ALTO Protocol

draft-ietf-alto-protocol-06


Grateful to contributions from large number of collaborators; see draft for complete list.
Outline

- Summary of Changes
- Remaining Issues
Change Summary

- Protocol Updates
  - Rules for certain identifiers (PIDs, Cost Type, Cost Mode)
  - Fixed some typos / naming inconsistencies in the encoding

- Redistribution
  - Substantially revised, mostly editorial except for...
  - Allow certificate chains (feedback from IETF78)

- IANA Considerations
  - Cost Types registry
  - application/alto MIME type

- Discussion Section
  - Separated text that should find a new home
PID Naming

- Background
  - There has been discussion/interest for hierarchical PIDs
  - However, it is unclear (at this point) ...
    - how it might be used in practice, and
    - how to define certain concepts (e.g., cost)

- Current approach
  - Allow hierarchical PIDs in the future, but don't define them now
  - Thus, the '.' character is reserved in PID names
ALTO Service ID (quick recap)

Example of problem

- Two ALTO Servers $S_A$ and $S_B$ deployed for load balancing / redundancy
- ALTO Client $C_A$ maps to $S_A$ via discovery and retrieves ALTO Info
- ALTO Client $C_B$ maps to $S_B$ via discovery
- $C_A$ should be able to redistribute ALTO Info to $C_B$

Solution approach

- Enable set of ALTO Servers to distribute identical ALTO information
- ALTO-layer ID to avoid dependence on particular implementation
  - e.g., anycast or DNS
- Redistributed ALTO Info includes Service ID
ALTO Service ID

- **Service ID**
  - UUID shared by ALTO Servers distributing identical ALTO Information
  - Servers with same Service ID use same private key for digital sigs

- **Use certificate chains**
  - Each ALTO Server exports certificate chain
    - Via Server Capability query
  - ALTO Servers with equivalent info MUST have chains with common root
    - Verified at client-side
  - Allows for unique private key at each ALTO Server
    - Simplifies key provisioning, rollover
Cost Type Registry

- Fields included in registration
  - Identifier (string)
  - Intended Semantics
    - What rules should ALTO Service Providers follow?
    - What should / should not be expected by ALTO Clients using the cost type?
  - Security Considerations
    - E.g., are there known privacy considerations for ISPs for exporting a particular type of cost?
- Registrations require Expert Reviewer

- Questions
  - Is overhead to maintain registry too high?
  - Language documenting what semantics must be specified?
Remaining Issues

- IPv4/IPv6
  - Two (simple) possible solutions identified
    1) Provide cost from any IPv4 endpoint to any IPv6 endpoint (and vice versa)
    2) Provide no costs between endpoints of different address families
  - Suggest (1)
    - Comments now?
    - Feedback on list

- Register ALTO-* message header fields

- Exploratory draft with sketch of a REST-ful ALTO Protocol
  - No progress thus far (does not appear to be push to do this)