



searchRetrieve: Part 5. CQL: The Contextual Query Language Version 1.0

Candidate OASIS Standard 01

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Additional artifacts:

This prose specification is one component of a Work Product which also includes:

- XML schemas: <http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/schemas/>
- *searchRetrieve: Part 0. Overview Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part0-overview/searchRetrieve-v1.0-cos01-part0-overview.html>
- *searchRetrieve: Part 1. Abstract Protocol Definition Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part1-apd/searchRetrieve-v1.0-cos01-part1-apd.html>
- *searchRetrieve: Part 2. searchRetrieve Operation: APD Binding for SRU 1.2 Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part2-sru1.2/searchRetrieve-v1.0-cos01-part2-sru1.2.html>

- *searchRetrieve: Part 3. searchRetrieve Operation: APD Binding for SRU 2.0 Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part3-sru2.0/searchRetrieve-v1.0-cos01-part3-sru2.0.html>
- *searchRetrieve: Part 4. APD Binding for OpenSearch Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part4-opensearch/searchRetrieve-v1.0-cos01-part4-opensearch.html>
- *searchRetrieve: Part 5. CQL: The Contextual Query Language Version 1.0.* (this document)
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part5-cql/searchRetrieve-v1.0-cos01-part5-cql.html>
- *searchRetrieve: Part 6. SRU Scan Operation Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part6-scan/searchRetrieve-v1.0-cos01-part6-scan.html>
- *searchRetrieve: Part 7. SRU Explain Operation Version 1.0.*
<http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/cos01/part7-explain/searchRetrieve-v1.0-cos01-part7-explain.html>

Related work:

This specification is related to:

- CQL: Contextual Query Language. Library of Congress.
<http://www.loc.gov/standards/sru/specs/cql.html>

Abstract:

This is one of a set of documents for the OASIS Search Web Services (SWS) initiative. CQL, the *Contextual Query Language*, is a formal language for representing queries to information retrieval systems. Its objective is to combine simplicity with expressiveness, to accommodate the range of complexity from very simple queries to very complex. CQL queries are intended to be human readable and writable, intuitive, and expressive.

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This document was last revised or approved by the OASIS Search Web Services TC on the above date. The level of approval is also listed above. Check the "Latest version" location noted above for possible later revisions of this document.

Technical Committee members should send comments on this specification to the Technical Committee's email list. Others should send comments to the Technical Committee by using the "Send A Comment" button on the Technical Committee's web page at <http://www.oasis-open.org/committees/search-ws/>.

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1 Introduction

2 This is one of a set of documents for the OASIS Search Web Services (SWS) initiative.

3 This document is “CQL: The Contextual Query Language”.

4 The documents in this collection of specifications are:

5 1. Overview

6 2. APD

7 3. SRU1.2

8 4. SRU2.0

9 5. OpenSearch

10 6. CQL (this document)

11 7. Scan

12 8. Explain

13 The Abstract Protocol Definition (APD) presents the model for the SearchRetrieve operation and serves
14 as a guideline for the development of *application protocol bindings* describing the capabilities and general
15 characteristic of a server or search engine, and how it is to be accessed.

16 The collection includes two bindings for the SRU (Search/Retrieve via URL) protocol: SRU1.2 and
17 SRU2.0. Both of these SRU protocols require support for CQL.

18 1.1 Terminology

19 The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD
20 NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described
21 in [RFC2119].

22 1.2 References

23 All references for the set of documents in this collection are supplied in the Overview document:

24 *searchRetrieve: Part 0. Overview Version 1.0*

25 [http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-
csd01-part0-overview.doc](http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-
26 csd01-part0-overview.doc)

27 1.3 Namespace

28 All XML namespaces for the set of documents in this collection are supplied in the Overview document:

29 *searchRetrieve: Part 0. Overview Version 1.0*

30 [http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-
csd01-part0-overview.doc](http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-
31 csd01-part0-overview.doc)

32 2 Model

33 CQL, the *Contextual Query Language*, is a formal language for representing queries to information
34 retrieval systems. Its objective is to combine simplicity with expressiveness, to accommodate the range of
35 complexity from very simple queries to very complex. CQL queries are intended to be human readable
36 and writable, intuitive, and expressive.

37 2.1 Data Model

38 A server maintains a *datastore*. A unit of information in the datastore is called an *item*. The server
39 exposes the datastore to a remote client, allowing the client to query the datastore and retrieve matching
40 items.

41 2.2 Protocol Model

42 A CQL query is presumed to be communicated as part of a protocol message. The protocol is referred
43 to in this document as “the search/retrieve protocol” however this standard does not prescribe any
44 specific protocol.

45 Although specification of the protocol is outside the scope of CQL, the following model is assumed. There
46 are two processing elements interfaced to one another at each of the client and server. These are
47 referred to as (1) CQL and (2) the Protocol. At the client, CQL formulates a query and passes it to the
48 Protocol which formulates a search/retrieve protocol request to send to the server. At the server, CQL
49 processes the request and passes the results, including diagnostic information, to the Protocol which
50 formulates a search/retrieve protocol response to send to the client.

51 2.3 Processing Model

- 52 • A client sends a search/retrieve protocol request message to a server. The request includes a
53 CQL query and may include additional parameters to indicate how it wants the response to be
54 composed and formatted.
- 55 • The server identifies items in the datastore that match the CQL query.
- 56 • The server sends a search/retrieve protocol response message to the client. The response
57 includes information about the processing of the request, possibly including the query results.

58 2.4 Diagnostic Model

59 A server supplies diagnostics in the search/retrieve protocol response as appropriate. A diagnostic may
60 be a reason why the query could not be processed, or it might be just a warning.

61 Diagnostics are part of the protocol and their specification is outside the scope of this standard. CQL is
62 responsible for passing sufficient information to the Protocol so that it may generate appropriate
63 diagnostics.

64 2.5 Explain Model

65 For any CQL implementation the server supporting that implementation provides an associated Explain
66 record. The protocol by which the client and server communicate the CQL query and response (see
67 [Protocol Model](#)) determines how the client accesses the Explain record from the server. (For example,
68 for SRU, the Explain record is to be retrievable as the response of an HTTP GET at the base URL for
69 SRU server.) The client may use the information in the Explain record to self-configure and provide an
70 appropriate interface to the user. The Explain record provides such details as CQL context sets
71 supported, and for each context set, indexes supported, relations, boolean operators, specification of
72 defaults, and other detail. It also includes sample queries.

73 3 CQL Query Syntax: Structure and Rules

74 3.1 Basic Structure

75 A CQL query consists of either a single search clause [examples a, b], or multiple search clauses
76 connected by boolean operators [example c]. It may have a sort specification at the end, following the
77 'sortBy' keyword [example d]. *Examples:*

- 78 a. cat
- 79 b. title = cat
- 80 c. .title = raven and creator = poe
- 81 d. title = raven sortBy date/ascending

82 3.2 Search Clause

83 A search clause consists of an index, relation, and a search term [example a]; or a search term alone
84 [example b]. It must consist either of all three components (index, relation, search term) or just the search
85 term; no other combination is allowed. If the clause consists of just a term, then the index and relation
86 assume default values (see [Context Set](#)).

87 *Examples:*

- 88 a. title = dog
- 89 b. dog

90 3.3 Context Set

91 This section introduces context sets and describes their syntactic rules. Context sets are discussed in
92 greater detail [later](#).

93 An index is defined as part of a context set. In a CQL query the index name may be qualified by a prefix,
94 or “short name”, indicating the context set to which the index belongs. The base index name and the
95 prefix are separated by a dot character ('.'). (If multiple '.' characters are present, then the first should be
96 treated as the prefix/base name delimiter.) If the prefix is not supplied, it is determined by the server.

97 In example (a), the qualified index name 'dc.title' has prefix 'dc' and base index name 'title. The prefix “dc”
98 is commonly used as the short name for the [Dublin Core context set](#).

99 Context sets apply not only to indexes, but also to relations, relation modifiers and boolean modifiers (the
100 latter two are discussed below). Conversely any index, relation, relation modifier, or boolean modifier is
101 associated with a context set.

102 The prefix 'cql' is reserved for the [CQL context set](#), which defines a set of utility (i.e. non application-
103 specific) indexes, relations and relation modifiers. 'cql' is the default context set for relations, relation
104 modifiers, and boolean modifiers. (I.e. when the prefix is omitted, 'cql' is assumed.) For indexes, the
105 default context set is declared by the server in its Explain file.

106 As noted above, if a search clause consists of just a term [example b], then the index and relation
107 assume default values. The term is treated as 'cql.serverChoice', and the relation is treated as '='
108 [example d]. Therefore examples (b) and (c) are semantically equivalent.

