A Word about Operational State

Phil Shafer
Martin Björklund
IETF85
First a word

• We need a word for data
  – Not config (not part of the device config)
  – Not operational state (it is writable)
  – Learned from external sources (apps, managers)
  – Heavily tied to automation
  – High frequency/volume
  – Non-persistent

• Examples: customer ports, routes, firewall signatures, etc.
Fortunately ...

• Swedish has a word that's "just right": "Lagom"

• So we have a distinct, specific word
Current World

• Issues:
  – Is the data model for opstate a subset of config?
  – Is the organization different?
  – Do the leafs have distinct values?
    • Are there config values that can't be opstate?
    • Are there opstate values that can't be config?

• RFC6244 gives no answers
  – Because we don't have any
IRS Needs

• IRS has some additional requirements
  – Need to work w/ IRS to clarify
    • Impacts, costs, and ramifications
  – "fast path"
Proposal

• Distinct datastore with distinct operations
  – Two types of validation:
    • Field level (as data is added)
    • Semantic (when data is consumed by system)
  – Allows semantically invalid data
    • Well defined failure modes (ignore invalid data)
  – Data model needs to indicate:
    • Data that is allowed in lagom
    • Failure points within lagom data hierarchies
Lagom

• Cannot invalidate config data
  – Config data must remain valid
• Independent of config true | false
• Lagum validity considers config
  – But not vice versa
• Failure points
  – Allow invalid data to be partially ignored
  – When semantic check fails, the failure point identifies hierarchy to be discarded
  – Default failure point is the top of the lagum hierarchy
New Math

DM + config + valid(lagom) = DS

DS + PE + LD = OS

Where:
DM data model
DS desired state
PE physical environment
LD learned data
Lagom Module

• Two extensions
  – lagom (true | false);
  – lagom-failure (true | false);

• Two operations
  – get-lagom
  – edit-lagom

• Distinct operations reduce options
  – test-options, error-options, etc