eZ Find Extension

Documentation

version 2.0.0 DRAFT

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1. Introduction

eZ Find is a search extension for eZ Publish, providing more functionality and better results than the default search in eZ Publish. This manual is a guide to installing, configuring and using eZ Find.

eZ Find enables site visitors to quickly and easily locate information on eZ Publish sites by providing relevant search results. High scalability and performance ensures that the eZ Find search engine can support enterprise-level sites.

eZ Find is a certified extension that integrates smoothly with all eZ Publish business solutions (eZ Publish On Demand, eZ Publish Now and eZ Publish Premium). With eZ Publish Premium, eZ Find can be further customized to meet specific requirements and site structures.

1.1. Target audience

This manual describes how to install, configure and use the eZ Find search extension, and thus is appropriate for system administrators and end users of the extension.

1.2. Conventions

- Code samples, functions, variable names, and so on are printed in `monospace font`.
- Filenames and paths are printed in *`monospace italic font`*.
- Commands are printed in **`monospace bold font`**.
- Elements of graphical user interfaces (such as buttons and field labels) are printed in **bold font**.
- Component names (such as an application) are capitalized, for example “Administration Interface”.
- In sample URLs, replace “example.com” with the domain name of your site.
- The screenshots in this document might have been modified to fit the page or to illustrate a point, and therefore might not exactly match the display on your site.

1.3. More resources

For assistance with eZ Publish, refer to the following resources:

- **eZ Publish documentation**: eZ Find is an extension to eZ Publish. Where appropriate, there are links in this document to the online versions of the eZ Publish documentation, located at http://ez.no/doc.
- **eZ Publish forums**: The forums on the eZ Systems website are a valuable community-driven resource, where eZ Publish users provide assistance and support to each other. Accessing the forums is free. The forums are located at http://ez.no/community/forum.
- **Support from eZ Partners**: eZ's global network of partners provides professional assistance for all eZ products. To find a partner, contact sales@ez.no.
- **Other eZ solutions**: For information about other solutions provided by eZ Systems,

refer to http://ez.no/products/solutions.

- **Training and certification**: eZ Systems and eZ Partners offer training courses and certifications for eZ Publish. Contact sales@ez.no or visit http://ez.no/services/training for more information.

1.4. Contacting eZ

For non-technical questions regarding eZ Publish or eZ Systems, please contact us:

- http://ez.no/company/contact
- info@ez.no

1.5. Copyright and trademarks

2) How does eZ Find work?

eZ Find is an extension that provides enhanced search functionality for eZ Publish sites. It uses the Open Source enterprise search server Solr, which runs on the Lucene Java search library. While the default search function in eZ Publish stores the search index in the database, Solr uses its own highly optimized file for storing its index.

eZ Find uses Solr to handle indexing and searching with an eZ Publish-specific set of configuration files. While indexing, eZ Find uses this specific configuration to do index and query-time analysis of text and keywords. When users perform searches, eZ Find generates a Solr search query based on the user input that is submitted to the Solr back end. All communication with Solr is via Web services (using the REST model).

3) Installation

The extension requires the Java Runtime Environment (JRE) version 5. (JRE version 6 is unstable with eZ Find). This can be obtained from the Java download pages. Follow the installation instructions for JRE as described on the Java home pages.

After JRE is installed, download the eZ Find extension. The extension can be downloaded from the eZ website at http://ez.no/ezfind. Save the downloaded file to the root of your eZ Publish installation, then extract the files.

3.1. Starting Solr

First, navigate to the *extension/ezfind/java* directory.

Start Solr by running the command:

```
java -Dezfind -jar start.jar
```

(Make sure the user executing the Java program has write access to the folders *extension/ezfind/java/solr/data* and *extension/ezfind/java/logs*).

This will start the Solr application in the bundled servlet container (Jetty). This application must be running for the indexing and search operations to work. If you are working directly on the web server, you can verify that Solr is running by accessing the URL http://localhost:8983/solr/admin/, or replace “localhost” in the URL with the IP address of the server.