109 Each context set has a unique identifier, a URI (see [Context Set URI](#)). A server typically declares the
110 assignment of a short name prefix to a context set in its Explain file. Alternatively, a query may include a
111 prefix assignment [example d].
112

- 113 *Examples:*
114 a. dc.title = cat
115 b. dog
116 c. cql.serverChoice = dog
117 d. > dc = "info:srw/context-sets/1/dc-v1.1" dc.title = cat

118 3.4 Search Term

119 A search term MAY be enclosed in double quotes [example a], though it need not be [example b]. It
120 MUST be enclosed in double quotes if it contains any of the following characters: left or right angle
121 bracket, left or right parenthesis, equal, backslash, quote, or whitespace [example c]. The search term
122 may be an empty string [example d].

123 Backslash (\) is used to escape quote (") and as well as itself.

124 **Examples:**

- 125 a. "cat"
126 b. cat
127 c. "cat dog"
128 d. ""

129 3.5 Relation

130 The relation in a search clause specifies the relationship between the index and search term. If no
131 relation is supplied in a search clause, then = is assumed, which means (see [CQL Context set](#)) that the
132 relation is determined by the server. (As is noted above, if the relation is omitted then the index MUST
133 also be omitted; the relation is assumed to be "=" and the index is assumed to be cql.serverChoice; that
134 is, the server chooses both the index and the relation.)

135 **Examples:**

- 136 a. dc.title any "fish frog"
137 *Find records where the title (as defined by the "dc" context set) contains one of the words "fish",*
138 *"frog"*
139 b. dc.title cql.any "fish frog"
140 *(The above two queries have the same meaning, since the default context set for relations is*
141 *"cql".)*
142 c. dc.title all "fish frog"
143 *Find records where the title contains all of the words: "fish", "frog"*
144

145 3.6 Relation Modifiers

146 Relations may be modified by one or more relation modifiers. Relation and modifier are separated by '/'
147 [example a]. Relation modifiers may also have a comparison symbol and a value [examples b, c]. The
148 comparison symbol is one of =, <, <=, >, >=, <>. The value must obey the same rules for quoting as
149 search terms.

150 A relation may have multiple modifiers, separated by '/' [example d]. Whitespace may be present on either
151 side of a '/' character, but the relation-plus-modifiers group may not end in a '/'.

152 **Examples:**

- 153 a. title =/relevant cat
154 *the relation modifier "relevant" means the server should use a relevancy algorithm for*
155 *determining matches (and/or the order of the result set). When the relevant modifier is used, the*
156 *actual relation ("=" in this example) is often not significant.*
157 b. title any/rel.algorithm=cori cat
158 *This example is distinguished from the previous example in which the modifier "relevant" is from*
159 *the CQL context set. In this case the modifier is "algorithm=cori", from the rel context set, in*
160 *essence meaning use the relevance algorithm "cori". A description of this context set is*
161 *available at <http://srw.cheshire3.org/contextSets/rel/>*

- 162 c. dc.title within/**locale=fr** "l m"
 163 *Find all titles between l and m, ensure that the locale is 'fr' for determining the order for what is*
 164 *between l and m.*
- 165 d. title =/**relevant /string** cat

166 3.7 Boolean Operators

167 Search clauses may be linked by a boolean operator **and**, **or**, **not** and **prox**.

168 ! **AND**

170 *The set of records representing two search clauses linked by AND is the intersection of the two*
 171 *sets of records representing the two search clauses. [Example a]*

172 ! **OR**

173 *The set of records representing two search clauses linked by OR is the union of the two sets of*
 174 *records representing the two search clauses. [Example c]*

175 ! **NOT**

176 *The set of records representing two search clauses linked by NOT is the set of records*
 177 *representing the left hand set which are not in the set of records representing the right hand set.*
 178 *NOT cannot be used as a unary operator. [Example b]*

179 ! **PROX**

180 *'prox' is short for "proximity". The prox boolean operator allows for the relative locations of the*
 181 *terms to be used in order to determine the resulting set of records. [Example d]*
 182 *The set of records representing two search clauses linked by PROX is the subset, of the*
 183 *intersection of the two sets of records representing the two search clauses, where the locations*
 184 *within the records of the instances specified by the search clause bear a particular relationship to*
 185 *one another, the relationship specified by the prox modifiers. For example, see [Boolean Modifiers](#)*
 186 *in the CQL Context Set.*
 187

188 Boolean operators all have the same precedence; they are evaluated left-to-right. Parentheses may be
 189 used to override left-to-right evaluation [example c].

190 *Examples:*

- 191 a. dc.title = raven **and** dc.creator = poe
- 192 b. dc.title = raven **not** dc.creator = poe
- 193 c. dc.title = raven **or** (dc.creator = poe and dc.identifier = "id:1234567")
- 194 d. dc.title = raven prox/unit=word/distance>3 dc.title = crow

195 3.8 Boolean Modifiers

196 Booleans may be modified by one or more boolean modifiers, separated as per relation modifiers with '/'
 197 characters. Boolean modifiers consist of a base name and may include a prefix indicating the modifier's
 198 context set [example a]. If not supplied, then the context set is 'cql'. As per relation modifiers, they may
 199 also have a comparison symbol and a value [example b] .

200 *Examples:*

- 201 a. dc.title = raven or/rel.combine=sum dc.creator = poe
- 202 b. dc.title = raven prox/unit=word/distance>3 dc.title = crow
- 203 *Find records where both "raven" and "crow" are in the title, separated by at least three*
 204 *intervening words.*

205 3.9 Proximity Modifiers

206 Basic proximity modifiers are defined in the [CQL context set](#). Proximity units 'word', 'sentence',
207 'paragraph', and 'element' are defined in the CQL context set, and may also be defined in other context
208 sets. The CQL set does not assign any meaning to these units. When defined in another context set they
209 may be assigned specific meaning. When used in the CQL context set they should take on the meaning
210 ascribed by some other context set, as indicated within the server's Explain file.

211 Thus compare "prox/unit=word" with "prox/xyz.unit=word". In the first, 'unit' is a prox modifier from the
212 CQL set, and as such its value is server-specific. In the second, 'unit' is a prox modifier defined by the
213 (hypothetical) xyz context set, which may assign the unit 'word' a specific meaning. The context set xyz
214 may define additional units, for example, 'street':

```
215 prox/xyz.unit="street"
```

216 3.10 Sorting

217 Queries may include explicit information on how to sort the result set generated by the search.

218 While sorting is a function of CQL, sorting may also be a function of a search/retrieve protocol employing
219 CQL as its query language. For example, SRU is a protocol that may employ CQL as its query language,
220 and sorting is a function of SRU. Sorting is included as a function of CQL because it might be used with a
221 protocol that does not support sorting. It also may be the case (as for SRU) that the protocol addresses
222 sort only for schema elements and not search indexes. CQL addresses sort only for search indexes.

223 When a sort specification is included in both the protocol (outside of the CQL query) and the CQL query,
224 there is potential for ambiguity. This (CQL) standard does not attempt to address or resolve that situation.
225 (The protocol might do so.)

226 The sort specification is included at the end, and is separated by a 'sortBy' keyword. The specification
227 consists of an ordered list of indexes, potentially with modifiers, to use as keys on which to sort the result
228 set. If multiple keys are given, then the second and subsequent keys should be used to determine the
229 order of items that would otherwise sort together. Each index used as a sort key has the same semantics
230 as when it is used to search.

231 Modifiers may be attached to the index in the same way as to booleans and relations in the main part of
232 the query. These modifiers may be part of any context set, but the [CQL context set](#) and the [Sort Context
233 Set](#) are particularly important.

234 Note that modifiers may be attached to indexes only in a sort clause. Modifiers may not be attached to
235 indexes in a search clause.

236 *Examples:*

237 a. cat sortBy dc.title

238 b. dinosaur sortBy dc.date/sort.descending dc.title/sort.ascending

239 3.11 Case Sensitivity

240 All parts of CQL are case insensitive apart from user supplied search terms, values for modifiers, and
241 prefix map identifiers, which may or may not be case sensitive.

242 4 CQL Query Syntax: ABNF

243 Following is the Augmented Backus-Naur Form (ABNF) definition for CQL. ABNF is specified in RFC
244 5234 (STD 68).

245 The equals sign ("=") separates the rule name from its definition elements, the forward slash ("/")
246 separates alternative elements, square brackets ("[" , "]") around an element list indicate an optional
247 occurrence, while variable repetition is indicated by an asterisk ("*") preceding an element list with
248 parentheses ("(", ")") used for grouping elements.

