

List Pagination Mechanisms for NETCONF and RESTCONF

Kent Watsen
Qin Wu
Olof Hagsand
Hongwei Li

NETCONF WG
IETF 109 (Virtual)

Motivation

- To better support user-facing client interfaces interacting with data from potentially very large lists.
- Examples: traffic logs, interfaces, ACLs, etc.
- Server-side processing reduces latency, bandwidth, and client-resources.

Solution Proposal

- Introduce NC and RC API for list pagination:
- Five control points:
 1. Limit the number of result set entries returned.
 2. Control the point at which the result set begins.
 3. Direction of result set processing.
 4. Enable result set to be sorted.
 5. Enable result set to be filtered.
- Processing order:

Filter → Sort → Direction → Offset / Skip → Limit / Count

Protocol-Independent Questions

1. How important is it to iterate over stable result sets?

- Should “cursors” or “snapshots” be supported?
- For config, Etags/Timestamps can be used - good enough?
- For opstate, assuming read-only time-series - stable enough already?

2. Should “offset” or “skip” be via an integral amount or a key lookup?

- This question is related to Question #1

3. Should names be “skip/count” or “offset/limit”?

- This question is dependent on Question #2

4. Should sub-sorts be supported?

- I.e., order-by([foo, ascending], [bar, descending])

Protocol-Independent Questions

5. How many drafts should there be?

- One Draft:
 - Containing three parts (general def, NC-specifics, RC-specifics)
 - PROs: good package
 - CONs: not a good RFC-target for future work?
- Two Drafts:
 - One each for NC and RC
 - PROs: decoupled
 - CONs: redundancies (parameter definitions and examples)
- Three Drafts
 - General definition + NC-specifics + RC-specifics
 - PROs: decoupled (like NMDA work)
 - CONs: more drafts

RESTCONF-Specific Questions

What should be the scope of the 'leaf' and 'leaf-list' targets?

1. Just the GET Method.
2. All HTTP Methods (i.e., POST, PUT, DELETE, etc.)

Considerations around increasing the scope:

- More complete / pure
- Little value (only DELETE benefits)
- Somewhat out of scope

NETCONF-Specific Questions

- None?

Thank You