DataparkSearch Engine 4.54

Reference manual

DataparkSearch Engine 4.54: Reference manual

Table of Contents

List of Tables

Chapter 1. Introduction

DataparkSearch is a full-featured web search engine. DataparkSearch consists of two parts. The first part is an indexing mechanism (the **indexer**). The indexer walks over hypertext references and stores found words and new references into the database. The second part is a CGI front-end to provide the search service using the data collected by the indexer.

DataparkSearch was cloned from the 3.2.16 CVS version of mnoGoSearch on 27 November 2003 as DataparkSearch 4.16. The mnoGoSearch's first release took place in November 1998. The search engine had the name of UDMSearch until October 2000 when the project was acquired by Lavtech.Com Corp. and changed its name to mnoGoSearch.

The latest change log of DataparkSearch can be found on our website (http://www.dataparksearch.org/ChangeLog).

Follow @dataparksearch (http://twitter.com/dataparksearch) to see latest updates to the DataparkSearch.

1.1. DataparkSearch Features

Main DataparkSearch features are as follows:

- MySQL (`libz` library required), PostgreSQL, iODBC, unixODBC, EasySoft ODBC-ODBC bridge, InterBase, Oracle (see Section 5.5>), MS SQL back-ends support.
- HTTP support.
- HTTP proxy support.
- HTTPS support.
- FTP support.
- NNTP support (both news:// and nntp:// URL schemes).
- HTDB virtual URL scheme support. One may build index and search through the big text fields/blobs of SQL database.
- Mirroring features.
- `text/html`, `text/xml`, `text/plain`, `audio/mpeg` (MP3) and `image/gif` built-in support.
- External parsers support for other document types.
- Ability to index multilingual sites using content negotiation.
- Searching all of the word forms using ispell affixes and dictionaries
- Basic authorization support. One may index password protected intranet HTTP servers.
- Proxy authorization support.
- Reentry capability. One may use several indexing and searching processes at the same time even on the same database. Multi-threaded indexing support.
- Stop-list support.
- <META NAME="robots" content="..."> and `robots.txt` support.

- C language CGI web front-end.
- Boolean query language support.
- Results sorting by relevance, popularity rank, last modified date and by importance (a multiplication of relevance and popularity rank).
- Fuzzy search: different word forms, spelling corrections, synonyms, acronyms and abbreviations.
- Various character sets support.
- HTML templates to easily customize search results.
- Advanced search options like time limits, category and tags limits etc.
- Phrases segmenting for Chinese, Japanese, Korean and Thai languages.
- Accent insensitive search.
- **mod_dpsearch** - search module for Apache (http://httpd.apache.org/) web server.
- Internationalized Domain Names support.
- The Summary Extraction Algorithm (SEA).

1.2. Where to get DataparkSearch.

Check for the latest version of DataparkSearch at: http://www.dataparksearch.org/, as well at Google Code: http://code.google.com/p/dataparksearch/.

DataparkSearch is also available in FreeBSD ports collection, see www.freshports.org/www/dpsearch (http://www.freshports.org/www/dpsearch) and in the T2 Linux SDE (http://www.t2-project.org/packages/dpsearch.html).

DataparkSearch's source is available via SVN at Google Code:

```
svn checkout http://dataparksearch.googlecode.com/svn/trunk/ dataparksearch-read-only
```

1.3. Disclaimer

1.4. Authors

Maxim Zakharov <maxime@maxime.net.ru>, homepage (http://www.maxime.net.ru/)

1.4.1. Contributors

Michael Kynast <kynast@newslookup.com>: First DataparkSearch user. Testing on Linux Red Hat.

Jean-Gerard Pailloncy: Testing on OpenBSD.

Amit Joshi: Testing on CentOS, packaging for Debian, some ideas to improve the scalability for several PC and using several DBAddr.

mnoGoSearch developers and contributors <devel@mnogosearch.org>: Development and contributions for mnoGoSearch versions up to 3.2.15.

Chapter 2. Installation

2.1. SQL database requirements

Note that if you want to compile DataparkSearch with one of supported SQL database you must have this database already installed before installing DataparkSearch.

It is possible to use DataparkSearch with several SQL databases.

You also should have enough permission to create new database or to write into already existing one.

MySQL notes: If you want to build DataparkSearch with MySQL, 4.1 or later release required. libz library must be installed from **zlib-devel** RPM to successfully compile DataparkSearch with MySQL.

PostgreSQL notes: If you want to build DataparkSearch with PostgreSQL, 8.2 or later release required. The latest PostgreSQL version is recommended for the fresh install.

iODBC notes: iodbc-2.50.22a is known to work.

unixODBC notes: unixODBC-1.7 is known to work.

InterBase notes:

- Interbase 4.0 is known to work.
- InterBase CS 6.0 is known to work.
- FirebirdCS-0.9-4 is known to work.

FreeTDS notes: 0.52 version is known to work with MS SQL 7.0.

Oracle8 notes: 8.0.5.X is known to work.

Oracle8i notes: 8.1.6 R2 EE is known to work.

2.2. Supported operating systems

We use GNU Autoconf so it is possible to compile and use DataparkSearch on almost every modern UNIX system with a C compiler without any modifications. We develop the software on FreeBSD 7.x using PostgreSQL 8.3.

Currently known systems where DataparkSearch has been successfully compiled and tested on are:

- CentOS 3.1, CentOS 3.3
- Debian GNU/Linux (Lenny, Etch) (i386)
- FreeBSD 2.2.5, 3.x, 4.x, 5.x, 6.x, 7.x
- Linux Fedora Core-1, Kernel 2.4.22-1.2174
- Linux Mandrake 10.2
- Linux Red Hat 8.0, 9.0

- Solaris 9
- Solaris 10 x86, gcc
- Ubuntu Linux 6.10, 7.x, 8.x, 9.04 (i386 and amd), 1x.yy
- Gentoo Linux 2007.0 amd64
- SUSE Linux
- OpenBSD 4.5 (i386)

We hope DataparkSearch will work on other Unix platforms as well. Please report successful platforms to maxime@maxime.net.ru (mailto:maxime@maxime.net.ru).

NFS notes: There are some problems reported running DataparkSearch over NFS v4 on Linux 2.6.17. Although, everything is OK on this system when NFS v3 is used.

2.3. Tools required for installation

You need the following tools to build and install DataparkSearch from source:

- Bzip2 (http://www.bzip.org/) to uncompress the distribution.
- A reasonable tar to unpack the distribution. GNU tar (http://www.gnu.org/software/tar/tar.html) is known to work.
- A working ANSI C compiler. GNU gcc (http://gcc.gnu.org/) is known to work.
- A good make program. GNU make (http://www.gnu.org/software/make/make.html) is recommended and sometimes required.
- A `sed` - stream editor.
- A `perl` interpreter, if **install.pl** will be used for installation.
- To build documentation from XML sources, you need `jade` or `openjade` installed.

  You need also `jadetex` installed to build documentation in PDF. Use **`make book.pdf`** command in `doc/` subdirectory to make that documentation.

If you wish to make changes into source code, documentation or configuration files you may need to install the following packages on Ubuntu Linux to be able to make distribution packages:

- **sudo apt-get install zlib1g-dev automake autoconf autotools-dev libsigsegv2 m4 libtool libltdl-dev openjade sgml-data docbook-dsssl docbook docbook-xml docbook-xsl sp libidn11-dev libc-ares-dev**

Depending on SQL-server of your choice you may need to install appropriate development package or all of them if you need support for all these SQL-servers:

- **sudo apt-get install libpq-dev libmysqlclient-dev libsqlite3-dev**

2.4. Installing DataparkSearch

1. Unpack the distribution and change directory into the top-level directory of the unpacked distribution.

   `tar -xyf dpsearch-x.x.tar.bz2`

2. To simplify configuration process we included a configuration script with the package - `install.pl`. Run `install.pl` and select DataparkSearch configuration options in a question-and-answer manner. After you specify all the configuration options, the script will run `./configure` with the options you chose. It will also create install.options file containing your configuration preferences that you can use to run the script later bypassing questions. After configuration is finished, build and install the package as described in section 3.

   In case you would like to configure DataparkSearch manually without using the configuration script, do the following:

   If you would like to configure the package with SQL database support:

   `sh$ ./configure --with-mysql`

   or

   `sh$ ./configure --with-pgsql`

   or with another depending on what database you prefer,

   or with multiple databases:

   `sh$ ./configure --with-mysql --with-pgsql --with-msql --with-freetds`

   By default, DataparkSearch is installed in `/usr/local/dpsearch` in the following subdirectories:

Directory	Contents
bin	`search.cgi`, `storedoc.cgi`, `dps-config`
lib	`libdpsearch.a(so)`, `libdpcharset.a(so)`
sbin	`indexer`, `cached`, `run-splitter`, `searchd`, `splitter`, `stored`
etc	`indexer.conf-dist`, `search.htm-dist`, `langmap.conf-dist`, `searchd.conf-dist`, `stopwords.conf-dist`, `stored.conf-dist`, `storedoc.htm-dist`
share	various documentation and sql scripts

   If you have no permission to write to that directory or just want to install DataparkSearch to another location, please use configure with `--prefix` option, e.g.

   `./configure --prefix=/user/home/data --with-mysql`

   To install DataparkSearch with HTTPS support use configure with the following option:

   `./configure --with-openssl`

   or in case the OpenSSL library is installed in a non-standard location:

./configure --with-openssl=/path/to/library

Note: Please note that OpenSSL library installed on your system is required for HTTPS support.

You can see all available options with `./configure --help`

If you want to provide some specific flags to C compiler (for example, `'-O7 -mpentium'` to build highly optimized binary for Pentium™ processor if you use egcs/pgcc), you can do so using command

sh$ CFLAGS="-O7 -mpentium"

before running configure.

To compile DataparkSearch on FreeBSD with Solid in old aout format use

sh$ CFLAGS="-aout"

before running configure.

To compile DataparkSearch on FreeBSD with aout InterBase use

sh$ CFLAGS="-aout -static"

before running configure.

You may also specify `--enable-freebsd-pthreads` or `--enable-linux-pthreads` to compile multi-threaded indexer on FreeBSD and Linux machines.

To enable DMALLOC memory debugger (http://sourceforge.net/projects/dmalloc/) support use `--enable-dmalloc`.

The euc-kr, big5, gb2312, tscii, gujarati and shift-jis character sets are not supported by default. To built DataparkSearch with these charsets support use configure with `--with-extra-charsets` command line argument.

To build DataparkSearch with all additional charsets support use:

./configure --with-extra-charsets=all

To build DataparkSearch with only one specified charset support use:

./configure --with-extra-charsets=tscii

To build DataparkSearch with support for Chinese or Japanese charsets, use:

./configure --with-extra-charsets=japanese or **./configure --with-extra-charsets=chinese**

To build DataparkSearch with support for several specified charsets, use a comma separated list of charsets you want:

./configure --with-extra-charset=japanese,tscii

If you run into problems with configure, please see Section 2.5>.

3. Build and install the package.

sh$ make

sh$ make install

If you run into problems with configure, please see Section 2.5>.

4. Create database `search` (for SQL database only).

   You can use existing database, skip this step in this case.

   MySQL:

   `sh$ mysqladmin create search`

   PostgreSQL:

   `sh$ createdb search`

   See database specific information if you use another database.

