



ANSI/NISO Z39.89-2003 (R2009)

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# The U.S. National Z39.50 Profile for Library Applications

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**Abstract:** This standard specifies the use of ANSI/NISO Z39.50-2003 in library applications. It specifies Z39.50 client and Z39.50 server behavior for search and retrieval across online library catalogs. The specifications included in this standard use *The Bath Profile: A Z39.50 Specification for Library Applications and Resource Discovery (Release 2)* as its foundation. Conformant use of this standard will improve interoperability between Z39.50 implementations.

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## Foreword

(This foreword is not part of ANSI/NISO Z39.89-2003, U.S. National Profile for Library Applications. It is included for information only).

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### About this Standard

This standard identifies a subset of specifications from *ANSI/NISO Information Retrieval (Z39.50): Application Service Definition and Protocol Specification* for use in Z39.50 client and server software. Conformance to this profile's specifications will improve search and retrieval among library catalogs, and the interchange of bibliographic information. Implementors of this profile will need a working knowledge of the Z39.50 protocol and associated registered objects.

The specifications for search and retrieval in an online library catalog environment assume a model of a bibliographic database and an information retrieval system that provides access to one or more databases. A valuable contribution of Z39.50 is providing an abstract view of information retrieval. The following describes the logical components and concepts of an online library catalog model. Actual implementations of library catalogs, bibliographic databases, and information retrieval systems may differ.

- **Bibliographic Database:** A logical component for storing data that represent bibliographic items. Typically these representations are created according to cataloging rules, where the representations include information about the title, author, subject, and other salient features of a bibliographic item. The representations when stored in a database are structured for machine processing using the framework of the MARC Bibliographic Format. The MARC format enables discrete data in the representations to be separately coded for machine processing and manipulation (e.g., title information is coded with field tag 245 and subfield a). A record in the database is comprised of the data associated with a single bibliographic item. Although the database may not physically store all associated data together in a record, the database is able to present the associated data as a record upon request. (The physical structure of the database, i.e., whether the data are stored in a relational database, a flat file, etc., and how the data are stored are not addressed by this model.)
- **Access Points and Indexes:** A logical component for searching the database is an index. An index is a list of values with a pointer to the database records that contain those values. In a library catalog, searchable areas of a record are considered access points. A catalog with, for example, a title access point, an author access point, and a subject access point allows a user to search for titles, authors, and subjects. An access point index is created by selecting values for the index from specific areas of the database record. For example, an author access point index consists of values (i.e., words and phrases) that occur in the MARC fields and subfields that contain author information with a pointer to the database records containing those values. (The internal structure of an index and how it associates the list of values with pointers to database records are not addressed by this model.)
- **Information Retrieval System:** a logical component that manages the search of the database and retrieval of records from the database. The system provides an interface to receive a query and processes the query against one or more access point indexes. When values in the index(es) match the query criteria (e.g. a search for records where the author's name is Mark Twain), the system selects and retrieves the relevant records from the bibliographic database for presentation to the user. The search is a mechanism to select bibliographic records from the database that matches the query criteria.

This profile specifies the use of Z39.50; improvements in interoperability between Z39.50 clients and Z39.50 servers will result through the use of these specifications. Local implementation decisions and functionality of the online library catalog can affect interoperability.

For example, variations in indexing policies in establishing access points can affect search results. This profile does not specify indexing rules. However, the Z39.50 Interoperability Testbed Project has

developed a set of indexing guidelines to support searches defined in the profile. These guidelines may provide librarians and vendors with a basis for setting up indexing policies when implementing Z39.50 servers conformant with this profile. These guidelines are available at:

<<http://www.unt.edu/zinterop/Documents/Indexing/>>

Data normalization and word extraction may affect interoperability between Z39.50 clients, Z39.50 servers, and online catalogs. This profile does not specify data normalization by the Z39.50 client, the server, or the online catalog system and its indexing application.

### **Reaffirmation**

This standard was processed and approved for submittal to ANSI by the National Information Standards Organization. It was balloted by the NISO Voting Members February 3, 2003 - March 14, 2003.

This standard underwent a periodic review and was reaffirmed by the NISO consensus body on May 14, 2009. ANSI approved the reaffirmation on January 4, 2010. This reaffirmation publication includes an editorial change on page 2: the URL for The Bath Profile was updated to the current, correct location.

Suggestions for improving this Standard are welcome. They should be sent to the National Information Standards Organization, 3600 Clipper Mill Road, Suite 302, Baltimore, MD 21211, telephone: (301) 654-2512, email: [nisohq@niso.org](mailto:nisohq@niso.org).

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## **Maintenance and Future Development of the National Z39.50 Profile**

NISO SC AV focused its work on specifying one functional area in this release of the profile. The Committee has identified future work on the profile to include:

- Access to Holdings Information. A future version of this profile will provide specifications for the retrieval of holdings information. These specifications will be based on the Bath Profile for Z39.50.
- Character Set and Language Negotiation. There is a desire to include such functionality. This could be especially important functionality and help the profile's adoption throughout North America (e.g., by Canada and Mexico). Language negotiation will be critically important for such adoption.
- Cross Domain Searching. Inclusion of specifications for cross domain searching (the ability for a bibliographic Z39.50 client to search non bibliographic databases and the mechanisms by which bibliographic Z39.50 servers can provide access to non bibliographic Z39.50 clients) may be included in some future version of this profile.
- Authority Searching. A future version of this profile may include specifications for retrieval of Authority records. Such specifications will likely be based on the Bath Profile for Z39.50.
- Abstracting and Indexing databases and full text databases. A future version of this profile may provide specifications for searching abstracting and indexing and full text databases.

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At the time it approved this standard (2003), NISO had the following members:

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# The U.S. National Z39.50 Profile for Library Applications

## 1 Introduction

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This standard identifies a subset of specifications from *Information Retrieval (Z39.50): Application Service Definition and Protocol Specification*, ANSI/NISO Z39.50-2003, for use in Z39.50 client and server software. Conformance to this profile's specifications will improve search and retrieval among library catalogs, and the interchange of bibliographic information. Use of this profile can improve national library resource sharing.

The foundation for this profile is *The Bath Profile: A Z39.50 Specification for Library Applications and Resource Discovery (Release 2.0)*. As a companion profile to the Bath Profile, conformant applications of the U.S. National Profile will improve national and international interoperability and library resource sharing.

The profile will evolve as the environment (e.g., requirements), the Bath Profile, and ANSI/NISO Z39.50 change.

### 1.1 Scope and Field of Application

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The primary goal of the profile is to improve the semantic interoperability between disparate library bibliographic systems so that end users can use Z39.50 clients to search catalogs and have confidence in the precision and recall of the information retrieved from Z39.50 servers.

The purpose of this profile is to specify additional constraints on Z39.50 client and server behavior defined in the Z39.50 standard to allow effective use of Z39.50 software in a range of library applications. Implementation of this profile by systems developers will improve interoperability among diverse library bibliographic systems.

The profile is structured into Functional Areas that group similar functional requirements, Z39.50 specifications, and levels of conformance. Implementors can claim their Z39.50 clients (Z-clients) and Z39.50 servers (Z-servers) conform to the profile at one or more Conformance Levels within one or more Functional Areas. The modular structure of the profile allows additional functional areas to be developed in the future to meet separate but compatible requirements involving a range of applications useful to librarians and end users.

This release of the profile defines one functional area:

- **Functional Area A for Bibliographic Search and Retrieval in Online Library Catalogs:** A definition of required searches, attribute combinations, and record syntaxes for common search and retrieval needs of library users (end users and library staff) when interacting with online library catalogs.

Other functional areas may be defined in future releases of this profile to address requirements such as search and retrieval of bibliographic holdings information, authority records, full-text databases, and abstracting and indexing databases.

The profile specifies several conformance levels for each functional area. Each higher conformance level inherits the requirements of lower conformance levels. In general, the conformance levels can be characterized as follows:

- **Conformance Level 0:** Defines very basic search and retrieval requirements for Z-clients and Z-servers. Level 0 presents the lowest threshold for conformance while resulting in meaningful

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interoperability. Level 0 serves as a basic resource discovery application. Level 0 searches are likely to be available in existing implementations.

- **Conformance Level 1:** Inherits all search and retrieval requirements from Level 0 and defines more narrowly specified search and retrieval requirements for Z-clients and Z-servers. Implementors are encouraged to provide Level 1 functionality. These requirements can be configured in systems currently under development. It is anticipated that those specifying new or enhanced Z39.50 systems should require adherence to at least this conformance level. Implementors are encouraged to conform at least to Level 1 to provide appropriate search and retrieval functionality.
- **Conformance Level 2:** Inherits all search and retrieval requirements from Levels 0 and 1. Level 2 defines more demanding requirements for a variety of specialized searches. These requirements should guide system enhancements and expansion of functionality.

Each conformance level (see Section 5, Conformance) identifies Z39.50 specifications required, and Z-client and Z-server capabilities and behavior. Conformance requires a system (Z-client, Z-server, and underlying information retrieval system) to be capable of carrying out the specified behaviors at a given conformance level. A vendor's product may conform at a specific level; customization for a local implementation, however, may jeopardize conformance. Managers of local implementations should be aware of conformance requirements to realize the benefits of the specifications provided in this profile.

A key component of this profile is the characterization of the types of searching required by librarians and end users. To this end, the profile defines specific searches and how the semantics of those searches are to be expressed in the vocabulary of Z39.50. The profile does not prescribe local indexing decisions or practices; semantic interoperability may be compromised, however, by indexing practices designed to meet specialized local needs without regard to interoperability considerations.

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## 1.2 Referenced Standards and Documents

Bath Profile: The Bath Profile: An International Z39.50 Specification for Library Applications and Resource Discovery (Release 2.0). 2002.

<<http://zing.z3950.org/srw/bath/2.0/>>

Bib-1 Attribute Set: bib-1 Attribute Set.

<<http://lcweb.loc.gov/z3950/agency/defns/bib1.html>>

Bib-1 Attribute Set Semantics: Attribute Set bib-1 (Z39.50-1995): Semantics. September 1995.

<<ftp://ftp.loc.gov/pub/z3950/defs/bib1.txt>>

Diagnostic Messages: Diagnostics: Suggested User Display and Message Logging Using Bib-1 Diagnostic Set. March 2002.

<<http://lcweb.loc.gov/z3950/agency/contributions/1.html>>

MARC 8 Character Encoding: MARC 21 Specifications for Record Structure, Character Sets, and Exchange Media: Character Sets. January 2000.

<<http://lcweb.loc.gov/marc/specifications/speccharintro.html>>

MARC 21: MARC 21 Format for Bibliographic Data. Washington, DC: Library of Congress  
MARC 21 Language Codes: MARC 21 Code List for Languages. 2000.

<<http://www.loc.gov/marc/languages/langhome.html>>

Object Identifiers: Z39.50 Maintenance Agency. Registry of Z39.50 Object Identifiers.