; A. Query

cql-query = query [sort-spec]

; B. Search Clauses

query = *prefix-assignment search-clause-group

search-clause-group = search-clause-group boolean-modified subquery |
subquery

subquery = "(" query ")" / search-clause

search-clause = [index relation-modified] search-term

search-term = simple-string / quoted-string / reserved-string

; C. Sort Spec

sort-spec = sort-by 1*index-modified

sort-by = "sortby"

; D. Prefix Assignment

prefix-assignment = ">" [prefix "="] uri

prefix = simple-name

uri = quoted-uri-string

; E. Indexes

index-modified = index [modifier-list]

index = simple-name / prefix-name

; F. Relations

relation-modified = relation [modifier-list]

relation = relation-name / relation-symbol

relation-name = simple-name / prefix-name

relation-symbol = "=" / ">" / "<" / ">=" / "<=" / "<>" / "=="

; G. Booleans

boolean-modified = boolean [modifier-list]

boolean = "and" / "or" / "not" / "prox"

; H. Modifiers

modifier-list = 1*modifier

modifier = "/" modifier-name [modifier-relation]

modifier-name = simple-name

modifier-relation = relation-symbol modifier-value

modifier-value = simple-string / quoted-string

; I. Terminal Aliases

prefix-name = prefix "." simple-name
; Prefix (simple-name) and name (simple-name)
separated
; by dot character (".").
;
; No whitespace allowed before or after the dot character
; (".")

quoted-uri-string = ; Double quotes enclosing a URI string.
;
; RFC 3986 (STD 66) specifies the allowed characters
; for a URI which all fall within the printable subset of
; US-ASCII.

reserved-string = boolean / sort-by

simple-name = simple-string

; J. Terminals

quoted-string = ; Double quotes enclosing a sequence of any characters
; except double quote unless preceded by a backslash
; character ("\").
;
; Backslash escapes the character following it. The
; surrounding double quotes are not included in the
value.

simple-string = ; Any sequence of non-whitespace characters that does
not
; include any of the following graphic characters:
:
:
; " () / < = >

249

5 Context Sets

250 CQL is so-named ("Contextual Query Language") because it is founded on the concept of searching by
251 semantics and context, rather than by syntax. CQL uses context sets to provide the means to define
252 community-specific semantics. Context sets allow CQL to be used by communities in ways that the
253 designers could not have foreseen, while still maintaining the same rules for parsing.

254 A context set defines one or more of the following constructs:

- 255 • Indexes
- 256 • Relations
- 257 • Relation modifiers
- 258 • Boolean modifiers
- 259 • Index modifiers (for use in a sortBy clause)

260 Each occurrence of one of these constructs in a CQL query belongs to a context set, implicitly or
261 explicitly. There are rules to determine the prevailing default set if it is not explicitly indicated.

262 For example:

- 263 • In the search clause:
264 **dc.title any/rel.algorithm=cori cat**
 - 265 ○ The **index**, 'title', belong to the context set 'dc'. More accurately, it belongs to the
266 context set whose short name is "dc"; in most cases this will be the Dublin Core context
267 set as 'dc' is its conventional short name. Every context set has a (permanent) URI and a
268 short name which may vary from query to query. The association of a short name to a
269 context set is discussed below.
 - 270 ○ The **relation**, 'any', belongs to the cql context set.
 - 271 ○ The **relation modifier**, rel.algorithm, belongs to the context set whose short name is
272 'rel'.
- 273 • In the boolean triple:
274 **dc.title = raven or/rel.combine=sum dc.creator = poe**
 - 275 ○ The **boolean modifier**, 'rel.combine=sum' (modifying the boolean operator 'or') belongs
276 to the context set whose short name is 'rel'.
- 277 • In the query
278 **dc.creator=plews sortBy dc.title/sort.respectCase**
 - 279 ○ The **index modifier**, 'sort.respectCase' (modifying the index dc.title in the sort clause)
280 belongs to the context set whose short name is 'sort' (presumably the [Sort Context Set](#).)

281 5.1 Context Set URI

282 As noted above Each context set has a unique identifier, a URI. It may, but need not, be an 'http:' URI. It
283 might be an 'info:' URI. For example, the [CQL Context Set](#) is identified by the URI

284 `info:srw/cql-context-set/1/cql-v1.2`

285 There is a list of several useful context sets at [http://www.loc.gov/standards/sru/resources/context-](http://www.loc.gov/standards/sru/resources/context-sets.html)
286 [sets.html](http://www.loc.gov/standards/sru/resources/context-sets.html).

287 Note that among the identifying URIs, some are 'http:' URIs and others are 'info:' URIs; any other
288 appropriate URI scheme may be used. However this standard provides a means for an implementor to

289 register an "info:srw" subspace, where context set (and other object) URIs may be registered. See
290 <http://www.loc.gov/standards/sru/resources/infoURI.html>.

291 **5.2 Context Set Short Name**

292 As noted above, within a CQL query, a context set is denoted by a prefix, which is a short name for the
293 context set. The association of the short name to the context set may be assigned in the server's Explain
294 file, or within the CQL query. For example, in the query:

295 **> dc = "info:srw/context-sets/1/dc-v1.1" dc.title = cat**

296 '> dc = "info:srw/context-sets/1/dc-v1.1"' associates the short name 'dc' to the URI info:srw/context-
297 sets/1/dc-v1.1 (which identifies the Dublin Core context set) so that 'dc' may be used subsequently within
298 the query as the prefix identifying that context set. Note that the assignment of a short name to a URI
299 does not persist across queries, regardless of what protocol is used.

300 **5.3 Defining a Context Set**

301 Anyone can define a context set, all that is required is a URI (as described above in [Context Set URI](#)) to
302 identify it. The definition should list the URI, the preferred short name, and all indexes, relations, relation
303 modifiers, boolean modifiers, and index modifiers (used in sort clauses) defined by the context set.

304 A context set may define any or all of these constructs. If one wants to define a single relation (no
305 indexes, modifiers, etc.) a new context set may be defined for just that single relation. Many context sets
306 likely will define indexes only.

307 **5.4 Standardization and Registration of Context Sets**

308 Some context sets will be standardized, some will be registered (whether standardized or not) and some
309 will be neither standardized nor registered.

310 **5.4.1 Standard Context Sets**

311 **5.4.2 Core Context Sets**

312 The CQL standard includes as normative (and therefore standardizes) definitions for three context sets
313 considered essential to the use of CQL. These are the [CQL Context Set](#), the [Sort Context Set](#), and the
314 [Dublin Core Context Set](#). They are defined in the first three annexes.

315 **5.4.2.1 Standard Application Context Sets**

316 Any individual or community that defines a context set may choose to standardize it within an appropriate
317 standard body. The decision whether or not to standardize it, and in what standards body, is outside the
318 scope of this standard.

319 An example of an application context set is the [Bibliographic Context Set](#), which is included as a non-
320 normative annex. (It is included as an example.) It is not currently a formal standard but may be
321 standardized (by some standards body) in the future.

322 **5.4.3 Registered Context Sets**

323 The CQL Maintenance Agency provides a register of context sets. Any individual or community that
324 defines a context set may request that it be registered. The current registry is at
325 <http://www.loc.gov/standards/sru/resources/context-sets.html>. Registration is a service provided to
326 facilitate discovery of context sets by developers and users.

327 Registration and standardization are independent. A context set may be standardized and registered,
328 standardized and not registered, registered and not standardized, or neither standardized nor registered.

329

330 6 Conformance

331 6.1 Client Conformance

332 Three levels of support are defined for a CQL client. In order for a client to claim conformance to CQL it
333 must support at least level 0:

334 6.1.1 Level 0

335 The client must be able to form a term-only query.

336 *Note: The term is either a single word, or, if multiple words separated by spaces then the entire*
337 *search term is quoted. If the term includes quote marks, they must be escaped by preceding them*
338 *with a backslash, e.g. "raising the \"titanic\".")*

339 6.1.2 Level 1

- 340 1. Support Level 0.
341 2. Be able to form at least one of :
342 (a) a search clause consisting of 'index relation searchTerm';
343 (b) queries where search terms are combined with booleans, e.g. "term 1 AND term2"

344 *Note: (b) does not require support for queries of the form:*
345 *index relation term1 AND index relation term2*
346 *It requires support for queries where the search clauses are term-only (do not include*
347 *index or relation).*

348 6.1.3 Level 2

349 The client must:

- 350 1. Support Level 1.
351 2. Be able to formulate all queries described in this standard, including those described by the CQL
352 context set.