5. Create configuration files.

   Copy `indexer.conf-dist` to `indexer.conf` and `search.htm-dist` to `search.htm` in the configuration directory (by default this directory is `/usr/local/dpsearch/etc/`). Then edit `indexer.conf` and `search.htm` according your needs. Basically your only have to edit **DBAddr** command in both of these files specifying a connection to SQL-server and desired dbmode.

6. Create sql-tables

   Run the command:

   `sh$ indexer -Ecreate`

   indexer creates all tables automatically according to the dbmode selected in your `indexer.conf` file.

7. Install search scripts

   Copy `search.cgi` to your web-server `cgi-bin` directory or make Apache alias to DataparkSearch bin directory.

2.5. Possible installation problems

- Every time you run `configure`, you must run `make` again to recompile.

  To prevent old configuration information or object files from being used, run these commands before re-running `configure`:

  `sh$ rm config.cache`

  `sh$ make clean`

- If your compile fails with make errors, this can be because you are using the wrong version of make. The behavior of Solaris, FreeBSD, OpenBSD make is slightly different from GNU make (http://www.gnu.org/software/make/make.html). If you have make-related problems, you should use GNU make (http://www.gnu.org/software/make/make.html) instead, often installed as gmake.

  GNU `make` version 3.77 is known to work.

- If starting Apache with mod_dpsearch module, you're getting the following error: **`Undefined symbol "pthread_join"`** (or something similar related to pthreads), try to add the following commmand into `httpd.conf` file before loading `mod_dpsearch.so`:

```
LoadFile /usr/lib/libpthread.so
```

If above information doesn't help you, please feel free to contact DataparkSearch mailing list <dataparksearch@yahoogroups.com>.

2.6. Creating binary distribution

You can create a binary distribution (tar.bz2 archive, Debian or RPM package) for your platform. To create a binary do please the command **make bin-dist** for tar.bz2 archive; **make pkg-deb** for Debian package; **make pkg-rpm** for RPM package. Please note, if you select the later option a Debian package will be created and then converted into RPM package with alien utility.

2.7. Quick usage tour

Before running **indexer** first time, you need specify web space to index (see Section 3.6>). Basically, if you want index one site, you should put a **Server** command similar to the following into your `indexer.conf` file:

```
Server http://www.server.ext/
```

Run the **indexer** to index your data and write URL data:

```
sh$ /usr/local/dpsearch/sbin/indexer -W
```

Chapter 3. Indexing

3.1. Indexing in general

3.1.1. Configuration

First, you should configure DataparkSearch. Indexer configuration is covered mostly by `indexer.conf-dist` file. You can find it in `etc` directory of DataparkSearch distribution. You may take a look at other *.conf samples in `doc/samples` directory.

To set up `indexer.conf` file, change directory to DataparkSearch installation `/etc` directory, copy `indexer.conf-dist` to `indexer.conf` and edit it.

To configure search front-ends (`search.cgi` and/or `search.php3`, or other), you should copy `search.htm-dist` file in /etc directory of DataparkSearch installation to `search.htm` and edit it. See Section 8.3> for detailed description.

3.1.2. Running indexer

Just run indexer once a week (a day, an hour ...) to find the latest modifications in your web sites. You may also insert indexer into your `crontab` job.

By default, indexer being called without any command line arguments reindex only expired documents. You can change expiration period with **Period** `indexer.conf` command. If you want to reindex all documents irrelevant if those are expired or not, use `-a` option. indexer will mark all documents as expired at startup.

Retrieving documents, indexer sends `If-Modified-Since` HTTP header for documents that are already stored in database. When indexer gets next document it calculates document's checksum. If checksum is the same with old checksum stored in database, it will not parse document again. indexer `-m` command line option prevents indexer from sending `If-Modified-Since` headers and make it parse document even if checksum is the same. It is useful for example when you have changed your **Allow/Disallow** rules in `indexer.conf` and it is required to add new pages that was disallowed earlier.

If DataparkSearch retrieves URL with redirect HTTP 301,302,303 status it will index URL given in `Location:` field of HTTP-header instead.

3.1.3. How to create SQL table structure

To create SQL tables required for DataparkSearch functionality, use `indexer -Ecreate`. Executed with this argument, indexer looks up a file containing SQL statements necessary for creating all SQL tables for the database type and storage mode given in **DBAddr** `indexer.conf` command. Files are looking up at `/share` directory of DataparkSearch installation, which is usually `/usr/local/dpsearch/share/`.

3.1.4. How to drop SQL table structure

To drop all SQL tables created by DataparkSearch, use `indexer -Edrop`. A file with SQL statements required to drop tables are looking up at `/share` directory of DataparkSearch installation.

3.1.5. Subsection control

indexer has -t, -u, -s options to limit action to only a part of the database. -t corresponds 'Tag' limitation, -u is a URL substring limitation (SQL LIKE wildcards). -s limits URLs with given HTTP status. All limit options in the same group are ORed and in the different groups are ANDed.

3.1.6. How to clear database

To clear the whole database, use 'indexer -C'. You may also delete only the part of database by using -t,-u,-s subsection control options.

3.1.7. Database Statistics

If you run `indexer -S`, it will show database statistics, including count of total and expired documents of each status. -t, -u, -s filters are usable in this mode too.

The meaning of status is:

- 0 - new (not indexed yet) URL

If status is not 0, then it is HTTP response code, some of the HTTP codes are:

- `200` - "OK" (url is successfully indexed)
- `206` - "Partial OK" (a part of url is successfully indexed)
- `301` - "Moved Permanently" (redirect to another URL)
- `302` - "Moved Temporarily" (redirect to another URL)
- `303` - "See Other" (redirect to another URL)
- `304` - "Not modified" (url has not been modified since last indexing)
- `401` - "Authorization required" (use login/password for given URL)
- `403` - "Forbidden" (you have no access to this URL(s))
- `404` - "Not found" (there were references to URLs that do not exist)
- `500` - "Internal Server Error" (error in cgi, etc)
- `503` - "Service Unavailable" (host is down, connection timed out)
- `504` - "Gateway Timeout" (read timeout when retrieving document)

`HTTP 401` means that this URL is password protected. You can use **AuthBasic** command in `indexer.conf` to set `login:password` for this URL(s).

`HTTP 404` means that you have incorrect reference in one of your document (reference to resource that does not exist).

Take a look on HTTP specific documentation (http://www.w3.org/Protocols/) for further explanation of different HTTP status codes.

Status codes `2xxx` are not in HTTP specification and they correspond to the documents marked as clones, where `xxx` - one of status codes described above.

3.1.8. Link validation

Being started with -I command line argument, indexer displays URL and it's referrer pairs. It is very useful to find bad links on your site. Don't use **HoldBadHrefs 0** command in `indexer.conf` for this mode. You may use subsection control options -t,-u,-s in this mode. For example, `indexer -I -s 404` will display all 'Not found' URLs with referrers where links to those bad documents are found. Setting relevant `indexer.conf` commands and command line options you may use DataparkSearch special for site validation purposes.

3.1.9. Parallel indexing

It is possible to run several indexers simultaneously with the same `indexer.conf` file. We have successfully tested 30 simultaneous indexers with MySQL database. By default, **indexer** marks documents selected for indexing as expired in 4 hours in the future to avoid double indexing of the same URL by different indexer. However this is not gives 100% garantee of avoiding such duplication. You may use multi-threaded version of indexer with any SQL back-end though which does support several simultaneous connections. Multi-threaded indexer version uses own locking mechanism.

It is not recommended to use the same database with different `indexer.conf` files! First process could add something but second could delete it, and it may never stop.

On the other hand, you may run several indexer processes with different databases with ANY supported SQL back-end.

3.2. Supported HTTP response codes

It is described here the way DataparkSearch processes different HTTP codes. Pseudo-language is used here for explanation.

- 200 OK
    1. If -m command line argument ("force reindex") specified, GOTO 4.
    2. Comparing new checksum with old one stored in database
    3. If checksum are the same, next_index_time=Now()+Period, GOTO 7
    4. Parsing the document, creating word list and adding in "url" table all of the found HREFs
    5. Comparing created word list with old one stored in "dict" table

6. Doing UPDATEs, DELETEs or INSERTs in table "dict" if something is different in word lists.
7. Done

- 304 Not Modified

1. `next_index_time=now()`+Period
2. Done

- 301 Moved Permanently

302 Moved Temporarily
303 See Other

1. Deleting all words in table "dict" for current URL
2. `next_index_time=Now()`+Period
3. Adding an URL given in `Location:` header
4. Done

- 300 Multiple Choices

305 Use Proxy (proxy redirect)
400 Bad Request
401 Unauthorized
402 Payment Required
403 Forbidden
404 Not found
405 Method Not Allowed
406 Not Acceptable
407 Proxy Authentication Required
408 Request Timeout
409 Conflict
410 Gone
411 Length Required
412 Precondition Failed
413 Request Entity Too Large
414 Request-URI Too Long
415 Unsupported Media Type
500 Internal Server Error
501 Not Implemented
502 Bad Gateway
505 Protocol Version Not Supported

1. Deleting all words in table "dict" for current URL
2. `next_index_time=Now()`+Period
3. Done

- 503 Service Unavailable

504 Gateway Timeout

1. `next_index_time=Now()`+Period
2. Done

3.3. Content-Encoding support

DataparkSearch engine supports HTTP compression (Content encoding). Compression can have a major impact on the performance of HTTP transactions. The only way to obtain higher performance is to reduce the number of bytes transmitted.

Using content encoding to receive a server's response you can reduce the traffic by twice or more.

The HTTP 1.1 (RFC 2616) specification (ftp://ftp.isi.edu/in-notes/rfc2616.txt) contains four content encoding methods: `gzip, deflate, compress`, and `identity`.

When Content-encoding is enabled, DataparkSearch's indexer sends to a server `Accept-Encoding: gzip,deflate,compress` string in HTTP headers.

If the server supports any of gzip, deflate or compress encoding, it sends gziped, deflated or compressed response.

To compile DataparkSearch with HTTP Content encoding support, the `zlib` library is required.

To enable HTTP Content encoding support, configure DataparkSearch with the following option:

```
./configure --with-zlib
```

Use this option along with all the other necessary ones.

3.4. Stopwords

`Stopwords` - are the most frequently used words, i.e. words which appear in almost every document searched. Stopwords are filtered out prior to index construction, what is allow to reduce the total size of the index without any significant loss in quality of search.

3.4.1. StopwordFile command

Load stop words from the given text file. You may specify either absolute file name or a name relative to DataparkSearch `/etc` directory. You may use several **StopwordFile** commands.

```
StopwordFile stopwords/en.sl
```

You must use the same set of **StopwordFile** commands in `indexer.conf` and `search.htm` (`searchd.conf` if **searchd** is used).

3.4.2. Format of stopword file

You may create your own stopword lists. As an example you may take the English stopword file `etc/stopwords/en.sl`. In the beginning of the list please specify the following two commands:

```
Language: en
Charset:  us-ascii
```

- `Language` - standard (ISO 639) two-letter language abbreviation.
- `Charset` - any charset supported by DataparkSearch (see Section 7.1>).

Then the list of stopwords is follow, one word per line. Each word is written in character set specified above by **Charset:** command.

You may use optional **Match:** command to specify a pattern to treat any word match it as a stopword. E.g.:

```
Match: regex ^\$##
```

According to this command, any word begins with `$##` will be considered as a stopword.