<<http://lcweb.loc.gov/z3950/agency/defns/oids.html>>

UNICODE: The Unicode Consortium. The Unicode Standard, Version 4.0.0, defined by The Unicode Standard, Version 4.0. Reading, MA, Addison-Wesley, 2003. ISBN 0-321-18578-1

Z39.50: ANSI/NISO Z39.50–2003. Information Retrieval (Z39.50): Application Service Definition and Protocol Specification. Bethesda, MD: NISO Press, 2003. ISBN: 1-880124-55-6  
<<http://lcweb.loc.gov/z3950/agency/document.html>>

Linear Range Searching: Z39.50 Maintenance Agency. Z39.50 Implementor Agreement 1: Linear Range Searching.  
<<http://lcweb.loc.gov/z3950/agency/agree/range.html>>

## 2 Definitions

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**Access point:** Key by which a record is retrieved. An access point will often be a data element as indexed in a record such as the complete title or a word in the title.

**Attribute:** Characteristic of a term as searched. Attributes refine the search term so that a user might find “computer” in the title, “computer” in the abstract, or variations on the word “computer” anywhere in the record.

**Attribute type:** Represents a specific sort of attribute. In the queries defined in this profile, there are six attribute types that can be specified with a search term.

**Attribute value:** Further division of an attribute type. One or more values are defined for each of the six attribute types in this profile.

**Attribute set:** A grouping of attribute types and the value(s) for each. The Bib-1 Attribute Set is used in this profile.

**Authentication:** Method by which a user’s identity can be recognized and verified. Users may, for example, be authenticated as individuals or as members of an institution or organization.

**Bath Profile:** An international Z39.50 specification for library applications. Serves as a common set of specifications for other regional and national profiles.

**Client:** Application where queries are initiated and results are displayed. A librarian or end user will use a client to access a database such as a library catalog.

**Interoperability:** Degree to which applications can interact and exchange information in a standard manner.

**Object identifier:** Globally unique representation for a data object.

**Operand:** A component of a query that includes the search term and all characteristics defined using attribute types and values.

**Phrase:** An ordered list of adjacent words.

**Precision:** Seeking a higher degree of search refinement. Precise searches often get fewer but more relevant results than recall-oriented searches.

**Profile:** A subset of specifications from one or more standards (e.g., selected services and required values for specific parameters) and associated objects to be used in specific applications. Provides the mechanism for vendors and users with an interest in common functionality to specify a standard way to interpret and implement options within a standard. For example, using a profile that is tailored to specific search requirements should provide more consistent search results.

**Query:** Search consisting of one or more operands.

**Recall:** Seeking a broader search definition. Recall-oriented searches often get more results than precise searches.

**Record syntax:** Abstract representation of a record in a standard format.

**Result set:** A local data structure used as a selection mechanism for the transfer of records identified by a query. Its logical structure is a named, ordered list of result set items, and possibly, unspecified information which may be used as a surrogate for the search that created the result set.

**Semantic interoperability:** Degree to which application interaction replicates the intent of involved parties.

**Server:** Application on which one or more databases sit.

**String:** Search term consisting of one or more alphanumeric characters possibly interspersed with spaces or characters treated as spaces.

### 3 Requirements

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This section identifies the functional requirements to which the Z39.50 specifications in this profile respond. These requirements focus on search and retrieval in online library catalogs. The requirements detailed in the sections below comprise the functional area addressed by this profile. Section 5, Conformance, details the Z39.50 specifications for this functional area and levels of conformance.

#### 3.1 Bibliographic Search and Retrieval in Online Library Catalogs

---

Library users conduct a variety of search and retrieval transactions. The functional requirements for bibliographic search and retrieval delineate a number of core searches, the browsing of indexes, and the appropriate retrieval mechanisms needed by library users when interacting with library catalogs.

##### 3.1.1 Bibliographic Search

Librarians and end users engage in a wide range of searching behaviors. Agreements on a core set of bibliographic searches have evolved through various Z39.50 profiling efforts. The following describes several categories of core searches and search functionality:

- **Author searches:** Searches that select bibliographic records by matching the search term and other search criteria (e.g., truncation) with entries in one or more author access point indexes. The search term may be part of a name or a complete name. The search term may be derived from an authority list or may be in uncontrolled form.
- **Title searches:** Searches that select bibliographic records by matching the search term and other search criteria (e.g., truncation) with entries in one or more title access point indexes. The search term may be part of a title or a complete title.
- **Subject searches:** Searches that select bibliographic records by matching the search term and other search criteria (e.g., truncation) with entries in one or more subject access point indexes. The search term may be an uncontrolled subject term, a term derived from a controlled vocabulary, a part of a subject heading, or a complete subject heading.

- **Keyword searches:** Searches that select bibliographic records by matching the search term and other search criteria (e.g., truncation) with entries in a general keyword access point index or entries in author, title, subject, and other access point indexes (implementation dependent). These high recall searches typically match the search term with words in author, title, subject, and other common access points.
- **Boolean searches:** Searches that select bibliographic records by matching two or more search terms that are combined using commonly implemented Boolean operators AND, OR, NOT. The multiple search terms may be matched against one access point index or against multiple access point indexes.
- **Truncation searches:** A query criterion that instructs the system to match entries in access point indexes with the search term where the index entries may include more characters or words than in the search term.

Other types of searches are necessary. For example, librarians and end users may want to select bibliographic records based on standard identifiers, specific types of authors and titles, and qualifying criteria such as date of publication, language, and format.

Given these bibliographic search requirements, the profile specifies three conformance levels for searching online library catalogs:

- **Level 0** defines very basic search and retrieval requirements for Z-clients and Z-servers. Level 0 presents the lowest threshold for conformance while resulting in meaningful interoperability. Keyword searches with no truncation for author, title, subject, and general keyword searching enable recall-oriented searches across library catalogs. Level 0 serves as a basic resource discovery application.
- **Level 1** inherits all search and retrieval requirements from Level 0. Level 1 defines more narrowly specified search and retrieval requirements for Z-clients and Z-servers. Level 1 enables precision-oriented searches for author, title, and subject. It adds truncation for keyword searches. Several searches provide for standard number searching including ISBN and ISSN, and qualifying searches based on date, language, and format of material.
- **Level 2** inherits all search and retrieval requirements from Levels 0 and 1. Level 2 defines more demanding requirements for a variety of specialized searches, including searches using controlled vocabularies, specialized author and title searches, searches on notes fields, etc.

The modular structure of the profile allows customers to specify and implementors to develop products that conform to the most appropriate level for a local implementation or particular market.

### **3.1.2 Browsing Indexes**

Librarians and end users often use a browse function on a local system to identify appropriate search terms to use in a query. Browsing can assist users in improving their selection of search terms for the query (e.g., for a searcher who does not know the correct term). It may be a good way for a user to find a known but forgotten heading, followed by a search on the heading or the discovered term. This feature is often used in conjunction with known-item searching. Such browse-based searching can provide an alternative searching strategy for some search requirements listed in 3.1.1. Browsing indexes can be achieved through the Z39.50 Scan service. The profile introduces this requirement as part of Functional Area A, Conformance Level 1.

### **3.1.3 Bibliographic Retrieval**

The profile supports the retrieval of bibliographic records from library catalogs. MARC 21 is the standard record format for interchanging bibliographic records in the U.S. Current systems also support the Z39.50 Simple Unstructured Text Record Syntax (SUTRS), used to interchange plain text, preformatted records. For international interoperability, however, implementations may be required to support UNIMARC.

It is a basic assumption of the profile that implementors of both Z-servers and Z-clients respond to a specific business case and market need and that the requirements of this profile will be followed only insofar as they do not add unduly to the cost of making products that address the business case and meet the market need. In the case of many Z-server implementations, there are large amounts of legacy data and the vast majority of users are resident in a specific geographic location, with specific expectations about the nature and format of data that are delivered to them. Z-client implementations, however, are often much more widely distributed and more likely required to meet the needs and expectations of highly diverse communities of users. For this reason, the profile assumes that the burden of additional complexity for interoperability, for instance supporting multiple record syntaxes, is most appropriately placed with Z-client implementations.

Level 0 requires only the support of the MARC 21 record syntax by Z-clients and Z-servers. Higher conformance levels include Z-client support for an additional record syntax, SUTRS.

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## **4 Z39.50 Specifications**

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This section summarizes the general Z39.50 specifications to address the functional requirements identified in Section 3.

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### **4.1 Protocol Version**

The profile requires ANSI/NISO Z39.50-2003. All implementations are encouraged to use Version 3, but in the near term, conformance to all specifications prescribed by this profile is available to Version 2 (1995) implementations.

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### **4.2 Z39.50 Objects**

The profile uses a number of Z39.50 registered objects. The following table summarizes all Z39.50 objects referenced in the profile specifications.

<b>Object</b>	<b>Z39.50 Object Identifier (OID)</b>
bib-1 attribute set	1.2.840.10003.3.1
bib-1 diagnostic set	1.2.840.10003.4.1
MARC 21 record syntax	1.2.840.10003.5.10
Simple unstructured record syntax (SUTRS)	1.2.840.10003.5.101

Section 5, Conformance, specifies the support for these registered objects by Z-clients and Z-servers. For information on Z39.50 registered objects, see the Z39.50 Maintenance Agency's Registry of Z39.50 Object Identifiers.

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### **4.3 Z39.50 Services**

The profile specifies the use of the following Z39.50 services:

- Init
- Search

- Present
- Scan

See Section 5, Conformance, for specific requirements related to these Z39.50 services.

No additional services are required for conformance to this profile. Z-servers may optionally support additional Z39.50 services. Z-clients are free to invoke any of the services provided by a server. Future releases of the profile may require additional services.

Standard Z39.50 Init Service negotiation procedures control the use of all services.

#### **4.3.1 Init**

Z-clients conforming to this profile may use the Z39.50 Init parameter IDAuthentication to transmit authentication information (e.g., userid and password). Z-servers conforming to this profile may or may not require authentication. The profile specifies no other security requirements. Z-clients may need to know in advance the authentication policy of a given server and be prepared to provide values as needed (e.g., for userid and password).

#### **4.3.2 Search: Query Type and Attribute Set**

The profile requires Z-clients and Z-servers to use Z39.50 Type 1 queries (i.e., general purpose Boolean query structures).

The Result-set-name parameter is required at certain conformance levels for Z-servers. When required by the profile, Z-servers must be able to retain at least two named results sets for the duration of a session.

To accommodate the searching requirements, the profile requires Z-clients and Z-servers to use the Bib-1 Attribute Set (OID: 1.2.840.10003.3.1). Conformant Z-clients and Z-servers will support attribute types and values according to Section 5, Conformance. "Support" in this context means:

- Z-clients must transmit the bib-1 attribute combination in a Type 1 Query for each defined search.
- Z-clients must accept the corresponding relevant responses to a query (which may be a diagnostic record) from Z-servers including specified record syntaxes.
- Z-servers must recognize the Bib-1 Attribute Set OID.
- Z-servers must recognize the bib-1 attribute types and value(s) listed for a conformance level.
- Z-servers must accept for each defined search the associated attribute combination if they are relevant in the context of the corresponding databases.
- Z-servers must process each defined search using attribute combinations sent by the Z-client and produce a valid result set (which could contain 0 hits).
- Z-servers must return the corresponding relevant responses to a query (which may be a diagnostic message) to the Z-client including the record in specified record syntaxes.

