Unified Index

This applies to the search and capabilities in Tiki to filter (search filters, permissions, etc) content. It is important if not critical to keep a fresh Unified-Index as Tiki rely on the freshness of the Unified-Index to display and filter content.

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Tiki can support multiple search engines internally. Each of those will have different capabilities and limitations. The default engine should provide capabilities good enough for small and medium sites. Larger sites may need additional infrastructure to get the most performance. Please see: Unified Index Comparison

Fields

Below is a matrix between the fields and the object types.

Legend:

X - Available
/ - Static value
? - Depends on the data
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<th>forum</th>
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</tr>
</tbody>
</table>

*) Tokenized - as in decomposed in words for full text search

**Searchable and not searchable**

Some fields are indexed and are searchable and other are not searchable (more explanation is required). It will influence results that will be outputted when using the plugins List, CustomSearch and ListExecute (probably).

For exemple, deepcategories (child from a parent category) are indexed but not searchable. When you set one of those plugins you need to specify the `searchable_only` parameter as follow, `searchable_only="0"`

Note that searching for not searchable objects in the Tiki "Experiment with plugin LIST tool" will output "no result found"

The plugin should start as follow.
Tracker Fields

In general, tracker fields are indexed as `tracker_field_PERMNAME/ID`. `PERMNAME/ID` is your tracker field permanent name or ID. However, many tracker field types have additional useful variants of the main field (see below) that are indexed for each field.

The indexing for tracker fields will vary depending on the field type. As a general rule, `tracker_field_PERMNAME/ID` will be used as the field and will be sortable. However, there are a few exceptions:

- Image and File fields are not indexed
- Text Area is not sortable

Multilingual fields are indexed as multiple fields

- The main one (`tracker_field_PERMNAME/ID`) contains all languages
- `tracker_field_PERMNAME/ID_lang` contains one language only (e.g., `tracker_field_12_fr` for example)

Rating and related fields store as multiple fields

- `tracker_field_PERMNAME/ID` contains the average
- `tracker_field_PERMNAME/ID_sum` contains the vote totals
- `tracker_field_PERMNAME/ID_count` contains the number of votes

Items List and Item Link fields

- `tracker_field_PERMNAME/ID_text` contains the text instead of the IDs of the linked/listed items

Language of the tracker item

- If a language field is set for the tracker item, that language is indexed as the item language, i.e. the `language` field.

Some used in `buildQuery/tiki-searchindex.php` (need explanation on whether these are real fields or just helpers):

- `type`: refers to `object_type`
- `deep`: if this is set, `categories` will be considered `deep-categories`
- `autocomplete`: Will search for items with title starting with this

Rebuild search index

Tiki is applying filters (and partially permissions to view) and in some case reading directly information from the Unified-Index. This allow very good performances and a lot of flexibility. Therefore, it is important to keep a fresh Unified-Index. Features but also plugins and modules will also relies on the freshness of the Unified-Index to display updated content (pages content, items, user informations, etc).

You can see when the index was last fully rebuilt usually by start a rebuild process from the Tiki interface (see below).

In recent Tiki version the index is stored in the database and you can rebuild (refresh) the Unified-Index with different method.
From the Tiki interface

It is possible to rebuild the Unified-Index from a browser. However, due to possible timeout during long operation, it is recommended to do this ONLY on relatively small Tiki (based on the number and the size of your Tiki objects). For medium to high load sites, it is strongly recommended to do that operation from the command line (much less limited), see the next paragraph.

- From the admin dashboard, on the main tiki menu click on the item Control Panels, then click on the Search panel. At the top of the page you will find a **Rebuild Index** button.
- From your URL address bar `tiki-admin.php?page=search&rebuild=now`

From the command line

The search index can be rebuilt manually from the command line or you can use the Tiki Scheduler since Tiki17 - see [Rebuild the Unified Index with log sample](#) or a Cron job since Tiki9 to run the command automatically - see [Cron Job to Rebuild Search Index](#).

Below are the commands that may be used to rebuild the index. Check [Console](#) documentation.

You can also rebuild it using the unified console.php command, with the appropriate parameters. For example:

**Basic command**

```bash
php console.php index:rebuild
```

`<-- or -->`

```bash
php console.php i:r
```

`<-- or add visual verbose, to follow what is going on -->`

```bash
php console.php i:r -p
```

**Multitiki sites**

For multitiki sites, you can rebuild with commands like:

```bash
php console.php index:rebuild --site=site1.example.com
php console.php index:rebuild --site=site2.example.com
...```

**Successful rebuild**

If the rebuild is successful a message like the following will be produced (for cron jobs, this can usually be sent to you via email as part of automatically running the command):

```
Started rebuilding index...

Unified search
--------------

Engine: MySQL, version 5.7.34
Indexed
  trackeritem: 210
  tracker: 13
  trackerfield: 104
```
Troubleshooting

If the rebuild is unsuccessful, instead of the above message you may get a message that indicates there has been an internal server error, or it may say "Rebuild in progress." This may be because the rebuild process uses more memory or takes more time than allowed by the server's php settings. Such settings can be changed on the fly as part of the rebuild command - examples of how to do this are shown below.

Not enough memory

Increase memory limit
One way to increase memory is to change the memory_limit php setting as follows (this example changes the memory limit to 4 gigabytes while the rebuild process is running):

```
php -dmemory_limit=4G console.php i:r --log
```

You could also direct php to use a specific php.ini file, where there may be a higher memory limit setting or no limit. In this case you would use the -c parameter followed by the path to the php.ini file, as in the example below:

```
php -c /etc/php5/cli/php.ini console.php i:r --log
```

Timeout error

Increase maximum execution time
Getting an internal server error may indicate the rebuild process takes longer than the max_execution_time php setting. That can be increased as part of the command as shown below where the max execution time is set to 300 seconds, or 5 minutes. (This command is also increasing the memory limit as described above):

