List Pagination Snapshots
for YANG-driven Protocols

Draft-awwhl-netconf-list-pagination-snapshot-00

IETF 119 NETCONF WG 2024-03-19

On behalf of NETCONF List Pagination Design Team
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Intro

- Based on work from draft-ietf-netconf-list-pagination
- Put in separate draft in order to not impede the list-pagination draft
- Requirements: Open question which need to be resolved for a solution
Requirements

• What should a snapshot include?
  - Entire list, list keys?

• How should a snapshot be reused
  - RESTCONF needs to be able to reuse it between sessions

• What is the lifecycle for a snapshot?

• Snapshot automatically deallocated after timeout
Requirements cont’d

• How should a client signal snapshot deallocation?
• Unable to allocate snapshot due to resource constraints
• Implicit deallocation when pagination is finished?
• Security considerations for protecting against DoS, taking many (huge) snapshots
Solution overview

- “snapshot” query parameter
  - NETCONF, RESTCONF

- Snapshot support
  - “config false” list or leaf-list
  - ietf-system-capabilities per-node-capabilities augmented with “snapshot” leaf

- YANG model
“snapshot” query parameter

• Client requests server to take snapshot before starting pagination
• MAY be supported for “config false” lists and leaf-lists
• Boolean value
  – Default false
• If snapshots not supported, return “snapshot-not-supported” in error-app-tag
“snapshot” query param NETCONF

- Add “snapshot” node
  - RPCs: get, get-config, get-data
- Augment “lpgsnap:snapshot-param-grouping”
“snapshot” query param NETCONF

augment /nc:get/nc:input:
+---w snapshot?  Boolean

augment /nc:get-config/nc:input
+---w snapshot?  Boolean

augment /ncds:get-data/ncds:input
+---w snapshot?  Boolean

augment /sysc:system-capabilities/sysc:datastore-capabilities/sysc:per-node-capabilities
+--ro snapshot?  empty
“snapshot” query param RESTCONF

- HTTP query parameter
  - GET, HEAD

- No support
  - HTTP Status “501 Not Implemented”
  - error-type “application”
  - error-tag “invalid-value”
  - error-app-tag “snapshot-not-supported”
“snapshot” query param RESTCONF

- Unsupported method or target resource
  - “400 Bad request”
  - error-tag “operation-not-supported”
name: ietf-list-pagination-snapshot
namespace: urn:ietf:params:xml:ns:yang:ietf-list-pagination-snapshot
prefix: lpgsnap
## RESTCONF capability

<table>
<thead>
<tr>
<th>Index</th>
<th>Capability Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>:snapshot</td>
<td>urn:ietf:params:restconf:capability:snapshot:1.0</td>
</tr>
</tbody>
</table>
Next steps

- Adopt document
- Work on open questions in requirements
- More feedback from the WG
Thank you!

Questions?