ALTO Discovery Discussion
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Agenda

- Goals/Takeaways
- Metrics & Issues
- Mechanisms
  - DHCP, DNS, Multicast, …
- Strawman Frameworks
  - By Peers
  - By Trackers

ALTO Discovery

- Goals
  - Not to (re-)invent another discovery framework
  - Survey of most obvious existing mechanisms
  - List the evaluation criteria
  - The final discovery framework(s) will likely be combinations of mechanisms presented here
- Takeaway (at this stage) …
  - Pros & cons for each individual type of mechanism
  - Classifications based on specific scenarios

Discovery Metrics

- Discovery "Clients"
  - Application Trackers *vs.* Peers
  - Cross-domain *vs.* Localized discovery
  - Hybrid approaches: Peers convey discovery information to trackers
- Service Locations
  - Distributed *vs.* Centralized
  - Distributed approach still requires finding a bootstrap ALTO server, may require a level of indirection
- Service Deployments
  - ISP-centric
  - Application level or trusted third parties
- Layering perspective
  - Network (DHCP, DNS, …) *vs.* Application (WSD, XRDS, …)

DHCP

- Provisioning ALTO server locations in DHCP
- [+] Advantages
  - Matches administrative domains
  - Minimum configuration on the clients
  - Happens during each network connect
- [−] Disadvantages
  - Only peer-based discovery
  - Limited to ISP-centric ALTO server discovery
  - Requires support in end-user equipment (home routers)
  - Need to create load balance scheme among local ALTO servers if more than one exists

DNS

- Provision ALTO server information in DNS
- [+] Advantages
  - Can support cross-domain service discovery (if well-known names)
  - Does not impose any requirement in the end-user network
  - Applications already make use of DNS queries
- [–] Disadvantages
  - Requires to pre-discover the corresponding ALTO server domain names (or well-known names)

Multicast

- Multicast discovery requests and/or multicast service announcements
- [+] Advantages
  - (Almost) zero configuration
- [–] Disadvantages
  - Scope constraint – LAN only
  - NAT traversal (clients behind NAT)
  - (Potential) Multicast flooding & latency concerns

Discovery by Peer (DHCP & DNS)

- A client Uses DHCP to retrieve the service name of local ALTO service
  - E.g. _ALTO._TCP.MyISP.com
  - Service name will not change, unlike address
  - Consideration of RGs
- Then it uses DNS SRV query for the address information
  - Load balance mechanism of SRV can be used

Discovery by Tracker

- First step: Application tracker must get the ISP/AS info of its client first
  - E.g. Using IANA database
  - Client may also send its ISP/AS info to the tracker (e.g. retrieve its ISP/AS info with DHCP)
- Second step: Tracker sends the DNS SRV query to retrieve the address information of ALTO server for its client
  - ALTO requests for different clients lead to different ALTO servers

Manual configuration

- ALTO server information could also be configured on the ALTO client by a user or service provider manually.

- It has the limit when used in mobility scenarios, because ALTO server changes.

Concerns

- Load balance among ALTO servers
  - Via server redirection *vs.* via discovery
- Well known port or not
- IP address change of ALTO servers
- Mobile scenarios of ALTO clients
  - Once a client has located an ALTO server for the first time, it can cache it for future use.
  - It also has the limit for mobility scenarios, because the ALTO server changes.

Next Steps

- Two teams working on the merged ID
  - Submit after this IETF
- Ask for WG feedbacks …
  - Other discovery mechanisms/frameworks?
  - Map architectural decisions to the discovery discussion