List Pagination Suite Overview

- List Pagination for YANG-driven Protocols (LP)
  - draft-ietf-netconf-list-pagination-02
  - Standard mechanism to control filtering, and retrieval of entries of list or leaf-list.
- NETCONF Extensions to support List Pagination (LP-NC)
  - draft-ietf-netconf-list-pagination-nc-02
- RESTCONF Extensions to support List Pagination (LP-RC)
  - draft-ietf-netconf-list-pagination-02
Current status

- Cursor pagination finalized
- Snapshot support for “config false” added
  - Possible to indicate snapshot support and enable it per request
- Locale-aware collating added
  - Possible to select wanted, and signal used, locale when collating
- Editorials
  - Missing definitions in ietf-list-pagination model
  - Clarifying error identities and showing by example
  - Added YANG Security Considerations template text
Cursor based pagination

- A server SHOULD support cursor based pagination
- Offset a list resource by key
  - Thus, conformance list
- Augmenting ietf-system-capabilities with “cursor-supported” leaf
  - Indicating support for cursor
  - Opt-in now, should it instead be opt-out?
Cursor based pagination

GET /restconf/data/example-social:members/member?
cursor=YWxpY2UK&limit=2

{"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

    }
POLL

Should cursor based pagination be opt-out or opt-in?
Pagination with snapshots

- A server MAY support snapshots
- Augmenting ietf-system-capabilities with "snapshot"
  - Indicating support for snapshot for targeted "config false" list node
- "snapshot" query parameter
Pagination with snapshots

• “snapshot” query parameter
  – Enabling snapshot per request
  – Allowed values “true” and “false”
  – Conformance lists and leaf-lists
  – “snapshot-not-supported” error identity in error-app-tag if unsupported
Locale aware sorting

- Server support
  - MUST for “config true”
  - SHOULD for “config false”
  - MAY disable for “config false” with “constrained” leaf in ietf-system-capabilities

- Code points can be collated differently depending on locale

- Enabling users to select locale and become informed of locale used, for collating

- References: RFC 5646 and RFC 6365
Locale aware sorting

• “sort-locale-collate” query parameter
  - Allowed value is free form string but SHOULD follow language sub-tag (RFC 5646) e.g. “sv_SE”
  - If omitted server chooses locale
  - If locale is unknown or invalid, “unknown-locale” error identity should be produced in error-app-tag

• “sort-locale-collated” metadata value
  - Always included in response if target is not constrained
Locale aware sorting

GET /restconf/data\n/example-social:member/member?sort-locale-collate=sv_SE

{"example-social:member":
  ["member-id": "alice", ...],
  ["member-id": "bob", ...],
  ...],
  "{example-social:member":
  {
   "ietf-list-pagination:sort-locale-collated": "sv_SE"
  }
}
Editorials

- Added text from YANG Security Considerations Template
  - draft-moriarty-yangsecuritytext-02
  - Should this be used?
Next steps

• Fix a few editorials
• WGLC
Thank you!

Questions?
Locale aware sorting

$ cat data.txt
aa_bb_cc
aa_b_ee
ana
aña
anna
o
ö
p
Locale aware sorting

$ LC_COLLATE=C \ 
  sort data.txt
aa_b_ee
aa_bb_cc
ana
anna
aña
o
p
ö

$ LC_COLLATE=es_ES.UTF-8 \ 
  sort data.txt
aa_bb_cc
aa_b_ee
ana
anna
aña
o
ö
p
Locale aware sorting

$ LC_COLLATE=en_US.UTF-8 \ sort data.txt
aa_bb_cc
aa_b_ee
ana
ña
anna
o
ö
p

$ LC_COLLATE=sv_SE.UTF-8 \ sort data.txt
aa_bb_cc
aa_b_ee
ana
ña
anna
o
p
ö