Server Notification Mechanism in ALTO

Aijun Wang, K.Y.Zhou, K.Li, X.H.Sun
China Telecom
2010.6.16

Contents

1. Problem Statements

- Current ALTO protocol uses query/response mechanism to get information from ALTO server.
- Such mechanism can fulfill the requirements in general environment , but there are situations that the ISPs want to optimize the traffic according to theirs updated policy as soon as possible:
  - ✓ To lessen the traffic congestion in some area.
  - ✓ To reflect the topology change after the network construction
  - ✓ To test the effect of some new policy
  - ✓ … …
- In these situations, query/response is not enough to meet the above requirements. There always some latency between the new policy and its effects.

2. Proposed Solutions

- One proposed solution is to use the short query interval:
  - Short query interval can assure the ALTO clients get the updated information, but it leads to:
    a. Induce new traffic burden to the congested network
    b. Get the same information repeatedly when the ALTO information is seldom change.
- Another is to use server notification mechanism:
  - When there is any change from ISP's policy, the ALTO server will notify the ALTO client actively, this can:
    a. Reduce the unnecessary query/response message
    b. Get the updated ALTO information timely
    c. More efficient

http://tools.ietf.org/id/draft-sun-alto-notification-02.txt

3. Server Notification Mechanism

I. Scope of Server Notification Mechanism

II. Registration Methods

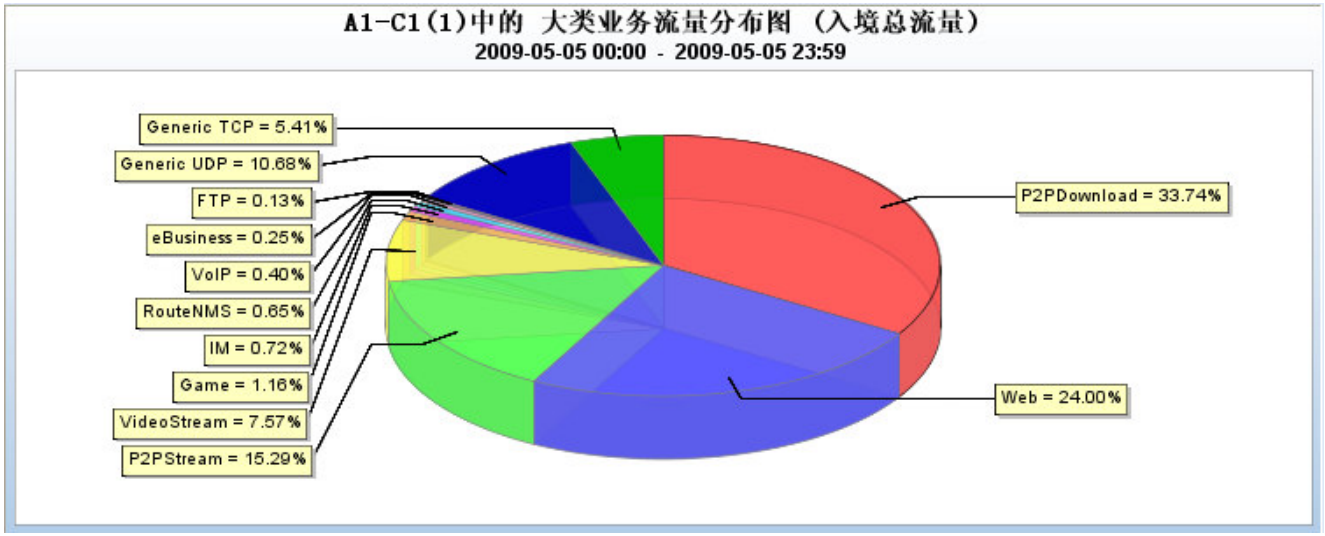
III. Server Notification Mode

IV. Implementation Consideration

V. Server Notification Messaging & Message Format

3.1 Scope of Server Notification Mechanism

- Tracker-based P2P applications and other non-p2p, distributed web service(such as CDN service) produce the most amount traffic in current internet.



- This draft will focus mainly on these two kinds applications, which can get valuable benefits though little efforts.