Options of **Match:** command are the same as for **Allow** (see Section 3.10.14>). Arguments are in character set specified by **Charset:** command. Regular expressions are limited at the moment (e.g. intervals aren't supported).

3.4.3. FillDictionary command.

With the command **`"FillDictionary yes"`** in `indexer.conf` you can enable storage of all indexed words into `"dict"` table for dbmode cache. This is usefull to track down which words are stopwords for your installation.

3.4.4. StopwordsLoose command.

With the command **`"StopwordsLoose yes"`** in `indexer.conf` and `search.htm` only the stopwords of the same language as the language of a document indexing or the language of a search request are taken into accont as stopwords, i.e. the stopwords of different language are processed as regular words for this document indexing or search request executed.

3.5. Clones

`Clones` -- are documents having equal values of Hash32 on all document sections. Indentical copies of the same document always have equal values of Hash32. This allow to eliminate duplicate documents in a collection. However, if only `title` section is defined in `sections.conf`, all documents with different bodies but with identical titles will be considered as clones.

3.5.1. DetectClones command

```
DetectClones yes/no
```

Allow/disallow clone detection and eliminating. If allowed, indexer will detect the same documents under different location, such as mirrors, and will index only one document from the group of such equal documents. "DetectClones yes" also allows to reduce space usage. Default value is "yes".

```
DetectClones no
```

3.6. Specifying WEB space to be indexed

When indexer tries to insert a new URL into database or is trying to index an existing one, it first of all checks whether this URL has corresponding **Server**, **Realm** or **Subnet** command given in `indexer.conf`. URLs without corresponding **Server**, **Realm** or **Subnet** command are not indexed. By default those URLs which are already in database and have no Server/Realm/Subnet commands will be deleted from database. It may happen for example after removing some Server/Realm/Subnet commands from `indexer.conf`.

These commands have following format:

```
<command> [method] [subsection] [CaseType] [MatchType] [CmpType] pattern [alias]
```

Mandatory parameter `pattern` specify an URL, or it part, or pattern to compare.

Optional parameter `method` specify an document action for this command. May take values: `Allow`, `Disallow`, `HrefOnly`, `CheckOnly`, `Skip`, `CheckMP3`, `CheckMP3Only`. By default, the value `Allow` is used.

1. **Allow**

   Value `Allow` specify that all corresponding documents will be indexed and scanned for new links. Depends on `Content-Type` appropriate external parser is executed if need.

2. **Disallow**

   Value `Disallow` specify that all corresponding documents will be ignored and deleted from database, if its was placed into before.

3. **HrefOnly**

   Value `HrefOnly` specify that all corresponding documents will be only scanned for new links (not indexed). This is useful, for example, for getting new documents from a feed, when the feed page is only scanned to detect new messages for indexing.

   ```
   Server HrefOnly Page http://www.site.ext/feed.xml
   Server Allow    Path http://www.site.ext/
   ```

4. **CheckOnly**

Value `CheckOnly` specify that all corresponding documents will be requested by HTTP HEAD request, not HTTP GET, i.e. inly brief info about documents (size, last modified, content type) will be fetched. This allow, for example, check links on your site:

```
Server HrefOnly  http://www.dataparksearch.org/
Realm  CheckOnly *
```

These commands instruct **indexer** to scan all documents on `www.dataparksearch.org` site and collect all links. Brief info about every document found will be requested by HEAD method. After indexing done, **indexer -S** command will show status for all documents from this site.

5. **Skip**

   Value `Skip` specify that all corresponding documents will be skipped while indexing. This is useful when need temporally disable reindexing several sites, but able search on. These documents will marked as expired.

6. **CheckMP3**

   Value `CheckMP3` specify that corresponding documents will be checked for MP3 tags along if its `Content-Type` is equal to `audio/mpeg`. This is useful, for example, if remote server supply `application/octet-stream` as `Content-Type` for MP3 files. If this tag is present, these files will indexed as MP3 file, otherwise its will be processed according to `Content-Type`.

7. **CheckMP3Only**

   This value is equal to `CheckMP3`, but if MP3 tag is not present, processing on `Content-Type` will not be taken.

Use optional `subsection` parameter to specify server's checking behavior. Subsection value must be one of the following: `nofollow`, `page`, `path`, `site`, `world` and has "path" value by default.

1. `path` subsection

   When indexer seeks for a "Server" command corresponding to an URL it checks that the discovered URL starts with URL given in Server command argument but without trailing file name. For example, if `Server path http://localhost/path/to/index.html` is given, all URLs which have `http://localhost/path/to/` at the beginning correspond to this Server command.

   The following commands have the same effect except that they insert different URLs into database:

   ```
   Server path http://localhost/path/to/index.html
   Server path http://localhost/path/to/index
   Server path http://localhost/path/to/index.cgi?q=bla
   Server path http://localhost/path/to/index?q=bla
   ```

2. `site` subsection

   indexer checks that the discovered URL have the same hostname with URL given in Server command. For example, `Server site http://localhost/path/to/a.html` will allow to index whole `http://localhost/` server.

3. `world` subsection

   If world subsection is specified in Server command, it has the same effect that URL is considered to match this Server command. See explanation below.

4. `page` subsection

   This subsection describes the only one URL given in Server argument.

5. `nofollow` subsection

   Skip links following for URL that match the pattern.

6. subsection in `news://` schema

   Subsection is always considered as "site" for news:// URL schema. This is because news:// schema has no nested paths like ftp:// or http:// Use `Server news://news.server.com/` to index whole news server or for example `Server news://news.server.com/udm` to index all messages from "udm" hierarchy.

Optional parameter `CaseType` is specify the case sensivity for string comparison, it can take one of follow value: `case` - case insensitive comparison, or `nocase` - case sensitive comparison.

Optional parameter `CmpType` is specify the type of comparison and can take two value: `Regex` and `String`. `String` wildcards is default match type. You can use ? and * signs in URLMask parameters, they means "one character" and "any number of characters" respectively. Use \ character to escape these characters in you patterns. For example, if you want to index all HTTP sites in .ru domain, use this command:

```
Realm http://*.ru/*
```

Regex comparison type takes a regular expression as it's argument. Activate regex comparison type using `Regex` keyword. For example, you can describe everything in .ru domain using regex comparison type:

```
Realm Regex ^http://.*\.ru/
```

Optional parameter `MatchType` means match type. There are `Match` and `NoMatch` possible values with `Match` as default. `Realm NoMatch` has reverse effect. It means that URL that does not match given `pattern` will correspond to this **Realm** command. For example, use this command to index everything without .com domain:

```
Realm NoMatch http://*.com/*
```

Optional `alias` argument allows providing very complicated URL rewrite more powerful than other aliasing mechanism. Take a look Section 3.7> for `alias` argument usage explanation. `Alias` works only with `Regex` comparison type and has no effect with `String` type.

3.6.1. Server command

This is the main command of the `indexer.conf` file. It is used to add servers or their parts to be indexed. This command also says indexer to insert given URL into database at startup.

E.g. command `Server http://localhost/` allows to index whole `http://localhost/` server. It also makes indexer insert given URL into database at startup. You can also specify some path to index server subsection: `Server http://localhost/subsection/`. It also says indexer to insert given URL at startup.

> **Note:** You can suppress indexer behavior to add URL given in Server command by using -q indexer command line argument. It is useful when you have hundreds or thousands Server commands and their URLs are already in database. This allows having more quick indexer startup.

3.6.2. Realm command

Realm command is a more powerful means of describing web area to be indexed. It works almost like **Server** command but takes a regular expression or string wildcards as it's `pattern` parameter and do not insert any URL into database for indexing.

3.6.3. Subnet command

Subnet command is another way to describe web area to be indexed. It works almost like **Server** command but takes a string wildcards or network specified in CIDR presentation format as it's `pattern` argument which is compared against IP address instead of URL. In case of string wilcards formant, argument may have * and ? signs, they means "one character" and "any number of characters" respectively. For example, if you want to index all HTTP sites in your local subnet, use this command:

```
Subnet 192.168.*.*
```

In case of network specified in CIDR presentation format, you may specify subnet in forms: a.b.c.d/m, a.b.c, a.b, a

```
Subnet 1291.168.10.0/24
```

You may use "NoMatch" optional argument. For example, if you want to index everything without `195.x.x.x` subnet, use:

```
Subnet NoMatch 195.*.*.*
```

3.6.4. Using different parameter for server and it's subsections

Indexer seeks for "Server" and "Realm" commands in order of their appearance. Thus if you want to give different parameters to e.g. whole server and its subsection you should add subsection line before whole server's. Imagine that you have server subdirectory which contains news articles. Surely those articles

are to be reindexed more often than the rest of the server. The following combination may be useful in such cases:

```
# Add subsection
Period 200000
Server http://servername/news/

# Add server
Period 600000
Server http://servername/
```

These commands give different reindexing period for `/news/` subdirectory comparing with the period of server as a whole. indexer will choose the first "Server" record for the `http://servername/news/page1.html` as far as it matches and was given first.

3.6.5. Default indexer behavior

The default behavior of indexer is to follow through links having correspondent Server/Realm command in the `indexer.conf` file. It also jumps between servers if both of them are present in `indexer.conf` either directly in Server command or indirectly in Realm command. For example, there are two Server commands:

```
Server http://www/
Server http://web/
```

When indexing `http://www/page1.html` indexer WILL follow the link `http://web/page2.html` if the last one has been found. Note that these pages are on different servers, but BOTH of them have correspondent Server record.

If one of the Server command is deleted, indexer will remove all expired URLs from this server during next reindexing.

3.6.6. Using `indexer -f <filename>`

The third scheme is very useful for `indexer -i -f url.txt` running. You may maintain required servers in the `url.txt`. When new URL is added into `url.txt` indexer will index the server of this URL during next startup.

3.6.7. URL command

```
URL http://localhost/path/to/page.html
```

This command inserts given `URL` into database. This is usefull to add several entry points to one server. Has no effect if an URL is already in the database.

3.6.8. ServerDB, RealmDB, SubnetDB and URLDB commands

```
URLDB pgsql://foo:bar@localhost/portal/links?field=url
```

These commands are equal to **Server**, **Realm**, **Subnet** and **URL** commands respectively, but takes arguments from field of SQL-table specified. In example above, URLs are takes from database `portal`, SQL-table `links` and filed `url`.

3.6.9. ServerFile, RealmFile, SubnetFile and URLFile commands

```
URLFile url.lst
```

These commands are equal to **Server**, **Realm**, **Subnet** and **URL** commands respectively, but takes arguments from a text file specified. In example above, URLs are takes from the text file `url.lst` located in `/usr/local/dpsearch/etc` directory, but the full path to a file can be specified as well.

3.6.10. Robots exclusion standard

DataparkSearch obeys the robots.txt standard (http://www.robotstxt.org/). `robots.txt` (http://www.robotstxt.org/robotstxt.html) is a file that you place in your web server's root directory that tells search engines what pages you do not want to be indexed.

DataparkSearch also obeys the `nofollow`, `noarchive` and `noindex` meta tags (http://www.robotstxt.org/meta.html).

DataparkSearch also supports the `Crawl-delay` (http://help.yahoo.com/l/us/yahoo/search/webcrawler/slurp-03.html) and `Host` (http://help.yandex.ru/webmaster/?id=996567#996574) directives in `robots.txt`.

Below are commands in `indexer.conf` file related to the Robots exclusion standard.