The “-Dezfind” option makes it easier to identify the eZ Find Java process.

If the Java process dies during indexing or searching, the memory limits (“heap space”) need to be increased. Specify the heap space as startup parameters, for example:

```
java -Dezfind -Xms512M -Xmx512M -jar start.jar
```

This will allocate a heap space of 512 MB.

3.1.1. Starting Solr as a service

eZ Find provides scripts for running eZ Find as a service on Linux platforms. The supported platforms are Debian and RedHat based distributions. For setting up eZ Find as a service, please see the files located in *extension/ezfind/bin/scripts/<dist>/*

.

4) Configuration

4.1. Indexing multiple sites

eZ Find can index multiple eZ Publish installations using the same instance of Solr. This is enabled by default. All indexed content objects are associated with a unique installation key. The installation key is used to identify the installation where the content originates. The installation key is stored in the table `ezsite_data`, with the name `ezfind_site_id`.

To specify that content from one installation should be included in the search index on other installations, use the option `IndexPubliclyAvailable` set in *`extension/ezfind/settings/ezfind.ini.append.php`*. Only content that is accessible to anonymous users will indexed on other eZ Publish installations.

```
IndexPubliclyAvailable=enabled
```

This value is set to `enabled` by default.

4.2. Searching multiple sites

As described above, it is possible to search for content on several eZ Publish installations simultaneously. To show results from multiple installations, check the configuration option `SearchOtherInstallations` in *`extension/ezfind/settings/ezfind.ini.append.php`*.

```
[SiteSettings]
SearchOtherInstallations=enabled
```

5) Enabling eZ Find

To enable the extension, open *`settings/override/site.ini.append.php`*, and add the following parameter in the `[ExtensionSettings]` block:

```
ActiveExtensions[]=ezfind
```

To use the correct templates for the `ezwebin` (Website Interface) extension, the eZ Find extensions must be enabled before the `ezwebin` extension.

5.1. Updating the search index

To add content to the search engine index, run the *`updatesearchindexsolr.php`* script using the administration siteaccess as the specified siteaccess. For example:

```
php extension/ezfind/bin/php/updatesearchindexsolr.php -s <admin
siteaccess> --php-exec=php --conc=2
```

The indexing process typically indexes at a rate of 5 to 15 objects per second. However, if you are using external filters to convert binary files to plain text, this may add more processing time.

The `--php-exec` parameter must specify the path to the PHP executable used. This parameter is used to start sub-processes in the indexing operation. This is done to prevent internal memory and reference problems.

