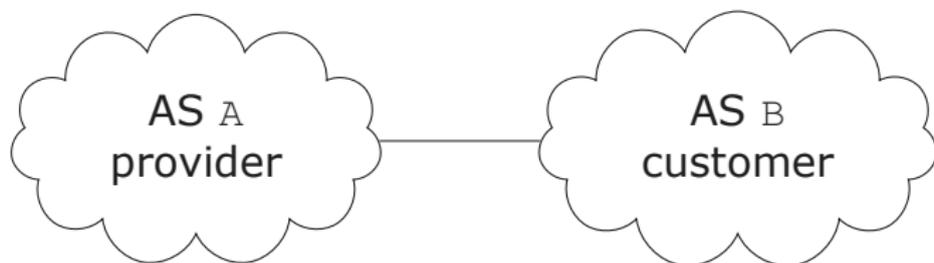
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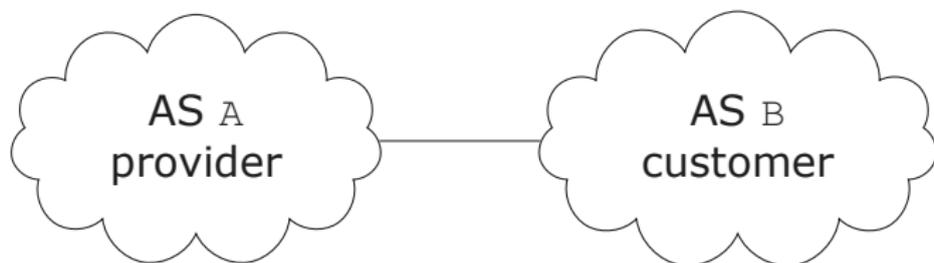
- AS A can't distinguish between the peers from the α subnet and from the rest of AS B.



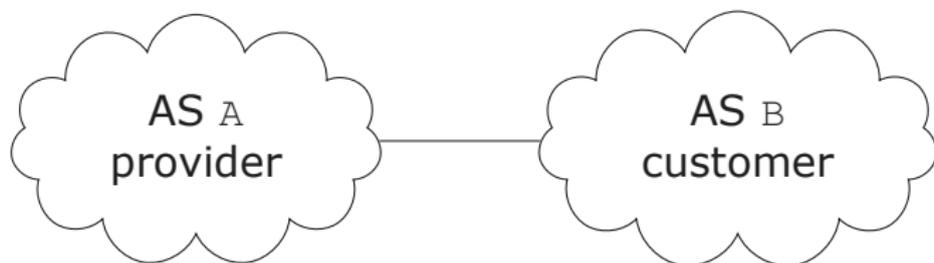
- AS_A can't distinguish between the peers from the α subnet and from the rest of AS_B .



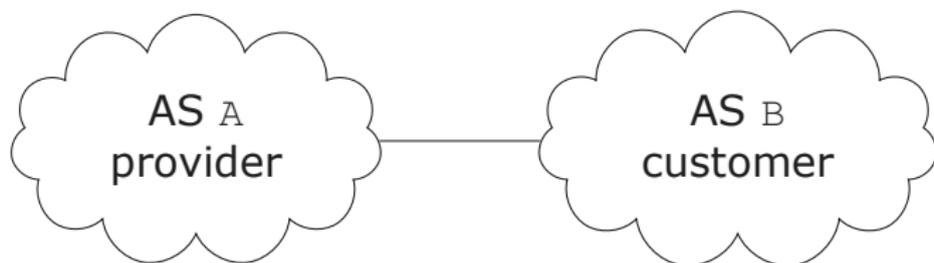
- AS B buys traffic from AS A.
- AS B does not prefer peers from AS A.
- AS A do prefer peers from AS B.



- **AS_B buys traffic from AS_A.**
- AS_B does not prefer peers from AS_A.
- AS_A do prefer peers from AS_B.



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 - Parameters
 - Communities



Parameters and Communities

Parameters

- Parameters are used to exchange the data.
- Each parameter has its name and meaning (info, asc, desc).
- Units are used to measure the values.