3.6.10.1. Robots command

```
Robots yes/no
```

Allows/disallows using `robots.txt` and <META NAME="robots" ...> exclusions. Use `no`, for example for link validation of your server(s). Command may be used several times before **Server** command and takes effect till the end of config file or till next **Robots** command. Default value is "yes".

```
Robots yes
```

3.6.10.2. RobotsPeriod command

By defaults, robots.txt data holds in SQL-database for one week. You may change this period using **RobotsPeriod** command:

```
RobotsPeriod <time>
```

For <time> format see description of **Period** command in Section 3.10.28>.

```
RobotsPeriod 30d
```

3.6.10.3. CrawlDelay command

Use this command to specify default pause in seconds between consecutive fetches from same server. This is similar to crawl-delay command in `robots.txt` file, but can specified in `indexer.conf` file on per server basis. If no crawl-delay value is specified in `robots.txt`, the value of **CrawlDelay** is used. If crawl-delay is specified in robots.txt, then the maximum of **CrawlDelay** and crawl-delay is used as interval between consecutive fetches.

3.6.10.4. MaxCrawlDelay command

When indexer is ready to index an URL from a server for which the Crawl-deley interval isn't expired yet since previous access, it waits until this period will be expired, if waiting peiod is less than amount of time specified by **MaxCrawlDelay** command. If the waiting period is greater or equal to this value, selected URL is posponed in indexing for the time remained.

```
MaxCrawlDelay 60
```

Default value is 300 seconds.

3.7. Aliases

DataparkSearch has an alias support making it possible to index sites taking information from another location. For example, if you index local web server, it is possible to take pages directly from disk without involving your web server in indexing process. Another example is building of search engine for primary site and using its mirror while indexing. There are several ways of using aliases.

3.7.1. Alias `indexer.conf` command

Format of "Alias" `indexer.conf` command:

```
Alias <masterURL> <mirrorURL>
```

E.g. you wish to index `http://search.site.ru/` using nearest German mirror `http://www.other.com/mirrors/Search/`. Add these lines in your indexer.conf:

```
Server http://search.site.ru/
Alias  http://search.site.ru/  http://www.other.com/mirrors/Search/
```

search.cgi will display URLs from master site http://search.site.ru/ but indexer will take corresponding page from mirror site http://www.other.com/mirrors/Search/.

Another example. If you want to index everything in udm.net domain and one of servers, for example http://home.udm.net/ is stored on local machine in /home/httpd/htdocs/ directory. These commands will be useful:

```
Realm http://*.udm.net/
Alias http://home.udm.net/ file:/home/httpd/htdocs/
```

Indexer will take home.udm.net from local disk and index other sites using HTTP.

3.7.2. Different aliases for server parts

Aliases are searched in the order of their appearance in indexer.conf. So, you can create different aliases for server and its parts:

```
# First, create alias for example for /stat/ directory which
# is not under common location:
Alias http://home.udm.net/stat/  file:/usr/local/stat/htdocs/

# Then create alias for the rest of the server:
Alias http://home.udm.net/ file:/usr/local/apache/htdocs/
```

Note: if you change the order of these commands, alias for /stat/ directory will never be found.

3.7.3. Using aliases in Server commands

You may specify location used by indexer as an optional argument for Server command:

```
Server  http://home.udm.net/  file:/home/httpd/htdocs/
```

3.7.4. Using aliases in Realm commands

Aliases in Realm command is a very powerful feature based on regular expressions. The idea of aliases in Realm command implementation is similar to how PHP preg_replace() function works. Aliases in Realm command work only if "regex" match type is used and does not work with "string" match type.

Use this syntax for Realm aliases:

```
Realm regex <URL_pattern> <alias_pattern>
```

Indexer searches URL for matches to URL_pattern and builds an URL alias using alias_pattern. alias_pattern may contain references of the form $n. Where n is a number in the range of 0-9. Every such reference will be replaced by text captured by the n'th parenthesized pattern. $0 refers to text matched by the whole pattern. Opening parentheses are counted from left to right (starting from 1) to obtain the number of the capturing subpattern.

Example: your company hosts several hundreds users with their domains in the form of `www.username.yourname.com`. Every user's site is stored on disk in "htdocs" under user's home directory: `/home/username/htdocs/`.

You may write this command into indexer.conf (note that dot '.' character has a special meaning in regular expressions and must be escaped with '\' sign when dot is used in usual meaning):

```
Realm regex (http://www\.)(.*)(\.yourname\.com/)(.*)  file:/home/$2/htdocs/$4
```

Imagine indexer process `http://www.john.yourname.com/news/index.html` page. It will build patterns from $0 to $4:

```
$0 = 'http://www.john.yourname.com/news/index.htm' (whole patter match)
$1 = 'http://www.'      subpattern matches '(http://www\.)'
$2 = 'john'             subpattern matches '(.*)'
$3 = '.yourname.com/'   subpattern matches '(\.yourname\.com/)'
$4 = '/news/index.html' subpattern matches '(.*)'
```

Then indexer will compose alias using $2 and $4 patterns:

```
file:/home/john/htdocs/news/index.html
```

and will use the result as document location to fetch it.

3.7.5. AliasProg command

You may also specify **AliasProg** command for aliasing purposes. **AliasProg** is useful for major web hosting companies which want to index their web space taking documents directly from a disk without having to involve web server in indexing process. Documents layout may be very complex to describe it using alias in Realm command. AliasProg is an external program that can be called, that takes a URL and returns one string with the appropriate alias to stdout. Use $1 to pass URL to command line.

For example this AliasProg command uses 'replace' command from MySQL distribution and replaces URL substring `http://www.apache.org/` to `file:/usr/local/apache/htdocs/`:

```
AliasProg  "echo $1 | /usr/local/mysql/bin/mysql/replace http://www.apache.org/ file:/usr/l
```

You may also write your own very complex program to process URLs.

3.7.6. ReverseAlias command

The ReverseAlias `indexer.conf` command allows URL mapping before URL is inserted into database. Unlike Alias command, that triggers mapping right before a document is downloaded, ReverseAlias command triggers mapping after the link is found.

```
ReverseAlias http://name2/   http://name2.yourname.com/
Server       http://name2.yourname.com/
```

All links with short server name will be mapped to links with full server name before they are inserted into database.

One of the possible use is cutting various unnecessary strings like `PHPSESSION=XXXX`

E.g. cutting from URL like `http://www/a.php?PHPSESSION=XXX`, when PHPSESSION is the only parameter. The question sign is deleted as well:

```
ReverseAlias regex  (http://[^?]*)[?]PHPSESSION=[^&]*$          $1$2
```

Cutting from URL like `w/a.php?PHPSESSION=xxx&..`, i.e. when PHPSESSION is the first parameter, but there are other parameters following it. The '&' sign after PHPSESSION is deleted as well. Question mark is not deleted:

```
ReverseAlias regex  (http://[^?]*[?])PHPSESSION=[^&]*&(.*)      $1$2
```

Cutting from URL like `http://www/a.php?a=b&PHPSESSION=xxx` or `http://www/a.php?a=b&PHPSESSION=xxx&c=d`, where PHPSESSION is not the first parameter. The '&' sign before PHPSESSION is deleted:

```
ReverseAlias regex  (http://.*)&PHPSESSION=[^&]*(.*)         $1$2
```

3.7.7. ReverseAliasProg command

ReverseAliasProg - is a command similar to both **AliasProg** command and **ReverseAlias** command. It takes agruments as **AliasProg** but maps URL before inserting it into database, as **ReverseAlias** command.

3.7.8. Alias command in `search.htm` search template

It is also possible to define aliases in search template (`search.htm`). The Alias command in `search.htm` is identical to the one in `indexer.conf`, however it is active during searching, not indexing.

The syntax of the `search.htm` Alias command is the same as in `indexer.conf`:

```
Alias <find-prefix> <replace-prefix>
```

For example, there is the following command in `search.htm`:

```
Alias http://localhost/ http://www.site.ext/
```

Search returned a page with the following URL:

```
http://localhost/news/article10.html
```

As a result, the $(DU) variable will be replace NOT with this URL:

```
http://localhost/news/article10.html
```

but with the following URL (that results in processing with Alias):

```
http://www.site.ext/news/article10.html
```

3.8. Servers Table

DataparkSearch has **ServerTable** `indexer.conf` command. It allow load servers and filters configuration from SQL table.

3.8.1. Loading servers table

When **ServerTable mysql://user:pass@host/dbname/tablename[?srvinfo=infotablename]** is specified, indexer will load servers information from given `tablename` SQL table, and will load servers parameters from given `infotablename` SQL table. If `srvinfo` parameter is not specified, parameters will be loaded from `srvinfo` table. Check the structure for `server` and `srvinfo` tables in `create/mysql/create.txt` file. If there is no structure example for your database, take it as an example.

You may use several **ServerTable** command to load servers information from different tables.

3.8.2. Servers table structure

Servers table consists of all necessary fields which describe servers parameters. Field names have correspondent `indexer.conf` commands. For example, "period" field corresponds "Period" `indexer.conf` command. Default field values are the same with default `indexer.conf` parameters.

"gindex" field corresponds "Index" command. Name is slightly changed to avoid SQL reserved word usage.

Description for several fields see in Section 9.3>.

> **Note:** Only those servers are read from the table where "active" field has 1 value and "parent" field has 0 value. This is useful to allow users to submit new URLs into servers table and give administrator a possibility to approve added URLs.

3.8.3. Flushing Servers Table

Flush server.enabled to inactive for all server table records. Use this command to deactivate all command in servertable before load new from `indexer.conf` or from other servertable.

3.9. External parsers

DataparkSearch indexer can use external parsers to index various file types (MIME types).

Parser is an executable program which converts one of the mime types to `text/plain` or `text/html`. For example, if you have postscript files, you can use ps2ascii parser (filter), which reads postscript file from stdin and produces ascii to stdout.

3.9.1. Supported parser types

Indexer supports four types of parsers that can:

- read data from stdin and send result to stdout
- read data from file and send result to stdout
- read data from file and send result to file
- read data from stdin and send result to file

3.9.2. Setting up parsers

1. Configure mime types

Configure your web server to send appropriate "Content-Type" header. For apache, have a look at `mime.types` file, most mime types are already defined there.

If you want to index local files or via `ftp` use "AddType" command in `indexer.conf` to associate file name extensions with their mime types. For example:

```
AddType text/html *.html
```

2. Add parsers

   Add lines with parsers definitions. Lines have the following format with three arguments:

   ```
   Mime <from_mime> <to_mime> [<command line>]
   ```

   For example, the following line defines parser for man pages:

   ```
   # Use deroff for parsing man pages ( *.man )
   Mime  application/x-troff-man   text/plain   deroff
   ```

   This parser will take data from stdin and output result to stdout.

   Many parsers can not operate on stdin and require a file to read from. In this case indexer creates a temporary file in /tmp and will remove it when parser exits. Use $1 macro in parser command line to substitute file name. For example, Mime command for "catdoc" MS Word to ASCII converters may look like this:

   ```
   Mime application/msword text/plain "/usr/bin/catdoc -a $1"
   ```

   If your parser writes result into output file, use $2 macro. indexer will replace $2 by temporary file name, start parser, read result from this temporary file then remove it. For example:

   ```
   Mime application/msword text/plain "/usr/bin/catdoc -a $1 >$2"
   ```

   The parser above will read data from first temporary file and write result to second one. Both temporary files will be removed when parser exists. Note that result of usage of this parser will be absolutely the same with the previous one, but they use different execution mode: file->stdout and file->file correspondingly.