This means that all online library catalog implementations with Z39.50 servers that conform to this profile must have search capabilities for attribute types and values listed at a level for which conformance is claimed. Z-clients and Z-servers may also use attribute types and values from other public or private attribute sets in addition to those required by this profile. Profile conformant Z-servers should be prepared to receive queries not specified in this profile from a range of Z-clients. Behavior of Z-servers receiving such queries is not addressed by this profile.

The Bib-1 Attribute Set plays a primary role in this profile for basic bibliographic searching. Semantics for most of the bib-1 attributes specified for support in this profile can be found in Attribute Set bib-1 (Z39.50-1995): Semantics (September 1995). Not all current bib-1 attribute values are defined in that document. The complete Bib-1 Attribute Set is available at <http://lcweb.loc.gov/z3950/agency/defns/bib1.html>.

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Two Structure Attribute values are used in the majority of searches: word and phrase. The Structure Attribute Value phrase is defined as “an ordered list of adjacent words.”

Complex keyword and phrase searches can be expressed using Boolean operators to connect one or more operands where the operands are constructed using the searches (both keyword and phrase) defined in these specifications. Queries containing two or more operands combined by commonly implemented Boolean operators AND, OR, NOT must be supported.

The following table summarizes the Bib-1 Attribute Set types and values referenced in Functional Area A.

See Section 5, Conformance, for specific requirements related to searches and attribute combinations.

Attribute Type	Attribute Value	Attribute Name	Conformance Level
Use (1)	4	title	0, 1, 2
	5	title series	2
	6	title uniform	2
	7	ISBN	1, 2
	8	ISSN	1, 2
	9	LC Card Number	2
	12	local number	1, 2
	21	subject heading	0, 1, 2
	25*	MESH subject	2
	27*	LC subject heading	2
	28*	RVM subject heading	2
	31	date of publication	1, 2
	33	title key	2
	50	no. govt pub.	2
	51	no. music publisher	2
	54	code-language	1, 2
	63	note	2
	1001	record type	1, 2
	1002	name	2
	1003	author	0, 1, 2
	1004	author-name personal	2
	1005	author-name corporate	2
	1006	author-name conference	2
1007	identifier-standard	1, 2	
1008*	Subject—LC children's	2	

Attribute Type	Attribute Value	Attribute Name	Conformance Level
	1016	any	0, 1, 2
	1018	publisher	2
	1027	report-number	2
	1031	material-type	2
	1088*	Subject—NAL	2
	1092	International standard music number (ISO 10957) ISMN	2
	1210*	Sears Subject Heading	2
	1211	OCLC Number	2
Relation (2)	1	less than	1, 2
	2	less than or equal	1, 2
	3	equal	0, 1, 2
	4	greater than or equal	1, 2
	5	greater than	1, 2
	104	within	2
Position (3)	1	first in field	1, 2
	3	any position in field	0, 1, 2
Structure (4)	1	phrase	1, 2
	2	word	0, 1, 2
	4	year	1, 2
Truncation (5)	1	right truncation	1, 2
	100	do not truncate	0, 1, 2
Completeness (6)	1	incomplete subfield	0, 1, 2
	3	complete field	1, 2

\* Support for only one of the controlled vocabulary use attributes is required. See Controlled Vocabulary searches in Conformance Level 2.

#### 4.3.3 Retrieval: Record Syntaxes

For interoperability, Z-clients and Z-servers must support at least one record syntax in common. Interoperability also requires use of standard character sets and encoding.

Support of a record syntax means that for every record in a result set, the Z-server can deliver the record in that record syntax. Z-clients and Z-servers have different responsibilities in their support for record syntaxes. Z-clients will support all syntaxes required in a functional area and at a given conformance level, while Z-servers will normally support only those syntaxes required for their business case and market. For Bibliographic Retrieval (Functional Area A), the MARC 21 and SUTRS record syntaxes are required depending on conformance level. The MARC 21 repertoire of characters using an 8-bit based encoding system, called in MARC 21 documentation MARC-8, is required. The MARC 21 repertoire of characters using a variable 8/16-bit encoding following

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ISO/IEC 10646 (UCS) and Unicode UTF-8 encoding rules, called UCS/Unicode UTF-8 in MARC 21 documentation, may be used.

See Section 5, Conformance, for specific requirements regarding record syntaxes for the different conformance levels. Z-clients and Z-servers may support other registered Z39.50 record syntaxes in addition to those required by this profile.

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### 4.4 Diagnostic Messages

The profile requires that Z-servers return appropriate diagnostic messages from Diagnostic Set bib-1. To assist implementors in sending the appropriate diagnostic for an error condition, a listing of bib-1 diagnostics to use for specific error conditions is located at the Maintenance Agency site <<http://lcweb.loc.gov/z3950/agency/contributions/1.html>>. In addition, Z-clients are encouraged to display usable and meaningful diagnostic messages to users. To assist implementors, the list also includes suggested wording for diagnostic messages intended for display to a user.

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## 5 Conformance

To address the requirements identified in Section 3 and build upon the general specifications listed in Section 4, Z-clients and Z-servers must be configured to support prescribed Z39.50 specifications to claim conformance within a functional area at a specific level. This section details the specifications Z-clients and Z-servers must support. To claim conformance at a specific level means that the Z-client or Z-server supports all specifications listed for that conformance level.

Conformance to the profile involves several considerations:

- Capability of the system as provided by the vendor, and the specific implementation by a library
- Local policies for providing services to specific user groups
- The availability of data in records
- Exceptional server situations

To conform to the profile at a given level, vendors' implementations must provide the capability for search and retrieval as defined (e.g., Z-clients must be able to send all searches properly and Z-servers must be capable of receiving and processing those searches). In addition, the local information retrieval system must be able to execute those searches against its database(s). Conformance is assessed and measured by observable behavior in a specific implementation.

A particular organization may limit access to functionality defined for a particular conformance level (i.e., may not make the full capability of the vendor-supplied system available to all users). This is determined by the business case for a Z39.50 application for a given organization. An organization may provide different levels of service to different user groups. For example, local policies may restrict access to records in one or more specific record syntaxes to authorized users (e.g., a user from a specific group requests a particular record syntax and the Z-server only provides records in a different syntax to members of that group). In such cases, the server should return the appropriate diagnostic. The organization's implementation, however, cannot claim conformance to a given conformance level if its Z39.50 implementation and its bibliographic system do not have the capability for functionality provided by that level. For a Z-server to conform to this profile, it must specify and support a category of users that have access to the functionality specified in the following sections.

In some cases, a database may not contain data in records to support a given functionality (e.g., a database with no ISSNs will not have an access point to search ISSNs). In that case, the system may still claim conformance at a profile conformance level if it can receive the search and return a diagnostic indicating this situation.

Systems may experience occasional disruptions of normal services. Exceptional server situations may override specific requirements listed in the following sections. For example, a database may be temporarily unavailable or a momentary resource demand may override the named results sets requirement. The expectation for conformance is that a server offers a quality of service that, apart from exceptional situations, normally provides functionality associated with all specifications at a given conformance level. Exceptional situations that disrupt normal services do not imply lack of conformance to the specifications.

Z-servers can address these considerations by providing appropriate diagnostics in response to a Z-client request. The following lists bib-1 diagnostics that may be relevant to the above considerations:

- For Z-servers that provide records in selected record syntaxes for specific authorized users, the bib-1 Diagnostic 1070: "User not authorized to receive this record in requested syntax" is available. Additionally, Z-Servers should not return a record in an alternative record syntax until requested by the Z-client.
- For a Z-client request for which there are no data in the database, the bib-1 Diagnostic 1073, "Database records do not contain data associated with access point."

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## 5A. Functional Area A: Bibliographic Search and Retrieval in Online Library Catalogs

Functional Area A specifies three levels of conformance for Z-clients and Z-servers. Each level is based on the specifications from the Bath Profile, Functional Area A, Bibliographic Search and Retrieval (Release 2). The U.S. National Profile differs in a limited way from the Bath Profiles. The conventions of **BP** (Bath Profile) and **US** (U.S. National Profile) used as prefixes for specific searches indicate profile-specific conformance requirements.

Functional Area A uses the following Z39.50 objects:

Object	OID	Z-client	Z-server
bib-1 attribute set	1.2.840.10003.3.1	X	X
bib-1 diagnostic set	1.2.840.10003.4.1	X	X
MARC 21 record syntax	1.2.840.10003.5.10	X	X
SUTRS	1.2.840.10003.5.101	*	

\* The support of Record Syntaxes varies by conformance level with Z-clients required to support more syntaxes than Z-servers.

The profile requires that Z-clients formulate queries using all the attribute types and values specified in the searches, and requires Z-servers to process all of the attribute types (i.e., servers cannot ignore any attribute types or values in the query). Z-servers that do not support specific attribute types and values must return a diagnostic message (e.g., in the case of the Level 2 Controlled Vocabulary searches where the profile provides options of Use Attributes).

Z-clients and Z-servers may support additional searches expressed in attribute types and values not specified in this profile. Profile conformant Z-servers should be prepared to receive queries not specified in this profile from a range of Z-clients. Behavior of Z-servers receiving such queries is not addressed by this profile.

A keyword search in this profile is defined as a search that matches the specified character string (i.e., the search term) against a word in an access point index designated by the Use Attribute value. A word may be a single alphanumeric character or a string of characters bounded by spaces or characters treated as spaces by the server. Where a keyword search contains multiple words, this profile requires that each word be addressed in a separate operand in the query, with the operands combined by a Boolean operator. Operands based on keywords or phrases can be formulated using searches defined for specific levels of conformance claimed, for example:

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- In Level 0, an operand to express a Title Keyword search combined with an operand to express a Subject Keyword search
- In Level 1, an operand to express a Title Keyword search combined with an operand to express a Subject First Words in Field search

Since servers are required to support a minimum number of well-defined searches for each conformance level, they should be able to process a query that combines operands that express searches across different access point indexes (i.e., cross index searching).

The profile uses the Bib-1 Attribute Set when specifying searches; however, information retrieval systems work with indexes and access points. Throughout this section, where the terms field and/or subfield are used in Attribute Names (e.g., Incomplete Subfield), the term should be interpreted to mean access point.

For retrieval, record syntax "support" means that the Z-server can deliver any record in a result set formatted in a required record syntax, and a Z-client can receive and process for display or other uses any record formatted in a required record syntax. For example, Functional Area A Level 0 Conformance requires that a Z-client must be able to receive and a Z-server must be able to deliver any record in MARC 21.

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### 5A.0 Level 0 Search and Retrieval Requirements

Level 0 defines very basic search and retrieval requirements for Z39.50 clients and servers. Keyword searches with no truncation for author, title, subject, and general keyword searching enable recall-oriented searches across library catalogs. Support for Boolean operators AND, OR, NOT where two or more operands each consisting of a word are combined using the operators is required.

Z39.50 Version 2 is required; Z39.50 Version 3 is recommended.

Level 0 retrieval requires the support of MARC 21 by Z-clients and Z-servers, and the use of the MARC-8 character set.

