Find information about Z39.50 configuration for connecting an external client to FirstSearch.

**Overview**

**Welcome**

This guide contains the technical specifications for connecting an external client to the FirstSearch 5.0 OCLC Z39.50 test server.

**Z39.50 mailing list**

Join the OCLC Z39.50 mailing list and current news will be emailed directly to you.

You can subscribe to OCLC's Z39.50 mailing list by sending mail to LISTSERV@OCLC.ORG and writing "subscribe Z3950FS-L <Your Full Name>" in the message body.

**Z39.50 Server**

The OCLC server implements Z39.50-1995 (version 3 of the protocol).

The server provides access to all databases available through the new FirstSearch service. We maintain both a production and a test server for external access. The test server provides access to databases for testing purposes. Authentication of authorization and password is required for access to the test server. The production server provides access to all the databases available and requires a valid FirstSearch authorization.

Note: Please do any configuration and client test on our test server. If you have questions, please contact OCLC Support with any questions or comments about FirstSearch.

**Database information**

See FirstSearch databases for detailed information about FirstSearch databases.

**Internet addresses and hours of availability**

**Production server**

Domain name: fsz3950.oclc.org
Port: 210

Test server

Domain name: fsz3950test.oclc.org
Port: 210

Hours

The OCLC Z39.50 production servers are available during the same hours as the online FirstSearch service. The servers are available 24 hours a day, except Sunday. Downtime hours are Sunday, from 2:00 am to 6:00 am, U.S. Eastern Time.

The OCLC Z39.50 test servers are generally available during the same hours as the online and production Z39.50 services. Some functionality, like full text access, is not reliable on the test server, but all indexes and display options are available for testing.

Z39.50 services supported

Initialization service

Protocol version

Z39.50-1995 (Version 3)

Options supported

Search

Present

Scan

Sort

Delete Result Set

Access Control

Trigger Resource Control

Close

Preferred message size

OCLC will accept the client's proposal for Preferred Message Size.
**Maximum record size**

OCLC will accept the client's proposal for Maximum Record Size.

**ID authentication**

OCLC supports ID authentication as prescribed by the standard. We recognize the userId and password fields; the groupId field is ignored. The service patron password is the password that must be used.

**UserInformation field**

On the Init Response message, we return the OCLC_Information Record in the UserInformation field. The OID for this is 1.2.840.10003.10.1000.17.1

OCLC-UserInformation ::= SEQUENCE {
    motd [1] IMPLICIT VisibleString OPTIONAL,
    dblist SEQUENCE OF DBName OPTIONAL,
    failReason [3] IMPLICIT BOOLEAN OPTIONAL,
    text [2] IMPLICIT VisibleString OPTIONAL
}

DBName ::= [2] IMPLICIT VisibleString

**Search service**

**Database-Names**

Consult the database information file and provide either the database name or the nickname listed (case-insensitive). Multiple database names can be supplied on the query using the IMPLICIT SEQUENCE of DatabaseName.

**Result set name**

The server maintains any number of named results sets during the Z-association.

**Element set names**

See [Element set names available](https://help.oclc.org/Discovery_and_Reference/FirstSearch/Z3950_access/Z3950_configuration).
Query
Type-1 & Type-101 are supported.

Attribute set ID
Bib-1 only is supported.

Operand
The Result Set ID (i.e., "default") can be used in the Operand (for qualifying searches).

Operators supported
AND
OR
AND-NOT

Present service

Result-set-id
The server attempts to find the requested record(s) from named result set. If the Result-set-id is not supplied, the server gets records from the last result set created.

Scan service

Database-Names
Consult the database information file and provide either the database name or the nickname listed (case-insensitive). Multiple database names can be supplied on the query using the IMPLICIT SEQUENCE of DatabaseName.

Use/Structure attribute contributions
Combine structure attribute 1 (phrase), 2 (word) or 5 (date) with the appropriate use attribute in order to scan an index. See individual database specifications in FirstSearch databases for use/structure combinations for each database.

Sort service

Support up to 6 sort keys per database. See database documentation for details.
Currently, the generic sortElement is supported.
Delete results set service

Used to delete old resultsets.

Trigger resource control

This is used by the origin to stop or break a Z39.50 command already in progress.

Close service

Used to terminate all operations and initiate termination of the Z-association.