353 6.2 Server Conformance

354 Three levels of support are defined for a CQL server. In order for a server to claim conformance to CQL it
355 must support at least level 0:

356 6.2.1 Level 0

357 The server must:

- 358 1. Be able to process a term-only query. (See [Client Conformance, Level 0.](#))
359 2. Be able to inform the Protocol that the query is not supported, in the event of any unsupported
360 query.
361 *Note: The intent is that the protocol will issue a diagnostic from server to client. However*
362 *this is beyond the scope of the CQL standard.*

363 6.2.2 Level 1

364 The server must:

365
366

- 367 1. Support Level 0.
- 368 2. Be able to *parse* both:
 - 369 (a) search clauses consisting of 'index relation searchTerm'; and
 - 370 (b) queries where search terms are combined with booleans, e.g. "term 1 AND term2"
- 371 3. *Support* at least one of (a) and (b).

372 *Notes*

- 373 1. *In 2 and 3:*
- 374 i. "parse both" mean that the server must at minimum be able to recognize
- 375 (a) search clauses consisting of 'index relation searchTerm' or (b)
- 376 queries where search terms are combined with booleans, even if it does
- 377 not support it, and be able to inform the Protocol so that it may convey
- 378 an appropriate diagnostic.
- 379 ii. "Support" means that it must be able to process - not just be able to
- 380 parse - at least one.
- 381 2. (b) does not require ability to parse or support queries such as: index relation
- 382 term1 AND index relation term2 but rather queries where the search clauses are
- 383 terms-only (do not include index or relation).

384 **6.2.3 Level 2**

385 The server must:

- 386 1. Support Level 1.
- 387 2. Be able to *parse* all of CQL and respond with appropriate error messages to the search/retrieve
- 388 protocol interface.

389 *Note: (2) does not require support for all of CQL, but rather that the server be able to*

390 *parse all of CQL.*

391

392 **Appendix A. Acknowledgments**

393 Acknowledgements are supplied in the Overview document:

394 *searchRetrieve: Part 0. Overview Version 1.0*

395 [http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-](http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-csd01-part0-overview.doc)
396 [csd01-part0-overview.doc](http://docs.oasis-open.org/search-ws/searchRetrieve/v1.0/csd01/part0-overview/searchRetrieve-v1.0-csd01-part0-overview.doc)

397 Appendix B. The CQL Context Set

398 Normative Annex

399 The CQL context set defines a set of indexes, relations and relation modifiers. The indexes defined are
400 utility indexes, generally useful across applications. These utility indexes are for instances when CQL is
401 required to express a concept not directly related to the data, or for indexes applicable in most contexts.

402 The reserved name for this context set is: **cql**

403 The identifier for this context set is: info:srw/cql-context-set/1/cql-v2.0

404 B.1 Indexes

405 • **serverChoice**

406 This is the default when the index and relation is omitted from a search clause. 'cql.serverChoice'
407 means that the server will choose one or more indexes in which to search for the given term. The
408 relation used is '=', hence 'cql.serverChoice="term"' is an equivalent search clause to '"term"'.
409

410 ! **resultSetId**

411 *Note: Discussion of the resultSetId index assumes that CQL is being used with a protocol that*
412 *declares a result set model for example, the SRU protocol.*

413
414 A result set id may be used as the index in a search clause [example a]. This is a special case,
415 where the index and relation are expressed as "cql.resultSetId =" and the term is a result set id
416 that has been previously returned by the server, for example in the 'resultSetId' element of an
417 SRU response. It may be used by itself in a query to refer to an existing result set from which
418 records are desired. It may be used to create a new result set via manipulation of existing result
419 sets [example b]. It may also be used to restrict a query to a given result set. in conjunction with
420 other resultSetId clauses or other indexes, combined by boolean operators. The semantics when
421 resultSetId is used with relations other than "=" is undefined.

422 Examples:

423 a. cql.resultSetId = "5940824f-a2ae-41d0-99af-9a20bc4047b1"
424 *Match all records in the result set with the given identifier.*

425 b. cql.resultSetId = "a" AND cql.resultSetId = "b"
426 *Create a new result set which is the intersection of these two result sets.*

427 c. cql.resultSetId = "a" AND dc.title=cat
428 *Apply the query 'dc.title=cat' to result set "a".*

429 ! **allRecords**

430 A special index which matches every record available. Every record is matched no matter what
431 values are provided for the relation and term, but the recommended syntax is: cql.allRecords = 1

432 Example:

433 " cql.allRecords = 1 NOT dc.title = dog
434 *Search for all records that do not match 'dog' as a word in title.*

435 ! **allIndexes**
436 The 'allIndexes' index will result in a search equivalent to searching all of the indexes (in all of the
437 context sets) that the server has access to. AllIndexes is not equivalent to a full-text search: not
438 all content is necessarily indexed, and content not indexed would not be searchable with the
439 allIndexes index.

440 Examples:

441 " cql.allIndexes = dog
442 If the server had three indexes title, creator, and date, then this would be the same as
443 title = dog or creator = dog or date = dog

444 B.2 Relations

445 B.2.1 Implicit Relations

446 These relations are defined as such in the grammar of CQL. The cql context set only defines their
447 meaning, rather than their existence.

448 ! =
449 This is the default relation, and the server can choose any appropriate relation or means of
450 comparing the query term with the terms from the data being searched. If the term is numeric, the
451 most commonly chosen relation is '=='. For a string term, either 'adj' or '==' as appropriate for the
452 index and term. The Explain file lists for every combination of index and term what relation is
453 used when '=' is supplied.

454 *Examples:*

455 " animal.numberOfLegs = 4
456 *Recommended to use '=='*

457 " dc.identifier = "gb 141 staff a-m"
458 *Recommended to use '=='*

459 " dc.title = "lord of the flies"
460 *Recommended to use 'adj'*

461 " dc.date = "2004 2006"
462 *Recommended to use 'within'*

463 ! ==
464 This relation is used for exact equality matching. The term in the data is exactly equal to the term
465 in the search. A relation modifier may be included to specify how whitespace (trailing, preceding,
466 or embedded) is to be treated (for example, the CQL relation modifier 'honorWhitespace').

467 Examples:

468 " dc.identifier == "gb 141 staff a-m"
469 *Search for the string 'gb 141 staff a-m' in the identifier index.*

470 " dc.date == "2006-09-01 12:00:00"
471 *Search for the given datestamp.*

472 " animal.numberOfLegs == 4
473 *Search for animals with exactly 4 legs.*

474 ! <>
475 This relation means 'not equal to' and matches anything which is not exactly equal to the search
476 term.

477 Examples:

478 " dc.date <> 2004-01-01
479 Search for any date except the first of January, 2004

480 " dc.identifier <> ""
481 Search for any identifier which is not the empty string.

482 ! <, >, <=, >=
483 These relations retain their regular meanings as pertaining to ordered terms (less than, greater
484 than, less than or equal to, greater than or equal to).

485 Examples:

486 " dc.date > 2006-09-01
487 Search for dates after the 1st of September, 2006

488 " animal.numberOfLegs < 4
489 Search for animals with less than 4 legs.

490 B.2.2 Defined Relations

491 These relations are defined as being widely useful as part of a default context set.

492 ! adj
493 Adjacency. Used for phrase searches. All of the words in the search term must appear, and must
494 be adjacent to each other in the record in the order of the search term. The adj relationship has
495 an implicit relation modifier of 'cql.word', which may be changed by use of alternative relation
496 modifiers.
497 An adjacency query could also be expressed using the PROX boolean operator, for example,
498 title adj "a b c"
499 would be equivalent to
500 (title=a prox/distance=1/ordered title=b) prox/distance=1/ordered title=c
501 The space character is the default delimiter to be used to separate words in the search term for
502 the 'adj' relation. A different delimiter may be specified in the server's Explain file.

503 Examples:

504 " dc.title adj "lord of the flies"
505 Search for the phrase 'lord of the flies' somewhere in the title.

506 " dc.description adj "blue shirt"
507 Search for 'blue' immediately followed by 'shirt' in the description.

508 ! all, any
509 These relations may be used when the term contains multiple items to indicate "all of these
510 items" or "any of these items". These queries could be expressed using boolean AND and OR
511 respectively. These relations have an implicit relation modifier of 'cql.word', which may be
512 changed by use of alternative relation modifiers. Relation 'all' may be used with relation modifier
513 'windowSize' to further require that the words all occur within a window of specified size.

514 Examples:

515 " dc.title all "lord flies"
516 Search for both lord and flies in the title.

517 " dc.title all/windowSize=6 "cat hat rat"
518 Find "cat", "hat", and "rat" within a 6-word window.

519 " dc.description any "computer calculator"
520 Search for either computer or calculator in the description.

521 ! within
522 Within may be used with a search term that has multiple dimensions. (Dimension values are
523 delimited by space.) It matches if the database's term falls completely within the range, area or
524 volume described by the search term, inclusive of the extents given.