Level 0 searching requires support of Boolean operators AND, OR, NOT. The following bib-1 Attribute Types and Values are required:

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
	21	subject heading
	1003	author
	1016	any
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

Combinations of these Attributes Types and Values express the semantics of the following four Level 0 searches (more completely specified below):

- BP0.1 Author Search – Keyword**
- BP0.2 Title Search – Keyword**
- BP0.3 Subject Search – Keyword**
- BP0.4 Any Search – Keyword**

These searches exactly match the searches defined in the Bath Profile for Level 0. See Appendix A for examples related to the searches defined for Level 0.

**BP0.1 Author Search – Keyword** (Equivalent to Bath 5.A.0.1)

*Uses:* Selects bibliographic records that have an author name access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP0.2 Title Search – Keyword** (Equivalent to Bath 5.A.0.2)

*Uses:* Selects bibliographic records that have a title access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP0.3 Subject Search — Keyword** (Equivalent to Bath 5.A.0.3)

*Uses:* Selects bibliographic records that have a subject access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject heading
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP0.4 Any Search — Keyword** (Equivalent to Bath 5.A.0.4)

*Uses:* Selects bibliographic records that have a general keyword access point logically available (as defined by the server) in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1016	any
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

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## 5A.1 Level 1 Search and Retrieval Requirements

Level 1 inherits all search and retrieval requirements from Level 0. Level 1 defines more narrowly specified search and retrieval requirements for Z-clients and Z-servers. Level 1 enables more precision-oriented searches for author, title, and subject. It adds truncation for keyword searches. Additional searches provide for standard number searching and qualifying searches based on date, language, and format of material. Support for Boolean operators AND, OR, NOT where two or more operands consisting of keywords and/or phrases are combined using the operators is required.

Z39.50 Version 2 is required; Z39.50 Version 3 is recommended.

Level 1 requires Z-clients and Z-servers to support SCAN.

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Level 1 retrieval requires:

- Z-clients to support MARC 21 and SUTRS
- Z-servers to support MARC 21

The Result-set-name parameter is required for Z-servers. Z-servers must be able to retain at least two named results sets for the duration of a session.

Level 1 searching requirements inherit all Level 0 requirements, and require the following bib-1 Attributes Types and Values:

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
	7	ISBN
	8	ISSN
	12	local number
	21	subject heading
	31	date of publication
	54	code-language
	1001	record type
	1003	author
	1007	identifier-standard
Relation (2)	1016	any
	1	less than
	2	less than or equal
	3	equal
	4	greater than or equal
Position (3)	5	greater than
	1	first in field
Structure (4)	3	any position in field
	1	phrase
	2	word
Truncation (5)	4	year
	1	right truncation
Completeness (6)	100	do not truncate
	1	incomplete subfield
	3	complete field

Combinations of these Attributes Types and Values express the semantics of the following twenty Level 1 searches (more completely specified below):

- BP1.1 Author Search – Keyword with Right Truncation**  
**BP1.2 Author Search – Exact Match**  
**BP1.3 Author Search – First Words in Field**  
**BP1.4 Author Search – First Characters in Field**  
**BP1.5 Title Search – Keyword with Right Truncation**  
**BP1.6 Title Search – Exact Match**  
**BP1.7 Title Search – First Words in Field**  
**BP1.8 Title Search – First Characters in Field**  
**BP1.9 Subject Search – Keyword with Right Truncation**  
**BP1.10 Subject Search – Exact Match**  
**BP1.11 Subject Search – First Words in Field**  
**BP1.12 Subject Search – First Characters in Field**  
**BP1.13 Any Search – Keyword with Right Truncation**  
**BP1.14 Standard Identifier Search**  
**US1.1 ISBN Search**  
**US1.2 ISSN Search**  
**US1.3 Remote System Record Number Search**  
**BP1.15 Date of Publication Search**  
**US1.4 Language Search**  
**US1.5 Format of Material Search – Keyword**

The searches with the prefix **BP** exactly match the searches defined in the Bath Profile for Level 1. See Appendix A for examples related to the searches defined for Level 1.

**BP1.1 Author Search – Keyword with Right Truncation** (Equivalent to Bath 5.A.1.1)

*Uses:* Selects bibliographic records that have an author name access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.2 Author Search – Exact Match** (Equivalent to Bath 5.A.1.2)

*Uses:* Selects bibliographic records that have an author name access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is needed to conduct a follow-up search when the user selects terms from an author index (e.g., from a Scan).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**BP1.3 Author Search – First Words in Field** (Equivalent to Bath 5.A.1.3)

*Uses:* Selects bibliographic records that have an author name access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the user knows the surname and first name of an author but not necessarily a complete name.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP1.4 Author Search – First Characters in Field** (Equivalent to Bath 5.A.1.4)

*Uses:* Selects bibliographic records that have an author name access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the searcher wants to retrieve all names beginning with a common stem or when a partial complete name is known (e.g., complete last name, first initial of other name).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.5 Title Search – Keyword with Right Truncation** (Equivalent to Bath 5.A.1.5)

*Uses:* Selects bibliographic records that have a title access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.6 Title Search – Exact Match** (Equivalent to Bath 5.A.1.6)

*Uses:* Selects bibliographic records that have a title access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for one or two word titles, often serials, where a less precise search may retrieve a very large result set. This search is also needed to conduct a follow-up search when the user selects terms from a full title index (e.g., from a Scan).

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**BP1.7 Title Search – First Words in Field** (Equivalent to Bath 5.A.1.7)

*Use:* Selects bibliographic records that have a title access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the user knows the beginning words in a title.

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP1.8 Title Search – First Characters in Field** (Equivalent to Bath 5.A.1.8)

*Uses:* Selects bibliographic records that have a title access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the beginning words in a title are known to the user but the user is not sure of the form or spelling of a particular word. For example, 'cat behav' will retrieve resources with titles beginning 'cat behavior' or 'cat behaviour'.

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.9 Subject Search – Keyword with Right Truncation** (Equivalent to Bath 5.A.1.9)

*Uses:* Selects bibliographic records that have a subject access point in which any word beginning with the specified character string matches the search term (single partial or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject heading
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.10 Subject Search – Exact Match** (Equivalent to Bath 5.A.1.10)

*Use:* Selects bibliographic records that have a subject access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for limiting searches to a precise subject, especially in fields that contain subheadings. This search is needed to conduct a follow-up search when the user selects terms from a subject heading index (e.g., from a Scan).

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject heading
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**BP1.11 Subject Search – First Words in Field** (Equivalent to Bath 5.A.1.11)

*Uses:* Selects bibliographic records that have a subject access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the searcher knows the main subject heading but not sub-headings.

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject heading
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP1.12 Subject Search – First Characters in Field** (Equivalent to Bath 5.A.1.12)

*Uses:* Selects bibliographic records that have a subject access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the searcher wants to retrieve all headings beginning with a common stem. For example, 'catalog' will retrieve resources on 'cataloging', 'catalog cards', 'catalog use', etc.

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject heading
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.13 Any Search – Keyword with Right Truncation** (Equivalent to Bath 5.A.1.13)

*Uses:* Selects bibliographic records that have a general keyword access point logically available (as defined by the server) in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1016	any
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**BP1.14 Standard Identifier Search** (Equivalent to Bath 5.A.1.14)

*Uses:* Selects bibliographic records that have one or more access points for standard identifiers (e.g., ISBN, ISSN, Music Standard numbers, CODEN, Superintendent of Documents Item Number, etc.) in which a left-anchored character string matches the search term (complete standard identifier). This search does not identify a specific standard number scheme. Servers can choose which standard identifiers to index to support this search.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1007	identifier-standard
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US1.1 ISBN Search**

*Uses:* Selects bibliographic records that have an ISBN access point in which a left-anchored character string matches the search term (single ISBN).

Attribute Type	Attribute Value	Attribute Name
Use (1)	7	ISBN
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US1.2 ISSN Search**

*Uses:* Selects bibliographic records that have an ISSN access point in which a left-anchored character string matches the search term (single ISSN).

Attribute Type	Attribute Value	Attribute Name
Use (1)	8	ISSN
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US1.3 Remote System Record Number Search**

*Uses:* Selects bibliographic records that have a local system record number access point in which a left-anchored character string matches the search term (single number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	12	local number
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP1.15 Date of Publication Search** (Equivalent to Bath 5.A.1.15)

*Uses:* A limiting search based on date of publication data in the record.

The Date of Publication Use Attribute may only be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the Date of Publication Use Attribute. This search allows the use of selected Relation attribute values in combination with the other five specified attribute type values as indicated in the following table.

Attribute Type	Attribute Value	Attribute Name
Use (1)	31	date of publication
Relation (2)	1	less than
	2	less than or equal
	3	equal
	4	greater than or equal
	5	greater than
Position (3)	1	first in field
Structure (4)	4	year
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US1.4 Language Search** (Equivalent to Bath 5.A.2.8)

*Uses:* A limiting search based on a set of language code data in the record. The code set is specified in the MARC 21 Code list for languages.

The Language Use Attribute may only be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the Language Use Attribute.

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Attribute Type	Attribute Value	Attribute Name
Use (1)	54	code-language
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US1.5 Format of Material Search – Keyword

*Uses:* A limiting search based on data in the record about the nature of the material described (e.g., book, cartographic material, visual materials, etc.).

The record type Use Attribute must be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the record type Use Attribute.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1001	record type
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

Searches will use a query term that is a 3-letter coded value associated with a format. Clients will use the format code in a query, not the natural language text of the format. The table identifies codes that can be used in a query.

Formats	Code
Book	bks
Printed or Manuscript Music	mus
Cartographic Material	cmt
Visual Materials	vis
Sound Recording	rec
Electronic Resources	elr
Archival/Mixed Materials	mix
Serial	ser

Appendix B identifies the places in a MARC 21 record where format data may be found and can provide guidance when establishing indexing policies for the database.

### 5A.1.1 Level 1 Scan Requirements

The Z39.50 Scan Service is required at Functional Area A: Level 1 Search and Retrieval. The following requirements apply for SCAN:

- Z-clients must support Term and DisplayTerm, and display DisplayTerm if sent. If DisplayTerm is not sent, Term must be displayed.
- Required value for parameter *preferredPositionInResponse* is either 0 and 1.
- Stepsize is 0.

To maintain symmetry with the searches defined in Level 1, three Scans are defined:

- Author – Exact Match
- Title – Exact Match
- Subject – Exact Match

The bibliographic searches defined in Sections 5A.0, 5A.1, and 5A.2 require all six attribute types with values be sent in a query. A Scan request does not require the same specification. For the Scans defined below, it is not necessary to specify the Relation, Completeness, and Truncation attributes. A Scan request is processed against a server's index with the assumption that the term (which can consist of one or more words) in the request is to be matched exactly with an index entry as a left-anchored match. Thus, there is no need to send additional attribute types.

**BP.1.SCAN.1 Author – Exact Match** (Equivalent to Bath 5.A.1.SCAN.1)

*Uses:* To browse an ordered list of author names.

