

# Inter-ALTO Communication Problem Statement

draft-dulinski-alto-inter-problem-statement-02

Zbigniew Dulinski <dulinski@th.if.uj.edu.pl>

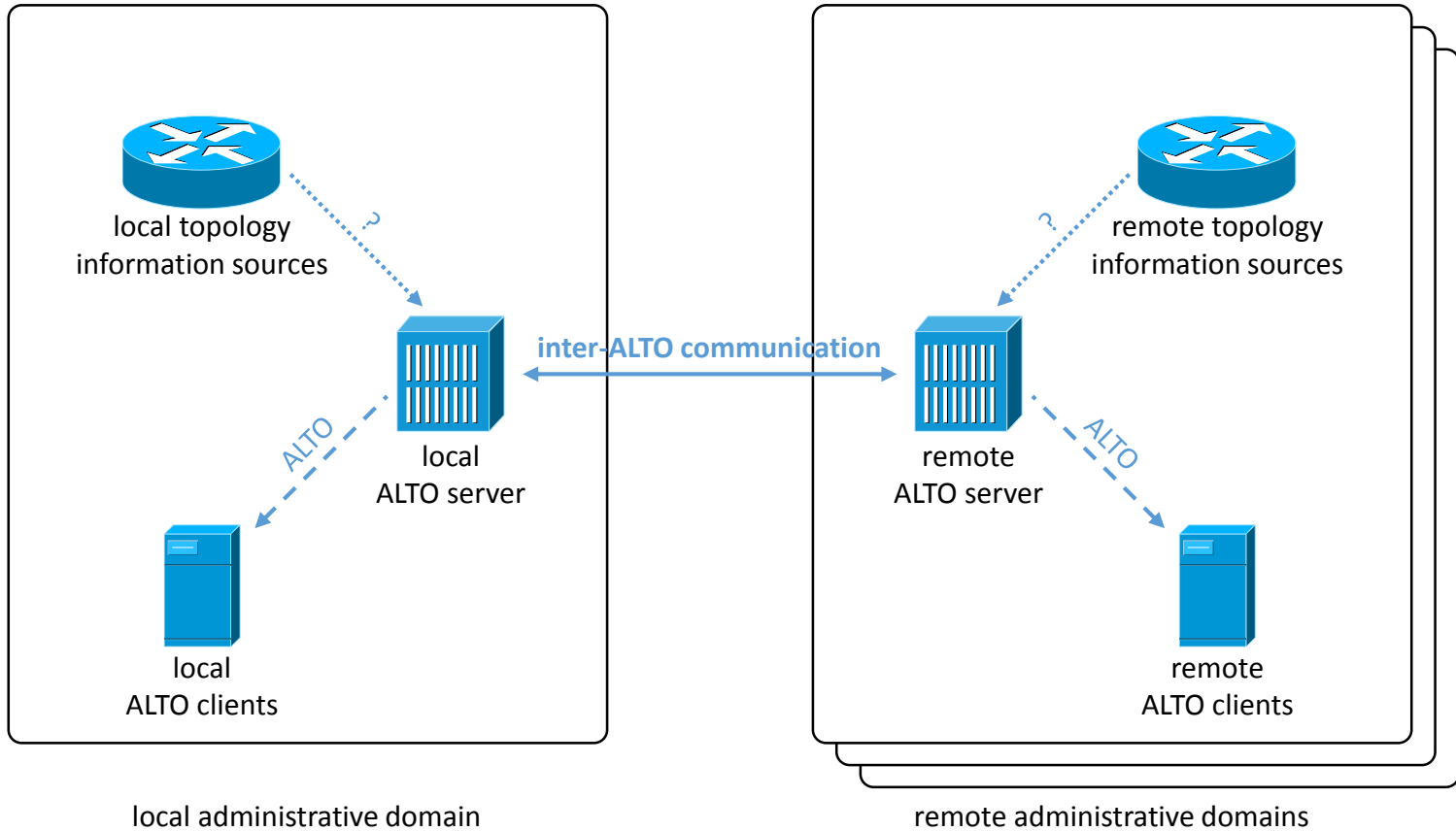
Piotr Wydrych <piotr.wydrych@agh.edu.pl>

