



FDSN Web Service Specification

fdsnws-dataselect

Version 1.1

2019-06-27

Purpose

To specify a web service interfaces for the exchange of time series data within the context of the International Federation of Digital Seismograph Networks (FDSN). The intention is to provide a specification that, when implemented at different FDSN data centers, can be used interchangeably by the same client software. Combined with common FDSN web service specifications, this document fully defines the request parameters and expected results.

Common service characteristics

This document must be combined with the common service characteristics defined in version 1.1, or later version 1.x, of the “[FDSN-WS-Specification-Commonalities](#)” for a full specification. The common service characteristics include versioning scheme, general calling pattern, common service methods, common error responses, and more.

Service methods

The service should support these methods:

- query** – to submit a data request
- queryauth** – to authenticate and submit a data request
- version** – to request the full service version number
- application.wadl** – to request a WADL for the interface

Purpose of the *query* method:

This method is designed to return time series data.

Purpose of the *queryauth* method:

The optional *queryauth* method behaves identically to the *query* counterpart except that submission requires authentication. The data center may then include restricted data as appropriate for the credentials.

Request parameters for the *query* method:

The service shall accept requests formulated using the parameters identified in Table 1. The **alias** values are acceptable synonyms for the given **parameter** name.

Table 1. Parameters for the *query* method:

Parameter	Alias	Support	Default	Allowed Values	Type	Unit
starttime	start	required	[Any]	Any valid time	time	UTC
						Limit results to time series samples on or after the specified start time
endtime	end	required	[Any]	Any valid time	time	UTC
						Limit results to time series samples on or before the specified end time
network	net	required	[Any]	Valid network code or wildcard	string	
						Select one or more network codes. Can be SEED network codes or data center defined codes. Multiple codes are comma-separated.
station	sta	required	[Any]	Valid station code or wildcard	string	
						Select one or more SEED station codes. Multiple codes are comma-separated.
location	loc	required	[Any]	Valid location code or wildcard	string	
						Select one or more SEED location identifiers. Multiple identifiers are comma-separated. As a special case '--' (two dashes) will be translated to a string of two space characters to match blank location IDs.
channel	cha	required	[Any]	Valid channel code or wildcard	string	
						Select one or more SEED channel codes. Multiple codes are comma-separated.
quality		optional	B	D, R, Q, M or B	string	
						Select a specific SEED quality indicator, handling is data center dependent.
minimumlength		optional	0.0	>= 0.0	float	
						Limit results to continuous data segments of a minimum length specified in seconds.
longestonly		optional	FALSE	TRUE or FALSE	boolean	
						Limit results to the longest continuous segment per channel.
format		optional	miniseed	miniseed	string	
						Specify format of result, the default value is <i>miniseed</i> . If this parameter is not specified the service must return miniSEED.
nodata		optional	204	204 or 404	string	
						Select status code for "no data", either 204 (default) or 404 .

Requests using the *query* method

The parameters may be submitted using either of the HTTP GET or POST methods. The POST method is useful to allow a large number of request parameters to be submitted.

For the GET method, the parameters should be submitted as key=value pairs and may not be specified more than once; if a parameter is submitted multiple times the result is undefined.

For the POST method, all parameters must be submitted as part of the POST body. The *quality*, *minimumlength* and *longestonly* parameters should be specified as key=value pairs on separate lines and the *simple-time* and *channel constraints* parameters repeated as many times as necessary following this pattern:

```
quality=M
minimumlength=0.0
longestonly=FALSE
NET STA LOC CHA STARTTIME ENDTIME
NET STA LOC CHA STARTTIME ENDTIME
NET STA LOC CHA STARTTIME ENDTIME
```

This would be POSTed to the URI “<site>/fdsnws/dataselect/1/query”.

All rules for parameters apply equally whether specified using the GET or POST methods with the exception of blank location IDs, which must be specified as “--” in the POST body due to spaces being used as the field separator.