The termlist for an Author Exact Match Scan is:

Attribute Type	Attribute Value	Attribute Name
Use (1)	1003	author
Position (3)	1	first in field
Structure (4)	1	phrase

**BP.1.SCAN.2 Title – Exact Match** (Equivalent to Bath 5.A.1.SCAN.2)

*Uses:* To browse an ordered list of complete titles.

The termlist for a Title Exact Match Scan is:

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Position (3)	1	first in field
Structure (4)	1	phrase

**BP.1.SCAN.3 Subject – Exact Match** (Equivalent to Bath 5.A.1.SCAN.3)

*Uses:* To browse an ordered list of complete subject terms and headings.

The termlist for a Subject Exact Match Scan is:

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject
Position (3)	1	first in field
Structure (4)	1	phrase

## 5A.2 Level 2 Search and Retrieval Requirements

Level 2 inherits all search and retrieval requirements from Level 0 and Level 1. Level 2 also defines additional requirements for a variety of specialized searches, including for example, searches using controlled vocabularies and specialized author and title searches.

Level 2 searching requires the following bib-1 Attributes Types and Values:

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
	5	title series
	6	title uniform
	9	LC Card Number
	21	subject heading
	25*	MESH subject
	27*	LC subject heading
	28*	RVM subject heading

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Attribute Type	Attribute Value	Attribute Name
	31	date of publication
	33	title key
	50	no. govt pub.
	51	no. music publisher
	63	note
	1002	name
	1004	author-name personal
	1005	author-name corporate
	1006	author-name conference
	1008*	Subject—LC children's
	1016	any
	1018	publisher
	1027	report-number
	1031	material-type
	1044	Possessing-institution
	1088*	Subject—NAL
	1092	International standard music number (ISO 10957) ISMN
	1210*	Sears Subject Heading
1211	OCLC Number	
Relation (2)	3	equal
	104	within
Position (3)	1	first in field
	3	any position in field
Structure (4)	1	phrase
	2	word
	4	year
Truncation (5)	1	right truncation
	100	do not truncate
Completeness (6)	1	incomplete subfield
	3	complete field

\* Support for only one of the controlled vocabulary use attributes is required.

Combinations of these Attributes Types and Values express the semantics of the following forty-eight Level 2 searches (more completely specified below):

<b>BP2.1</b>	<b>Key Title Search – Keyword</b>
<b>BP2.2</b>	<b>Key Title Search – Keyword with Right Truncation</b>
<b>BP2.3</b>	<b>Key Title Search – Exact Match</b>
<b>BP2.4</b>	<b>Key Title Search – First Words in Field</b>
<b>BP2.5</b>	<b>Key Title Search – First Characters in Field</b>
<b>US2.1</b>	<b>Uniform Title Search – Keyword</b>
<b>US2.2</b>	<b>Uniform Title Search – Keyword with Right Truncation</b>
<b>US2.3</b>	<b>Uniform Title Search – Exact Match</b>
<b>US2.4</b>	<b>Uniform Title Search – First Words in Field</b>
<b>US2.5</b>	<b>Uniform Title Search – First Characters in Field</b>
<b>US2.6</b>	<b>Series Title Search – Keyword</b>
<b>US2.7</b>	<b>Series Title Search – Keyword with Right Truncation</b>
<b>US2.8</b>	<b>Series Title Search – Exact Match</b>
<b>US2.9</b>	<b>Series Title Search – First Words in Field</b>
<b>US2.10</b>	<b>Series Title Search – First Characters in Field</b>
<b>US2.11</b>	<b>Title Search – Unanchored Phrase</b>
<b>US2.12</b>	<b>Subject Search – Unanchored Phrase</b>
<b>US2.13</b>	<b>Name Search – Unanchored Phrase</b>
<b>US2.14</b>	<b>Any Search – Unanchored Phrase</b>
<b>US2.15</b>	<b>Type of Material Search – Keyword</b>
<b>BP2.6</b>	<b>Date of Publication Range Search</b>
<b>US2.16</b>	<b>LCCN Search</b>
<b>US2.17</b>	<b>OCLC Number Search</b>
<b>US2.18</b>	<b>Music Publisher Number Search</b>
<b>US2.19</b>	<b>International Standard Music Number (ISMN) Search</b>
<b>US2.20</b>	<b>Technical Report Number Search</b>
<b>US2.21</b>	<b>Government Document Number Search – Unanchored Phrase</b>
<b>US2.22</b>	<b>Government Document Number Search – Unanchored Phrase with Right Truncation</b>
<b>US2.23</b>	<b>Notes Search – Keyword</b>
<b>US2.24</b>	<b>Notes Search – Keyword with Right Truncation</b>
<b>US2.25</b>	<b>Publisher Name Search – Keyword</b>
<b>BP2.7</b>	<b>Possessing Institution Search</b>
<b>US2.26</b>	<b>Personal Author Search – Keyword</b>
<b>US2.27</b>	<b>Personal Author Search – Keyword with Right Truncation</b>
<b>US2.28</b>	<b>Personal Author Search – Exact Match</b>
<b>US2.29</b>	<b>Personal Author Search – First Characters in Field</b>
<b>US2.30</b>	<b>Corporate Author Search – Keyword</b>
<b>US2.31</b>	<b>Corporate Author Search – Keyword with Right Truncation</b>
<b>US2.32</b>	<b>Corporate Author Search – Exact Match</b>
<b>US2.33</b>	<b>Corporate Author Search – First Characters in Field</b>
<b>US2.34</b>	<b>Conference Author Search – Keyword</b>
<b>US2.35</b>	<b>Conference Author Search – Keyword with Right Truncation</b>
<b>US2.36</b>	<b>Conference Author Search – Exact Match</b>
<b>US2.37</b>	<b>Conference Author Search – First Characters in Field</b>
<b>US2.38</b>	<b>Controlled Vocabulary Search – Keyword with Right Truncation</b>
<b>US2.39</b>	<b>Controlled Vocabulary Search – Exact Match</b>
<b>US2.40</b>	<b>Controlled Vocabulary Search – First Words in Field</b>
<b>US2.41</b>	<b>Controlled Vocabulary Search – First Characters in Field</b>

The searches with the prefix **BP** exactly match the searches defined in the Bath Profile for Level 2. See Appendix A for examples related to the searches defined for Level 2.

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### BP2.1 Key Title Search – Keyword (Equivalent to Bath 5.A.2.1)

*Uses:* Selects bibliographic records that have a key title access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	33	title key
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### BP2.2 Key Title Search – Keyword with Right Truncation (Equivalent to Bath 5.A.2.2)

*Uses:* Selects bibliographic records that have a key title access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	33	title key
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### BP2.3 Key Title Search – Exact Match (Equivalent to Bath 5.A.2.3)

*Uses:* Selects bibliographic records that have a key title access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for one or two word titles where a less precise search may retrieve a very large result set.

Attribute Type	Attribute Value	Attribute Name
Use (1)	33	title key
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

### BP2.4 Key Title Search – First Words in Field (Equivalent to Bath 5.A.2.4)

*Uses:* Selects bibliographic records that have a key title access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the user knows the beginning words in a title.

Attribute Type	Attribute Value	Attribute Name
Use (1)	33	title key
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### BP2.5 Key Title Search – First Characters in Field (Equivalent to Bath 5.A.2.5)

*Uses:* Selects bibliographic records that have a key title access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the user knows the beginning words of a key title but the user is not sure of the form or spelling of a particular word.

Attribute Type	Attribute Value	Attribute Name
Use (1)	33	title key
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### US2.1 Uniform Title Search – Keyword

*Uses:* Selects bibliographic records that have a uniform title access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	6	title uniform
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.2 Uniform Title Search – Keyword with Right Truncation

*Uses:* Selects bibliographic records that have a uniform title access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	6	title uniform
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### US2.3 Uniform Title Search – Exact Match

*Uses:* Selects bibliographic records that have a uniform title access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for one or two word titles where a less precise search may retrieve a very large result set.

Attribute Type	Attribute Value	Attribute Name
Use (1)	6	title uniform
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

### US2.4 Uniform Title Search – First Words in Field

*Uses:* Selects bibliographic records that have a uniform title access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the user knows the beginning words in a title.

Attribute Type	Attribute Value	Attribute Name
Use (1)	6	title uniform
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.5 Uniform Title Search – First Characters in Field**

*Uses:* Selects bibliographic records that have a uniform title access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the user knows the beginning words of a key title but the user is not sure of the form or spelling of a particular word.

Attribute Type	Attribute Value	Attribute Name
Use (1)	6	title uniform
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.6 Series Title Search – Keyword**

*Uses:* Selects bibliographic records that have a series title access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	5	title series
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.7 Series Title Search – Keyword with Right Truncation**

*Uses:* Selects bibliographic records that have a series title access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	5	title series
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.8 Series Title Search – Exact Match**

*Uses:* Selects bibliographic records that have a series title access point in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for one or two word titles where a less precise search may retrieve a very large result set.

Attribute Type	Attribute Value	Attribute Name
Use (1)	5	title series
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**US2.9 Series Title Search – First Words in Field**

*Uses:* Selects bibliographic records that have a uniform title access point in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words). This search is useful when the user knows the beginning words in a title.

Attribute Type	Attribute Value	Attribute Name
Use (1)	5	title series
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.10 Series Title Search – First Characters in Field

*Uses:* Selects bibliographic records that have a series title access point in which the search term (one or more partial or complete words) matches the specified character string, left-anchored. This search is useful when the user knows the beginning words of a key title but the user is not sure of the form or spelling of a particular word.

Attribute Type	Attribute Value	Attribute Name
Use (1)	5	title series
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### US2.11 Title Search – Unanchored Phrase

*Uses:* Selects bibliographic records that have a title access point in which an ordered list of adjacent complete word(s) matches the search term (one or more partial or complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	4	title
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.12 Subject Search – Unanchored Phrase

*Uses:* Selects bibliographic records that have a subject access point in which an ordered list of adjacent complete word(s) matches the search term (one or more partial or complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	21	subject
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.13 Name Search – Unanchored Phrase

*Uses:* Selects bibliographic records that have a name title access point in which an ordered list of adjacent complete word(s) matches the search term (one or more partial or complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1002	name
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.14 Any Search – Unanchored Phrase**

*Uses:* Selects bibliographic records that have a general keyword access point logically available (as defined by the server) in which an ordered list of adjacent complete word(s) matches the search term (one or more partial or complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1016	any
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.15 Type of Material Search – Keyword (Equivalent to Bath 5.A.2.6)**

*Uses:* A limiting search based on type of material (e.g., printed music, globe, video recording, etc.) data in the record.

The material-type Use Attribute must be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the Material-Type Use Attribute.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1031	material-type
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

Searches will use a query term that is a 3-letter coded value associated with a type of material. Clients will use the material type code in a query, not the natural language text of the format. The table identifies codes that can be used in a query.