```
php -dmemory_limit=4G -dmax_execution_time=300 console.php i:r --log
```

Force rebuild

When the rebuild is unsuccessful with a "Rebuild in progress" message, this usually means that the rebuild failed previously in the middle of the process, leaving a temporary folder called temp/unified-index-new on the server. When a new rebuild is started and the program sees this folder, it thinks there is a rebuild already in progress and will stop. You can either delete this folder before rebuilding again or
include the `--force` parameter in the rebuild command as follows:

```bash
code
php -dmemory_limit=4G -dmax_execution_time=300 console.php i:r --force --log
```

Log to review possible problems with content

```bash
code
php console.php i:r -p --log
```

**Several index_files in the database**

Typically happening when using the same database over and over you may end with several indexes in your database. We provide a developer tool to clean properly this issue. You need to be the web user and use bash to run the script.

```bash
code
bash doc/devtools/clear_mysql_search_indexes.bash
```

You need to rebuild your index after the operation.

**MySQL limits for very big numbers of tracker fields**

How to detect

If *Unified Search* is configured with the *MySQL Full Text Search* engine, you might encounter a failure to reindex with the following symptoms:

- `php console index:rebuild` stops without displaying the list of indexing statistics:

```bash
code
php console index:rebuild
[14 mai 2020 09:26 EDT] Started rebuilding index...
Unified search engine: MySQL, version 10.1.45-MariaDB
(it takes a very long time and in the end nothing shows up)
```

If you investigate with producing a log it ends this way:

```bash
code
php console.php index:rebuild --log
[14 mai 2020 16:10 EDT] Started rebuilding index... logging to file:
temp/Search_Indexer_mysql_database_name_console.log
Unified search engine: MySQL, version 10.1.45-MariaDB
(it takes a very long time and in the end nothing shows up)
```

```bash
code
tail temp/Search_Indexer_mysql_database_name_console.log
... 2020-05-14T16:21:47-04:00 ERR (3): Indexing failed while processing "2512" (type trackeritem) with the error "Could not perform index modification: Too many columns"
2020-05-14T16:21:47-04:00 ERR (3): WARNING: PDO::query(): SQLSTATE[HY000]: General error: 1117 Too many columns
{"code":null,"file":":/path/to/tikiroot/lib/core/TikiDb/Pdo.php","line":104}
2020-05-14T16:21:47-04:00 INFO (6): addDocument trackeritem 2513 {"memoryUsage":"46.5 MiB"}
2020-05-14T16:21:47-04:00 ERR (3): Indexing failed while processing "2513" (type trackeritem) with the error "Could not perform index modification: Too many columns"
2020-05-14T16:21:47-04:00 ERR (3): WARNING: PDO::query(): SQLSTATE[HY000]: General error: 1117 Too many columns
{"code":null,"file":":/path/to/tikiroot/lib/core/TikiDb/Pdo.php","line":104}
2020-05-14T16:21:47-04:00 INFO (6): addDocument trackeritem 2514 {"memoryUsage":"46.5 MiB"}
```
Technical explanation (thanks Victor)

[+] Solutions

The following options in [Control panels → Search] help for this situation:

- **MySQL use short field names**
  *Due to form file constraints, number of search fields that one index can hold is usually limited to about 1500. This can be exceeded if you have numerous tracker fields. Enabling this option will try to shorten the field names internally that should allow you to use 300-500 more fields. Switching this option requires full index rebuild.*
  
  Summary: This makes no difference in how you use Tiki.

- **Don't index non searchable fields**
  *Indexing will skip adding all tracker fields that are not marked as "searchable". This will free index space but also make it impossible to use those fields in search index queries.*
  
  Summary: You need to review the Searchable property of your tracker fields. A full index rebuild will be necessary after changes in the tracker fields Searchable properties.

**Hint:** If the first option is enough for your site, you may ignore the second one.

**Indexing log common error troubleshooting**

When rebuilding your index use the following command to create a log file.

Note you need to point to the PHP for the PHP version your Tiki uses.

```bash
php console.php i:r -p --log
```

In the log you may see some error, this is an attempt to help and diagnose the possible issues.

<table>
<thead>
<tr>
<th>Error</th>
<th>Possible fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>addDocument article 275</td>
<td>Edit article275, Advanced tab check the URL validity in the &quot;Source&quot; field.</td>
</tr>
<tr>
<td>ERR (3): NOTICE: Trying to access array offset on value of type bool.../...lib/core/Search/ContentSource/ArticleSource.php&quot;,&quot;line&quot;:53</td>
<td></td>
</tr>
</tbody>
</table>

**Unified Index storage in the database (MySQL full-text search)**

By design the unified-index store data in the MySQL database using MyISAM no matter if your Tiki uses InnoDB or MyISAM (not all versions of InnoDB offer FULLTEXT).

**Duplicate unified-index table**

For some reasons you may found that your database has several index (tables like index ...alphabetic...).

This happen when they were issues rebuilding the index or when moving and upgrading the database (Tiki upgrade).

You can delete those tables (always consider saving a backup of your data prior any work) and rebuild the unified-index. Tiki will recreate and relink everything properly. You can find information about the unified-index in use at the Search control panel, General settings under Unified search index.
Related
- Cron Job to Rebuild Search Index
- PluginList
- PluginCustomSearch
- Unified Search

Developer Notes
See https://dev.tiki.org/Unified-Index#Developer_Notes.

alias names for this page
Unified Search | UnifiedSearch | Enterprise search | Search Index | SearchIndex | UnifiedIndex | IndexRebuild | Index Rebuild