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## iBase REST Server

The iBase REST (REpresentational State Transfer) server allows third party applications, such as web sites, to query an iBase repository via a HTTP request and retrieve assets and metadata in the form of a structured XML document.

This document details the required format of the URL that is passed to the REST server and the structure of the XML document containing the search results.

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## 1 What is iBase REST Server?

The iBase REST (REpresentational State Transfer) server allows third party applications, such as web sites, to query an iBase repository via a HTTP request and retrieve assets and metadata in the form of a structured XML document.

The iBase data schema is highly configurable, and provides for such things as the creation and management of a structured subject / category / keyword hierarchy, item relationships and also enables sets of data fields to be created that are specific to each of any number of separate item types within a single database. The iBase REST server fully supports all aspects of the iBase data schema, making it ideal for exporting assets in a distributed environment.

This document details the required format of the URL that is passed to the REST server and the structure of the XML document containing the search results.

## 2 Search Protocol

### 2.1 URL Syntax

The search URL is of the 'httpurl' form conforming to W3C RFC 1738, with the following name value pair search arguments contained in the search part.

Argument	Usage
itemtype	Name of type of item to limit search to. Empty value indicates search across all item types. *
itemtypeid	Id of type of item to limit search to. Value of zero indicates search across all item types. *
criteria	Search string, as could be entered into the simple search prompt of the user interface
pageindex	Page of results to return, starting at zero



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resultsperpage	Number of results to return in a page.
details	Set to either 'brief' or 'full'. Determines level of detail returned.

\* Note either 'itemtype' or 'itemtypeid' may be included in the search url. If both are included, the value of 'itemtypeid' will take precedence.

## 2.2 Example search URL

`http://server/searchpath?itemtype=picture&criteria="london monument"&pageindex=0&resultsperpage=10&details=full`

## 2.3 URL Encoding

Search URL's must be encoded as per RFC1738 to enable the transmission of reserved characters. The encoded version of the example search URL would be as follows:

`http://server/searchpath?itemtype=picture&criteria=%22london%20monument%22&pageindex=0&resultsperpage=10&details=full`

# 3 Result Syntax

The result of a search is an XML document that conforms to specific schema. See Appendix A.

## 3.1 Results elements

- The result contains elements containing information including:
  - The search criteria used
  - The total number of results identified by the search
  - The size and index of the page of results returned
  - The format (brief | full) of the results returned
  - If the search identified some results, one or more result item elements containing information including:
    - Item Id
    - Title
    - User page – A url to the page in the browser User Interface that would normally display the full information for the item
    - Thumbnail - A url and display size information
    - Record – an element containing system specific data associated with the item
    - Image - A url and display size information
    - Subject

## 3.2 Example Results

Note. See Appendix A for XML Schema definition relevant to these examples.

### 3.2.1 Zero results

```
<?xml version="1.0" encoding="UTF-8"?>
<searchResult xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\temp\ibase\Results.xsd">
  <searchMetaData pageIndex="0" resultsPerPage="100" brief="true" results="0">
    <criteria>Tower of London</criteria>
  </searchMetaData>
</searchResult>
```

