ZIG Tutorial
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Z39.50 Overview

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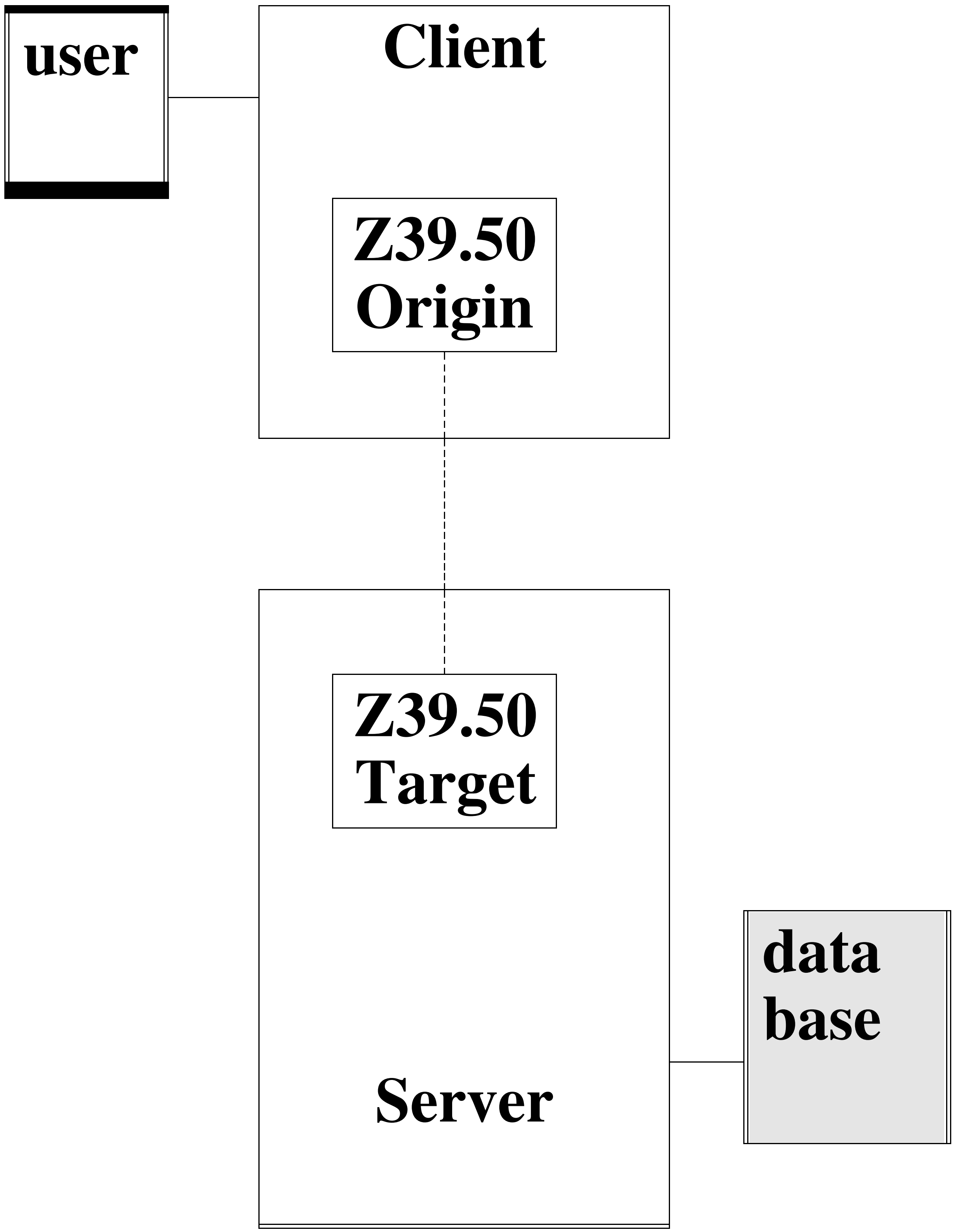
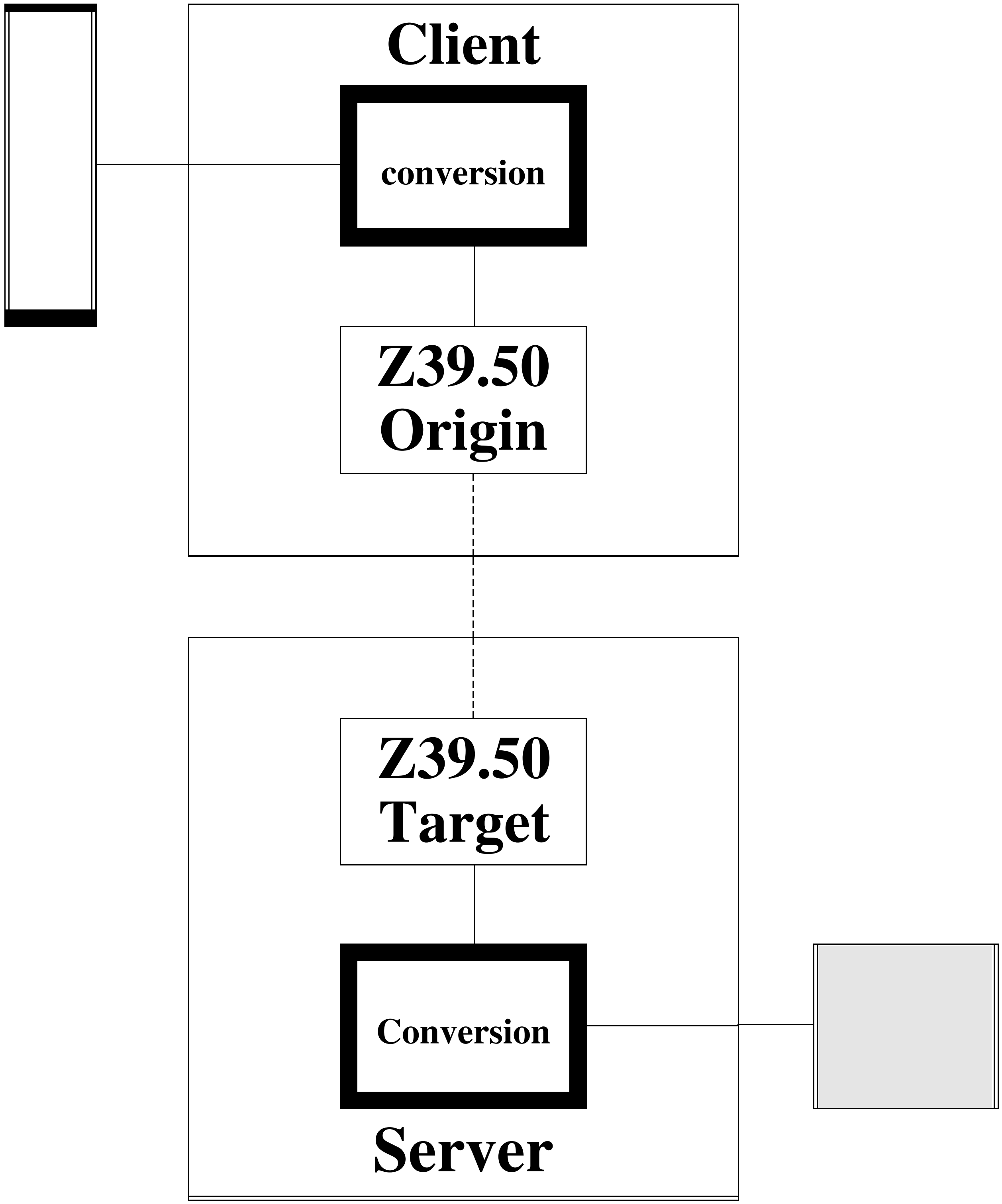
Z39.50
Information Retrieval Protocol