   If the <command line> parameter is omitted this means both MIME type are synonyms. E.g. some sites can supply incorrect type for MP3 files as **`application/mp3`**. You can alter it into correct one **`audio/mpeg`** and therefore process them:

   ```
   Mime application/mp3 audio/mpeg
   ```

3.9.3. Avoid indexer hang on parser execution

To avoid a indexer hang on parser execution, you may specify the amount of time in seconds for parser execution in your `indexer.conf` by `ParserTimeOut` command. For example:

```
ParserTimeOut 600
```

Default value is 300 seconds, i.e. 5 minutes.

3.9.4. Pipes in parser's command line

You can use pipes in parser's command line. For example, these lines will be useful to index gzipped man pages from local disk:

```
AddType  application/x-gzipped-man  *.1.gz *.2.gz *.3.gz *.4.gz
Mime     application/x-gzipped-man  text/plain  "zcat | deroff"
```

3.9.5. Charsets and parsers

Some parsers can produce output in other charset than given in LocalCharset command. Specify charset to make indexer convert parser's output to proper one. For example, if your catdoc is configured to produce output in windows-1251 charset but LocalCharset is koi8-r, use this command for parsing MS Word documents:

```
Mime  application/msword  "text/plain; charset=windows-1251" "catdoc -a $1"
```

3.9.6. DPS_URL environment variable

When executing a parser **indexer** creates DPS_URL environment variable with an URL being processed as a value. You can use this variable in parser scripts.

3.9.7. Some third-party parsers

- RPM parser by Mario Lang <lang@zid.tu-graz.ac.at>

  /usr/local/bin/rpminfo:

  ```
  #!/bin/bash
  /usr/bin/rpm -q --queryformat="<html><head><title>RPM: %{NAME} %{VERSION}-%{RELEASE}
  (%{GROUP})</title><meta name=\"description\" content=\"%{SUMMARY}\"></head><body>
  %{DESCRIPTION}\n</body></html>" -p $1
  ```

  indexer.conf:

  ```
  Mime application/x-rpm text/html "/usr/local/bin/rpminfo $1"
  ```

  It renders to such nice RPM information:

  ```
  3. RPM: mysql 3.20.32a-3 (Applications/Databases) [4]
         Mysql is a SQL (Structured Query Language) database server.
         Mysql was written by Michael (monty) Widenius. See the CREDITS
         file in the distribution for more credits for mysql and related
         things....
         (application/x-rpm) 2088855 bytes
  ```

- catdoc MS Word to text converter

Home page (http://freshmeat.net/redir/catdoc/1055/url_homepage/), also listed on Freshmeat (http://freshmeat.net/).

`indexer.conf`:

```
Mime application/msword         text/plain      "catdoc $1"
```

- xls2csv MS Excel to text converter

  It is supplied with catdoc.

  `indexer.conf`:

  ```
  Mime application/vnd.ms-excel   text/plain      "xls2csv $1"
  ```

- pdftotext Adobe PDF converter

  Supplied with xpdf project.

  Homepage (http://freshmeat.net/redir/xpdf/12080/url_homepage/), also listed on Freshmeat (http://freshmeat.net/).

  `indexer.conf`:

  ```
  Mime application/pdf            text/plain      "pdftotext $1 -"
  ```

- unrtf RTF to html converter

  Homepage (ftp://ftp.gnu.org/pub/gnu/unrtf/)

  `indexer.conf`:

  ```
  Mime text/rtf*        text/html  "/usr/local/dpsearch/sbin/unrtf --html $1"
  Mime application/rtf  text/html  "/usr/local/dpsearch/sbin/unrtf --html $1"
  ```

- xlhtml XLS to html converter

  Homepage (http://chicago.sourceforge.net/xlhtml/)

  `indexer.conf`:

  ```
  Mime application/vnd.ms-excel  text/html  "/usr/local/dpsearch/sbin/xlhtml $1"
  ```

- ppthtml PowerPoint (PPT) to html converter. Part of xlhtml 0.5.

  Homepage (http://chicago.sourceforge.net/xlhtml/)

  `indexer.conf`:

  ```
  Mime application/vnd.ms-powerpoint  text/html  "/usr/local/dpsearch/sbin/ppthtml $1"
  ```

- Using vwHtml (http://wvWare.sourceforge.net/) (DOC to html).

  `/usr/local/dpsearch/sbin/0vwHtml.pl`:

  ```
  #!/usr/bin/perl -w

  $p = $ARGV[1];
  $f = $ARGV[1];

  $p =~ s/(.*)\/([^\/]*)/$1\//;
  $f =~ s/(.*)\/([^\/]*)/$2/;

  system("/usr/local/bin/wvHtml --targetdir=$p $ARGV[0] $f");
  ```

  `indexer.conf`:

```
Mime  application/msword       text/html  "/usr/local/dpsearch/sbin/0wvHtml.pl $1 $2"
Mime  application/vnd.ms-word  text/html  "/usr/local/dpsearch/sbin/0wvHtml.pl $1 $2"
```

- swf2html from Flash Search Engine SDK (http://www.macromedia.com/software/flash/download/search_engine/)

  `indexer.conf`:

  ```
  Mime  application/x-shockwave-flash  text/html  "/usr/local/dpsearch/sbin/swf2html $1"
  ```

- djvutxt from djvuLibre (http://djvu.sourceforge.net/)

  `indexer.conf`:

  ```
  Mime  image/djvu  text/plain  "/usr/local/bin/djvutxt $1 $2"
  Mime  image/x.djvu  text/plain  "/usr/local/bin/djvutxt $1 $2"
  Mime  image/x-djvu  text/plain  "/usr/local/bin/djvutxt $1 $2"
  Mime  image/vnd.djvu  text/plain  "/usr/local/bin/djvutxt $1 $2"
  ```

3.9.8. libextractor library

DataparkSearch can be build with libextractor library (http://gnunet.org/libextractor/). Using this library, DataparkSearch can index keywords from files of the following formats: PDF, PS, OLE2 (DOC, XLS, PPT), OpenOffice (sxw), StarOffice (sdw), DVI, MAN, FLAC, MP3 (ID3v1 and ID3v2), NSF(E) (NES music), SID (C64 music), OGG, WAV, EXIV2, JPEG, GIF, PNG, TIFF, DEB, RPM, TAR(.GZ), ZIP, ELF, S3M (Scream Tracker 3), XM (eXtended Module), IT (Impulse Tracker), FLV, REAL, RIFF (AVI), MPEG, QT and ASF.

To build DataparkSearch with libextractor library, install the library, and then configure and compile DataparkSearch.

Bellow the relationship between keyword types of libextractor version prior to 0.6 and DataparkSearch's section names is given:

Table 3-1. Relationship between libextractor's keyword types and DataparkSearch section names

Keyword Type	Section name
EXTRACTOR_FILENAME	Filename
EXTRACTOR_MIMETYPE	Mimetype
EXTRACTOR_TITLE	Title
EXTRACTOR_AUTHOR	Author
EXTRACTOR_ARTIST	Artist
EXTRACTOR_DESCRIPTION	Description
EXTRACTOR_COMMENT	Comment
EXTRACTOR_DATE	Date
EXTRACTOR_PUBLISHER	Publisher
EXTRACTOR_LANGUAGE	Content-Language
EXTRACTOR_ALBUM	Album
EXTRACTOR_GENRE	Genre

Keyword Type	Section name
EXTRACTOR_LOCATION	Location
EXTRACTOR_VERSIONNUMBER	VersionNumber
EXTRACTOR_ORGANIZATION	Organization
EXTRACTOR_COPYRIGHT	Copyright
EXTRACTOR_SUBJECT	Subject
EXTRACTOR_KEYWORDS	Meta.Keywords
EXTRACTOR_CONTRIBUTOR	Contributor
EXTRACTOR_RESOURCE_TYPE	Resource-Type
EXTRACTOR_FORMAT	Format
EXTRACTOR_RESOURCE_IDENTIFIER	Resource-Idendifier
EXTRACTOR_SOURCE	Source
EXTRACTOR_RELATION	Relation
EXTRACTOR_COVERAGE	Coverage
EXTRACTOR_SOFTWARE	Software
EXTRACTOR_DISCLAIMER	Disclaimer
EXTRACTOR_WARNING	Warning
EXTRACTOR_TRANSLATED	Translated
EXTRACTOR_CREATION_DATE	Creation-Date
EXTRACTOR_MODIFICATION_DATE	Modification-Date
EXTRACTOR_CREATOR	Creator
EXTRACTOR_PRODUCER	Producer
EXTRACTOR_PAGE_COUNT	Page-Count
EXTRACTOR_PAGE_ORIENTATION	Page-Orientation
EXTRACTOR_PAPER_SIZE	Paper-Size
EXTRACTOR_USED_FONTS	Used-Fonts
EXTRACTOR_PAGE_ORDER	Page-Order
EXTRACTOR_CREATED_FOR	Created-For
EXTRACTOR_MAGNIFICATION	Magnification
EXTRACTOR_RELEASE	Release
EXTRACTOR_GROUP	Group
EXTRACTOR_SIZE	Size
EXTRACTOR_SUMMARY	Summary
EXTRACTOR_PACKAGER	Packager
EXTRACTOR_VENDOR	Vendor
EXTRACTOR_LICENSE	License
EXTRACTOR_DISTRIBUTION	Distribution
EXTRACTOR_BUILDHOST	BuildHost
EXTRACTOR_OS	OS

Keyword Type	Section name
EXTRACTOR_DEPENDENCY	Dependency
EXTRACTOR_HASH_MD4	Hash-MD4
EXTRACTOR_HASH_MD5	Hash-MD5
EXTRACTOR_HASH_SHA0	Hash-SHA0
EXTRACTOR_HASH_SHA1	Hash-SHA1
EXTRACTOR_HASH_RMD160	Hash-RMD160
EXTRACTOR_RESOLUTION	Resolution
EXTRACTOR_CATEGORY	Ext.Category
EXTRACTOR_BOOKTITLE	BookTitle
EXTRACTOR_PRIORITY	Priority
EXTRACTOR_CONFLICTS	Conflicts
EXTRACTOR_REPLACES	Replaces
EXTRACTOR_PROVIDES	Provides
EXTRACTOR_CONDUCTOR	Conductor
EXTRACTOR_INTERPRET	Interpret
EXTRACTOR_OWNER	Owner
EXTRACTOR_LYRICS	Lyrics
EXTRACTOR_MEDIA_TYPE	Media-Type
EXTRACTOR_CONTACT	Contact
EXTRACTOR_THUMBNAIL_DATA	Thumbnail-Data
EXTRACTOR_PUBLICATION_DATE	Publication-Date
EXTRACTOR_CAMERA_MAKE	Camera-Make
EXTRACTOR_CAMERA_MODEL	Camera-Model
EXTRACTOR_EXPOSURE	Exposure
EXTRACTOR_APERTURE	Aperture
EXTRACTOR_EXPOSURE_BIAS	Exposure-Bias
EXTRACTOR_FLASH	Flash
EXTRACTOR_FLASH_BIAS	Flash-Bias
EXTRACTOR_FOCAL_LENGTH	Focal-Length
EXTRACTOR_FOCAL_LENGTH_35MM	Focal-Length-35MM
EXTRACTOR_ISO_SPEED	ISO-Speed
EXTRACTOR_EXPOSURE_MODE	Exposure-Mode
EXTRACTOR_METERING_MODE	Metering-Mode
EXTRACTOR_MACRO_MODE	Macro-Mode
EXTRACTOR_IMAGE_QUALITY	Image-Quality
EXTRACTOR_WHITE_BALANCE	White-Balance
EXTRACTOR_ORIENTATION	Orientation
EXTRACTOR_TEMPLATE	Template