525 Examples:

526 " dc.date within "2002 2003"
527 Search for dates between 2002 and 2003 inclusive.

528 " animal.numberOfLegs within "2 5"
529 Search for animals that have 2,3,4 or 5 legs.

530 ! encloses
531 Roughly the opposite of within and similarly is used when the index's data has multiple
532 dimensions. It matches if the database's term fully encloses the search term.

533 Examples:

534 " "geo.dateRange encloses 2002
535 Search for ranges of dates that include the year 2002.

536 " geo.area encloses "45.3 19.0"
537 Search for any area that encloses the point 45.3, 19.0
538

539 B.3 Relation Modifiers

540 B.3.1 Functional Modifiers

541 ! **relevant**
542 The server should use a relevancy algorithm for determining matches and the order of the result
543 set.

544 ! **fuzzy**
545 The server should be liberal in what it counts as a match. The exact details of this are left up to
546 the server, but might include permutations of character order, off-by-one for numerical terms and
547 so forth.

548 ! **partial**
549 When used with within or encloses, there may be some section which extends outside of the
550 term. This permits for the database term to be partially enclosed, or fall partially within the search
551 term.

552 ! **ignoreCase, respectCase**
553 The server is instructed to either ignore or respect the case of the search term, rather than its
554 default behavior (which is unspecified). This modifier may be used in sort keys to ensure that

555 terms with the same letters in different cases are sorted together or separately, respectively.
556 These modifiers may be used in sort keys.

557 ! **ignoreAccents, respectAccents**

558 The server is instructed to either ignore or respect diacritics in terms, rather than its default
559 behavior (which is unspecified, but respectAccents is recommended). This modifier may be used
560 in sort keys, to ensure that characters with diacritics are sorted together or separately from those
561 without them. These modifiers may be used in sort keys.

562 ! **locale=value**

563 The term should be treated as being from the specified locale. Locales are identifiers for a
564 grouped specification of options in relation to sort order (collation), names for time zones,
565 languages, countries, scripts, measurement units, numbers and other elements. Values for
566 locales can be found in the Unicode Common Locale Data Repository (CLDR)
567 <http://unicode.org/cldr/> which points to <http://www.iana.org/assignments/language-subtag-registry>
568 . 2 character language codes are specified, e.g. "es" is Spanish, "en" is English. Specifically in
569 relation to sort order, locales indicate how data is normalized, e.g. whether sort order is case-
570 sensitive or insensitive and how characters with diacritics are normalized. The language code
571 may be modified by a 2 character country code as per ISO 3166, e.g. "en-UK" and "en-US" The
572 default locale is determined by the server. As well as being used in a query, locales may be
573 specified in sort keys.

574 ! **windowSize=value**

575 Used with relation 'all', to specify that a set of words (two or more) are contained within a span of
576 a specified number of words.

577 ! **Weight=value**

578 Specifies a weight to be assigned to this search clause, relative to other search clauses. A
579 positive integer, default value is 1.

580 **Examples:**

581 ! person.phoneNumber =/fuzzy "0151 795-4252"

582 Search for a phone number which is something similar to '0151 795-4252' but not necessarily
583 exactly that.

584 ! "fish" sortBy dc.title/ignoreCase

585 Search for 'fish', and then sort the results by title, case insensitively.

586 ! dc.title within/locale=fr "l m"

587 Find all titles between l and m, ensure that the locale is 'fr' for determining the order for what is
588 between l and m.

589 ! dc.title all/windowSize=6 "cat hat rat"

590 Find "cat", "hat", and "rat" within a 6-word window.

591 **B.3.2 Term-format Modifiers**

592 These modifiers specify the format of the search term to ensure that the correct comparison is performed
593 by the server. These modifiers may all be used in sort keys.

594 ! **word**

595 The term should be broken into words, according to the server's definition of a 'word'.

596 ! **string**

597 The term is a single item, and should not be broken up.

598 ! **isoDate**
599 *Each item within the term conforms to the ISO 8601 specification for expressing dates.*

600 ! **number**
601 *Each item within the term is a number.*

602 ! **uri**
603 *Each item within the term is a URI.*

604 ! **oid**
605 *Each item within the term is an ISO object identifier, dot-separated format.*

606 *Examples:*

607 ! dc.title =/string "today's winners and today's losers "
608 *Search in title for the term as a string', rather than as a sequence of words. (Equivalent to the*
609 *use of == as the relation)*

610 ! zeerex.set ==/oid "1.2.840.10003.3.1"
611 *Search for the given OID as an attribute set.*

612 ! squirrel sortby numberOfLegs/number
613 *Search for squirrel, and sort by the numberOfLegs index ensuring that it is treated as a number,*
614 *not a string. (eg '2' would sort after '10' as a string, but before it as a number.)*

615 **B.3.3 Matching**

616 ! **masked** (default modifier)
617 The following masking rules and special characters apply for search terms, unless overridden in
618 a profile via a relation modifier. To explicitly request this functionality, add 'cql.masked' as a
619 relation modifier.

620 " A single asterisk (*) is used to mask zero or more characters.

621 " A single question mark (?) is used to mask a single character, thus N consecutive
622 question-marks means mask N characters.

623 " Carat/hat (^) is used as an anchor character for terms that are word lists, that is, where
624 the relation is 'all' or 'any', or 'adj'. It may not be used to anchor a string, that is, when the
625 relation is '==' (string matches are, by default, anchored). It may occur at the beginning or
626 end of a word (with no intervening space) to mean right or left anchored."^" has no
627 special meaning when it occurs within a word (not at the beginning or end) or string but
628 must be escaped nevertheless.

629 " Backslash (\) is used to escape '*', '?', quote (") and '^', as well as itself. Backslash not
630 followed immediately by one of these characters is an error.

631 *Examples:*

632 " dc.title = c*t
633 *Matches words that start with c and end in t*

634 " dc.title adj "**fish food*"
635 *Matches a word that ends in fish, followed by a word that starts with food.*

636 " dc.title = c?t

637 *Matches a three letter word that starts with c and ends in t.*

638 " dc.title adj "^cat in the hat"
639 *Matches 'cat in the hat' where it is at the beginning of the field*

640 " dc.title any "^cat ^dog rat^"
641 *Matches a string with 'cat' or 'dog' at the beginning or 'rat' at then end: 'cat eats rat', 'dog*
642 *eats rat', but not 'rat eats cat'.*

643 " dc.title == "\"Of Couse\", she said"
644 *Escape internal double quotes within the term.*

645 ! **unmasked**
646 *Do not apply masking rules, all characters are literal.*

647 ! **honorWhitespace**
648 *Used with '==' for exact matching to indicate that matching should even include extraneous*
649 *whitespace (preceding, embedded, or following). In the absence of this modifier it is left to the*
650 *server to decide whether ir not to honor extraneous whitespace.*

651 ! **Substring**
652 *The 'substring' modifier may be used to specify a range of characters (first and last character)*
653 *indicating the desired substring within the field to be searched. The modifier takes a value, of the*
654 *form "start:end" where start and end obey the following rules:*

655 " *Positive integers count forwards through the string, starting at 1. The first character is 1,*
656 *the tenth character is 10.*

657 " *Negative integers count backwards through the string, with -1 being the last character.*

658 " *Both start and end are inclusive of that character.*

659 " *If omitted, start defaults to 1 and end defaults to -1.*

660 **Examples:**

661 " marc.008 =/substring="1:6" 920102

662 " dc.title =/substring=":" "The entire title"

663 " dc.title =/substring="2:2" h

664 " dc.title =/substring="-5:" title

665 ! **regexp**
666 *The term should be treated as a regular expression. Any features beyond those found in modern*
667 *POSIX regular expressions are considered to be server dependent. This modifier overrides the*
668 *default 'masked' modifier, above. It may be used in either a string or word context.*

669 **Examples:**

670 " dc.title adj/regexp "(lord|king|ruler) of th[ea] r.*s"
671 *Match lord or king or ruler, followed by of, followed by the or tha, followed by r plus zero*
672 *or more characters plus s.*

673 B.4 Boolean Modifiers

674 The CQL context set defines the following boolean modifiers, which are only used with the prox boolean
675 operator.

676 ! distance symbol value
677 *The distance that the two terms should be separated by.*

678 " Symbol is one of: < > <= >= = <>
679 *If the modifier is not supplied, it defaults to <=.*

680 " Value is a non-negative integer.
681 *If the modifier is not supplied, it defaults to 1 when unit=word, or 0 for all other units.*

682 ! container=containerName
683 A container is a structure containing one or more indexes. For example the server may support a
684 container whose name is 'author' that contains indexes 'name' and 'date'. In that case the server
685 would support a query (see [example](#)) to find an author with a specific name and date. (This is
686 contrasted with a boolean query which may return undesired results because they have multiple
687 authors, some of which have the desired name but the wrong date and others the specified date
688 but the wrong name.) The server should list supported containers in its Explain file, and for each
689 container, the indexes that it contains.

