Unified Properties for ALTO
Diffs since v11

draft-ietf-alto-unified-props-new-12

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Unified Properties for the ALTO Protocol in a nutshell

- Extends IPv4 and IPv6 endpoints to entities such as IPv4/6, PIDs, ANEs
  - On which properties are conveyed
- Introduces a new information resource and media type
  - (Filtered) Property Map
- Used by several ALTO Services
  - Standalone entity property service
  - In multi-part Path-Vector Cost Map Server response
  - In CDNI-FCI footprint capabilities
- Entity Property Service handles information resource dependent entities and properties, which requires
  - Careful design for resource-dependent entities and properties
  - Unambiguous mapping of properties to applicable entities
  - Unambiguous mapping of entities, properties to applicable information resources
- Long-lasting design and specification work
Unified property updates - overview

• Design updates
  • Introduced « defining information resource »
    • To define authorized mappings of entity domain types and information resource types
    • To support defining « persistent entities » returned by Path Vector
  • Added sections relating to « defining information resource » in v12
    • For the definition
    • In sections specifying entity domain types introduced in the UP draft
    • In sections introducing property types introduced in the UP draft
    • In IANA section on entity property types
    • Removed section 6.1 in V11 on Information Resource Export

• Text clarifications and reformulation
  • 3.2. Entity Domain
  • 4. Advanced Features of the Unified Property Extension
  • 5.1. Entity Domain
  • Updated example IRD and example UP transactions

• ToC updates
  • Added Section 1.1 Terminology
  • Added section 2 Requirements language

• STATUS: in WGLC until August 7
Design – Defining information resource

• A defining information resource for an entity domain D
  • The information resource where entities of D are defined
  • That is, all the information on the entities of D can be retrieved in this resource

• This concept applies to resource specific domains

• Useful for entity domain types that are by essence domain-specific,
  • such as "pid" and "ane" domain types
  • Allows to expose ANE property maps

• Useful for resource-specific entity domains constructed from resource agnostic domain types,
  • such as for example, network map specific domains of local IPv4 addresses

• Useful for ALTO Client to see if ALTO Server exposes unauthorized mappings of entity domains and properties
Design – Defining information resource – definition

• 4.6 Defining Information Resource (for an entity domain D)
  • has an entry in the IRD,
  • defines the entities of D,
  • does not use another information resource that defines these entities
  • defines and exposes entity identifiers that are all persistent
  • its media type is unique and is specified in the documents introducing the corresponding entity domain type

• 4.6.2 Examples for media-types of defining resources for ED types
  • "pid" ➞ "application/alto-networkmap+json",
  • "ipv4" and "ipv6" (if local) ➞ "application/alto-networkmap+json"
  • "ane“ ➞ "application/alto-propmap+json“ for ANEs having a persistent identifier

• The ALTO Client checks the media-type to verify correctness of mapping
Design – Defining information resource for property values

• Property values may be resource-specific
• Useful to Client to check if (ED, Property) mapping is correct
• NEW 4.7 Defining Information Resource for Resource-Specific Property Values
• 4.7.1 Examples
  • “PID”
    • media type of value defining resource is "application/alto-networkmap+json"
    • because PIDs are defined in network map resources
  • "cdni-fci-capability" : error in text
    • Will be corrected to "cdni-capabilities“ ➔ "application/alto-cdni+json"
Text updates

• Besides 4.6 and 4.7 on « Defining IR »
• NEW 6.1.4. Defining Information Resource Media Type for domain types IPv4 and IPv6
• NEW 6.2.4. Defining Information Resource Media Type for Domain Type PID
• NEW 8.7. Entity property type defined in this document (PID)

• 10.4. Information Resource Directory (IRD), see next slide
  • ADDED example "ane-dc-property-map" resource, for persistent ANEs
  • Removed example "path-vector-map" resource,
• 10.10 updated example transaction accordingly
• 12.2.2 ALTO Entity Domain Type Registration Process (IANA)
  • ADDED member “Media type of defining information resource”
• 12.3 Media type of defining information resource (IANA)
  • ADDED member “Security Considerations”

• REMOVED 12.5. ALTO Resource Entity Property Mapping Registries
Design – Defining information resource and media type

- Example in 10.4. Information Resource Directory (IRD)

```
"ane-dc-property-map": {
    "uri" : "http://alto.example.com/propmap/ane",
    "media-type" : "application/alto-propmap+json",
    "accepts": "application/alto-propmapparams+json",
    "capabilities": {
        "mappings": {
            ".ane": ["storage-capacity" ],
            ".ane": ["ram", "cpu"],
        }
    },
}
```
4. Advanced Features of the Unified Property Extension
   4.5. Supported Properties on Entity Domains in Property Map Capabilities
   4.4 Entity Hierarchy and Property Inheritance: re-phrased and re-organized
   4.4.2. Property Inheritance: re-phrased
   NEW 4.4.3. Property Value Unicity
   The inheritance rules must ensure that an entity belonging to a hierarchical set of entities inherits no more than one property value

5.1.2 Entity Domain Name: re-organized
   5.1.2.1. Resource-specific Entity Domain
   • EG "netmap-1.pid"
   5.1.2.2. Resource-agnostic Entity Domain
   • EG: “ipv4”, “ipv6”
   5.1.2.3. Self-defined Entity Domain
   • Neither resource-specific nor resource-agnostic but are instead defined within the property map itself
   • EG “.ane”
NEXT STEPS

• In WGLC
  • Fri, July 17, 2020, to Fri, August 7, 2020
Thank you