Material Type	Code
Printed Music	pmu
Manuscript Music	mmu
Printed Cartographic Material	pcm
Manuscript Cartographic Material	mcm
Map	map
Globe	glb
Manuscript Material	mss
Projected Medium	pgr
Motion Picture	mot
Videorecording	vid
Two Dimensional Nonprojected Graphic	ngr
Three Dimensional Object (Artifact)	art
Musical Sound Recording	msr
Nonmusical Sound Recording	nsr
Kit	kit
Periodical	per
Newspaper	new
Microform	mic
Large Print	lpt
Braille	brl

Appendix B identifies the places in a MARC 21 record where Type of Material data may be found and can provide guidance when establishing indexing policies for the database.

**BP2.6 Date of Publication Range Search (Equivalent to Bath 5.A.2.9)**

*Uses:* Limiting search based on date of publication data in the record and where a date in the record falls within the dates specified in the search term (two specified dates).

The Date of Publication Use Attribute must be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the Date of Publication Use Attribute.

This search must be based on the Z39.50 Implementors Agreement #1 for Linear Range Searching (see <<http://lcweb.loc.gov/z3950/agency/agree/range.html>>).

Attribute Type	Attribute Value	Attribute Name
Use (1)	31	date of publication
Relation (2)	104	within position
Position (3)	3	any position in field
Structure (4)	4	year
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.16 LCCN Search

*Uses:* Selects bibliographic records that have a LCCN access point in which a left-anchored complete string matches the search term (single LCCN).

Attribute Type	Attribute Value	Attribute Name
Use (1)	9	LC Card Number
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.17 OCLC Number Search

*Uses:* Selects bibliographic records that have an OCLC Number access point in which a left-anchored complete string matches the search term (single OCLC Number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1211	OCLC Number
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.18 Music Publisher Number Search

*Uses:* Selects bibliographic records that have a Music Publisher Number access point in which any complete word matches the search term (single music publisher number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	51	no. music publisher (not ISMN)
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.19 International Standard Music Number (ISMN) Search

*Uses:* Selects bibliographic records that have an International Standard Music Number access point in which a left-anchored complete string matches the search term (single ISMN Number).

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Attribute Type	Attribute Value	Attribute Name
Use (1)	1092	International standard music number (ISO 10957) ISMN
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.20 Technical Report Number Search

*Uses:* Selects bibliographic records that have a Technical Report Number access point in which a left-anchored complete string matches the search term (single technical report number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1027	Report-number
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.21 Government Document Number Search – Unanchored Phrase

*Uses:* Selects bibliographic records that have a government document number access point in which any complete string matches the search term (single government document number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	50	No. govt pub.
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

### US2.22 Government Document Number Search – Unanchored Phrase with Right Truncation

*Uses:* Selects bibliographic records that have a government document number access point in which any string beginning with the string specified in the search term matches the search term (single government document number).

Attribute Type	Attribute Value	Attribute Name
Use (1)	50	No. govt pub.
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### US2.23 Notes Search – Keyword

*Uses:* Selects bibliographic records that have a notes access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	63	note
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.24 Notes Search – Keyword with Right Truncation**

*Uses:* Selects bibliographic records that have a notes access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	63	note
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.25 Publisher Name Search – Keyword**

*Uses:* Selects bibliographic records that have a publisher name access point in which any complete word matches the search term (single word) matches.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1018	publisher
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**BP2.7 Possessing Institution Search (Equivalent to Bath 5.A.2.10)**

*Use:* Selects bibliographic records that have a possessing institution access point in which any string beginning with the string specified in the search term matches the search term (library symbol or other code) or name that identifies the institution that possesses the item.

The Possessing Institution Use Attribute must be used as a search limiter in conjunction with another operand (i.e., used to limit a search using other Use Attribute values). Z-servers may reject a query that only includes the Possessing Institution Use Attribute.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1044	possessing institution
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.26 Personal Author Search – Keyword**

*Uses:* Selects bibliographic records that have a personal author access point in which any complete word matches the search term (single word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1004	author-name personal
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.27 Personal Author Search – Keyword with Right Truncation**

*Uses:* Selects bibliographic records that have a personal author access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1004	author-name personal
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.28 Personal Author Search – Exact Match**

*Uses:* Selects bibliographic records that have a personal author access point in which a left-anchored, complete character string matches the search term (one or more complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1004	author-name personal
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**US2.29 Personal Author Search – First Characters in Field**

*Uses:* Selects bibliographic records that have a personal author access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the searcher wants to retrieve all names beginning with a common stem.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1004	author-name personal
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.30 Corporate Author Search – Keyword**

*Uses:* Selects bibliographic records that have a corporate author access point in which any complete word matches the search term (single word) matches.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1005	author-name corporate
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.31 Corporate Author Search – Keyword with Right Truncation**

*Uses:* Selects bibliographic records that have a corporate author access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1005	author-name corporate
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.32 Corporate Author Search – Exact Match**

*Uses:* Selects bibliographic records that have a corporate author access point in which a left-anchored, complete character string matches the search term (one or more complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1005	author-name corporate
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

**US2.33 Corporate Author Search – First Characters in Field**

*Uses:* Selects bibliographic records that have a corporate author access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the searcher wants to retrieve all names beginning with a common stem.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1005	author-name corporate
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.34 Conference Author Search – Keyword**

*Uses:* Selects bibliographic records that have a conference author access point in which any complete word matches the search term (single word) matches.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1006	author-name conference
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

**US2.35 Conference Author Search – Keyword with Right Truncation**

*Uses:* Selects bibliographic records that have a conference author access point in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1006	author-name conference
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

**US2.36 Conference Author Search – Exact Match**

*Uses:* Selects bibliographic records that have a conference author access point in which a left-anchored, complete character string matches the search term (one or more complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	1006	author-name conference
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

### US2.37 Conference Author Search – First Characters in Field

*Uses:* Selects bibliographic records that have a conference author access point in which a left-anchored character string matches the search term (one or more partial or complete words). This search is useful when the searcher wants to retrieve all names beginning with a common stem.

Attribute Type	Attribute Value	Attribute Name
Use (1)	1006	author-name conference
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

### Controlled Vocabulary Searches

Not all controlled vocabulary searches defined for this level are appropriate for all servers. For example, some libraries only use Library of Congress Subject Headings (LCSH), and therefore, it would be inappropriate or impossible for those systems to support a Medical Subject Heading (MESH) search. To accommodate these differences, the profile specifies:

- Four pattern searches (Keyword with Right Truncation, Exact Match, First Words in Field, First Characters in Field)
- A list of controlled vocabularies and associated Use Attributes values

The profile requires that Z-servers support the four pattern searches for at least one of the controlled vocabularies listed below. Z-clients must support the four pattern searches for each of the controlled vocabularies listed below.

This optionality within the profile is necessary, but it does have implications for interoperability for these searches. When a Z-server receives a query with a Use Attribute for a non-supported controlled vocabulary, it should return an appropriate diagnostic (i.e., #114, Unsupported use attribute). A Z-client can retry the search using a different Use Attribute for another controlled vocabulary.

Controlled Vocabulary	Use Attribute Number	Use Attribute Name
Library of Congress Subject Headings	27	LC subject heading
LC Subject Headings for Children's Literature (same as: Annotated Card Program, AC Subject Headings)	1008	Subject--LC children's
Medical Subject Headings	25	MESH subject
National Agricultural Library Subject	1088	Subject-NAL
Répertoire de vedettes-matière	28	RVM subject heading
Sears List of Subject Headings	1210	Sears Subject Heading

### US2.38 Controlled Vocabulary Search – Keyword with Right Truncation

*Uses:* Selects bibliographic records that have an access point identified by the Use Attribute value in which any word beginning with the specified character string matches the search term (single, partial, or complete word).

Attribute Type	Attribute Value	Attribute Name
Use (1)	*	
Relation (2)	3	equal
Position (3)	3	any position in field
Structure (4)	2	word
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

\* A Use Attribute value from the table above.

### US2.39 Controlled Vocabulary Search – Exact Match

*Uses:* Selects bibliographic records that have an access point identified by the Use Attribute in which a left-anchored, complete character string matches the search term (one or more complete words). This search is useful for limiting searches to a precise subject, especially in fields that contain subheadings.

Attribute Type	Attribute Value	Attribute Name
Use (1)	*	
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	3	complete field

\* A Use Attribute value from the table above.

### US2.40 Controlled Vocabulary Search – First Words in Field

*Uses:* Selects bibliographic records that have an access point identified by the Use Attribute value in which a left-anchored, ordered list of adjacent complete word(s) matches the search term (one or more complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	*	
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	100	do not truncate
Completeness (6)	1	incomplete subfield

\* A Use Attribute value from the table above.

### US2.41 Controlled Vocabulary Search – First Characters in Field

*Uses:* Selects bibliographic records that have an access point identified by the Use Attribute value in which a left-anchored character string matches the search term (one or more partial or complete words).

Attribute Type	Attribute Value	Attribute Name
Use (1)	*	
Relation (2)	3	equal
Position (3)	1	first in field
Structure (4)	1	phrase
Truncation (5)	1	right truncation
Completeness (6)	1	incomplete subfield

\* A Use Attribute value from the table above.



## Appendixes

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These appendixes to the U.S. National Profile are non-normative. They are intended to provide additional useful information related to the normative specifications in the body of the standard.

## Appendix A

# Examples for Profile-Defined Searches

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The following examples illustrate the behavior of a Z39.50 server and underlying information retrieval system for searches defined in Functional Area A, Conformance Levels 0-2. For certain searches, local indexing policies and system indexing algorithms may affect search results.

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### 5.1 Level 0 Searches

#### BP0.1 Author Search – Keyword

Search term = “william”

- Will select records with “Shakespeare, William” as author
- Will not select records with “Williams, John” as author

Boolean search = “william” OR “john”

- Will select records with either “Shakespeare, William” or “Williams, John” as authors

#### BP0.2 Title Search – Keyword

Search = “water”

- Will select records with “water” in the title
- Will not select records with “waterhole” in the title

Boolean search = “water” AND “hole”

- Will select records with both “water” and “hole” occurring in a title in the same record
- Will not select records with “waterhole” in the title

#### BP0.3 Subject Search — Keyword

Search = “computer”

- Will select records with “computer” as a subject
- Will not select records with “computers” as a subject

Boolean search = “computer” AND “science”

- Will select records with both “computer” and “science” as subjects in the same record, including
  - “computer” and “science” in the same subject
  - “computer” in one subject and “science” in another subject

#### BP0.4 Any Search — Keyword

Search = “twain”

- Will select records with “twain” in areas of the record commonly indexed (e.g., author, title, subject)
- Will not select records with “twain’s” in areas of the record commonly indexed (e.g., author, title, subject)

Boolean search = “life” AND “twain”

- Will select records with “life” and “twain” occurring in areas of the same record commonly indexed (e.g., author, title, subject), including
  - “life” and “twain” in the same title
  - “life” in the title and “twain” in the author
  - “life” in one subject and “twain” in another subject

## 5.2 Level 1 Searches

### BP1.1 Author Search – Keyword with Right Truncation

Search term = "will"

- Will select records with "Shakespeare, William" as author
- Will not select records with "Smith, Twilla" as author

Boolean search = "will" OR "jon"

- Will select records with either "Shakespeare, William" or "Jones, Jonathan" as authors

### BP1.2 Author Search – Exact Match

Search term = "rowlings, edith"