### 3.2.2 Many Results

```
<?xml version="1.0" encoding="UTF-8"?>
<searchResult xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\temp\ibase\Results.xsd">
  <searchMetaData pageIndex="0" resultsPerPage="100" brief="false" results="2">
    <criteria>Tower of London</criteria>
  </searchMetaData>
  <item item-id="1" title="The Tower of London">
    <thumbnail src="http://store/thumbnails?id=1" width="120" height="120"/>
    <userpage>http://server/detailpage?id=1</userpage>
    <itemType item-type-id="1" name="Pictures"/>
    <record data-id="100">
      <field name="PICTURE_TITLE" type="varchar(100)" label="Title">The Tower of
London</field>
      <field name="PHOTOGRAPHER" type="varchar(100)" label="Photographer">Harry
Smith</field>
      <field name="DATE_TAKEN" type="date" label="Date Taken">01/01/2004</field>
    </record>
    <image src="http://store/images?id=101&resolution=1" data-id="101" resolution="1"
depth="24" width="384" height="400"/>
    <image src="http://store/images?id=101&resolution=2" data-id="101" resolution="2"
depth="24" width="768" height="600"/>
    <image src="http://store/images?id=101&resolution=3" data-id="101" resolution="3"
depth="24" width="1500" height="1024"/>
    <sound src="http://store/sounds?id=102" data-id="102" duration="140"/>
    <video src="http://store/videos?id=103" data-id="102" width="384" height="400"
frames="16000" duration="140"/>
    <subject subject-id="1" name="London"/>
    <subject subject-id="2" name="Tower"/>
    <subject subject-id="3" name="Harry Smith"/>
    <related-item description="Photographer" forward-description="Taken by" backward-
description="Has taken" item-id="2" item-title="Harry Smith"/>
  </item>
  <item item-id="77" title="The Keep">
    <thumbnail src="http://store/thumbnails?id=77" width="120" height="120"/>
    <userpage>http://server/detailpage?id=77</userpage>
    <itemType item-type-id="7" name="Drawings"/>
    <record data-id="188">
      <field name="PICTURE_TITLE" type="varchar(100)" label="Title">The Keep of the
Tower of London</field>
      <field name="ARTIST" type="varchar(100)" label="Artist">Joe Bloggs</field>
      <field name="DATE" type="date" label="Date">1750</field>
    </record>
    <image src="http://store/images?id=171&resolution=1" data-id="101" resolution="1"
depth="24" width="384" height="400"/>
    <image src="http://store/images?id=171&resolution=2" data-id="101" resolution="2"
depth="24" width="768" height="600"/>
```



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```
<image src="http://store/images?id=171&resolution=3" data-id="101" resolution="3"
depth="24" width="1500" height="1024"/>
<subject subject-id="1" name="London"/>
<subject subject-id="2" name="Tower"/>
<subject subject-id="3" name="Keep"/>
<subject subject-id="4" name="Joe Bloggs"/>
<related-item description="Artist" forward-description="Drawn by" backward-
description="Drew" item-id="99" item-title="Joe Bloggs"/>
</item>
</searchResult>
```

### 3.3 Error Reporting

If the Server cannot respond to a received Search URL with a valid result it responds with an error result.

#### 3.3.1 Error Types

The types of error that can be reported in response to a request include:

- Invalid Search URL
  - Search URL not conforming to specification
  - Missing required arguments
  - Duplicate arguments
  - Alpha characters in numeric arguments
- Invalid URL arguments
  - Unsupported Itemtype
  - Empty / too short criteria
  - Invalid pageindex
  - Unsupported number for resultsperpage
- Invalid search criteria
- Internal iBase error

#### 3.3.2 Error Result

An error result is an XML Document conforming to the agreed schema. The error tag contains an English description of the error, plus optionally a detailed report of the cause to aid problem diagnosis.

#### 3.3.3 Example Errors

```
<?xml version="1.0" encoding="UTF-8"?>
<searchResult xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\temp\ibase\Results.xsd">
  <error>
    <description>System error</description>
    <detail><![CDATA[Internal Fatal Exception thrown: DBAcceslayer line27
logonstring "az&&34" invalid
Aborting]]></detail>
  </error>
```

