

ALTO Discovery

Terminology and Requirements

Nico Schwan

Sebastian Kiesel

Michael Scharf

ALTO Virtual Interim Meeting
June 2010

Motivation

- Currently two usage scenarios for ALTO server discovery
 - I. Resource consumer initiated ALTO server discovery
`draft-song-alto-server-discovery-01`
 - II. Third party ALTO server discovery
`draft-kiesel-alto-3pdisc-02`
 - Current drafts focus on technical discussion of potential solutions
 - Decision on suitable solution depends on the requirements of the usage scenarios
 - Understand if and how both scenarios are different
- Definition of common and specific requirements for each scenario

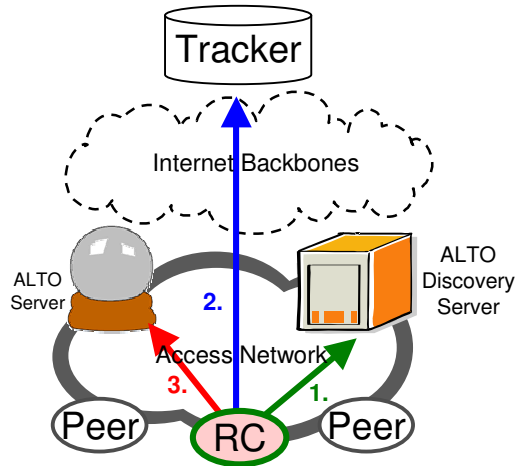
Terminology

- **ALTO Discovery Client (*):**
The logical entity discovering the ALTO Service. Depending on the scenario, this could be a Peer or a Superpeer/Tracker.
- **ALTO Discovery Server (*):**
The logical entity providing information to locate the ALTO Service. Depending on the discovery mechanism, this could be another Peer or a dedicated entity in the network.
- **ALTO Discovery Domain (*):**
The scope of the network handled by a particular ALTO Discovery Server.
- **Resource Consumer Discovery**
The ALTO discovery client performing the discovery is also the resource consumer (Peer)
- **3rd Party Discovery**
The ALTO discovery client performing the discovery is an entity that is logically separate from the resource consumer, for example the resource directory (SuperPeer/Tracker).

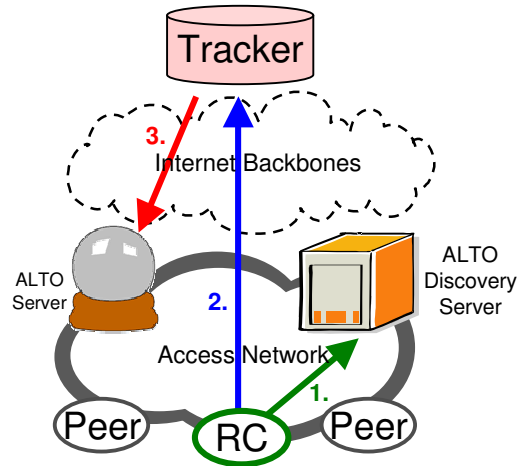
Discovery Scenarios

RC = Resource Consumer
3p = Third Party

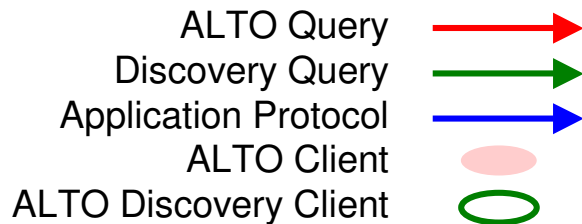
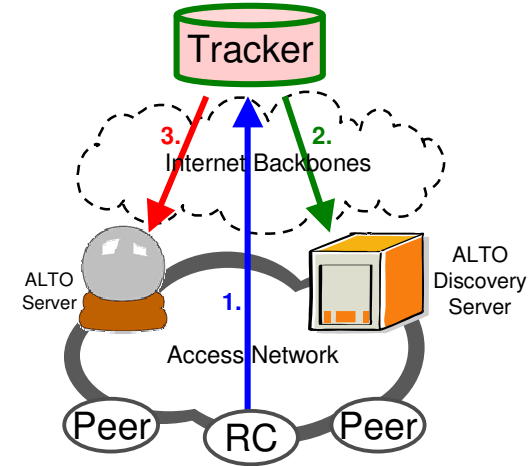
RC ALTO Query & RC Discovery Query