ANSI/NISO Z39.50
ISO 23950

ANSI/NISO Z39.50-1988	
ANSI/NISO Z39.50-1992	**(2)**
ANSI/NISO Z39.50-1995	**(2 + 3)**

ISO	**10162/10163**	**1991**	**(1 + 2)**
ISO	**23950**	**1997**	**(2 + 3)**


user
Client
Z39.50
Origin
Z39.50
Target
Server
data
base


Client
conversion
Z39.50
Origin
Z39.50
Target
Conversion
Server

Z39.50 Operations

<u>Origin</u> **<u>Target</u>**

<u>Initialization Operation</u>

Init request . . . . >

< . . . . Init response

<u>Search Operation</u>

Search request . . . . >

< . . . . Search response

<u>Present Operation</u>

Present request . . . . >

< . . . . Present response

Z39.50
Operation Types

Initialize

Search

Present

Scan

Sort

(and others)

The Essense of a Search

Search request . . . . >

Database(s) to search

name to give to new result set

Query

< . . . . Search response

How many records were identified by the query

The Essense of a Present

Present request . . . . >

Result set from which to retrieve records

range of records

How you want them:
composition
syntax

< . . . . Present response

records

The Essense of a Scan

Scan request . . . . >

Index (or "term-list") from which to obtain terms

Where to start scanning (what term)

How many terms

< . . . . Scan response

Terms

Example

1. Scan

Scan request . . . . >

"Scan the <u>title</u> index for the <u>Music</u> database; begin scan with ' <u>mozart chamber music</u>', as the <u>fifth</u> term; return <u>nine</u> terms "

< . . . . Scan response

mozart & beethoven
mozart & prague
mozart & salieri
mozart & the archbooby
---> mozart chamber music
mozart in new york
mozart speaks
(-->) mozart symphonies
mozart und haydn in London

2. Search

Search request . . . . >

"Search the music database for records with 'mozart symphonies' in the title."