Keyword Type	Section name
EXTRACTOR_SPLIT	Split
EXTRACTOR_PRODUCTVERSION	ProductVersion
EXTRACTOR_LAST_SAVED_BY	Last-Saved-By
EXTRACTOR_LAST_PRINTED	Last-Printed
EXTRACTOR_WORD_COUNT	Word-Count
EXTRACTOR_CHARACTER_COUNT	Character-Count
EXTRACTOR_TOTAL_EDITING_TIME	Total-Editing-Time
EXTRACTOR_THUMBNAILS	Thumbnails
EXTRACTOR_SECURITY	Security
EXTRACTOR_CREATED_BY_SOFTWARE	Created-By-Software
EXTRACTOR_MODIFIED_BY_SOFTWARE	Modified-By-Software
EXTRACTOR_REVISION_HISTORY	Revision-History
EXTRACTOR_LOWERCASE	Lowercase
EXTRACTOR_COMPANY	Company
EXTRACTOR_GENERATOR	Generator
EXTRACTOR_CHARACTER_SET	Meta-Charset
EXTRACTOR_LINE_COUNT	Line-Count
EXTRACTOR_PARAGRAPH_COUNT	Paragraph-Count
EXTRACTOR_EDITING_CYCLES	Editing-Cycles
EXTRACTOR_SCALE	Scale
EXTRACTOR_MANAGER	Manager
EXTRACTOR_MOVIE_DIRECTOR	Movie-Director
EXTRACTOR_DURATION	Duration
EXTRACTOR_INFORMATION	Information
EXTRACTOR_FULL_NAME	Full-Name
EXTRACTOR_CHAPTER	Chapter
EXTRACTOR_YEAR	Year
EXTRACTOR_LINK	Link
EXTRACTOR_MUSIC_CD_IDENTIFIER	Music-CD-Identifier
EXTRACTOR_PLAY_COUNTER	Play-Counter
EXTRACTOR_POPULARITY_METER	Popularity-Meter
EXTRACTOR_CONTENT_TYPE	Ext.Content-Type
EXTRACTOR_ENCODED_BY	Encoded-By
EXTRACTOR_TIME	Time
EXTRACTOR_MUSICIAN_CREDITS_LIST	Musician-Credits-List
EXTRACTOR_MOOD	Mood
EXTRACTOR_FORMAT_VERSION	Format-Version
EXTRACTOR_TELEVISION_SYSTEM	Television-System

Keyword Type	Section name
EXTRACTOR_SONG_COUNT	Song-Count
EXTRACTOR_STARTING_SONG	Strting-Song
EXTRACTOR_HARDWARE_DEPENDENCY	Hardware-Dependency
EXTRACTOR_RIPPER	Ripper
EXTRACTOR_FILE_SIZE	File-Size
EXTRACTOR_TRACK_NUMBER	Track-Number
EXTRACTOR_ISRC	ISRC
EXTRACTOR_DISC_NUMBER	Disc-Number

If a section name from the list above doesn't specified in sections.conf, the value of corresponding keyword is written as `body` section. Keywords of unknown type are written as `body` section as well.

For libextractor 0.6.x, the values returned by EXTRACTOR_metatype_to_string function are used as section names.

3.10. Other commands are used in `indexer.conf`

3.10.1. Include command

You may include another configuration file in any place of the `indexer.conf` using **`Include`** <**`filename`**> command. Absolute path if <`filename`> starts with "/":

```
Include /usr/local/dpsearch/etc/inc1.conf
```

Relative path else:

```
Include inc1.conf
```

3.10.2. DBAddr command

DBAddr command is URL-style database description. It specify options (type, host, database name, port, user and password) to connect to SQL database. Should be used before any other commands. You may specify several **DBAddr** commands. In this case DataparkSearch will merge result from every database specified. Command have global effect for whole config file. Format:

```
DBAddr <Type>:[//[User[:Pass]@]Host[:Port]]/DBName/[?[dbmode=mode]{&<parameter name>=<para
```

Note: ODBC related. Use DBName to specify ODBC data source name (DSN) `Host` does not matter, use "localhost".

Note: Solid related. Use `Host` to specify Solid server DBName does not matter for Solid.

You may use CGI-like encoding for `User` and `Pass` if you need use special characters in user name or password. For example, if you have **ABC@DEF** as password, you should write it as **ABC%40DEF**.

Currently supported `Type` values are `mysql`, `pgsql`, `msql`, `solid`, `mssql`, `oracle`, `ibase`, `sqlite`. Actually, it does not matter for native libraries support. But ODBC users should specify one of supported values. If your database type is not supported, you may use "unknown" instead.

MySQL and PostgreSQLusers can specify path to Unix socket when connecting to localhost: **mysql://foo:bar@localhost/dpsearch/?socket=/tmp/mysql.sock**

If you are using PostgreSQL and do not specify hostname, e.g. **pgsql://user:password@/dbname/** then PostgreSQL will not work via TCP, but will use default Unix socket.

`dbmode parameter`. You may also select database mode of words storage. When "`single`" is specified, all words are stored in the same table (file). If "`multi`" is selected, words will be located in different tables (files) depending of their lengths. "`multi`" mode is usually faster but requires more tables (files). If "`crc`" mode is selected, DataparkSearch will store 32 bit integer word IDs calculated by HASH32 algorithm instead of words. This mode requires less disk space and it is faster comparing with "single" and "multi" modes, however it doesn't support substring searches. "`crc-multi`" uses the same storage structure with the "crc" mode, but also stores words in different tables (files) depending on words lengths like "multi" mode. Default mode is "single".

`stored parameter`. Format:**stored=StoredHost[:StoredPort]**. This parameter is used to specify host and port, if specified, where **stored** daemon is running, if you plan to use document excerpts and cached copies.

`cached parameter`. Format:**cached=CachedHost[:CachedPort]**. Use **cached** at given host and port if specified. It is required for `cache` storage mode only (see Section 5.2>). Each **indexer** will connect to `cached` on given address at startup.

`charset parameter`. Format:**charset=DBCharacterSet**. This parameter can be used to specity database connection charset. The charset specified by DBCharacterSet should be equal to charset specified by **LocalCharset** command.

`label parameter`. Format: **label=DBAlabel**. This parameter may be used to assign a label to **DBAddr** command. So, if you pass `label` CGI-variable to the DataparkSearch, then only **DBAddr** marked by label value will be used to performing search. Thus, you can use one **searchd** daemon to answer queries for several search databases selectible by `label` variable.

Note: If no `label` is passed as CGI-parameter, then only DBAddr without a `label` will be used to perform search query.

Example:

```
DBAddr          mysql://foo:bar@localhost/dpsearch/?dbmode=single
```

3.10.3. VarDir command

You may choose alternative working directory for cache mode:

```
VarDir /usr/local/dpsearch/var
```

3.10.4. NewsExtensions command

Whether to enable news extensions. Default value is no.

```
NewsExtensions yes
```

3.10.5. SyslogFacility command

This is used if DataparkSearch was compiled with syslog support and if you don't like the default value. Argument is the same as used in `syslog.conf` file. For list of possible facilities see syslog.conf(5)

```
SyslogFacility local7
```

3.10.6. Word length commands

Word lengths. You may change default length range of words stored in database. By default, words with the length in the range from 1 to 32 are stored.

```
MinWordLength 1
MaxWordLength 32
```

3.10.7. MaxDocSize command

This command is used for specify maximal document size. Default value 1048576 (1 Megabyte). Takes global effect for whole config file.

```
MaxDocSize 1048576
```

3.10.8. MinDocSize command

This command is used to checkonly urls with content size less than value specified. Default value 0. Takes global effect for whole config file.

```
MinDocSize 1024
```

3.10.9. IndexDocSizeLimit command

Use this command to specify the maximal amount of data stored in index per document. Default value 0. This means no limit. Takes effect till next **IndexDocSizeLimit** command.

```
IndexDocSizeLimit 65536
```

3.10.10. URLSelectCacheSize command

Select number of targets to index at once. Default value is 1024.

```
URLSelectCacheSize 10240
```

3.10.11. URLDumpCacheSize command

Select at once this number of urls to write cache mode indexes, to preload url data or to calculate the Popularity Rank. Default value is 100000.

```
URLDumpCacheSize 10240
```

3.10.12. UseCRC32URLId command

Switch on or off the ID generation for URL using HASH32. Default value is "no".

```
UseCRC32URLId yes
```

Switching it on allow speed up indexing a bit, but some small number of collisions is possible.

3.10.13. HTTPHeader command

You may add desired headers to indexer's HTTP request. You should not use "If-Modified-Since", "Accept-Charset" headers, these headers are composed by indexer itself. "User-Agent: DataparkSearch/version" header is sent too, but you may override it. Command has global effect for all configuration file.

```
HTTPHeader "User-Agent: My_Own_Agent"
HTTPHeader "Accept-Language: ru, en"
HTTPHeader "From: webmaster@mysite.com"
```

3.10.14. Allow command

```
Allow [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ... ]
```

Use this command to allow URLs that match (doesn't match) given argument. First three optional parameters describe the type of comparison. Default values are Match, NoCase, String. Use `NoCase` or `Case` values to choose case sensitive or case insensitive comparison. Use `Regex` to choose regular expression comparison. Use `String` to choose string with wildcards comparison. Wildcards are '*' for any number of characters and '?' for one character. Note that '?' and '*' have special meaning in `String` match type. Please use `Regex` to describe documents with '?' and '*' signs in URL. `String` match is much faster than `Regex`. Use `String` where it is possible. You may use several arguments for one **Allow** command. You may use this command any times. Takes global effect for config file. Note that DataparkSearch automatically adds one "Allow regex .*" command after reading config file. It means that allowed everything that is not disallowed.

