

# 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

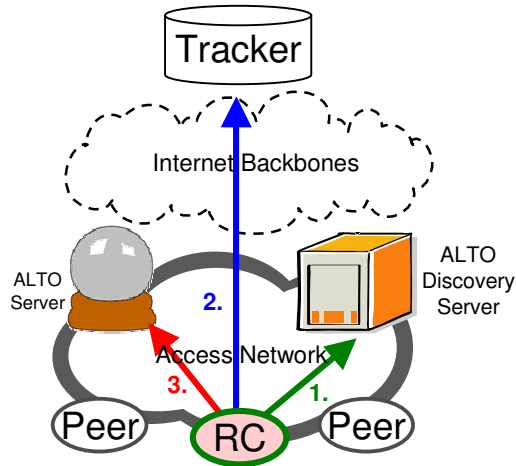
# Terminology

- **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).

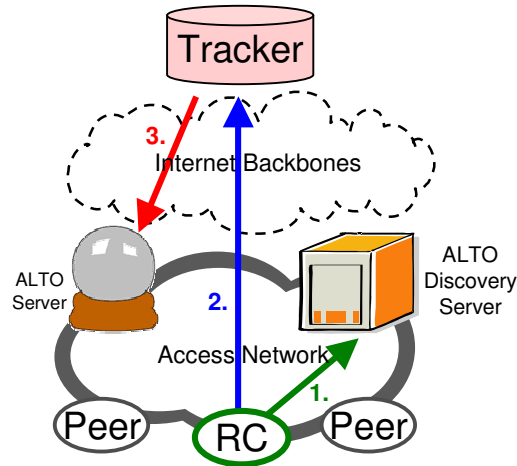
# Discovery Scenarios

RC = Resource Consumer  
3p = Third Party

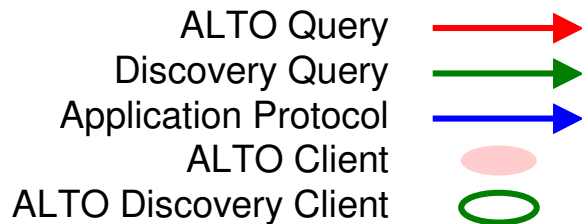
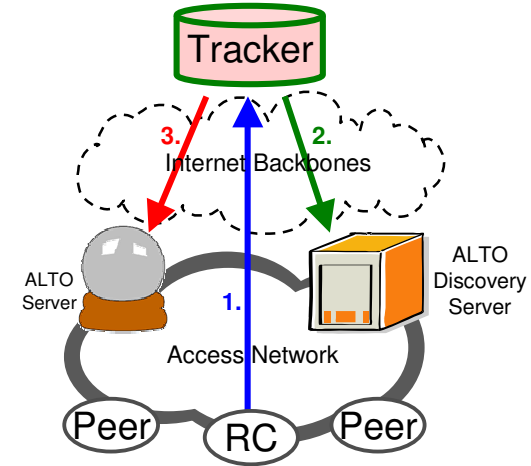
### RC ALTO Query & RC Discovery Query



### 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>
<b>REQ. Network constraints</b>	
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
<b>REQ. Efficiency</b>	
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
<b>REQ. User friendliness</b>	
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