Record syntaxes supported

When the PresentRequest indicates a SUTRS record, OCLC returns a text record looking like the FirstSearch Web display. When the PresentRequest is for USMARC, OCLC generates a record using the best available USMARC tags. For XML, OCLC returns a record containing 15 elements that offer basic descriptive information about the item in question. If no Preferred Record Syntax is supplied, the OCLC server defaults to USMARC.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>USMARC</td>
</tr>
<tr>
<td>101</td>
<td>SUTRS</td>
</tr>
<tr>
<td>109</td>
<td>XML</td>
</tr>
</tbody>
</table>

Element set names available

Full views include all the data from the record. Brief views generally include just author, title, and date. If no Element Set Name is supplied, OCLC defaults to Full.

<table>
<thead>
<tr>
<th>VALUE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Full record display</td>
</tr>
<tr>
<td>B</td>
<td>Brief record display</td>
</tr>
<tr>
<td>FA</td>
<td>Full with All Holdings (supported with SUTRS only; used</td>
</tr>
<tr>
<td>VALUE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>FI</td>
<td>Full record display with No Holdings</td>
</tr>
<tr>
<td>T</td>
<td>Full text (Available for the CWI database using syntax SUTRS only; used to display full-text of this database when the 949/z is present in the MARC record or when ACCESS is displayed in the SUTRS record)</td>
</tr>
</tbody>
</table>

Note: A few records may contain large amounts of holdings, while most contain medium to small amounts. Test your system's performance with holdings using the following WorldCat records:

- **large** -- 1564932
- **medium** -- 235191
- **small** -- 29323884

Holdings available in a variety of ways:

1. Country, location, institution name and symbol information available in Full SUTRS, Full All Holdings SUTRS, Union Lists Brief MARC and Full MARC.

2. In Full MARC, holdings details are broken out into fields/subfields in the following manner:
   - Subfield a will contain the ISO country code.
   - Subfield b will contain the US state and Canadian province information. For all other countries the code in this field is not meaningful, and only subfield a country code is useful.
   - Subfield c will contain the OCLC symbol.
   - A new subfield d will contain the library name.

   A new 948 tag will appear with each new country and/or state/province.

3. In Union Lists Brief MARC, holdings details are broken out into fields/subfields in the following manner:
   - Subfield a will the ISO country code.
   - Subfield b will contain the US state and Canadian province information. For all other countries the code in this field is not meaningful, and only subfield a country code is useful.
   - Subfield c will contain the OCLC symbol.
   - Subfield d will contain the library name.
   - Subfield e will contain local holdings details (when available).

   A new 948 tag will appear with each new country and state or province combination 948/ab) and a new 948 tag will appear for each institution within that area (948/cde).

4. In Full (F) SUTRS, holdings and local holdings data are prefaced with the label "Libraries". A tabular format is used.
to delineate pieces of data. The FirstSearch authorization's holdings default setting is used to determine how many states/provinces holdings are displayed.

5. In Full All (FA) SUTRS, holdings and local holdings data are prefaced with the label "Libraries". A tabular format is used to delineate pieces of data. All the holdings for that record are displayed, even if the FirstSearch administration web site has the authorization number set to not display all holdings.

Note: The codes used in display are described in the following websites:

- The ISO country codes are listed [here](#).
- The 59 U.S. states and possessions use the U.S. Postal abbreviations listed [here](#).
- The Canadian provinces use the Canadian Postal abbreviations listed [here](#).

### How full-text is available

1. OCLC created URLs contained in 856/u fields in full MARC syntax and under the label ACCESS in full SUTRS syntax will now allow internet-based access to all full text available in virtually all applicable FirstSearch databases. These URLs can be cut and pasted, or programmatically entered, into any browser supported by FirstSearch in order to gain access to the full text. Regular full text billing charges apply to this access each time the URL is used; the URLs will time out after 7 days so if continued access is desired another search to receive an updated URL will need to be executed. The 856/i field is the indicator for full text access via this method; because 856/u fields can also indicate a link to a web site that is not necessarily full text, the 856/i should be checked to be certain the 856/u link is truly a FirstSearch full text link. The 856/i field contains instructions regarding the URL and information on whether the full text is ASCII or PDF.

   Note: If Z39.50 local holdings information is configured in the FirstSearch administrative module on your authorization, 856/u links to local holdings will appear in your records. Details on how to configure access to Z39.50 catalog in order to provide local holdings can be found in the [WorldCat Admin](#).