Examples

```
#  Allow everything:
Allow *
#  Allow everything but .php .cgi .pl extensions case insensitively using regex:
Allow NoMatch Regex \.php$|\.cgi$|\.pl$
#  Allow .HTM extension case sensitively:
Allow NoCase *.HTM
```

3.10.15. Disallow command

```
Disallow [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ... ]
```

Use this command to disallow URLs that match (doesn't match) given argument. The meaning of first three optional parameters is exactly the same with **Allow** command. You can use several arguments for one **Disallow** command. Takes global effect for config file. Examples:

```
# Disallow URLs that are not in udm.net domains using "string" match:
Disallow NoMatch *.udm.net/*
```

```
# Disallow any except known extensions and directory index using "regex" match:
Disallow NoMatch Regex \/$|\.htm$|\.html$|\.shtml$|\.phtml$|\.php$|\.txt$
# Exclude cgi-bin and non-parsed-headers using "string" match:
Disallow */cgi-bin/* *.cgi */nph-*
# Exclude anything with '?' sign in URL. Note that '?' sign has a
# special meaning in "string" match, so we have to use "regex" match here:
Disallow Regex  \?
```

3.10.16. CheckOnly command

```
CheckOnly [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ... ]
```

The meaning of first three optional parameters is exactly the same with **Allow** command. Indexer will use HEAD instead of GET HTTP method for URLs that match/do not match given regular expressions. It means that the file will be checked only for being existing and will not be downloaded. Useful for zip,exe,arj and other binary files. Note that you can disallow those files with commands given below. You may use several arguments for one **CheckOnly** commands. Useful for example for searching through the URL names rather than the contents (a la FTP-search). Takes global effect for config file. Examples:

```
# Check some known non-text extensions using "string" match:
CheckOnly *.b   *.sh   *.md5
# or check ANY except known text extensions using "regex" match:
CheckOnly NoMatch Regex \/$|\.html$|\.shtml$|\.phtml$|\.php$|\.txt$
```

3.10.17. HrefOnly command

```
HrefOnly [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ... ]
```

The meaning of first three optional parameters is exactly the same with **Allow** command. Use this to scan a HTML page for "href" attribute of tags but not to index the contents of the page with an URLs that match (doesn't match) given argument. Commands have global effect for all configuration file. When indexing large mail list archives for example, the index and thread index pages (like mail.10.html, thread.21.html, etc.) should be scanned for links but shouldn't be indexed:

```
HrefOnly */mail*.html */thread*.html
```

3.10.18. CheckMp3 command

```
CheckMp3 [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ...]
```

The meaning of first three optional parameters is exactly the same with **Allow** command. If an URL matches given rules, indexer will download only a little part of the document and try to find MP3 tags in it. On success, indexer will parse MP3 tags, else it will download whole document then parse it as usual. Notes: This works only with those servers which support HTTP/1.1 protocol. It is used "Range: bytes" header to download mp3 tag.

```
CheckMp3 *.bin *.mp3
```

3.10.19. CheckMp3Only command

```
CheckMP3Only [Match|NoMatch] [NoCase|Case] [String|Regex] <arg> [<arg> ...]
```

The meaning of first three optional parameters is exactly the same with **Allow** command. If an URL matches given rules, indexer, like in the case **CheckMP3** command, will download only a little part of the document and try to find MP3 tags. On success, indexer will parse MP3 tags, else it will NOT download whole document.

```
CheckMP3Only *.bin *.mp3
```

3.10.20. IndexIf command

```
IndexIf [Match|NoMatch] [NoCase|Case] [String|Regex] <section> <arg> [<arg> ... ]
```

Use this command to allow indexing, if the value of `section` match the `arg` pattern given. The meaning of first three optional parameters is exactly the same as for the **Allow** command (see Section 3.10.14>).

Example

```
IndexIf regex Title Manual
IndexIf body "*important detail*"
```

3.10.21. NoIndexIf command

```
NoIndexIf [Match|NoMatch] [NoCase|Case] [String|Regex] <section> <arg> [<arg> ... ]
```

Use this command to disallow indexing, if the value of `section` match the `arg` pattern given. The meaning of first three optional parameters is exactly the same as for the **Allow** command (see Section 3.10.14>).

Example

```
NoIndexIf regex Title Sex
IndexIf body *xxx*
```

3.10.22. AllowIf command

```
AllowIf [Match|NoMatch] [NoCase|Case] [String|Regex] <section> <arg> [<arg> ... ]
```

This command is similar to the **Allow** command (see Section 3.10.14>), but is applicable to any section of the document indexed, and it is appplied after the content of the document downloaded and indexed. Use this command to allow indexing, if the value of `section` match the `arg` pattern given. The meaning of first three optional parameters is exactly the same as for the **Allow** command.

Example

```
AllowIf regex Title Manual
AllowIf body "*important detail*"
```

3.10.23. DisallowIf command

```
DisallowIf [Match|NoMatch] [NoCase|Case] [String|Regex] <section> <arg> [<arg> ... ]
```

This command is similar to the **Disallow** command (see Section 3.10.15>), but is applicable to any section of the document indexed, and it is appplied after the content of the document downloaded and indexed. Use this command to delete corresponding document from the database, if the value of `section` match the `arg` pattern given. The meaning of first three optional parameters is exactly the same as for the **Allow** command (see Section 3.10.14>).

Example

```
DisallowIf regex Title Sex
DisallowIf body *xxx*
```

3.10.24. HoldBadHrefs command

```
HoldBadHrefs <time>
```

How much time to hold URLs with erroneous status before deleting them from the database. For example, if host is down, indexer will not delete pages from this site immediately and search will use previous content of these pages. However if site doesn't respond for a month, probably it's time to remove these pages from the database. For <time> format see description of **Period** command in Section 3.10.28>.

```
HoldBadHrefs 30d
```

3.10.25. DeleteOlder command

```
DeleteOlder <time>
```

How much time to hold URLs before deleting them from the database. For example, for news sites indexing, you may delete automatically old news articles after specified period. For <time> format see description of **Period** command in Section 3.10.28>. Default value is 0. "0" value mean "do not check". You may specify several **DeleteOlder** commands, for example, by one for every **Server** command.

```
DeleteOlder 7d
```

3.10.26. UseRemoteContentType command

```
UseRemoteContentType yes/no
```

This command specifies if the indexer should get content type from http server headers (yes) or from it's AddType settings (no). If set to 'no' and the indexer could not determine content-type by using its AddType settings, then it will use http header. Default: yes

```
UseRemoteContentType yes
```

3.10.27. AddType command

```
AddType [String|Regex] [Case|NoCase] <mime type> <arg> [<arg>...]
```

This command associates filename extensions (for services that don't automatically include them) with their mime types. Currently "file:" protocol uses these commands. Use optional first two parameter to choose comparison type. Default type is "String" "Case" (case insensitive string match with '?' and '*' wildcards for one and several characters correspondently).

```
AddType image/x-xpixmap *.xpm
```

3.10.28. Period command

```
Period <time>
```

Set reindex period. <time> is in the form 'xxxA[yyyB[zzzC]]' (Spaces are allowed between xxx and A and yyy and so on) there xxx, yyy, zzz are numbers (can be negative!) A, B, C can be one of the following: s - second M - minute h - hour d - day m - month y - year (these letters are the same as in strptime/strftime functions). Examples:

```
 15s - 15 seconds
```

```
4h30M - 4 hours and 30 minutes
1y6m-15d - 1 year and six month minus 15 days
1h-10M+1s - 1 hour minus 10 minutes plus 1 second
```

If you specify only number without any character, it is assumed that time is given in seconds. Can be set many times before **Server** command and takes effect till the end of config file or till next **Period** command.

```
Period 7d
```

3.10.29. PeriodByHops command

```
PeriodByHops <hops> [ <time> ]
```

Set reindex period per <hops> basis. The format for <time> is the same as for **Period**.

Can be set many times before **Server** command and takes effect till the end of config file or till next **PeriodByHops** command with same <hops> value. If <time> parameter is omitted, this undefine the previous defined value.

If for given <hops> value the appropriate **PeriodByHops** command is not specified, in this case the value defined in **Period** command is used.

3.10.30. ExpireAt command

```
ExpireAt [ A [ B [ C [ D [ E ]]]]]
```

This command allow specify the exactly expiration time for documents. May be specified per Server/Realm basis and takes effect till the end of config file or till next **ExpireAt** command. **ExpireAt** specified without any arguments disable previously specified value. A - stand for minute, may be * or 0-59; B - stand for hour, may be * or 0-23; C - stand for day of month, may be * or 1-31; D - stand for month, may be * or 1-12; E - stand for day of week, may be * or 0-6, 0 - is Sunday. **ExpireAt** command have higher prioroty over **Period** or **PeriodByHops** command.

3.10.31. UseDateHeader command

```
UseDateHeader yes|no|force
```

Use Date header if no Last-Modified header is sent by remote web-server. The value "force" instructs to use Date header even if Last-Modified header has been sent by remote server. Default value: no.

3.10.32. LMDSection command

```
LMDSection <section name>
```

This command specify the section which will be used as the document last modification date instead of Last-Modified header sent by remote web-server. Can be set many times before **Server** command and takes effect till the end of config file or till next **LMDSection** command. Default value is undefined. Use this command without any argument to make its value undefined. If the value of the section specified by this command is not defined for current document the value of Last-Modified header will be used.

3.10.33. MaxHops command

```
MaxHops <number>
```

It limits the length of a way from a seeding URL to the indexing one in "mouse clicks". Default value is 256. Can be set multiple times before "Server" command and it takes effect till the end of config file or till next MaxHops command.

```
MaxHops 256
```

3.10.34. TrackHops command

```
TrackHops yes|no
```

This command enable or disable hops tracking in reindexing. Default value is no. If enabled, the value of hops for url is recalculated when reindexing. Otherwise the value of hops is calculated only once at insertion of url into database.

```
TrackHops yes
```

3.10.35. MaxDepth command

```
MaxDepth <number>
```

It limits the directory depth of an URL indexed. Default value is 16. Can be set multiple times before "Server" command and takes effect till the end of config file or till next MaxDepth command.

```
MaxDepth 2
```

3.10.36. MaxDocsPerServer command

`MaxDocsPerServer <number>`

Limits the number of hrefs accepted from a Server. Default value is -1, that means no limits. If set to positive value, no more than given number of pages will be indexed from one server during this run of index. Can be set multiple times before **Server** command and takes effect till the end of config file or till next **MaxDocsPerServer** command.

```
MaxDocsPerServer 100
```

3.10.37. MaxHrefsPerServer command

`MaxHrefsPerServer <number>`

Limits the number of documents retrieved from a Server. Default value is -1, that means no limits. If set to positive value, no more than given number of hrefs will be picked up from one server during this run of index. Can be set multiple times before **Server** command and takes effect till the end of config file or till next **MaxHrefsPerServer** command.

```
MaxHrefsPerServer 100
```

3.10.38. MaxNetErrors command

`MaxNetErrors <number>`

Maximum network errors for each server. Default value is 16. Use 0 for unlimited errors number. If there too many network errors on some server (server is down, host unreachable, etc) **indexer** will try to do not more then `'number'` attempts to connect to this server. Takes effect till the end of config file or till next **MaxNetErrors** command.

```
MaxNetErrors 16
```

3.10.39. ReadTimeOut command

`ReadTimeOut <time>`

Connect timeout and stalled connections timeout. For `<time>` format see Section 3.10.28>. Default value is 30 seconds. Can be set any times before **Server** command and takes effect till the end of config file or till next **ReadTimeOut** command.

```
ReadTimeOut 30s
```

3.10.40. DocTimeOut command

```
DocTimeOut <time>
```

Maximum amount of time indexer spends for one document downloading. For <time> format see Section 3.10.28>. Default value is 90 seconds. Can be set any times before **Server** command and takes effect till the end of config file or till next **DocTimeOut** command.

```
DocTimeOut 1m30s
```

3.10.41. NetErrorDelayTime command

```
NetErrorDelayTime <time>
```

Specify document processing delay time if network error has occurred. For <time> format see Section 3.10.28>. Default value is one day

```
NetErrorDelayTime 1d
```

3.10.42. Cookies command

```
Cookies yes/no
```

Enables/Disables the support for HTTP cookies. Command may be used several times before **Server** command and takes effect till the end of config file or till next **Cookies** command. Default value is "no".

```
Cookies yes
```

3.10.43. Section command

```
Section <string> <number> <maxlen> [strict] [ <pattern> <replacement> ]
```

where <string> is a section name and <number> is section ID between 0 and 255. Use 0 if you don't want to index some of these sections. It is better to use different IDs for different sections. In this case during search time you'll be able to give different weight to each section or even disallow some sections at a search time. <maxlen> argument contains a maximum length of section which will be stored in database. Use 0 for <maxlen>, if you don't want to store this section. <pattern> and

<replacement> are a regex-like pattern and replacement to extract section value from document content.