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- Contain mandatory and optional parameters.
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 - At the root of the tree: **GENERAL** community

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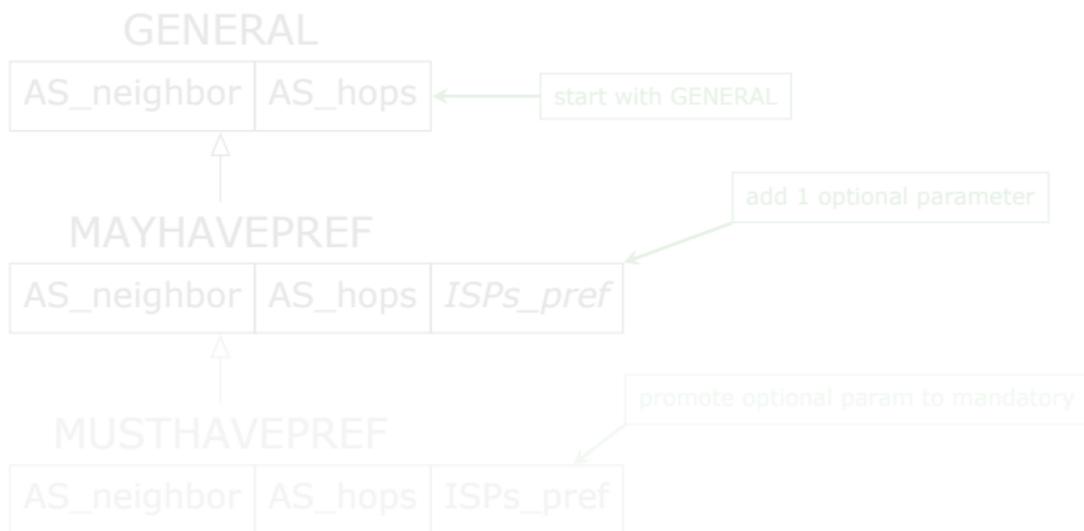
→ [see also: `community` and `community`](#)

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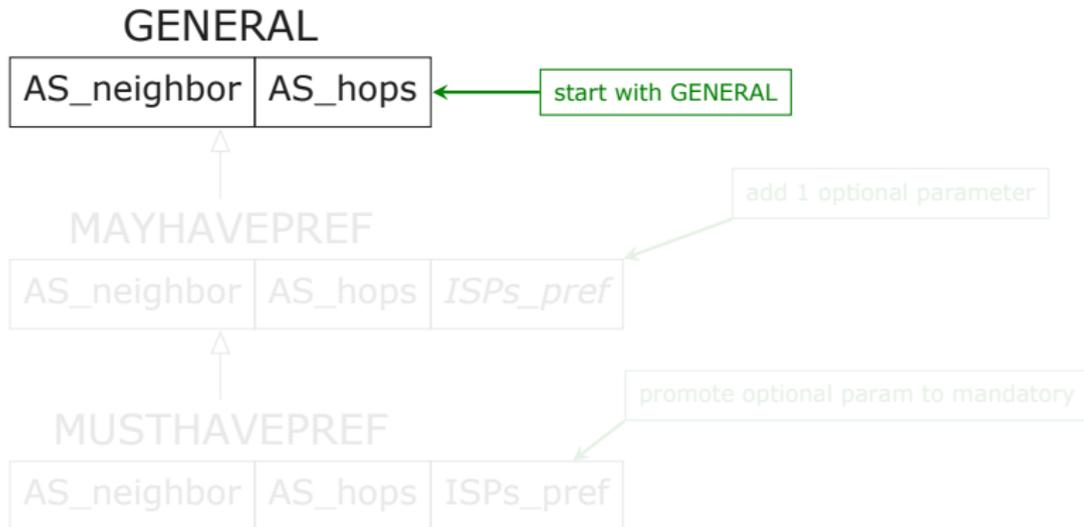
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Sample community dependency tree:



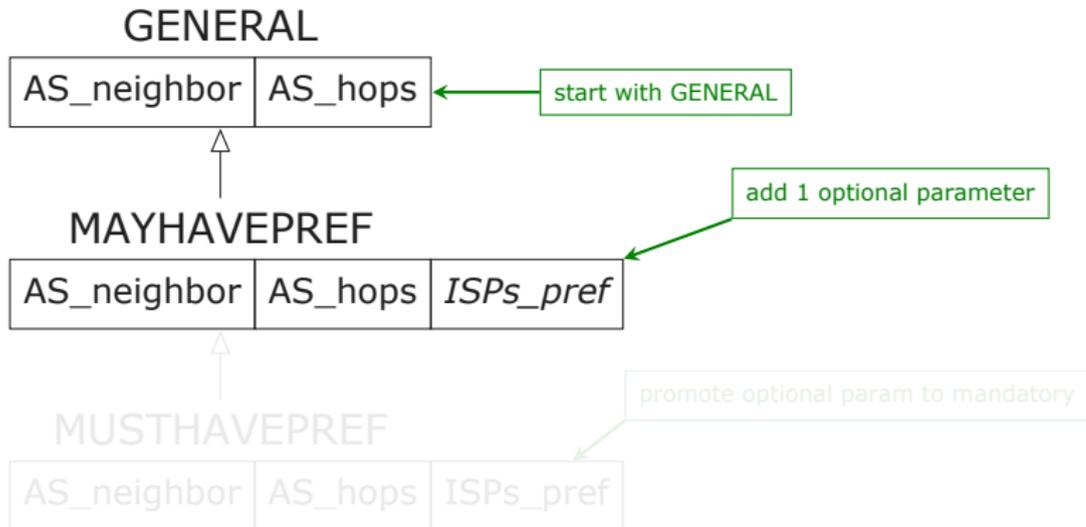
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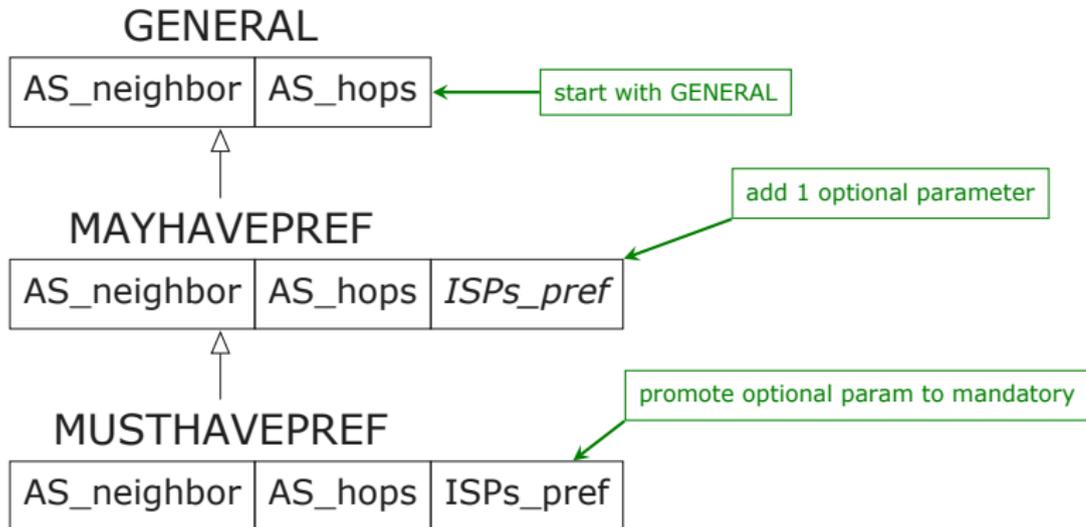
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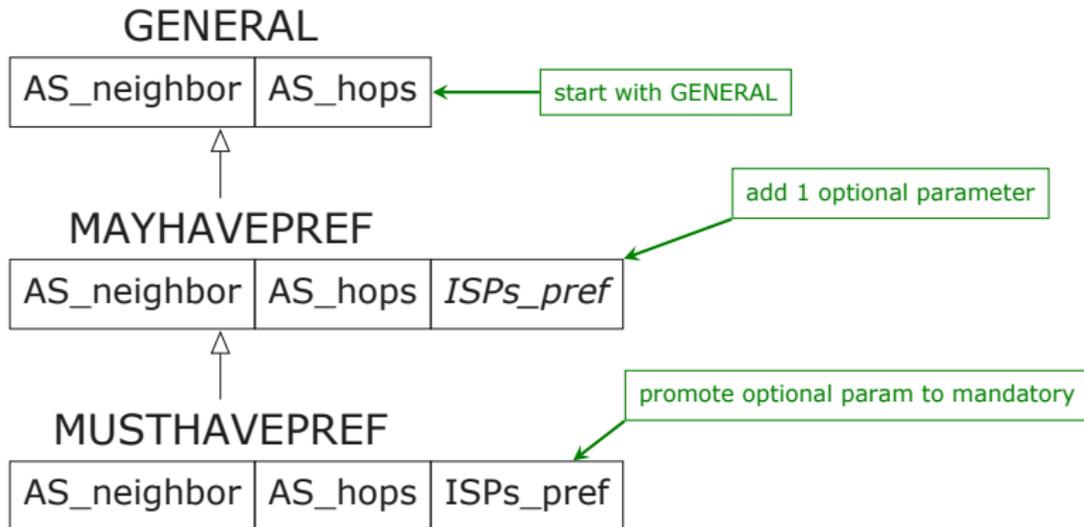
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NO

