Proportional Quota in RELOAD

draft-petithuguenin-p2psip-proportional-quota-01

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Quota Mechanism in RELOAD

The quota mechanism in RELOAD limits the amount of data that a peer will store per kind.

This mechanism is controlled by two configuration parameters, <max-size> and <max-count>.

The VIPR RELOAD Usage requires a different quota mechanism that can apply to other usages and so is proposed as a separate RELOAD extension.

Proportional Quota

The proportional quota mechanism forces an entity to provide a storage capacity that is proportional to the amount of data it will store.

Because each peer in an overlay is responsible in average to the same number of different Resource-IDs, an entity changes its storage capacity by adding peers.

E.g. for VIPR, an entity wanting to store 100,000 phone numbers must contribute 10 times more peers than an entity that want to store 10,000 phone numbers.

Algorithm

The responsible peer maintains a counter that contains the number of values stored for each signer per kind.

After verifying that the size of the entry is consistent, the responsible peer multiplies the max-count value by the number of replicas then divides it by the fraction of the overlay it is responsible for. The entry is added if this value is lower than the updated counter.

Because of imperfect distribution of Resource-IDs, the storing entity must increase the number of peers to guarantee an acceptable probability of rejection.

Configuration

The quota mechanism is designed as an extension to RELOAD:

```
<kind name="VIPR-REGISTRATION"
 xmlns:quota="urn:ietf:params:xml:ns:p2p:quota"
 xmlns:vipr="urn:ietf:params:xml:ns:p2p:vipr">
  <data-model>DICTIONARY</data-model>
  <access-control>VIPR-MATCH</access-control>
  <max-count>10000</max-count>
  <max-size>20</max-size>
  <vipr:store-rate-limit>20</vipr:store-rate-limit>
  <quota:max-count-per-type>SIGNER</quota:max-count-
per-type>
</kind>
```

Conclusions

Any interest in doing this as an independent draft? (if no support by the time the minutes are published, this draft will be moved back to VIPR)

Adoption by WG?

Questions?