690 ! unit=value
691 *The type of unit for the distance.*
692 *Value is one of: 'paragraph', 'sentence', 'word' and 'element', and defaults to 'word'. These values*
693 *are explicitly undefined. They are subject to interpretation by the server. See Proximity Units .*

694 ! unordered
695 *The order of the two terms is unimportant. This is the default.*

696 ! ordered
697 *The order of the two terms must be as per the query.*

698 Examples:

699 ! cat prox/unit=word/distance>2/ordered hat
700 *Find 'cat' where it appears more than two words before 'hat'*

701 ! cat prox/unit=paragraph hat
702 *Find cat and hat appearing in the same paragraph (distance defaulting to 0) in either*
703 *order (unordered default)*

704 ! name=jones prox/container=author date=1950
705 *Find the name 'jones' and date '1950' in the same author field.*

706 ! jack PROX/container=author jones
707 *Find 'jack' and 'jones' within the same author field. (In this example, both 'jack' and*
708 *'jones' assume the default relation and index for the server, and that index is assumed to*
709 *be supported for the container 'author'.)*

710 ! jack PROX/container=author/distance<=2/ordered jones
711 *Find 'jack' followed by 'jones' within the same author field, separated by two words or less*

712 **B.4.1 Proximity Units**

713 As noted above, proximity units 'paragraph', 'sentence', 'word' and 'element' are explicitly undefined when
714 used by the CQL context set. Other context sets may assign them specific values.

715
716 Thus compare "prox/unit=word" with "prox/xyz.unit=word". In the first, 'unit' is a prox modifier from the
717 CQL set, and as such its values are undefined, so 'word' is subject to interpretation by the server. In the
718 second, 'unit' is a prox modifier defined by the xyz context set, which may assign the unit 'word' a specific
719 meaning.

720 Other context sets may define additional units, for example, 'street': 'prox/xyz.unit="street"

721 ‘

722 Appendix C. The Sort Context Set

723 Normative Annex

724 The *sort context set* defines a set of index modifiers to be used within a sortby clause.

725 The URI for this context set is: **info:srw/cql-context-set/1/sort-v1.0**

726 The recommended short name is: **sort**

727 CQL does not permit index modifiers, except within a sort clause. For example in the CQL query:
728 "*author=wolfe sortby title*" 'sortby title' is a sort clause; 'title' is an index. 'author', which is the primary
729 index of query, may not have a modifier, but 'title', which is the index of the sort clause, may.

730 Thus for example, in the CQL query: "*author=wolfe sortby title/ascending*" 'ascending' is an index
731 modifier.

732 The sort context set defines index modifiers only. It does not define any of the other constructs of context
733 sets (indexes, relations, relation modifiers, relation qualifiers, or boolean modifiers). The index modifiers
734 defined by the sort context set are as shown in the following table.
735

Modifier	Description
ignoreCase	Case-insensitive sorting: for example, unit and UNIT sort together.
respectCase	Case-sensitive sorting: for example, unit and UNIT sort separately.
ignoreAccents	Accent-insensitive sorting: for example sorensen and sørensen sort together.
respectAccents	Accent-sensitive sorting: for example sorensen and sørensen sort separately.
ascending	Sort in ascending order.
descending	Sort in descending order.
missingOmit	Records that have no value for the specified index are omitted from the sorted result set.
missingFail	Records that have no value for the specified index cause the search/sort operation to fail.
missingLow	Records that have no value for the specified index are treated as if they had the lowest possible value (they sort first in ascending order and last in descending order).
missingHigh	Records that have no value for the specified index are treated as if they had the highest possible value.
missingValue = <i>value</i>	Records that have no value for the specified index are treated as if they had the specified <i>value</i> .
Locale = <i>value</i>	Sort according to the specified locale, which will in general include specifications for whether sorting is case-sensitive or insensitive, how it treats accents, etc. The <i>value</i> is usually of the form C, french, fr_CH, fr_CH.iso88591 or similar.
unicodeCollate = <i>value</i>	Specifies the Unicode collation level. The <i>value</i> should be a small integer as described in the <i>Unicode Collation Algorithm</i> report at www.unicode.org/reports/tr10

736 **C.1 Examples**

- 737 • dc.creator=plews sortby dc.title/sort.respectCase
738 *Sort by title, case sensitive*
- 739 • dc.creator=plews sortby dc.title/sort.respectCase/sort.descending
740 *Sort case sensitive and in descending order*
- 741 • dc.creator=plews sortby dc.date/sort.missingOmit
742 *Sort by date: records that have no date field are omitted from the result set.*
- 743 • dc.creator=plews sortby dc.date/sort.missingValue=1970
744 *Sort by date: records that have no date field are sorted as though they had a date of 1970*
- 745

746 Appendix D. The Dublin Core Context Set

747 Normative Annex

748 The *Dublin Core context set* defines 15 indexes, corresponding to the [15 Dublin Core \(simple\)](#)
749 [elements](#).

750 The URI for this context set is: **info:srw/cql-context-set/1/dc-v1.1**

751 The recommended short name is: **dc**

752 D.1 Indexes

- 753 1. title
- 754 2. creator
- 755 3. subject
- 756 4. description
- 757 5. publisher
- 758 6. contributor
- 759 7. date
- 760 8. type
- 761 9. format
- 762 10. identifier
- 763 11. source
- 764 12. language
- 765 13. relation
- 766 14. coverage
- 767 15. rights

768 The semantics of these indexes are the same as those of the corresponding Dublin Core elements. See
769 sections 4.1-4.15 of <http://dublincore.org/documents/usageguide/elements.shtml>.

770 D.2 Relations

771 No relations are defined for this context set.

772 D.3 Relation Modifiers

773 No relation modifiers are defined for this context set.

774 D.4 Boolean Modifiers

775 No boolean modifiers are defined for this context set.

776

777 Appendix E. Bib Context Set

778 Non-normative Annex

779 The *bib context set* defines bibliographic indexes and modifiers.

780 The indexes and modifiers are based on [MODS](#), i.e. MODS is used for reference semantics; this does not
781 presume that the data being searched is MODS.

- 782 • **URI for this context set:** info:srw/cql-context-set/1/bib-v1
- 783 • **Recommended short name:** bib

784 Examples of the use of this context set are supplied in the non-normative Annex [Bibliographic Searching](#)
785 [Examples](#).

786 E.1 Indexes

787 E.1.1 Title Indexes

788 *Note that this context set does not define an index for “title proper”; dc.title may be used.*

- 789 • bib.titleAbbreviated
- 790 • bib.titleUniform
- 791 • bib.titleTranslated
- 792 • bib.titleAlternative
- 793 • bib.titleSeries

794 E.1.2 Name Indexes

- 795 • bib.name
- 796 • bib.namePersonal
- 797 • bib.namePersonalFamily
- 798 • bib.namePersonalGiven
- 799 • bib.nameCorporate
- 800 • bib.nameConference

801 E.1.3 Subject Indexes

- 802 • bib.subjectPlace
- 803 • bib.subjectTitle
- 804 • bib.subjectName
- 805 • bib.subjectOccupation

806 E.1.4 Date Indexes

- 807 • bib.dateIssued
- 808 • bib.dateCreated
- 809 • bib.dateValid
- 810 • bib.dateModified

- 811
- bib.dateCopyright

812 E.1.5 Part Indexes

- 813
- bib.volume
- 814
- bib.issue
- 815
- bib.startPage
- 816
- bib.endPage

817 E.1.6 Additional Indexes

- 818
- *genre*: bib.genre
- 819
- *Audience*: bib.audience
- 820
- *Classification*: bib.classification
- 821
- *Place of Origin*: bib.originPlace
- 822
- *Edition*: bib.edition
- 823
- *Issuance*: bib.issuance
- 824
- Values:**
- 825
- continuing
- 826
- monograph

827 E.2 Relations

828 No relations are defined for this context set.

829 E.3 Relation Modifiers

830 E.3.1 Relation Modifiers for title indexes

- 831
- bib.portion
- 832
- Values:**
- 833
- main
- 834
- sub
- 835
- partNum
- 836
- partName
- 837
- bib.titleAuthority (for titleUniform only)
- 838
- Values:**
- 839
- lcnaf

840 E.3.2 Relation Modifiers for title indexes

- 841
- bib.date
- 842
- bib.nameAuthority
- 843
- bib.role
- 844
- bib.roleAuthority (**default** marcrelator)