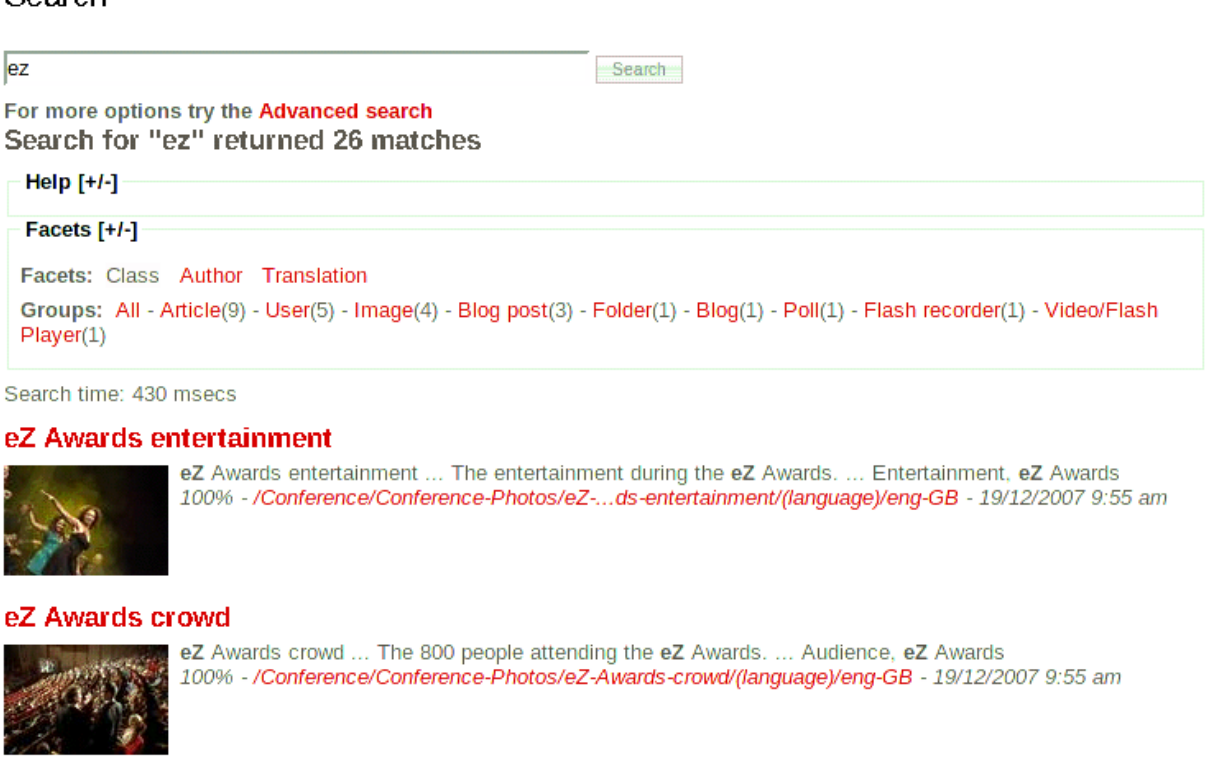
The `--conc` parameter specifies how many concurrent processes should be used to index the content. This number should be equal to the number of processor cores on the server.

An optional parameter is `--clean` which will delete all existing entries (and also the spell check index terms in the default configuration)

6) Customization

6.1. Facets

Facets[1] were introduced in eZ Find 2.0, and enable you to create browse-based search functionality. In other words, the search results can be further narrowed after the original search has been made. This is sometimes called “drilling down” into the results. Facets refer to the characteristics of the content objects in the results, such as their class, author, and translation. The default templates provide some simple facet examples, although eZ Find is capable of providing much more functionality.



To use facets, you must customize the search templates. To make this easier, the template operators `facetParameters` and `filterParameters` have been added, which provide default parameters to implement facet functionality. Facet-related

1 http://www.searchtools.com/info/faceted-metadata.html

parameters are described in more detailed in the next section about the eZ Find fetch function.

6.2. Template fetch functions

New in eZ Find 2.0 ~~is a~~are dedicated template fetch functions:

`fetch(ezfind, search, hash(<parameters>))` that returns eZ Find search results exposing the powerful features of the backend Solr;

`fetch(ezfind, moreLikeThis, hash(<paramerters>))` that will find related content with heuristic techniques;

`fetch(ezfind, rawSolrRequest, hash(<parameters>))` which allows for "raw" Solr requests (not for normal use). ~~:~~

1.1.1. Fetch function `search`

The available parameters are:

Name	Type	Description	Required
query	String	Search query string	No
offset	Integer	Result offset	No
limit	Integer	Result count limit	No
sort_by	Array	Sort definition	No
facet	Array	Facet query definition	No
filter	Mixed	Search filter, independent from ranking	No
class_id	Mixed	Class ID limitation	No
subtree_array	Array	List of subtree limitations	No

`query`

The `query` parameter can contain one or multiple search terms. The query is used to rank and limit the search results.