- Will select records with "Rowlings, Edith" as author
- Will not select records with "Rowlings, Edith M." as author

### BP1.3 Author Search – First Words in Field

Search term = "smites"

- Will select records with "Smites van Waesberghe, M. M. J." as author
- Will not select records with "Smiteshony, Julie" as author

Boolean search = "smites van" OR "smith"

- Will select records with either "Smites van Waesberghe, M. M. J." or "Smith Carleson, Joseph" as authors

### BP1.4 Author Search – First Characters in Field

Search term = "jon"

- Will select records with "Jones, Robert" as author
- Will not select records with "Smith, Jonathan" as author

Boolean search = "jon" AND "smit"

- Will select records with "Jones, Robert" and "Smith, Jonathan" as authors in the same record

### BP1.5 Title Search – Keyword with Right Truncation

Search term = "water"

- Will select records with "Victory at Waterson" as title
- Will not select records with "Newater Tavern Anthology" as title

Boolean search = "water" OR "wates"

- Will select records with either "Victory at Waterson" or "Castle on the Wates" as titles

### BP1.6 Title Search – Exact Match

Search term = "health care"

- Will select records with "Health Care" as title
- Will not select records with "Health Care Industry" as title

### BP1.7 Title Search – First Words in Field

Search term = "heal"

- Will select records with "Heal the Masses" as title
- Will not select records with "Health Care Industry" as title

Boolean search = "heal" OR "brac"

- Will select records with either "Heal the Masses" or "Brace Yourself" as titles

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### **BP1.8 Title Search – First Characters in Field**

Search term = "heal"

- Will select records with "Health Care Industry" as title
- Will not select records with "Thealma and Clearchus" as title

Boolean search = "heal" OR "pove"

- Will select records with either "Healing the Masses" or "Powers that Change the World" as titles

### **BP1.9 Subject Search – Keyword with Right Truncation**

Search term = "unit"

- Will select records with "United States" as subject
- Will not select records with "Dunit" as subject

Boolean search = "unit" AND "star"

- Will select records with "United States" and "Starburst galaxies" as subjects in the same record

### **BP1.10 Subject Search – Exact Match**

Search term = "anamorphic art"

- Will select records with "Anamorphic art" as subject
- Will not select records with "Anamorphic art – United States" as subject

Note: The results of this search may be dependent on how subjects are indexed by the server. This example assumes that subdivisions are included when subject fields are indexed.

### **BP1.11 Subject Search – First Words in Field**

Search term = "united states"

- Will select records with "United States – Government" as subject
- Will not select records with "United Nations" as subject

Boolean search = "united states" OR "art history"

- Will select records with either "United States – History" or "Art History – Paintings" as subject

### **BP1.12 Subject Search – First Characters in Field**

Search term = "ana"

- Will select records with "Anatomy" as subject
- Will not select records with "Antiques" as subject

Boolean search = "ger" OR "ana"

- Will select records with "Anatomy" or "Anamorphic Art" or "German History" as subject

### **BP1.13 Any Search – Keyword with Right Truncation**

Search term = "hist"

- Will select records with "History of War" as title
- Will select records with "Art History" as subject
- Will select records with "Histon, James" as author
- Will select records with "History of the Inquisition" in the notes field (if the notes field was indexed for general keyword searching)
- Will not select records with "thistles" as a keyword

Note: The results of this search will be dependent on what fields are indexed for general keyword searching.

### **BP1.14 Standard Identifier Search**

Search term = "1234567890"

- Will select records with "1234567890" as ISBN (if the server includes ISBNs in its Standard Identifier search)

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US1.1 ISBN Search**

Search term = "3893224416"

- Will select records with "3893224416" as ISBN
- Will not select records with "3893324417" as ISBN

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US1.2 ISSN Search**

Search term = "8756-7717"

- Will select records with "87567717" as ISSN
- Will not select records with "87565775" as ISSN

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US1.3 Remote System Record Number Search**

Search term = "01-12345-239"

- Will select the record which has "01-12345-239" as unique local control number in the database being searched

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**BP1.15 Date of Publication Search**

Search term = [author search – exact match] "grisham, john" AND [date] "1990"

- Will select records with John Grisham as author and where publication date is before 1990 -- if relation value 1 (less than) is used
- Will select records with John Grisham as author and where publication date is 1990 or earlier -- if relation value 2 (less than or equal) is used
- Will select records with John Grisham as author and where publication date is 1990 -- if relation value 3 (equal) is used
- Will select records with John Grisham as author and where publication date is 1990 or later -- if relation value 4 (greater than or equal) is used
- Will select records with John Grisham as author and where publication date is after 1990 -- if relation value 5 (greater than) is used

Search term = [date] "1990"

- May be rejected by the server because no other Use Attribute was provided

**US1.4 Language Search**

Search term = [subject search – exact match] "art history" AND [language] "fre"

- Will select records with "Art History" as subject and where language code is FRE (indicating the item described by the record is in French)
- Will not select records with "Art History" as subject and where language code is ENG (indicating the item described by the record is in English)

Search term = [language] "fre"

- May be rejected by the server because no other Use Attribute was provided

**US1.5 Format of Material Search – Keyword**

Search term = [subject search – keyword] "jazz" AND [format of material] "rec"

- Will select records with "Jazz" as a keyword in a subject field and where the record contains an indication that the item being described is a sound recording

Note: This indication may be in the form of a code and/or text in the record. Servers establish their own criteria for determining how format of material is indicated.

Search term = [format of material] "rec"

- May be rejected by the server because no other Use Attribute was provided

## 5.3 Level 2 Searches

### BP2.1 Key Title Search – Keyword

Search Term = "literature"

- Will select records with "Abstracts of Bulgarian Scientific Literature" as key title
- Will not select "Abstracts of German Literary Research" as key title

### BP2.2 Key Title Search – Keyword with Right Truncation

Search term = "astro"

- Will select records with "Bulletin – American Astronomical Society" as key title
- Will not select records with "Bulletin – American Gastronomic Society" as key title

Boolean search = "anth" OR "med"

- Will select records with either "Bulletin – American Anthropological Society" or "Bulletin – Canadian Medical Society" as key titles

### BP2.3 Key Title Search – Exact Match

Search term = "acta radiologica oncology radiation physics biology"

- Will select records with "Acta radiologica. Oncology, radiation, physics, biology" as key title
- Will not select records with "Acta radiologica. Oncology, radiation, biology, physics" as key title

### BP2.4 Key Title Search – First Words in Field

Search term = "air carrier"

- Will select records with "Air Carrier Financial Statistics Quarterly" as key title
- Will not select records with "North American Air Carrier Semi Annual Safety Statistics" as key title

### BP2.5 Key Title Search – First Characters in Field

Search term = "act"

- Will select records with "Acta polytechnica Scandinavica. Annotated index" as key title
- Will not select records with "Abstracts of Russian Medical Literature" as key title

### US2.1 Uniform Title Search – Keyword

Search term = "art"

- Will select records with "Art Precolumbian" as uniform title
- Will not select records with "Arthurian Legend. Spanish" as uniform title

### US2.2 Uniform Title Search – Keyword with Right Truncation

Search term = "intern"

- Will select records with "Principles of Internal Medicine" as uniform title
- Will not select records with "Records of the Comintern Archives" as uniform title

Boolean search = "pri" AND "med"

- Will select records with "Principles of Internal Medicine" as uniform title

### US2.3 Uniform Title Search – Exact Match

Search term = "outline history of ibadan"

- Will select records with "Outline history of Ibadan" as uniform title
- Will not select records with "Outline history of Ibadan (Nigeria)" as uniform title

### US2.4 Uniform Title Search – First Words in Field

Search term = "grundlagen tibetischer"

- Will select records with "Grundlagen tibetischer Heilkunde" as uniform title
- Will not select records with "Grundlagen Heilkunde tibetischer" as uniform title

### US2.5 Uniform Title Search – First Characters in Field

Search term = "prin"

- Will select records with "Principles of Internal Medicine" as uniform title
- Will not select records with "Price of International Diplomacy" as uniform title

**US2.6 Series Title Search – Keyword**

Search term = "studies"

- Will select records with "AAPG studies in Geology" as series title
- Will not select records with "AAPG Annual study in Physics" as series title

**US2.7 Series Title Search – Keyword with Right Truncation**

Search term = "art"

- Will select records with "Paris Annual Artist Exposition Catalogues" as series title
- Will not select records with "Annual Cartesian Research Reports" as series title

**US2.8 Series Title Search – Exact Match**

Search term = "studies in geology"

- Will select records with "Studies in Geology" as series title
- Will not select records with "AAPG studies in Geology" as series title

**US2.9 Series Title Search – First Words in Field**

Search term = "new york"

- Will select records with "New York Periodic Publications on the Arts" as series title
- Will not select records with "New Mexico Annual Publications in Physics" as series title

**US2.10 Series Title Search – First Characters in Field**

Search Term = "nas"

- Will select records with "NASA Contract Reports" as series title
- Will not select records with "National Annual Housing Reports" as series title

**US2.11 Title Search – Unanchored Phrase**

Search term = "completely explained"

- Will select records with "XML Schema Completely Explained" in a title field
- Will select records with "Completely Explained in 10 Easy Lessons: Calculus" in a title field
- Will not select records with "Physics Explained Completely in 15 Hours" in a title field

**US2.12 Subject Search – Unanchored Phrase**

Search term = "folk music"

- Will select records with "Popular Folk Music" in a subject field
- Will select records with "Folk Music: American Favorites" in a subject field
- Will not select records with "Folk Dance Music" in a subject field

**US2.13 Name Search – Unanchored Phrase**

Search term = "henry paul"

- Will select records with "Johnson, Henry Paul" in a field indexed for name searching
- Will select records with "Henry, Paul Joseph" in a field indexed for name searching
- Will not select records with "Josephson, Paul Walter Henry" in a field indexed for name searching

Search term = "manufacturing corporation"

- Will select records with "Manufacturing Corporation of America" in a field indexed for name searching
- Will select records with "European Manufacturing Corporation" in a field indexed for name searching
- Will not select records with "West Coast Manufacturing and Production Corporation" in a field indexed for name searching

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### **US2.14 Any Search – Unanchored Phrase**

Search term = "film society"

- Will select records with "History of the American Film Society" in a title field
- Will select records with " Film Society of Cannes (France)" in an author field
- Will select records with "Australian Film Society Expositions" in a subject field
- Will select records with "Canadian Film Society" in a notes field (if notes fields are indexed for general keyword searching)

Note: The results of this search will be dependent on what fields are indexed for general keyword searching.

### **US2.15 Type of Material Search – Keyword**

Search term = [subject search – unanchored phrase] "american continent" AND [type of material] "glb"

- Will select records with "North American Continent" in a subject field and where the record contains an indication that the item being described is a globe
- Will not select records with "North American Continent" in a subject field and where the record contains an indication that the item being described is a map

Note: The actual characters "glb" might not appear anywhere in the record.