845 E.3.3 Relation Modifiers for subject indexes

- 846
- bib.subjectAuthority (e.g. 'marcgac', 'marccountry', 'iso3166', 'lcsch', 'lcnaf')

847 E.3.4 Relation Modifiers for identifier indexes

848 *Note that this context set does not define indexes for identifiers. These modifiers may be used for*
849 *example with dc.identifier.*

- 850 • bib.identifierAuthority
- 851 **Values:**

852 Among the values for this modifier are the following initial set.

- 853 ○ hdl
- 854 ○ doi
- 855 ○ isbn
- 856 ○ isrc
- 857 ○ ismn
- 858 ○ issn
- 859 ○ local
- 860 ○ lccn
- 861 ○ stock-number
- 862 ○ uri

863 These are represented, respectively by the following URIs:

- 864 ○ info:/srw/1/vocabulary/identifierType/hdl
- 865 ○ info:/srw/1/vocabulary/identifierType/doi
- 866 ○ info:/srw/1/vocabulary/identifierType/isbn
- 867 ○ info:/srw/1/vocabulary/identifierType/isrc
- 868 ○ info:/srw/1/vocabulary/identifierType/ismn
- 869 ○ info:/srw/1/vocabulary/identifierType/issn
- 870 ○ info:/srw/1/vocabulary/identifierType/local
- 871 ○ info:/srw/1/vocabulary/identifierType/lccn
- 872 ○ info:/srw/1/vocabulary/identifierType/stock-number
- 873 ○ info:/srw/1/vocabulary/identifierType/uri

874 For these values, the actual parameter value used may be the URI or it may be the term itself. The rule is
875 that whenever the parameter value does not take the form of a URI, then it is assumed to be prefixed by
876 the string 'info:srw/resultCountPrecision/1'.

877 In these URIs, the path component '1' is the authority component; '1' refers to the SRU Maintenance
878 Agency. Other authorities will be registered upon request. See
879 <http://www.loc.gov/standards/sru/resources/infoURI.html> for details. In this manner additional values may
880 be defined. The 'info' URI mechanism is not intended to preclude use of other types of URIs to represent
881 values of this parameter.

882 E.3.5 Relation Modifiers for date indexes

- 883 • bib.dateAuthority
- 884 **Values:**
- 885 ○ w3cdtf (see <http://www.w3.org/TR/NOTE-datetime>).
 - 886 ○ edtf (see <http://www.loc.gov/standards/datetime/>). This is the default value.

887 E.3.6 Relation Modifiers for format index

- 888 • bib.formatAuthority

889 E.3.7 Relation Modifiers for genre index

- 890 • bib.genreAuthority
- 891 **Values:**
- 892 ○ modsGenre (default)

893 E.3.8 Relation Modifiers for type indexes

894 *Note that this context set does not define indexes for type. These modifiers may be used for example with*
895 *dc.type.*

- 896 • bib.typeAuthority
- 897 **Values:**
- 898 ○ modsResource

899 E.3.9 Relation Modifiers for target audience index

- 900 • bib.audienceAuthority
- 901 **Values:**
- 902 ○ modsAudience (See <http://www.loc.gov/marc/sourcecode/target/targetlist.html>). This is
- 903 the default value.

904 E.3.10 Relation Modifiers for classification index

- 905 • bib.classAuthority
- 906 **Values:**
- 907 ○ lcc (This is the default value.)

908 E.3.11 Relation Modifiers for Place of Origin index

- 909 • bib.geoUnit
- 910 **Values:**
- 911 ○ country
- 912 ○ city
- 913 • bib.placeAuthority
- 914 **Values:**
- 915 • marcCC (country code)
- 916 • marcCN (country name)

917 See <http://www.loc.gov/marc/countries/>

918 E.3.12 Relation Modifiers for language indexes

919 *Note that this context set does not define indexes for language. These modifiers may be used for*
920 *example with dc.language.*

- 921 • bib.languageAuthority
- 922 **Values:**
- 923 ○ rfc3066
- 924 ○ iso639-2b
- 925 Default is server defined

926 **E.4 Relation Qualifiers**

927 No relation qualifiers are defined for this context set.

928 **E.5 Boolean Modifiers**

929 No boolean modifiers are defined for this context set.

930 **E.6 Summary Table**

Category	Indexes	Modifiers
Title	<ul style="list-style-type: none">• bib.titleAbbreviated• bib.titleUniform• bib.titleTranslated• bib.titleAlternative• bib.titleSeries	<ul style="list-style-type: none">• bib.portion (main, sub, partNum, partName)• bib.titleAuthority (for titleUniform only)
Name	<ul style="list-style-type: none">• bib.name• bib.namePersonal• bib.namePersonalFamily• bib.namePersonalGiven• bib.nameCorporate• bib.nameConference	<ul style="list-style-type: none">• bib.date• bib.nameAuthority• bib.role• bib.roleAuthority default marcrelator
Subject	<ul style="list-style-type: none">• bib.subjectPlace• bib.subjectTitle• bib.subjectName• bib.subjectOccupation	<ul style="list-style-type: none">• bib.subjectAuthority
Identifier		<ul style="list-style-type: none">• bib.identifierAuthority
Date	<ul style="list-style-type: none">• bib.dateIssued• bib.dateCreated• bib.dateValid• bib.dateModified• bib.dateCopyright	<ul style="list-style-type: none">• bib.dateAuthority<ul style="list-style-type: none">○ edtf○ w3cdtf
Resource Type		<ul style="list-style-type: none">• bib.typeAuthority
Format		<ul style="list-style-type: none">• bib.formatAuthority
Genre	<ul style="list-style-type: none">• bib.genre	<ul style="list-style-type: none">• bib.genreAuthority
Target Audience	<ul style="list-style-type: none">• bib.audience	<ul style="list-style-type: none">• bib.audienceAuthority
Classification	<ul style="list-style-type: none">• bib.classification	<ul style="list-style-type: none">• bib.classAuthority

Place of Origin	<ul style="list-style-type: none"> • bib.originPlace 	<ul style="list-style-type: none"> • bib.geoUnit • bib.placeAuthority
Language		<ul style="list-style-type: none"> • bib.languageAuthority Default: server defined
Edition	<ul style="list-style-type: none"> • bib.edition 	
Part	<ul style="list-style-type: none"> • bib.volume • bib.issue • bib.startPage • bib.endPage 	
Issuance	<ul style="list-style-type: none"> • bib.issuance 	

931 E.7 Bibliographic Searching Examples

932 E.7.1 Examples of Searching by Title

- 933 1. bib.titleUniform=/bib.portion=main/bib.titleAuthority=lcnaf "Symphonies, no. 5, op. 67, C minor"
- 934 2. bib.titleTranslated=/bib.portion=main/lang=fr "homme qui voulut être roi"
- 935 3. dc.title="Annual report of notifiable diseases"
- 936 4. dc.title="Annual report of notifiable diseases" OR bib.titleAbbreviated="Annu. rep. notif. dis."
- 937 5. dc.title=/lang=rus "Geodezja i urzadzenia roline" OR bib.titleTranslated=/lang=eng "Land
- 938 surveying and agriculture equipment"
- 939 6. dc.title="Focus on grammar" AND bib.titleSub="basic level"

940 *Notes:*

- 941 • As seen in these examples there is no general 'title' index defined for the bib set. To search on
- 942 unqualified 'title', for example to search for a list of words anywhere within a title field, dc.title is to
- 943 be used.
- 944 • Similarly there is no bib.titleProper index defined. To search on "title proper" dc.title is to be used.

945 E.7.2 Examples of Searching by Name

- 946 1. bib.namePersonal="Herb Plews"
- 947 2. bib.namePersonalGiven=herb PROX bib.namePersonalFamily=plews
- 948 3. bib.namePersonal=/bib.role=shortstop "Herb Plews"
- 949 4. bib.nameCorporate=ibm
- 950 5. bib.nameConference="International Workshop on Plasma-Based Ion Implantation 1993 :
- 951 University of Wisconsin--Madison"
- 952 6. bib.NamePersonal=/bib.nameAuthority=lcnaf/bib.role=composer/bib.roleAuthority=marcrelator
- 953 "Beethoven, Ludwig van, 1770-1827"
- 954 7. bib.NamePersonal=/bib.role=author/bib.roleAuthority=marcrelator "George Orwell"
- 955 8. bib.namePersonal=/bib.date="1835-1913" "Albert Babeau"
- 956 9. dc.contributor="Florida Department of Agriculture and Consumer Affairs"

957 *Notes:*

- 958 • In example 6, "role=composer/bib.roleAuthority=marcrelator" means that the 'role' "composer" is
959 taken from the list 'marcrelator' which is intended to be a nickname for the list of roles at
960 <http://www.loc.gov/marc/sourcecode/relator/relatorlist.html>.
- 961 • So, as seen in example 7, to do an author search, use
962 "bib.role=author/bib.roleAuthority=marcrelator".
- 963 • lcnaf refers to the LC name authority file, searchable at <http://authorities.loc.gov/>. The authorized
964 name heading, "Beethoven, Ludwig van, 1770-1827" (in example 5), can be found there.
- 965 • To search by contributor use dc.contributor; to search by publisher, use dc.publisher; to search by
966 creator, use dc.creator. That is, use these instead of role=contributor, role=publisher or
967 role=creator.