Rafał Stankiewicz <rstankie@agh.edu.pl>

# Changes from -01 (July 11, 2011)

- Rewritten from scratch
- ALTO is not only for P2P now – be generic
- 11 use-cases merged into 3 new ones
  - Remote view of topology
  - Detailed information on remote topology
  - Partitioned networks
    - 1<sup>st</sup> and 2<sup>nd</sup> use-case are also valid for this one

# General Architecture



# Remote View of Topology

- “Routing asymmetry” generalized
- Information on upstream paths is easily available
- Downstream paths are not known
  - Information on them is available at remote domains
- If costs depend on paths between given endpoints\*
  - It is easy to calculate cost of sending data to any endpoint
  - It is not possible\*\* to calculate costs of receiving or transiting data

\* isn't this the main use-case for ALTO? ;-)

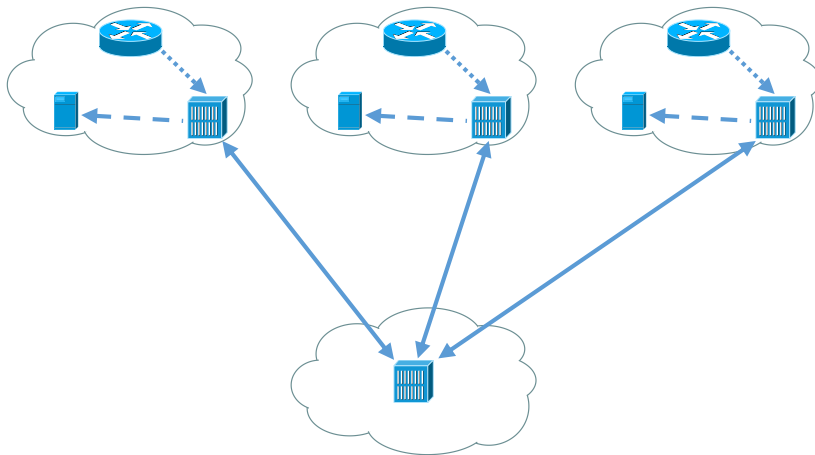
\*\* without inter-ALTO

# Detailed Information on Remote Topology

- “Remote ISP’s preference” generalized
- BGP hides a lot of information
- A local ALTO server assumes that two given endpoints are equal, while they should be differentiated
  - Same AS\_PATH
  - For any reason – connectivity issues, overload
- Inter-ALTO may be used to “promote” or “demote” a given prefix
  - The reason does not have to be revealed!
  - A prefix may be more specific than BGP announcement

# Partitioned Networks

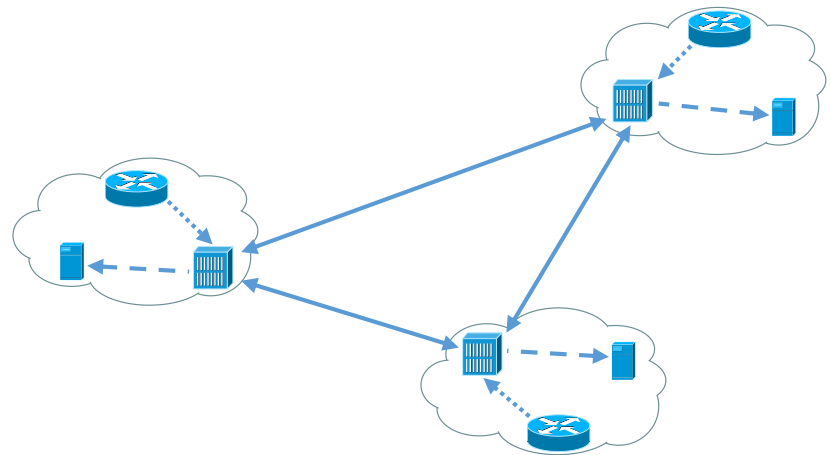
## Hierarchical



ALTO servers in network partitions gather locally-available topology information and send it to central server

Central server merges data and distributes common maps

## Mesh



Independent ALTO servers merge locally-available information gathered via provisioning protocol with information gathered via inter-ALTO

# Security Considerations

- Potential exchange of sensitive data
- Local ALTO server may be required not to re-distribute information gathered from remote servers through inter-ALTO
- May require a formal agreement between ALTO server owners, mutual authentication, authorization etc.
- Separation of server-to-client and server-to-server communication security contexts

# Next steps?

- WG adoption? Including in charter in next update?
- Defining requirements
- Detailed specification of framework