Search term = [type of material] "vid"

- May be rejected by the server because no other Use Attribute was provided

### **BP2.6 Date of Publication Range Search**

Search term = [subject – keyword search] "art" AND [date of publication within] "1980-1990"

- Will select records with "Art" as a keyword in a subject field and where the date of publication is between 1980 and 1989 (or between 1980 and 1990 -- the structure used to specify the date range has a flag that indicates whether or not the end point of the date range is to be included in the range)
- Will not select records with "Art" as a keyword in a subject field and where the date of publication is 1991

Search term = [date of publication within] "1960-1975"

- May be rejected by the server because no other Use Attribute was provided

### **US2.16 LCCN Search**

Search term = "67928921"

- Will select records with "67928921" as LCCN
- Will not select records with "267928921" as LCCN

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

### **US2.17 OCLC Number Search**

Search term = "3000593"

- Will select records with "3000593" as OCLC number
- Will not select records with "43000593" as OCLC number

### **US2.18 Music Publisher Number Search**

Search term = "6787"

- Will select records with "6787" as music publisher number
- Will not select records with "67870" as music publisher number

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US2.19 International Standard Music Number (ISMN) Search**

Search term = "m-2306-7118-7"

- Will select records with "M-2306-7118-7" as ISMN
- Will not select records with "BM-2306-7118-7" as ISMN

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US2.20 Technical Report Number Search**

Search term = "23420440"

- Will select records with "234-204-4.0" as technical report number
- Will not select records with "1-234-204-40" as technical report number

Note: Searches may need to be entered with and without punctuation since servers may index this type of data in a variety of ways.

**US2.21 Government Document Number Search – Unanchored Phrase**

Search term = "s1500.3"

- Will select records with "S1500.3 F49" as the government document classification number
- Will select records with "S1500.3" as a string in the government document classification number
- Will not select records with "S1500.36" as a string in the government document classification number
- Will not select records with "1500.3" as a string in the government document classification number
- Boolean search = "s1500.3" AND "txdocs"
- Will select records with "S1500.3 F49" as the government document classification number and "txdocs" as the source
- Will select records with "S1500.3" as a string in the government document classification number and "txdocs" as the source
- Will not select records with "S1500.36" as a string in the government document classification number and "txdocs" as the source

**US2.22 Government Document Number Search – Unanchored Phrase with Right Truncation**

Search term = "s1500.3"

- Will select records with "S1500.3 F49" as the government document classification number
- Will also select records with "S1500.3" as a string in the government document classification number
- Will select records with "S1500.36" as a string in the government document classification number
- Will not select records with "1500.3" as a string in the government document classification number

**US2.23 Notes Search – Keyword**

Search term = "health"

- Will select records with "Women's health issues" as note
- Will not select records with "Women's healthy eating guide" as note

**US2.24 Notes Search – Keyword with Right Truncation**

Search term = "heal"

- Will select records with "Health and welfare" as a note
- Will not select records with "Breaking unhealthy habits" as a note

**US2.25 Publisher Names Search – Keyword**

Search term = "health"

- Will select records with "National association for mental health" as publisher name
- Will not select records with "National institute for healthy people" as publisher name

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### **BP2.7 Possessing Institution Search**

Search term = [title keyword] "pharmacy" AND [possessing institution] "ohio state"

- Will select records with "The food pharmacy" as title and "The Ohio State University" as possessing institution
- Will not select records with "The State College of Ohio" as possessing institution

Search term = [title keyword] "pharmacy" AND [possessing institution] "osu"

- Will select records with "The food pharmacy" as title and "osu" as possessing institution
- Will not select records with "osub" as possessing institution

### **US2.26 Personal Author Search – Keyword**

Search term = "will"

- Will select records with "Smith, Will" as personal author
- Will not select records with "Williams, John" as personal author

Boolean search = "will" OR "john"

- Will select records with either "Smith, Will" or "Williams, John" as personal authors

### **US2.27 Personal Author Search – Keyword with Right Truncation**

Search term = "will"

- Will select records with "Smith, William" as personal author
- Will not select records with "Twillian, John" as personal author

Boolean search = "will" AND "jon"

- Will select records with "Smith, William" and "Jones, Roy" as personal authors in the same record

### **US2.28 Personal Author Search – Exact Match**

Search term = "tompson, may"

- Will select records with "Tompson, May" as personal author
- Will not select records with "Tompson, May Ann" as personal author

### **US2.29 Personal Author Search – First Characters in Field**

Search term = "will"

- Will select records with "William, John" as personal author
- Will not select records with "Jones, Will" as personal author
- Boolean search = "will" OR "smith"
- Will select records with either "William, John" or "Smithson, Paul" as personal authors

### **US2.30 Corporate Author Search – Keyword**

Search term = "micro"

- Will select records with "Advanced Micro Devices" as corporate author
- Will not select records with "Microsoft Corporation" as corporate author

### **US2.31 Corporate Author Search – Keyword with Right Truncation**

Search term = "micro"

- Will select records with "Microsoft Corporation" as corporate author
- Will not select records with "Micra Inc." as corporate author

### **US2.32 Corporate Author Search – Exact Match**

Search term = "microsoft corporation"

- Will select records with "Microsoft Corporation" as corporate author
- Will not select records with "Microsoft Corporation (USA)" as corporate author

### **US2.33 Corporate Author Search – First Characters in Field**

Search term = "corp"

- Will select records with "Corporation Inc." as corporate author
- Will not select records with "Microsoft Corporation" as corporate author

**US2.34 Conference Author Search – Keyword**

Search term = "institute"

- Will select records with "Health and Welfare Institute" as conference author
- Will not select records with "National Institutes of Health" as conference author

**US2.35 Conference Author Search – Keyword with Right Truncation**

Search term = "hap"

- Will select records with "Center for Happiness" as conference author
- Will not select records with "The Shaping Tomorrow Center" as conference author

**US2.36 Conference Author Search – Exact Match**

Search term = "center for happiness"

- Will select records with "Center for Happiness" as conference author
- Will not select records with "North American Center for Happiness" as conference author

**US2.37 Conference Author Search – First Characters in Field**

Search term = "well"

- Will select records with "Wellness Institute" as conference author
- Will not select records with "Center for Wellness" as conference author

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## 5.4 Controlled Vocabulary Searches

Note: Servers are not required to support all of the controlled vocabularies defined in the US National Profile (e.g., Library of Congress Subject Headings, Medical Subject Headings). A server may reject a search if the value of the Use Attribute specifies a controlled vocabulary that is not supported for the database(s) being searched. Therefore, the examples given for the four pattern searches below are generic and are intended to apply to all controlled vocabularies a server might support.

**US2.38 Controlled Vocabulary Search – Keyword with Right Truncation**

Search term = "state"

- Will select records with "United States" as a subject from the controlled vocabulary specified in the search
- Will not select records with "Estate Planning" as a subject from the controlled vocabulary specified in the search
- Will not select records with "United States" as a subject from a controlled vocabulary other than the one specified in the search

**US2.39 Controlled Vocabulary Search – Exact Match**

Search term = "archival materials"

- Will select records with "Archival Materials" as a subject from the controlled vocabulary specified in the search
- Will not select records with "Archival Materials Storage" as a subject from the controlled vocabulary specified in the search
- Will not select records with "Archival Materials" as a subject from a controlled vocabulary other than the one specified in the search

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### **US2.40 Controlled Vocabulary Search – First Words in Field**

Search term = "states"

- Will select records with "States and Provinces" as a subject from the controlled vocabulary specified in the search
- Will not select records with "United States" as a subject from the controlled vocabulary specified in the search
- Will not select records with "States and Provinces" as a subject from a controlled vocabulary other than the one specified in the search

### **US2.41 Controlled Vocabulary Search – First Characters in Field**

Search term = "comp"

- Will select records with "Computer Systems Design" as a subject from the controlled vocabulary specified in the search
- Will not select records with "Hybrid Computers" as a subject from the controlled vocabulary specified in the search
- Will not select records with "Computer Systems Design" as a subject from a controlled vocabulary other than the one specified in the search

## Appendix B

### MARC 21 Fields and Subfield Values for Format and Type of Material Searches

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Tables 1 and 2 provide information to implementors of the U.S. National Profile to support the US1.5 Format of Material Search – Keyword and the US2.15 Type of Material Search – Keyword. The tables identify where Format and Type of Material data may be found in a MARC 21 record, and these tables can provide a basis for decisions when setting indexing policies for the database. Table 1 identifies the codes to be used in a query and the sources of data in a MARC 21 record to be considered when establishing indexing policies to support this search. Table 2 identifies the codes to be used in a query and the sources of data in a MARC 21 record to be considered when establishing indexing policies to support this search.

**Table 1. US1.5 Format of Material Search – Keyword**

Formats	Code	Leader/06	006/00	Leader/07	007/00	008/21	008/23	008/29
Book	bks	a OR t	a OR t		t			
Printed or Manuscript Music	mus	c OR d	c OR d		q			
Cartographic Material	cmt	e OR f	e OR f					
Visual Materials	vis	g OR k OR r	g OR k OR r	f OR g OR k OR m				
Sound Recording	rec	i OR j	i OR j		s			
Electronic Resources	elr	m	m		c			
Archival/Mixed Materials	mix	p	p					
Continuing Resources	ser		s	b OR s				

Note: Any single value in a cell identifies the format (i.e., ORs between cells in the same row are implied), EXCEPT when ANDs are used within the same row.

Table 2. US2.15 Type of Material Search – Keyword

Material Type	Code	Leader/06	006/00	Leader/07	007/00	008/21	008/23	008/29
Printed Music	pmu	c	c					
Manuscript Music	mmu	d	d					
Printed Cartographic Material	pcm	e	e					
Manuscript Cartographic Material	mcm	f	f					
Map	map				a			
Globe	glb				d			
Manuscript Material	mss	d OR f OR t	d OR f OR t					
Projected Medium	pgr	g	g		g			
Motion Picture	mot				m			
Videorecording	vid				v			
Two Dimensional Nonprojected Graphic	ngr	k	k		k			
Three Dimensional Object (Artifact)	art	r	r					
Musical Sound Recording	msr	j	j					
Nonmusical Sound Recording	nsr	i	i					
Kit	kit	o	o		o			
Periodical	per	a	AND s			AND p		
Newspaper	new	a	AND s			AND n		
Microform	mic				h			
	mic	a OR c OR d OR p OR t	a OR c OR d OR p OR t				AND (a OR b OR c)	
	mic		s	b OR s			AND (a OR b OR c)	
	mic	e OR f OR g OR k OR r	e OR f OR g OR k OR r					AND (a OR b OR c)

Material Type	Code	Leader/06	006/00	Leader/07	007/00	008/21	008/23	008/29
Large Print	lpt	a OR c OR d OR p OR t	a OR c OR d OR p OR t				AND d	
	lpt		s	b OR s			AND d	
		e OR f OR g OR k OR r	e OR f OR g OR k OR r					AND d
Braille	brl	a OR c OR d OR p OR t	a OR c OR d OR p OR t				AND f	
	brl		s	b OR s			AND f	
	brl	e OR f OR g OR k OR r	e OR f OR g OR k OR r					AND f

Note: Any single value in a cell identifies the material type (i.e., ORs between cells in the same row are implied), EXCEPT when ANDs are used within the same row.