List Pagination Mechanisms for NETCONF and RESTCONF

draft-ietf-netconf-list-pagination-01
draft-ietf-netconf-list-pagination-nc-01
draft-ietf-netconf-list-pagination-rc-01

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List Pagination Suite Overview

• List Pagination for YANG-driven Protocols (LP)
  - draft-ietf-netconf-list-pagination-01
  - A standard mechanism to control the filtering, and retrieval of entries of list or leaf-list.

• NETCONF Extensions to support List Pagination (LP-NC)
  - draft-ietf-netconf-list-pagination-nc-01

• RESTCONF Extensions to support List Pagination (LP-RC)
  - draft-ietf-netconf-list-pagination-rc-01
Current status

• Cursor pagination has been added and published since IETF 115
  – Some editorial details left

• A few questions has been raised
  – Cursor based pagination (without snapshots)
  – Paginating a snapshot of the datastore
  – Locale based sorting
Cursor based pagination

GET /restconf/data/example-social:members/member?
cursor=YWxpY2UK&limit2

{"example-social:member":
  [{"member-id": "alice", ...},
   {"member-id": "lin", ...}],
  "@example-social:member":
    {"ietf-list-pagination:remaining": 1,
     "ietf-list-pagination:previous": [null],
     "ietf-list-pagination:next": "am9lCg== // joe
   }
}
Snapshot pagination

• Take a snapshot of the queried datastore and traverse that snapshot.
• Snapshots can be very costly when used.
• Document doesn’t mention if pagination snapshots data or not.
  – Could be left up to implementer
  – Depending on use case, no snapshots are a usable best effort solution
• Already leveraging ietf-system-capabilies to constrain huge lists. Is more needed or is it enough?
POLL

Should snapshot be further documented in list-pagination?
Locale based sorting

- Was raised at IETF 115
- Nothing published in the document
- No work done in this area
POLL

Should locale based sorting be further documented in list-pagination?
Thank you!

Questions?
Motivation and Goal

• To better support user-facing client interfaces to retrieve large number of entries from lists or leaf-lists.
  – Applicable to both config data and operational data.
  – Examples: traffic logs, interfaces, ACLs, etc.

• Server-side processing reduces latency, bandwidth, and client-resources.

• Enables servers to leverage indexes maintained by their backend storage system.