< . . . . Search response

"27 records found."

3. Present

Present request . . . . >

"Present the first three records; in MARC format, Brief records."

< . . . . Present response

1. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Saint-foix, Georges de, 1874-1954
The Symphonies of Mozart, 1968
LC Call Number ML410.M9S172 1968 68-55994

2. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Dickinson, A.E.F. (Alan Edgar Frederick)
A study of Mozart's last three symphonies / 1978
LC Call Number MT138.M8D4 73-181142

3. Mozart, Wolfgang Amadeus, 1756-1791. Symphonies.
Dearling, Robert, 1933-
The Music of Wolfgang Amadeus Mozart, the Symphonies / 1982
LC Call Number MT130.M8D33 1982 78-68625

4. Present

Present request . . . . >

"Present the second record; in MARC format, Full record."

< . . . . Present response

001	73-181142 MN r952
050	MT130.M8D4
082	785.1/1/0924
100	Dickinson, A.E.F. (Alan Edgar Frederick)
245	A study of Mozart's last three Symphonies / by A.E.F. Dickinson.
260	St. Clair Shores, Mich.: Scholarly Press, 1978.
300	58 p. : music ; 22 cm.
440	The Music Pilgrim
500	Reprint of the 1927 ed. published by Oxford University Press, london.
---> 600	Mozart, Wolfgang Amadeus, 1765-1791. Symphonies.
040	.....

5. Scan Again

Scan request . . . . >

"Scan Subjects (personal name); begin scan with 'Mozart, Wolfgang Amadeus, 1765-1791. Symphonies' as the fifth term; return ten terms"

< . . . . Scan response

Mozart, Wolfgang Amadeus, 1756-1791. Quintets
Mozart, Wolfgang Amadeus, 1756-1791. Requiem
Mozart, Wolfgang Amadeus, 1756-1791. Serenade
Mozart, Wolfgang Amadeus, 1756-1791. Sonatas

----> **Mozart, Wolfgang Amadeus, 1756-1791. Symphonies**

Mozart, Wolfgang Amadeus, 1756-1791. Variations
Mozart, Wolfgang Amadeus, 1756-1791. Vocal Music
Mozart, Wolfgang Amadeus, 1756-1791. Works --
Mozart, Wolfgang Amadeus, 1756-1791. Works, chamber
Mozart, Wolfgang Amadeus, 1756-1791. Zaide

eight Z39.50 Operation Types

Init

Search

Present

Scan

Sort

Delete

Resource-report

Extended-services

The Essense of a Search

Search request . . . . >

Database(s) to search

name to give to new result set

Query

< . . . . Search response

How may records were identified by the query

Z39.50 Query Types

private:

Type-0 query

required for conformance:

Type-1 query

Also included:

Type-2 query
Type-100 query
Type-101 query

Plus some Under development:

Type-102 query
Ranked List Query

Type-103 query
SQL

Type-1: "Reverse Polish Notation" (RPN) query.

examples:

1. Query : A

Records in database for which A is true

2. Query : A B C AND OR

Records in database for which both B and C are true, or A is true

3. Query : A B AND C OR

Records in database for which both A and B are true, or C is true

4. Query : (Result set R) AND A

Records in result set R for which A is true

Bib-1 Attributes

Use	1	Structure	4
Relation	2	Truncation	5
Position	3	Completeness	6

Use	Value	Use	Value
Personal name	1	Name and title	57
Corporate name	2	Name geographic	58
Conference name	3	Place publication	59
Title	4	Abstract	62
Title series	5	Note	63
Title uniform	6	Name	1002
ISBN	7	Author	1003
Subject heading	21	Editor	1020
Date of publication	31	Music-key	1025

Relation	Value	Relation	Value
less than	1	greater than	5
equal	3	not equal	6

Structure	Value	Structure	Value
phrase	1	date	5
year	4	string	108

Back to the Present

Present request . . . . >

Result set

range

syntax

composition

Example: Retrieve records 1-10 from result set R; retrieve 'brief' records, in USMARC format

Record Syntaxes

(Object Identifier 1.2.840.10003.5.x)

Marc Record Formats:

