ALTO Server Discovery Protocol

draft-kiesel-alto-3pdisc-04.txt

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Outline

• Draft History
• Requirements & Preconditions
• Protocol Overview
• Retrieving the server URI by DHCP
• Retrieving the server URI by U-NAPTR
  – Retrieving the Domain Name
• Conclusion
Draft History

- 00, -01, -02
  - 3rd party server discovery
  - Problem Statement, classification & discussion of solution approaches

- 03
  - peer and 3rd party server discovery
  - based on reverse FQDN lookup
  - based on SRV records

- 04 (present version)
  - peer and 3rd party server discovery
  - uses a procedure to determine ALTO server
  - includes multiple ways to cope with the various deployments
Requirements & Pre-Conditions

• ALTO has only moderate security requirements compared to GEOPRIV
  – In GEOPRIV a failure has severe impacts (e.g. loss of life)
  – In ALTO a wrong, missing, or forged guidance does not prevent the application to operate

• We assume that the ALTO server discovery procedure
  – is executed on a per IP address base
  – is executed on a per IP family base
  – might have a different result in case the IP address of an interface changes
Protocol Overview

DHCP

User Input

DHCP

Reverse DNS

Retrieving the DNS suffix

Determine own IP address

U-NAPTR

Retrieving ALTO Server URI

Final DNS lookup

ALTO Server FQDN Option (e.g. a.ex.com)

DNS Suffix Option (e.g. ex.com)
Retrieving the server URI by DHCP

- DHCP option for direct ALTO Server URI configuration by access network provider in case DHCP is deployed.

- `draft-kiesel-alto-3pdisc-04.txt` specifies:
  - ALTO Server Domain Name Encoding
  - ALTO Server DHCPv4 Option
  - ALTO Server DHCPv6 Option

- For example:
  - Client retrieves `altoserver.example.com` by DHCP
  - Protocol defaults to HTTP
  - Client contacts ALTO server under `http://altoserver.example.com/`
Retrieving the URI by U-NAPTR

• U-NAPTR [RFC4848] Resolution for retrieval of ALTO Server URI in case of DHCP deployment issues based on draft-stiemerling-alto-dns-discovery-00.txt

• 2 Steps:
  – Retrieve domain name of access network
  – Retrieve ALTO Server URI through U-NAPTR resolution

• draft-kiesel-alto-3pdisc-04.txt specifies DNS entries for HTTP and HTTPS:
  example.com.
  IN NAPTR 100 10 "u" "ALTO:https"
    "!*https://altoserver.example.com/secure!" 
  IN NAPTR 200 10 "u" "ALTO:http"
    "!*http://altoserver.example.com!" ""
Retrieving the Domain Name

- Access network domain name required as input for U-NAPTR
- **Option 1: User Input**
  - Allow user configuration of third party ALTO server instance
  - User specifies DNS suffix (e.g. myaltoprovder.com)
  - Use IP address as prefix (e.g. d.c.b.a.myaltoprovder.com)
  - Shorten domain name until successful U-NAPTR lookup
    - d.c.b.a.myaltoprovder.com
    - c.b.a.myaltoprovder.com
    - b.a.myaltoprovder.com
- **Option 2: DHCP**
  - Use DHCP option to retrieve access network domain name [RFC5986]
- **Option 3: Reverse DNS Lookup**
  - Resolve IP address to FQDN through DNS PTR lookup (e.g. d-c-b-a.dsl.westcoast.myisp.net)
  - Shorten FQDN name until successful U-NAPTR lookup
Open Issues & Conclusion

- Open Issues
  - Reverse DNS lookup for IPv6
  - Missing reverse DNS entries
  - Handling of multiple results
  - Suffix issues

- draft-kiesel-alto-3pdisc-04.txt:
  - First version of a specified ALTO server discovery procedure
  - Several options depending on what is workable in deployment
    - DHCP based discovery
    - DNS based discovery (UNAPTR)
  - Covers both, the "normal" and 3rd party discovery use case

- Refine the specification

- Accept as a WG item?