QUESTIONS

**VIOLATORS
WILL BE SHOT
SURVIVORS
WILL BE SHOT
AGAIN**

Thank you!

4 Requests and Responses

5 Simulated Topology

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4 Requests and Responses

- Request Types
- Response Types

5 Simulated Topology

- **BASIC REQUEST**
 - Any subset of parameters (defined for a specified community).
 - List of requested parameters for remote peers.
 - Designed for download-only P2P applications.
- **EXTENDED REQUEST**
 - All mandatory parameters + any subset of optional parameters.
 - List of values of parameters for local peers + list of requested parameters for remote peers.
 - Designed for download-and-upload P2P applications.
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Requests and Responses

Response Types

- **NORMAL RESPONSE**

- Everything OK, like HTTP 200.
- List of values of requested (+ non-requested) parameters.
- Sending values of optional parameters is not a must.

- **REFUSE RESPONSE**

- Responding ALTO server won't communicate with the requesting ALTO server within the indicated availability.
- After receiving this response the requester should log off in the community dependency DB.

- **ERROR RESPONSE**

- An unsupported parameter name has been found in a request.

Requests and Responses

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● Responding ALL server won't communicate with the requesting ALG server within the indicated time interval.

● After receiving this response the requester should stop its in the community dependency time.

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● An unexpected error has occurred. It is based on the error codes.

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 - After receiving this response, the requester should stop up in the community discovery phase.
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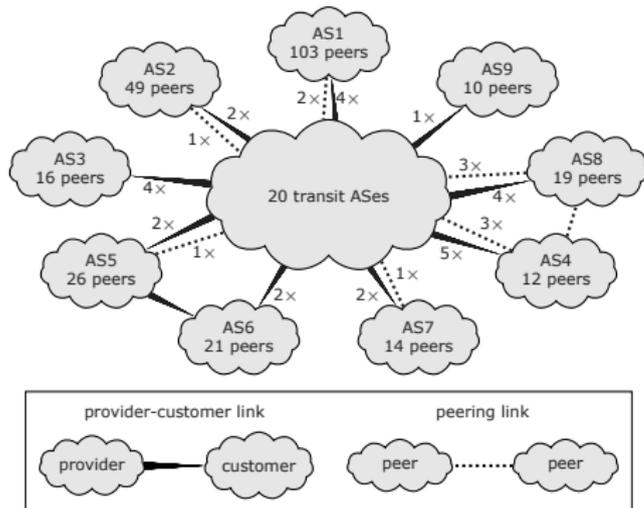
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- 4 Requests and Responses
- 5 Simulated Topology**



AGH Simulated Topology

A scrap of the real Internet topology (AS numbers were hidden):



We managed to:

- Move a part of the traffic from provider-customer to peering links.
- Coordinate policies of AS5 and AS6.