Unimarc	1
Intermarc	2
CCF	3
USmarc	10
UKmarc	11
Normarc	12
Librismarc	13
Danmarc	14
Finmarc	15
MAB	16
Canmarc	17
SBN	18
Picamarc	19
Ausmarc	20
Ibermarc	21

Record Syntaxes (continued)

Content Specific

• Marc	1-23
• OPAC	102

Facility Specific

• Explain	100
• Extended Services	106

Generic

• SUTRS *(unstructured)*	101
• GRS-1 *(structured)*	105

And others

- e.g. HTML

OPAC Record Syntax

102

MARC record

+

1 or more holdings

and/or

holdings + circ records

Syntax and Element Sets

MARC	OPAC
Bibliographic	Circulation
	Holdings
	Bibliographic

Element Sets

<u>MARC</u>	<u>OPAC</u>
Full	**Full**
Brief	**Circ**
Brief-1	**holdings**
	circ+holdings
	bib+circ

Schema Definition

Opac Record

(1): circulation
(2): holding
(3): bibliographic

Element Specification

"return result set record 1, assuming the "Opac" schema, circulation, first two holdings, bibliographic information in USMARC, all packaged in the 'GRS' record syntax".

Retrieval Record

(1)	circulation		
(2)	holding	first	
(2)	holding	second	
(3)	bibliographic		usmarc

Abstract Record Structure: Schema Elements for GILS Schema

Tag (Path)	Element
(2,1)	title
(2,6)	abstract
(4,51)	purpose
(4,70)	availability
(4,70)/(4,90)	distributor
(4,70)/(4,90)/(2,7)	Name
(4,70)/(4,90)/(2,10)	Org.
(4,70)/(4,25)	linkage
(4,94)	pointOfContact
(4,94)/(2,7)	Name
(4,94)/(2,10)	Organization
(4,97)	crossReference
(4,27)	recordSource

Access Control

Origin **Target**

Search request . . . . >

< . . . . ***Access Control Request***

Access Control response **. . . . . . >**

< . . . . Search response

Resource Control

Origin **Target**

Search request . . . . >

< . . . . . ***Resource Control Request***

Resource Control response **. . . . >**

< . . . . Search response

Origin **Target**

Search request . . . . >

< . . . . . Resource Control Request

"Search will probably:

- ***take at least an hour, or***
- ***cost at least $100, or***
- ***result in more than 10,000 records***

Want to continue?"

Resource Control response . . . >

"Sure"

< . . . . Search response

Trigger-resource Control

Origin **Target**

Search request . . . . >

Trigger-resource-control-request . . . . >

< . . . . Resource Control Request

Resource Control response . . . . >

< . . . . Search response

Search Operation

Search request . . . . >

Trigger-resource-
control request . . . . >

< . . . . Resource
Control Request

Resource Control
response . . . . >

< . . . . Search response

Resource-report Operation

Resource-report request . . . >

< . . Resource-report response

Z39.50 Explain Facility

- **Uses Z39.50 Search/Present facilities for Information about:**
  - **the Target**
  - **Databases**
  - **Attributes**
  - **Record Syntaxes** (etc.)
- **Explain database**
- **exp-1 attribute set**
- **explain-1 record syntax**

<u>Example</u>

Search ***Explain database: 'explainCategory' = 'databaseInfo'***

Present ***Records 1 through n using Explain-1 record syntax.***

Extended services

- **Save a result set**
- **Export**
- **Periodic Query**
- **Order an item**
- **Update a database**

Extended Services Facility

- **the Extended-services *service***
- **The extended *services***
- **The ES *database***
- **Also uses Search/Present**
- **ES Attribute set**
- **ES Record Syntax**

Facility	Service(s)	Operation
Initialization	Init	Init
Search	Search	Search
Retrieval	Present Segment	Present
Delete	Delete	Delete
Sort	Sort	Sort
Browse	Scan	Scan
Access Control	Access Control	
Resource control	Resource Control Trigger-Resource control Resource report	Resource Report
Extended Services	Extended Services	Extended Services
Explain		
Termination	Close	

Profiles

- WAIS
- GILS
- ATS (Author-title-subject)
- ZDSR
- Collections
  - CIMI (Museums)
  - Digital library
- CIP
- Geo
- Union Catalog
- Item Order/ILL
- ONE

Maintenance Agency web Page

http://lcweb.loc.gov/z3950/agency

- **The Z39.50 Document**
- **Register of Implementors**
- **Profiles**
- **Registered Objects and definitions**
- **Implementor Agreements**
- **ZIG**
- **Clarifications/commentaries**
- **Hosts available for testing**
- **Articles, tutorials, etc.**