3p ALTO Query & RC Discovery Query



3p ALTO Query & 3p Discovery Query



- Legacy applications
- Network based applications that optimize transparently for the resource consumer (e.g. CDNs)

Requirements

draft-ietf-alto-reqs-05.txt

- **REQ. ARv05-39/40:**
ALTO clients **MUST** be able to perform server discovery to find one or several ALTO servers
- **REQ. ARv05-41/42/43:**
ALTO clients **MUST** be able to perform server discovery, even if they or the resource consumer are behind a network address translator (NAT).
- **REQ. ARv05-44:**
During the evaluation of existing protocols or mechanisms their availability in various access network architectures and their suitability for third-party queries should be taken into account.
- **REQ. ARv05-45:**
The ALTO server discovery mechanism **SHOULD** be able to return the respective contact information for several ALTO servers.
- **REQ. ARv05-46:**
The ALTO server discovery mechanism **SHOULD** be able to indicate preferences for each returned ALTO server contact information.

Common Requirements

- **REQ. Reliability:**
The protocol **MUST** provide an ALTO client with a response containing one or several suitable ALTO servers or it must inform the ALTO client if the discovery failed and should provide the reason of the failure
- **REQ. Simplicity:**
The protocol **SHOULD** be as simple as possible. The less different mechanisms the protocol has to support the more favorable.
The protocol **SHOULD** require minimal changes only to the application & ALTO protocol, to the P2P entities and to other network entities
- **REQ. Performance:**
The response **MUST** reach the ALTO discovery client in a reasonable amount of time
- **REQ. Privacy:**
The protocol **MUST** guarantee the privacy of the resource consumer
- **REQ. Multi-domain operation:**
The ALTO discovery **SHOULD** return an ALTO server that is located in the same domain like the consumer, if such an ALTO server is available. Of course alternative servers can be discovered additionally.
- **REQ. Network topology:**
The protocol **MUST** work across domain/AS borders

Specific Requirements

<i>Resource Consumer Discovery</i>	<i>3rd Party Discovery</i>
REQ. Network constraints	
Protocol MUST work for all common access network architectures	
Protocol MUST work in case the ALTO discovery client is behind a residential gateway	
Protocol MUST work even if the ALTO discovery client is behind a NAT	Protocol MUST work even in case the resource consumer is behind a NAT
REQ. Efficiency	
ALTO discovery client MUST be able to perform few requests	ALTO discovery client MUST be able to perform many requests thus a high efficiency of the protocol is favorable. Caching techniques that support the efficiency of the ALTO discovery client SHOULD be taken into account during the evaluation of protocol options
REQ. User friendliness	
The end user SHOULD not need to perform additional configuration steps	

Requirements TBD

- REQ. Discovery policies:
A network operator SHOULD be able to set policies what ALTO servers are discovered
- REQ. User configuration
A user SHOULD be able to specify a preferred ALTO service provider
- REQ. Deterministic:
The discovery mechanism SHOULD respond with the same (set of) ALTO server(s) for similar requests
- REQ. Authority:
An ALTO discovery client SHOULD be able to reasonably check whether the discovered ALTO server is able to provide guidance for its domain

Conclusion

Summary:

- Identified common and specific requirements for resource consumer initiated vs. 3rd party discovery scenarios
- RC discovery and 3rd party discovery are similar to a large extent, but there are differences

Next Steps:

- Discuss presented requirements
- Are there any additional requirements?
- Analyze protocol options for specific usage scenarios considering presented (and additional?) requirements
- Evaluate whether one protocol option fulfills all requirements