

# Evolution of SeedLink

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# History

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

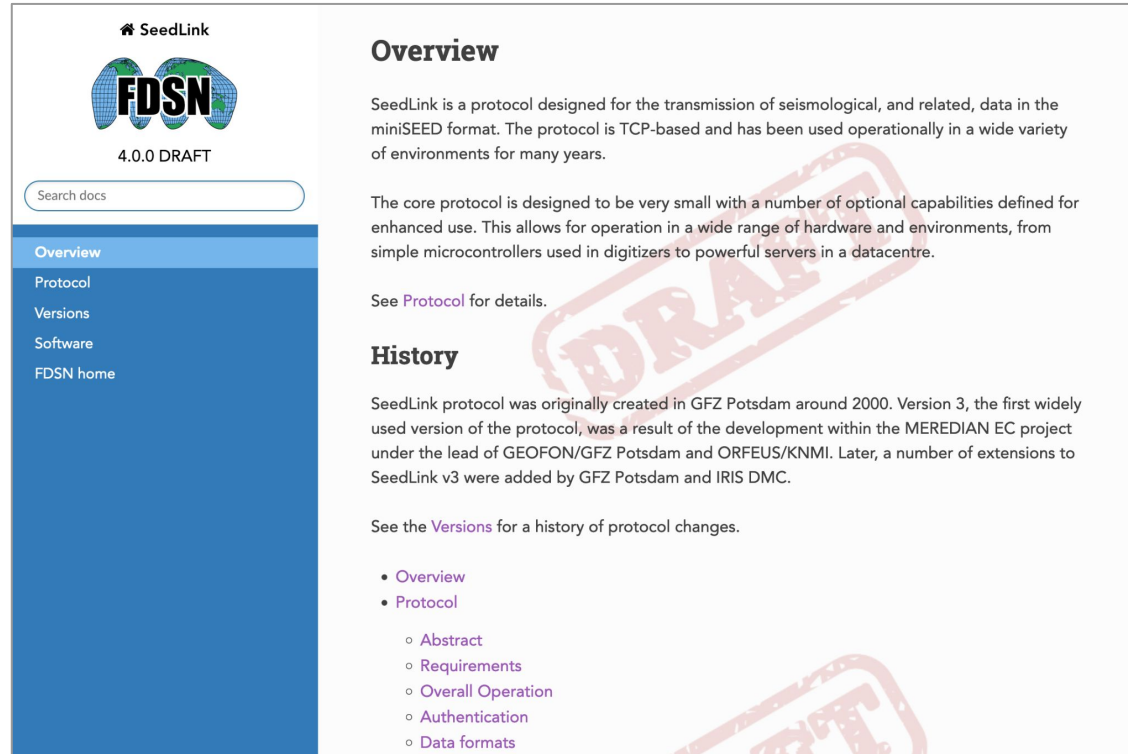
# Current status

Specification drafted in FDSN web format


Initial technical evaluation

included:

- Prototype server
- Prototype libslink port
- Prototype JavaScript client



SeedLink



4.0.0 DRAFT

- Overview
- Protocol
- Versions
- Software
- FDSN home

## Overview

SeedLink is a protocol designed for the transmission of seismological, and related, data in the miniSEED format. The protocol is TCP-based and has been used operationally in a wide variety of environments for many years.

The core protocol is designed to be very small with a number of optional capabilities defined for enhanced use. This allows for operation in a wide range of hardware and environments, from simple microcontrollers used in digitizers to powerful servers in a datacentre.

See [Protocol](#) for details.

## History

SeedLink protocol was originally created in GFZ Potsdam around 2000. Version 3, the first widely used version of the protocol, was a result of the development within the MERIDIAN EC project under the lead of GEOFON/GFZ Potsdam and ORFEUS/KNMI. Later, a number of extensions to SeedLink v3 were added by GFZ Potsdam and IRIS DMC.

See the [Versions](#) for a history of protocol changes.

- [Overview](#)
- [Protocol](#)
  - [Abstract](#)
  - [Requirements](#)
  - [Overall Operation](#)
  - [Authentication](#)
  - [Data formats](#)

# Work on libslink

The libslink library is a common foundation for many SeedLink clients.

As part of prototyping work, libslink has been modified to support the v4 drafts (not quite up to date as of now).

## Key points for future release

- Will supports both v3 and v4 seamlessly
- *Not* a drop-in replacement for previous releases, porting needed
- Many dependent clients will be updated when/if adopted (slinktool, slarchive, slink2ew, slink2orb)

The strategy: allow seamless upgrade for users of libslink-based programs

# Outlook (assuming acceptance for review)

- Formal submission to FDSN as the new standard real-time protocol  
(now/September)
- Review process (September/October)
- Prototype server from GEOFON (September/October)
- Prototype libslink and slinktool client from IRIS DMC (September/October)
- Public release of the project repository and specifications (October/November)

Contact the WG chair if you are willing to engage in the review process!