2. Two databases have a different method for providing full text.
   
a. **CWI.** For the CWI database, full-text is available using element set name T and syntax SUTRS, however this full-text display will only work with records that contains full-text. The records with full-text display the information under the label ACCESS in the full SUTRS display. In full MARC displays, if a 949/z exists full-text is available. Records without the SUTRS label ACCESS or the MARC subfield 949/z do not have full-text. Those records will cause an error if element set name T is used to try to display the record.

   b. **PsycBOOKS.** For the PsycBooks database, URLs to PDF files are provided for chapters of the book. The URLs are found in the SUTRS display with the label TOC. After the main label TOC, each chapter gives the information of that chapter and then the label Full text: followed by the URL for that chapter. In MARC displays, the information is found in each 505 field with the URL found in the 505/9 subfield.

### Attributes supported

#### Use attributes supported

The OCLC server supports many different USE attributes. Please refer to [FirstSearch databases](#) for a detailed list of attributes defined for each database.
Relation attributes supported

The OCLC server supports the following Relation attributes. If no attribute value is sent, our implementation performs the search as if the value Equal (3) were sent.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Less than (as of 12/16/2001)</td>
<td></td>
</tr>
<tr>
<td>2 Less than or equal to (as of 12/16/2001)</td>
<td></td>
</tr>
<tr>
<td>3 Equal</td>
<td></td>
</tr>
<tr>
<td>4 Greater or equal (as of 12/16/2001)</td>
<td></td>
</tr>
<tr>
<td>5 Greater than (as of 12/16/2001)</td>
<td></td>
</tr>
</tbody>
</table>

Position attributes supported

The OCLC server supports the following position attributes. If no attribute value is sent, our implementation performs the search as if the value is Any.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 First in field (only with structure= 1 or 4)</td>
<td></td>
</tr>
<tr>
<td>3 Any</td>
<td></td>
</tr>
</tbody>
</table>

Structure attributes supported

For any USE attribute where we specify that WORD is a valid structure attribute, the values of word list (6) and ordered word list (7) are also valid. We implement word list as "AND" within a field. We implement ordered word list (7) as "AND" with a proximity of 1 with order being important. Date (5) is implemented much like word with the most useful difference being it allows for ranging of dates (ie: 1987-1993 will only hit on records between 1987 and 1993 inclusive). If no
attribute value is sent, our implementation performs the search as if the value is Word.

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>word</td>
<td>key</td>
<td>year</td>
</tr>
<tr>
<td>date</td>
<td></td>
<td>word list</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ordered word list</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normalized</td>
</tr>
</tbody>
</table>

**Truncation attributes supported**

Truncation attributes 1, 100, 101 and 104 are defined in the [Truncation Attributes](https://help.oclc.org/Discovery_and_Reference/FirstSearch/Z3950_access/Z3950_configuration) section of Bib Attribute Set.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right truncation</td>
<td></td>
</tr>
<tr>
<td>Do not truncate</td>
<td></td>
</tr>
<tr>
<td>Process # in search term</td>
<td>(# is zero or more characters)</td>
</tr>
<tr>
<td>Truncation is defined in Z39.58-1992</td>
<td></td>
</tr>
<tr>
<td>? represents a single character</td>
<td></td>
</tr>
<tr>
<td># represents</td>
<td></td>
</tr>
</tbody>
</table>

[https://help.oclc.org/Discovery_and_Reference/FirstSearch/Z3950_access/Z3950_configuration](https://help.oclc.org/Discovery_and_Reference/FirstSearch/Z3950_access/Z3950_configuration)
from 0 to 9 characters; specify a number after the ?

If no truncation character is present, do not truncate

Truncation and wildcard characters can only be used after 3 characters in the search term. Limits are imposed on truncation/wildcards in order to maintain high performance standards – an error will be sent if the truncation/wildcard query is too general.

**Completeness attributes supported**

The OCLC server supports the following completeness attributes. If no attribute value is sent, our implementation performs the search as if the value is Incomplete subfield.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Incomplete subfield</td>
</tr>
<tr>
<td>3</td>
<td>complete field (only with structure=1 or 4)</td>
</tr>
</tbody>
</table>

**Other Z39.50 information**

Additional Z39.50 information can be found at [Z39.50 International Standard Maintenance Agency](https://help.oclc.org/Discovery_and_Reference/FirstSearch/Z3950_access/Z3950_configuration).