For information about standard Solr query syntax, see:

http://wiki.apache.org/solr/SolrQuerySyntax and
http://lucene.apache.org/java/docs/queryparsersyntax.html

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems' ) )
```

Returns:

Search result with documents containing the words "ez" and "systems".

Example:

```
fetch( ezfind, search, hash( query, '"eZ Systems"' ) )
```

Returns:

Search result with documents containing the term “ez systems”.

`offset`

Search result offset. The default value is “0”.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             offset, 20 ) )
```

Returns:

Search result containing the words “ez” and “systems”, starting from the 20th result.

`limit`

Search result count limitation. The default value is “10”.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             offset, 0,
                             limit, 25 ) )
```

Returns:

Search result with the first 25 results that contain the words “ez” and “systems”.

`sort_by`

The `sort_by` parameter is used to define the sort order of the search result. It supports the following options:

Key	Description
relevance	Default option. Sorts the result by Solr internal relevancy calculations[1].
score	Alias to “relevance”
<class attribute>	Content class attribute, following the syntax “<class_identifier>/<class_attribute>[/<sub_structure]”
modified	Modified time
published	Published time
author	Author name
class_name	Content class name
class_id	Content class identifier or content class ID
name	Content object name
path	Node location path
section_id	Section ID

1 http://lists.tartarus.org/pipermail/xapian-discuss/2004-November/000571.html

All sort keys can be used to sort in ascending (“asc”) or descending (“desc”) order. It is also possible to specify multiple sort options in the same fetch function.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             sort_by, hash( class_name, asc,
                                            published, desc ) ) )
```

Returns:

All documents containing the words “ez” and “systems”, sorted by the content class name in ascending order, then by the published time in descending order.

`<class_attribute>`

Sorting can be done based on a content class attribute field, specified by its ID number or identifier. If the content class attribute datatype extends `ezfSolrDocumentFieldBase`, the sub-structure can be used as well.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             sort_by, hash( 'article/title', 'asc'
) ) )
```

Returns:

All documents containing the words “ez” and “systems”, sorted by the article title in ascending order.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             sort_by, hash(
'article/options/opt1', 'asc' ) ) )
```

Returns:

All documents containing the words “ez” and “systems”, sorted by the “opt1” part of the article options.

Example:

```
fetch( ezfind, search, hash( query, 'eZ Systems',
                             sort_by, hash( 234, 'asc' ) ) )
```

Returns:

All documents containing the words “ez” and “systems”, sorted by the content class attribute with an ID of “234”, in ascending order.

`facet`

The `facet` parameter is used to define the facet query that should be performed. The results include information about the facets and facet groups relevant to the current search and are returned in addition to the normal query results. It is possible to perform multiple facet queries in one fetch request.

The following facet options are available:

Option	Description
field	The object characteristic that will serve as the facet. This can be a field, specified using the syntax "<class_identifier>/<class_attribute>[/<sub_structure]" The sub-structure is only available for complex datatypes. To enable "<sub_structure>" support, the datatype must contain distinct sub-items (such as the alternative image text for images) and these sub-items must be indexed. Other supported characteristics are: • author – content object author • class – content class • translation – translation
query	Facet query[1]. The facet queries are used to specify facets for the sub-selection of content object attributes.
prefix	Limits the facet fields to only list facet groups where the field value starts with the prefix.
sort	Sort by "count" or "alpha". "alpha" will sort the facet results alpha-numerically by field value.
limit	Maximum number of facet groups to return. The default value is "20".
offset	Offset. The default value is "0".
mincount	Returns only facet groups with more results than the specified minimum count. The default value "0".
missing	If set to "true", the results will also include facet groups with no results. The default value is "false".
date.start	Start date for facet. This must be specified using a strict dateTime syntax.
date.end	End date for facet. This must be specified using a strict dateTime syntax.
date.gap	Size of date range.

Below are examples and more detailed descriptions of the different facet options.

