SeedLink v4 proposal
overview and status

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And the review team
History (FDSN WGIII in 2021 “Evolution of SeedLink”)

- Initial development and requirements at that time.
- The SeedLink protocol was originally created at GEOFON/GFZ around 2000.
- Version 3, the first widely used version of the protocol, was a result of the development within the MEREDIAN EC project under the lead of GEOFON/GFZ and ORFEUS/KNMI.
- Later, a number of extensions to SeedLink v3 were added by GFZ and IRIS DMC.
Motivation for next generation development
Known limitations of existing SeedLink protocol

- Only miniSEED 2.x with 512-byte record length supported
- Protocol (SELECT) assumes fixed length location and channel codes
- 24-bit sequence numbers limit ringbuffer to 8 GB
- Station wildcards, capabilities, extended ERROR reply not standardized
- End-time not supported with DATA and FETCH, time-windowed requests not resumable
- Sub-second time resolution not supported in protocol commands
- Authentication not supported
Features added to next generation protocol
How limitations have been addressed

- New packet header allowing
  - Multiple payload formats (miniSEED 2, 3, etc.)
  - Variable length packets
- New SELECT syntax: delineated identifiers, wildcard “*” supported
- 64-bit sequence numbers
- Station wildcards, capabilities and error codes standardized
- New syntax of DATA and FETCH
  - including ISO8601-compatible date format with sub-second time resolution
- AUTH command added options for user/password and token
  - JWT being considered as authentication type
Current status

https://fdsn.org/message-center/thread/734/

02.04.2022 - Submitted to this working group for consideration as a standard.
Current status

https://fdsn.org/message-center/thread/818/

23.12.2022 - A review team considered the proposal's suitability for adoption by the FDSN (Mark Chadwick, Philip Crotwell, Roman Racine):

“a strong candidate to be an FDSN standard and that it should be advanced to the evaluation stage. This will, amongst other things, provide sound governance, stability, and a framework for any future enhancements, or security updates, as appropriate or as needed.”
Current status

https://fdsn.org/message-center/thread/818/

04.02.2023 - with 20 votes, WGII members agreed to move forward with the actual technical proposal evaluation.

Review team:

Mark Chadwick (GNS), Roman Racine (ETH Zürich), Philip Crotwell (U of South Carolina), Charles Blais (Natural Resources Canada), David Easton (Nanometrics), Eliseo Banda (Kinematics)
Current status

Under review

https://github.com/FDSN/SeedLink/issues

Today - open issues from the review team being addressed by the developer group

- Posting answers to the issues, closing them where possible
- Where changes to the specs are needed suggesting them in the issues already
Outlook (assuming acceptance after review)

- Conclusion of review process with review report (expected by August)
- Include modifications requested/agreed with reviewers and review of specifications (October)
- WGIII votes on final adoption (November)
- Public release of the project repository and specifications (December/January)
- Prototype server from GEOFON (Spring 2024)
- Prototype libslink and slinktool client from IRIS DMC (Spring 2024)