3.2 ALTO Clients Registration Method

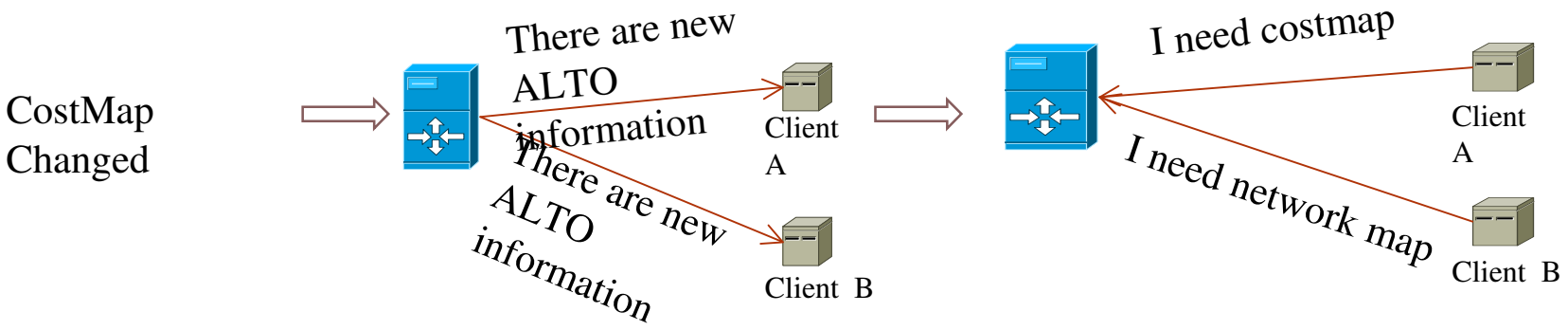
- For ALTO server to notify the ALTO clients actively, the ALTO clients should register to ALTO server in advance.
- To simplify the implementation, the register process is decoupled from notify mechanism:
  - ✓ ALTO Clients can use any out-of-band methods to register to the ALTO server
  - ✓ ALTO server will keep one table ('candidate table') to records the IP address/ports information of ALTO clients.
  - ✓ The 'candidate table' will be kept permanently unless it is changed or removed by ISP.

Candidate Table Example

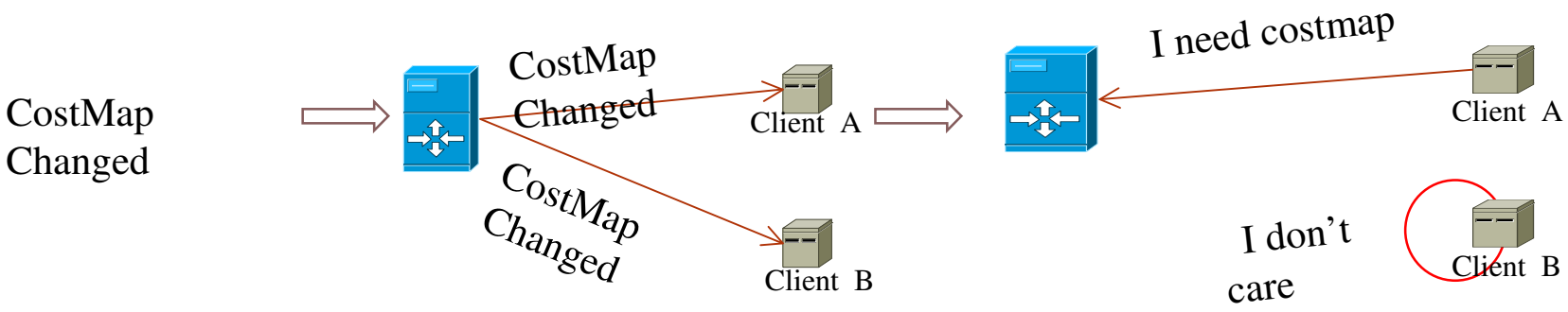
	IP address	Port	Interested Info.
ALTO Client 1	1.1.1.1	3000	General/All
ALTO Client 2	2.2.2.2	3000	Networkmap