Example:

```
fetch( ezfind, search, hash( 'query', 'Cabriolet',
                             'facet', array( hash( 'field',
'car/model',
                                                   'limit', 20 ) )
) )
```

Returns:

Normal result set of 10 documents containing the word "cabriolet", and a facet list with 20 groups of car models (this is specific to "model" attributes of objects of the "car" class) also containing the word "cabriolet".

1 http://wiki.apache.org/solr/SimpleFacetParameters#head-529bb9b985632b36cbd46a37bde9753772e47cdd

Example:

```
fetch( ezfind, search,
       hash( 'query', 'Cabriolet',
             'facet', array( hash( 'field', 'car/make',
                                   'limit', 25 ),
                             hash( 'field', 'car/size',
                                   'missing', true(),
                                   'limit', 25 ) ) ) )
```

Returns:

Normal result set with a list of 10 documents containing the word “cabriolet”, a facet list with 25 groups of car makes (this is specific to “make” attributes of objects of the “car” class) and a facet list with 25 groups of car sizes (this is specific to “size” attributes of objects of the “car” class), both containing the word “cabriolet”. The “car/size” results will also list elements with 0 matching elements.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             facet, array( hash( query, 'path:2' ),
                           hash( query, 'path:5' ) ) ) )
```

Returns:

Normal result set with a list of 10 documents containing the word “cabriolet”, and a facet list with groups in the subtree with a parent node with an ID of “2”, and a facet list with groups in the subtree with a parent node with an ID of “5”.

For more information about facets, see:
http://wiki.apache.org/solr/SimpleFacetParameters

`filter`

The filter is used when creating faceted search templates for drill-down navigation. Filters are used to limit the search result set without altering the relevancy sort order. Facet results contain filter definitions that can be used directly. Custom filter definitions can also be created.

A filter is specified by `<class_identifier>/<class_attribute>[/<sub_structure]:<value>`. The filter option may be a string or list of strings.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             filter, 'car/in_stock:1' ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, having the content object attribute “car/in_stock” with a value of “1”.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             filter, array( 'car/in_stock:1',
                            'car/make:Alfa Romeo',
                            'car/model:8C' ) ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, having the content object attribute “car/in_stock” with a value of “1”, the “car/make” attribute with the value “alfa romeo” and the “car/model” attribute with the value “8c”.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             filter, 'car/make:( Audi OR Volvo )' ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, having the content object attribute “car/make” with the value “audi” or “volvo”.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             filter, array( 'path:2',
                            'class_id:1' ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, in the subtree below the node with an ID of “2”, for objects of the content class with an ID of “1”.

`class_id`

This parameter is used to limit the search result to specific content classes, using either their identifiers or ID numbers. This can also be achieved by using the filter functionality. `class_id` may be either a single value or a list of values.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             class_id, 1 ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, for objects of the content class with an ID of “1”.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             class_id, array( 'folder', 'article' ) ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, for objects of the Folder and Article content classes.

`subtree_array`

This parameter is a list of node IDs that specifies which subtrees should be included in the search. The same functionality can be achieved with the filter functionality.

Example:

```
fetch( ezfind, search,
       hash( query, 'eZ Systems',
             subtree_array, array( 23, 42 ) ) )
```

Returns:

Result with documents containing the words “ez” and “systems”, from the subtrees with parent nodes with IDs of “23” and “42”.

1.1.2. Fetch function `moreLikeThis`

6.3. Customizing result templates

Customizing result templates for eZ Find is similar to customizing templates for the regular search in eZ Publish, except that eZ Find offers some additional options.

The eZ Find fetch function returns some extra information compared to the default search in eZ Publish, including:

- Relevancy ranking
- Language information
- Complete URLs to external results

The default search in eZ Publish returns a list of `eZContentObjectTreeNode` objects. To provide extra information, eZ Find returns a list of `eZFindResultTree` objects. The `eZFindResultTree` class extends `eZContentObjectTreeNode` and contains the following extra attributes:

- `is_local_installation`: a boolean value indicating whether the result item is from the installation where the search was performed
- `name`: the language-dependent name of the result item
- `global_url_alias`: URL to the result item, including the protocol and domain name
- `published`: published timestamp
- `language_code`: result item language code

- `highlight`: text extracts that include the search terms
- `score_percent`: a relative value that indicates how well the result item matches the search terms

These values are accessible as regular attributes in the templates.

The default eZ Find result templates are stored in *extension/ezfind/design/standard/templates/content.*

Custom templates for the Website Interface are provided with eZ Find. An example of the result item is shown below (*extension/ezfind/design/ezwebin/templates/node/view/ezfind_line.tpl*). `$node` is an instance of `eZFindResultTree`.

ezfind_line.tpl code:

```
<div class="content-view-line">
    <div class="class-article float-break">

        <div class="attribute-title">
            <h2 style="margin-top: 0.5em; margin-bottom: 0.25em"><a
href="{$node.global_url_alias}">{$node.name|wash}</a></h2>
        </div>

        {if is_set( $node.data_map.image )}
            {if $node.data_map.image.has_content}
                <div class="attribute-image">
                    {attribute_view_gui image_class=small href=concat( '"',
$node.global_url_alias, '"' ) attribute=$node.data_map.image}
                </div>
            {/if}
        {/if}

        <div class="attribute-short">
            {$node.highlight}
        </div>

        <div class="attribute-short">
```

```
            <i>{$node.score_percent}% - <a
href="{$node.global_url_alias}">{$node.global_url_alias|shorten(70, '...',
'middle')|wash}</a> - {$node.object.published|l10n(shortdatetime)}</i>
        </div>
    </div>
</div>
```

7) Using eZ Find

7.1. Basic search

To perform a search, enter one or more search terms in the search field. To execute the search, press Enter on your keyboard or click the **Search** button.

After the search is executed, the search result page is displayed. The search result page lists the content objects that matched the search term, with some information about each object. The total number of content objects matching the search terms is displayed under the search term field. The search time shows how long the internal search engine took to find the results.

Each result contains a small description of the content object. Results can also contain a title, image, summary, relevance, location and creation date. The summary includes one or more excerpts where the search terms occur. The relevance indicates how well the content object fits the search terms and conditions. The title, image and location link to the content object. Image preview is not provided for content objects located on other eZ Publish installations.

7.2. Search term options

7.2.1. Phrase search

To search for a phrase, surround the phrase with quotation marks (for example, *“*Grenland in Telemark”*).*

You can combine searching for a phrase with searching for individual terns. For example, entering '“Grenland in Telemark” boat' will return all documents containing the phrase “Grenland in Telemark” and the word “boat”.

7.2.2. Exclude or require terms

You can exclude documents that contain specific words from the search results by prefixing the word with a minus symbol. For example, “Telemark -Grenland”:

... will return results that contain the work “Telemark” but do not contain the word “Grenland”.

Similarly, prefix a search term with a plus symbol to specify that all documents must have the term in order to be included in the search results.

7.2.3. Searching for multiple terms

When multiple search terms are specified, a certain number (depending on the number of terms entered) must match the content object in order for the content object to be included in the search results. For example, when two terms are specified, at least one of them must match for the content object to be included in the results. When three or four terms are specified, at least two must match. For more than four terms, 30% of the terms must be present for a match.

These (heuristic) rules reduce the returned results to a smaller but usually more meaningful set.

7.3. Advanced search

Advanced search is accessed by clicking the **Advanced search** link on the search result page.

The **Advanced search** interface enables you to further limit search conditions.

The **Search the exact phrase** field provides the same functionality as the phrase search described earlier.

7.3.1. Content class limitation

To limit the search to a specific content class, select the class from the dropdown list. Click the **Update attributes** button to see the attributes associated with the selected content class.

If a class attribute is selected, the search terms must occur in the selected attribute.

7.3.2. Other limitations

You can also limit search results based on the section where the content is published and the published date.