```
</searchResult>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<searchResult xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\temp\ibase\Results.xsd">
  <error>
    <description>Search syntax error</description>
    <detail><![CDATA[Criteria contains no input]]></detail>
  </error>
</searchResult>
```

## 4 Appendix A – Results XML Schema

Xml schema for returned results.

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
  <xs:element name="criteria" type="xs:string"/>
  <xs:element name="field">
    <xs:complexType>
      <xs:simpleContent>
        <xs:extension base="xs:string">
          <xs:attribute name="name" type="xs:string" use="required"/>
          <xs:attribute name="type" type="xs:string" use="required"/>
          <xs:attribute name="label" type="xs:string" use="required"/>
        </xs:extension>
      </xs:simpleContent>
    </xs:complexType>
  </xs:element>
  <xs:element name="image">
    <xs:complexType>
      <xs:attribute name="src" type="xs:anyURI" use="required"/>
      <xs:attribute name="data-id" type="xs:byte" use="required"/>
      <xs:attribute name="resolution" use="required">
        <xs:simpleType>
          <xs:restriction base="xs:NMTOKEN">
            <xs:enumeration value="1"/>
            <xs:enumeration value="2"/>
            <xs:enumeration value="3"/>
          </xs:restriction>
        </xs:simpleType>
      </xs:attribute>
      <xs:attribute name="depth" type="xs:byte" use="required"/>
      <xs:attribute name="width" type="xs:int" use="required"/>
      <xs:attribute name="height" type="xs:int" use="required"/>
    </xs:complexType>
```

```
</xs:element>
<xs:element name="item">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="thumbnail"/>
      <xs:element ref="userpage"/>
      <xs:element ref="itemType"/>
      <xs:element ref="record"/>
      <xs:element ref="image" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="sound" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="video" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="subject" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="related-item" minOccurs="0"/>
    </xs:sequence>
    <xs:attribute name="item-id" type="xs:int" use="required"/>
    <xs:attribute name="title" type="xs:string" use="required"/>
  </xs:complexType>
</xs:element>
<xs:element name="itemType">
  <xs:complexType>
    <xs:attribute name="item-type-id" type="xs:int" use="required"/>
    <xs:attribute name="name" type="xs:string" use="required"/>
  </xs:complexType>
</xs:element>
<xs:element name="record">
  <xs:complexType>
    <xs:sequence>
      <xs:element ref="field" maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:attribute name="data-id" type="xs:int" use="required"/>
  </xs:complexType>
</xs:element>
<xs:element name="related-item">
  <xs:complexType>
    <xs:attribute name="description" type="xs:string" use="required"/>
    <xs:attribute name="forward-description" type="xs:string" use="required"/>
    <xs:attribute name="backward-description" type="xs:string" use="required"/>
    <xs:attribute name="item-id" type="xs:int" use="required"/>
    <xs:attribute name="item-title" type="xs:string" use="required"/>
  </xs:complexType>
</xs:element>
<xs:element name="searchMetaData">
  <xs:complexType>
    <xs:sequence>
```

```

        <xs:element ref="criteria"/>
    </xs:sequence>
    <xs:attribute name="pageIndex" type="xs:int" use="required"/>
    <xs:attribute name="resultsPerPage" type="xs:byte" use="required"/>
    <xs:attribute name="brief" type="xs:boolean" use="required"/>
    <xs:attribute name="results" type="xs:byte" use="required"/>
</xs:complexType>
</xs:element>
<xs:element name="searchResult">
    <xs:complexType>
        <xs:sequence>
            <xs:choice>
                <xs:element ref="searchMetaData"/>
                <xs:element name="error">
                    <xs:complexType>
                        <xs:sequence>
                            <xs:element name="description"
type="xs:string"/>
                            <xs:element name="detail"
type="xs:string" minOccurs="0"/>
                        </xs:sequence>
                    </xs:complexType>
                </xs:element>
            </xs:choice>
            <xs:element ref="item" minOccurs="0" maxOccurs="unbounded"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>
<xs:element name="sound">
    <xs:complexType>
        <xs:attribute name="src" type="xs:anyURI" use="required"/>
        <xs:attribute name="data-id" type="xs:byte" use="required"/>
        <xs:attribute name="duration" type="xs:short" use="required"/>
    </xs:complexType>
</xs:element>
<xs:element name="subject">
    <xs:complexType>
        <xs:attribute name="subject-id" type="xs:byte" use="required"/>
        <xs:attribute name="name" type="xs:string" use="required"/>
    </xs:complexType>
</xs:element>
<xs:element name="thumbnail">
    <xs:complexType>
        <xs:attribute name="src" type="xs:anyURI" use="required"/>
        <xs:attribute name="width" type="xs:byte" use="required"/>

```



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```
        <xs:attribute name="height" type="xs:byte" use="required"/>
    </xs:complexType>
</xs:element>
<xs:element name="userpage" type="xs:anyURI"/>
<xs:element name="video">
    <xs:complexType>
        <xs:attribute name="src" type="xs:anyURI" use="required"/>
        <xs:attribute name="data-id" type="xs:byte" use="required"/>
        <xs:attribute name="width" type="xs:short" use="required"/>
        <xs:attribute name="height" type="xs:short" use="required"/>
        <xs:attribute name="frames" type="xs:short" use="required"/>
        <xs:attribute name="duration" type="xs:short" use="required"/>
    </xs:complexType>
</xs:element>
</xs:schema>
```

END