3.3 Server Notification Mode

- General Mode：



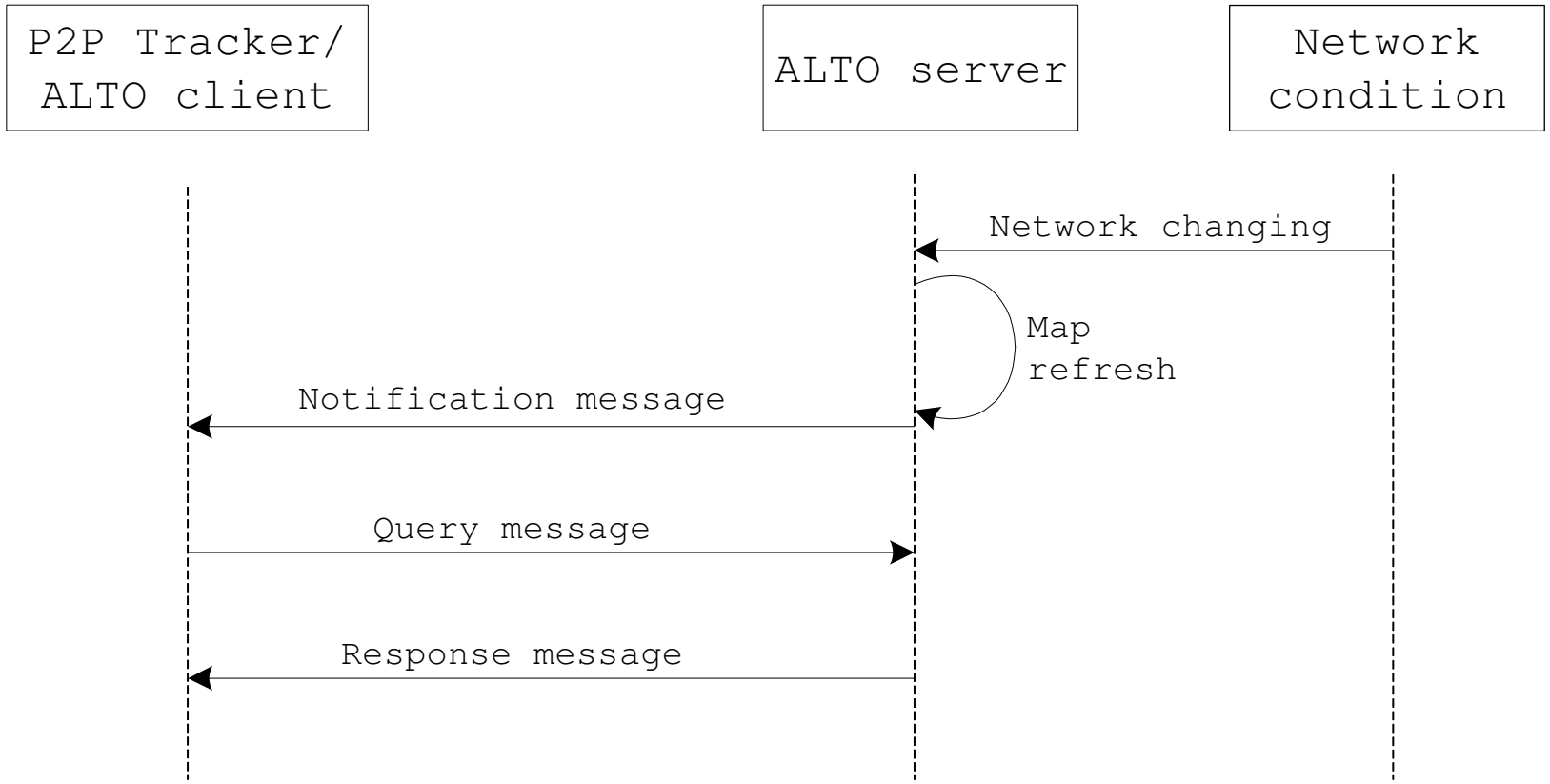
- Specific Mode：



3.4 Implementation Consideration

- The notification service can lessen the burden of the ALTO server.
- It is acceptable that such service be incorporated into ALTO Server directly, as one independent module.
- In future, notification service can be implemented by one dedicated server----’ notification server’:
  - If registered ALTO Clients are large enough &
  - If the ALTO information is more rich &
  - If the requirements from ALTO Clients are more diverse

3.5 Server Notification Messaging



3.6 Messaging Format

General Notification Mode:

Method : 'POST'
URI Path : '/notification‘

Specific Notification Mode:

Method : 'POST'
URI Path : '/notification/costmap‘
:’ /notification/networkmap’
: … …

4. Discussion

- **Tracker-less P2P Situation:**
  - ✓ Tracker-less p2p application using different mechanism for information distribution between p2p peers.
  - ✓ ALTO Clients(embedded in p2p client) change rapidly.
  - ✓ Not applicable for ALTO Server to record all the changed information
  - ✓ Solution:
    I. Only record those stable, powerful p2p clients(public IP adress) that are wish to receive notification information.
    II. Seek more efficient information dispatch method for tracker-less p2p application(draft-gu-alto-redistribution-02.txt).

5. Future Process

- **Which way should this draft be followed in future?**
  1. Merged into current ALTO Protocol?
  2. Developing as one independent draft and then…? (→working group document ?→RFC?)
  3. Other Possibilities?

Thank You