

ALTO Resource Attributes

draft-roome-alto-resource-attr-00

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IETF 91

November 13, 2014

What Are “Resource Attributes”?

- Meta-data for resources
- Distinguish between resources – or ALTO Servers – with the same capabilities
- Attributes vs. Capabilities:
 - Attributes are hints & guidelines
 - Capabilities are guarantees
- Examples:
 - Map Size (number of PIDs, number of costs, etc)
 - Update frequency
- This extension defines the mechanism for announcing attributes, and an initial set of attributes

Announcing Attributes

- Add “attributes” field to IRD entry:

```
"numerical-routing-cost-map" : {  
  "uri" : "http://alto.example.com/costmap/num/routing",  
  "media-type" : "application/alto-costmap+json",  
  "uses" : [ "my-default-network-map" ],  
  "capabilities" : {  
    "cost-type-names" : [ "num-routing" ]  
  },  
  "attributes" : {  
    "cost-count-current" : 503,  
    "cost-count-range" : [ 250, 750 ]  
  }  
},
```

- Ensures attributes won't conflict with capabilities

Defining Resource Attributes

- New IANA registry for ALTO Resource Attributes
 - Same as for cost metrics & endpoint properties
- Proposed attributes:
 - pid-count-current: Number of PIDs currently in a Network Map
 - pid-count-range: Upper & lower bounds on number of PIDs
 - prefix-count-current: Number of prefixes currently in a Network Map
 - prefix-count-range: Upper & lower bounds on number of prefixes
 - cost-count-current: Number of cost points currently in a Cost Map
 - cost-count-range: Upper & lower bounds on number of cost points
 - authoritative-prefixes: Set of prefixes for which this Network Map and its dependent Cost Maps provides authoritative data
 - authoritative-exclusions: Set of prefixes to exclude from authoritative-prefixes

Authoritative Endpoint Set

- Typically ALTO Servers will be run by ISPs
 - They will have accurate data for the ISP's network
 - But not for the rest of the network
 - The “authoritative-prefixes” attribute tells clients the network subset this resource covers
- For endpoints in the “authoritative set”:
 - The PIDs covering those endpoints should be finer-grained than for PIDs for endpoints
 - The Cost Maps should define costs to & from the PIDs covering these endpoints to every other PID
- For an ALTO Server run by an ISP:
 - “authoritative-prefixes” has the prefixes assigned to the ISP
 - “authoritative-exclusions” has prefixes of customers who moved to other ISPs and took their addresses with them

Thank you