968 E.7.3 Examples of Searching by Subject

- 969 1. dc.subject="Food additives -- Law and legislation"
- 970 2. dc.subject=/bib.subjectAuthority=lcsh "Food additives -- Law and legislation"
- 971 3. bib.subjectName= "Ted Williams"
- 972 4. bib.subjectName=/bib.subjectAuthority=lcnaf "Williams, Ted, 1918-2002"

973 *Notes:*

- 974 • No bib index is defined to search on unqualified 'subject', instead (as seen in example 1)
975 dc.subject should be used.
- 976 • Similarly there is no bib.subjectTopic index defined. To search on "subject - topic" dc.subject is to
977 be used.

978 E.7.4 Examples of Searching by Identifier

- 979 1. dc.identifier=n78890351
- 980 2. dc.identifier=/bib.identifierAuthority=lccn n78890351

981 *Notes:*

- 982 • In the first example above, the identifier is an LCCN. This query could be used on a server where
983 lccn is the default identifier type.

984 E.7.5 Examples of Searching by Date

- 985 1. **bib.dateIssued=2001** AND bib.namePersonal="matilda plews"
- 986 2. **bib.dateIssued=/dateAuthority=edtf 2001** AND bib.namePersonal="matilda plews"
- 987 3. **dc.date=2001**

988 *Notes:*

- 989 • Examples 1 and 2 have identical semantics since 'edtf' is the default date authority.
- 990 • To search simply on date where no qualification ("created", "published", etc.) is intended, dc.date
991 should be used, as in example 3.

992 E.7.6 Examples of Searching by Format

- 993 1. **dc.format=/bib.formatAuthority=modsPhysicalForm print** AND bib.namePersonal="matilda
994 plews"

995 *Notes:*

- 996 • modsPhysicalForm refers to the list at <http://www.loc.gov/marc/sourcecode/form/formlist.html>

997 **E.7.7 Examples of Searching by Resource Type/Genre**

- 998 1. **bib.genre=/bib.genreAuthority=modsGenre "humor, satire"** AND bib.namePersonal="dan
999 jenkins"
- 1000 2. **bib.genre=humor** AND bib.namePersonal="dan jenkins"
- 1001 3. **dc.type=/bib.typeAuthority=modsResource text** AND bib.namePersonal="matilda plews"

1002 *Notes:*

- 1003 • bib.genre is for use with a controlled vocabulary. If the authority is omitted then a default is
1004 assumed (specified in the server's Explain information).
- 1005 • 'modsGenre' refers to the list at <http://www.loc.gov/marc/sourcecode/genre/genrelist.html>.
- 1006 • 'modsResource' refers to the enumerated list for resourceType in the MODS schema.
- 1007 • Although as noted above, no bib index is defined for resource type and instead dc.type should be
1008 used, for bibliographic searching by genre, bib.genre, not dc.type, should be used (even though
1009 in general Dublin Core element type covers genre).

1010

1011 **E.7.8 Examples of Searching by Target Audience**

- 1012 1. **bib.audience=/bib.audienceAuthority=modsAudience adolescent** AND
1013 bib.namePersonal="matilda plews"
- 1014 2. **bib.audience=adolescent** AND bib.namePersonal="matilda plews"

1015 *Notes:*

- 1016 • This index is for use with a controlled vocabulary. If the authority is omitted then a default is
1017 assumed (specified in the server's Explain information).
- 1018 • 'modsAudience' refers to the list at <http://www.loc.gov/marc/sourcecode/target/targetlist.html>.

1019 **E.7.9 Examples of Searching by Classification**

- 1020 1. **bib.classification=RF110-320**
- 1021 2. **bib.classification=/bib.classAuthority=lcc RF110-320**

1022 *Notes:*

- 1023 • This index is for use with a controlled vocabulary. If the authority is omitted then a default is
1024 assumed (specified in the server's Explain information).
- 1025 • 'lcc' as the class authority means the value is from the list at:
1026 <http://www.loc.gov/marc/sourcecode/classification/classificationsource.html>, and refers to "Library
1027 of Congress classification". For the example, click on "R" and then "Subclass RF" see that
1028 RF110-320 is the classification for "Otology. Diseases of the ear".

1029 **E.7.10 Examples of Searching by Place of Origin**

- 1030 1. **bib.originPlace=london** AND bib.namePersonal="jack t. ripper"

- 1031 2. **bib.originPlace=/bib.geoUnit=country/bib.placeAuthority=marcCC cu** AND
1032 bib.namePersonal="livan hernandez"
1033 3. **bib.originPlace=/bib.geoUnit=country/bib.placeAuthority=marcCN cuba** AND
1034 bib.namePersonal="livan hernandez"
1035 4. **bib.originPlace=/bib.geoUnit=city havana** AND bib.namePersonal="livan hernandez"

1036 *Notes:*

- 1037 • <http://www.loc.gov/marc/countries/> lists countries by name and code. marcCC is for country code
1038 and marcCN is for country name.

1039 **E.7.11 Examples of Searching by Language**

- 1040 • **dc.language=english** AND bib.subjectPlace=london
1041 • **dc.language=/languageAuthority=iso639-2b car** AND bib.subjectPlace=carribbean

1042 **E.7.12 Examples of Searching by Edition**

- 1043 • bib.edition=canadian

1044 **E.7.13 Examples of Searching by Part**

- 1045 • dc.title="neurology now" AND **bib.volume=1** AND **bib.issue=2**

1046 **E.7.14 Examples of Searching by Issuance**

- 1047 • dc.title="neurology now" AND bib.issuance=continuing
1048

1049 Appendix F. Query Type ‘cql-form’

1050 Non-normative Annex

1051 **This Annex describes the query type ‘cql-form’.**

1052 The identifier (URI) for this query is **http://www.loc.gov/sru/oasis/cql-form**

1053 The recommended short name to be used for the value of the parameter queryType in an SRU request is
1054 **‘cql-form’**.

1055 When the query type in an SRU query is ‘cql-form’ then the following parameters may occur in the SRU
1057 request:

- 1058 • **Index Parameters.** Parameters with names of the form **qN.index**, where N is a positive integer.
1059 E.g. q1.index, q2.index, etc. The value of an index parameter is an index name.
- 1060 • **Relation Parameters.** Parameters with names of the form **qN.relation**, where N is a positive
1061 integer. E.g. q1.relation, q2.relation, etc. The value of a relation parameter is a relation.
- 1062 • **Term Parameters.** Parameters with names of the form **qN.term**, where N is a positive integer.
1063 E.g. q1.term, q2.term, etc. The value of a term parameter is a term.
- 1064 • **Boolean Parameters.** Parameters with names of the form **qN.boolean**, where N is a positive
1065 integer. The value is a boolean, i.e. ‘and’, ‘or’, or ‘and-not’. E.g. q1.and, q2.or.
- 1066 • The parameter ‘boolean’, whose value is ‘pre’ or ‘post’.

1067
1068 The server processes the parameters as follows:

- 1069 • For any given value of N, the server groups together all parameters whose names begin qN, and
1070 groups them into a search clause.
- 1071 • For each clause, the term parameter must be present, and the index parameter is present if and
1072 only if the relation parameter is present; otherwise the query is in error.
- 1073 • Call the search clause for integer N “clauseN” and the Boolean for integer N “booleanN”. For any
1074 N, if there is a booleanN there must be a clauseN, otherwise the query is in error. (There may be
1075 a clauseN with no booleanN.)
- 1076 • Consider every clauseN and booleanN to be a token. If the value of the parameter ‘boolean’ is
1077 ‘pre’, then the server orders the tokens as:

1078
1079 (first boolean) first clause (second boolean) second clause, etc.

1080
1081 I.e. in increasing value of N for pairs of: booleanN, clauseN (or just clauseN if there is no
1082 booleanN); The result should be a valid prefix query; otherwise the query is in error.

- 1083 • If the value of the parameter ‘boolean’ is ‘post’ then the boolean parameters follow rather than
1084 precede the clause. The result should be a valid postfix query; otherwise the query is in error.
- 1085 • If the result is a valid prefix or postfix query, the server proceeds to process it.