Responses for the *query* method:

The results of a successful request shall be returned as a stream of miniSEED by default, using the MIME type **application/vnd.fdsn.mseed**. The exact nature of the miniSEED returned by this service is data center dependent, a center may choose to remove duplicated data or prune to the exact window specified by the caller. The time series is generally expected to represent unprocessed, “raw” recorded data as supplied by the network operator or data owner. A data center may choose to return the results in alternate formats as specified by the format parameter.

Behavior for the *queryauth* method

HTTP Digest Authentication (RFC 2617) should be requested from the client. After successful authentication, a request should be accepted and handled as per the *query* method. Authentication credentials (user database and associated licensing schemes) are data center specific.

Behavior for the *version* method

The service shall return the implementation version as a simple text string using the MIME type **text/plain**. Any parameters submitted with the method will be ignored.

Behavior for the *application.wadl* method

The service shall return a WADL conformant description of the interface using the MIME type **application/xml**. Any parameters submitted with the method will be ignored. The WADL shall describe all parameters supported by the interface and is primarily used to document which optional parameters are supported.

Behavior for the *error* conditions

All errors returned to the client shall use the type and pattern described in the common service characteristics specification.

Examples

Requesting all data channels from IU station COLA for the first 12 hours of year 2012 using a GET request:

<http://service.iris.edu/fdsnws/dataselect/1/query?network=IU&station=COLA&starttime=2012-01-01T00:00:00&endtime=2012-01-01T12:00:00>

Requesting all LHE, LHN, LHZ data channels from IU station COLA for the first 12 hours of year 2012 using a POST request:

<http://service.iris.edu/fdsnws/dataselect/1/query>

POST message body:

```
quality=M
IU COLA 00 LHE 2012-01-01T00:00:00 2012-01-01T12:00:00
IU COLA 00 LHN 2012-01-01T00:00:00 2012-01-01T12:00:00
IU COLA 00 LHZ 2012-01-01T00:00:00 2012-01-01T12:00:00
```

References

FDSN Web Service Commonalities - <http://www.fdsn.org/webservices/>

SEED data format - http://www.iris.edu/manuals/SEEDManual_V2.4.pdf

Web Application Description Language (WADL) - <http://www.w3.org/Submission/wadl/>

Credits

This document was designed and is maintained by the Incorporated Research Institutions for Seismology (IRIS), Data Services on behalf of the FDSN.

Changes

Note: Through 2019-06-27 the changes relevant for this service are extracted from the original, monolithic specification document.

2012-07-12 • Initial specification, release candidate 1

2012-11-20

1. Include example request URI's for each service.
2. Remove provisional status on fdsnws-station.

2013-04-24 • Version 1.0 final

1. Remove the DRAFT designation.

2013-09-18 • Integrate proposed version 1.1 changes

1. Add designation of required versus optional parameters for each service interface.
2. Add optional *format* parameter. The default format of miniSEED remains the same.
3. Add optional *nodata* parameter to each service definition that accepts values of '204' (default) and '404'. This parameter controls the HTTP status code to return when the request was successful but matched no data.
4. Clarify definition of *starttime* and *endtime* parameters to explicitly include metadata epochs intersection with the specified time range.

2013-10-04 • 1.1 release candidate

1. Avoid ambiguity of required parameters by re-naming the appropriate column "Support" and changing the values to "Required" and "Optional".

2013-10-15 • 1.1 release candidate 2

1. Add section describing WADL conventions.
2. Clarify that when the *format* parameter is not specified the default format must be returned.

3. Clarify that an HTTP 413 status shall be returned when either the request entity itself is too large or the resulting data set would be too large, the latter being an extension of the standard meaning.

2013-10-25 · Version 1.1 final

2019-06-27 · Version 1.1 of fdsnws-dataselect only

1. Reformat document to contain only the specification for fdsnws-dataselect service. Common service characteristics are maintained in a separate document, including the earlier change history for this specification.