You can specify strict option to set strict string tokenization for a section, which mean word break at any non-character symbol despite the context. It's useful, for example, in indexing of URL, where hyphen, the character, uses as delimiter between words.

You can specify single option for a single value section, for which any second value will be skipped in processing. This is useful, for example, to clean up titles of pages with frames or to remove doubled titles when libextractor is used.

```
# Standard HTML sections: body, title
Section body   1 256
Section title   2 128
# strict tokenization for URL
Section url                     3       0 strict
# regex-pattern for a section
Section GoodName                4       128 "<h1>([^<]*)</h1>" "<b>GoodName:</b> $1"
```

3.10.44. HrefSection command

```
HrefSection <string> [ <pattern> <replacement> ]
```

where <string> is a section name, <pattern> and <replacement> are a regex-like pattern and replacement to extract section value from document content. Use this command to extract links from document content.

```
# Standard HTML sections: body, title
HrefSection link
HrefSection     NewLink "<newlink>([^<]*)</newlink>" "$1"
```

3.10.45. FastHrefCheck command

The "**FastHrefCheck yes**" command is useful to speed-up the indexing when you have a huge list of **Server/Realm/Subnet** commands as it disables the href checking against server list during parsing.

3.10.46. Index command

```
Index yes/no
```

Prevent indexer from storing words into database. Useful for example for link validation. Can be set multiple times before **Server** command and takes effect till the end of config file or till next **Index** command. Default value is "yes".

```
Index no
```

3.10.47. ProxyAuthBasic command

```
ProxyAuthBasic login:passwd
```

Specity username and password for http proxy basic authorisation and for SOCKS5 authorisation. Can be used before every **Server** command and takes effect only for next one **Server** command! It should be also before **Proxy** command. Examples:

```
ProxyAuthBasic somebody:something
```

3.10.48. Proxy command

```
Proxy [http|socks5] your.proxy.host[:port]
```

Use proxy rather then connect directly. You can specify either HTTP or SOCK5 proxy type. HTTP proxy type is used by default. One can index ftp servers when using HTTP proxy Default port value if not specified is 3128 (Squid) If proxy host is not specified direct connect will be used. Can be set before every **Server** command and takes effect till the end of config file or till next **Proxy** command. If no one **Proxy** command specified indexer will use direct connect. Examples:

```
#           Proxy on atoll.anywhere.com, port 3128:
Proxy atoll.anywhere.com
#           Proxy on lota.anywhere.com, port 8090:
Proxy lota.anywhere.com:8090
#     Proxy on local Tor
Proxy socks5 localhost:9050
#           Disable proxy (direct connect):
Proxy
```

3.10.49. AuthBasic command

```
AuthBasic login:passwd
```

Use basic http authorization. Can be set before every **Server** command and takes effect only for next one **Server** command! Examples:

```
AuthBasic somebody:something

# If you have password protected directory(-ies), but whole server is open,use:
AuthBasic login1:passwd1
Server http://my.server.com/my/secure/directory1/
AuthBasic login2:passwd2
```

```
Server http://my.server.com/my/secure/directory2/
Server http://my.server.com/
```

3.10.50. ServerWeight command

```
ServerWeight <number>
```

Server weight for Popularity Rank calculation (see Section 8.5.3>). Default value is 1.

```
ServerWeight 1
```

3.10.51. OptimizeAtUpdate command

```
OptimizeAtUpdate yes
```

Specify word index optimize strategy. Default value: no If enabled, this save disk space, but slow down indexing. May be placed in `indexer.conf` and `cached.conf`.

3.10.52. SkipUnreferred command

```
SkipUnreferred yes|no|del
```

Default value: no. Use this command to skip reindexing or delete unreferred documents. An unreferred document is a document with no links to it. This command require the links collection to be enabled (see Section 8.5.3>).

3.10.53. Bind command

```
Bind 127.0.0.1
```

You may use this command to specify local ip address, if your system have several network interfaces.

3.10.54. ProvideReferer command

```
ProvideReferer yes
```

Use this command to provide `Referer:` request header for HTTP and HTTPS connections.

3.10.55. LongestTextItems command

```
LongestTextItems 4
```

Use this command to specify the number of longest text items to index.

3.10.56. MakePrefixes command

With **MakePrefixes yes** command you can instruct **indexer** to produce automatically all prefixes for words indexed. This is suitable, for example, for making search suggestions.

3.11. Extended indexing features

3.11.1. News extensions

To enable News extensions do these steps:

- Build DataparkSearch with `news://` scheme support, i.e. do not disbale it when run configure (News extensions are enabled by default)
- Add the command **NewsExtensions yes** into your `indexer.conf` configuration file. Also add these **Section** commands into `sections.conf` file:

  ```
  Section Header.References 18 0
  Section Header.Message-ID 19 0
  Section Header.Parent-ID  20 0
  ```

  You can also use `Header.Subject` or `Header.From`. Please remember, you need to specify non-zero maximal length for any of these sections if you need to store it into `urlinfo` table and/or use it in your search template.

With News extensions enable, the **indexer** try to detect Parent-ID for each article indexed and also put the pairs (`Parent-ID`, `ID`) into `links` table.

3.11.2. Indexing SQL database tables (htdb: virtual URL scheme)

DataparkSearch can index SQL database text fields - the so called htdb: virtual URL scheme.

Using htdb:/ virtual scheme you can build full text index of your SQL tables as well as index your database driven WWW server.

> **Note:** You must have PRIMARY key on the table you want to index.

3.11.2.1. HTDB indexer.conf commands

Five `indexer.conf` commands provide HTDB. They are **HTDBAddr**, **HTDBList**, **HTDBLimit**, **HTDBDoc** and **HTDBText**.

HTDBAddr is used to specify database connection. It's syntax identical to **DBAddr** command.

HTDBList is SQL query to generate list of all URLs which correspond to records in the table using PRIMARY key field. You may use either absolute or relative URLs in HTDBList command:

For example:

```
HTDBList "SELECT concat('htdb:/',id) FROM messages"
    or
HTDBList "SELECT id FROM messages"
```

HTDBLimit command may be used to specify maximal number of records in one SELECT operation. It allow reduce memory usage for big data tables indexing. For example:

```
HTDBLimit 512
```

HTDBDoc is a query to get only certain record from database using PRIMARY key value.

HTDBList SQL query is used for all URLs which end with '/' sign. For other URLs SQL query given in HTDBDoc is used.

> **Note:** HTDBDoc query must return FULL HTTP response with headers. So, you can build very flexible indexing system giving different HTTP status in query. Take a look at HTTP response codes section of documentation to understand indexer behavior when it gets different HTTP status.

If there is no result of HTDBDoc or query does return several records, HTDB retrieval system generates "HTTP 404 Not Found". This may happen at reindex time if record was deleted from your table since last reindexing. You may use **HoldBadHrefs 0** to delete such records from DataparkSearch tables as well.

You may use several HTDBDoc/List commands in one `indexer.conf` with corresponding Server commands.

HTDBText <**section**> is a query to get raw text data from database using PRIMARY key value collected via **HTDBList** command. The <section> parameter is specify the section name useing for storing this data. This query may return as many rows as required. You may specify several **HTDBText** commands per **Server** or **Realm** command.

```
DBAddr mysql://foo:bar@localhost/database/?dbmode=single

HTDBAddr mysql://foofoo:barbar@localhost/database/

HTDBList "SELECT DISTINCT topic_id FROM messages"

HTDBText body "SELECT raw_text\
FROM messages WHERE topic_id='$1'"
```

```
Server htdb:/
```

It' possible to specify both **HTDBDoc** and **HTDBText** commands per one **Server** or **Realm** command. **HTDBText** commands are processing first.

3.11.2.2. HTDB variables

You may use PATH parts of URL as parameters of both HTDBList and HTDBDoc SQL queries. All parts are to be used as $1, $2, ... $n, where number is the number of PATH part:

```
htdb:/part1/part2/part3/part4/part5
         $1    $2    $3    $4    $5
```

For example, you have this `indexer.conf` command:

```
HTDBList "SELECT id FROM catalog WHERE category='$1'"
```

When htdb:/cars/ URL is indexed, $1 will be replaced with 'cars':

```
SELECT id FROM catalog WHERE category='cars'
```

You may use long URLs to provide several parameters to both HTDBList and HTDBDoc queries. For example, `htdb:/path1/path2/path3/path4/id` with query:

```
HTDBList "SELECT id FROM table WHERE field1='$1' AND field2='$2' and field3='$3'"
```

This query will generate the following URLs:

```
htdb:/path1/path2/path3/path4/id1
...
htdb:/path1/path2/path3/path4/idN
```

for all values of the field "id" which are in HTDBList output.

It's possible to specify a regex-based pattern to match the URL into HTDB variables for **HTDBDoc** and **HTDBtext** commands:

```
HTDBText header "SELECT header FROM news WHERE section=$1 AND article=$2" "^/section/([0-9]
```

in this case the regex pattern specified is matched against the full path and filename of the URL.

For the **HTDBText** command it is possible to use search template meta-variables (as for example, $(DP_ID), $(URL), etc.) to form a sql-query. E.g.:

```
HTDBText hint "SELECT hint FROM hints WHERE url = '$(url)'"
```

3.11.2.3. Creating full text index

Using htdb:/ scheme you can create full text index and use it further in your application. Lets imagine you have a big SQL table which stores for example web board messages in plain text format. You also want to build an application with messages search facility. Lets say messages are stored in "messages" table with two fields "id" and "msg". "id" is an integer primary key and "msg" big text field contains messages themselves. Using usual SQL LIKE search may take long time to answer:

```
SELECT id, message FROM message WHERE message LIKE '%someword%'
```

Using DataparkSearch htdb: scheme you have a possibility to create full text index on "message" table. Install DataparkSearch in usual order. Then edit your `indexer.conf`:

```
DBAddr mysql://foo:bar@localhost/search/?dbmode=single

HTDBAddr mysql://foofoo:barbar@localhost/database/

HTDBList "SELECT id FROM messages"

HTDBDoc "SELECT concat(\
'HTTP/1.0 200 OK\\r\\n',\
'Content-type: text/plain\\r\\n',\
'\\r\\n',\
msg) \
FROM messages WHERE id='$1'"

Server htdb:/
```

After start indexer will insert 'htdb:/' URL into database and will run an SQL query given in HTDBList. It will produce 1,2,3, ..., N values in result. Those values will be considered as links relative to 'htdb:/' URL. A list of new URLs in the form htdb:/1, htdb:/2, ... , htdb:/N will be added into database. Then HTDBDoc SQL query will be executed for each new URL. HTDBDoc will produce HTTP document for each document in the form:

```
HTTP/1.0 200 OK
Content-Type: text/plain

<some text from 'message' field here>
```

This document will be used to create full text index using words from 'message' fields. Words will be stored in 'dict' table assuming that we are using 'single' storage mode.

After indexing you can use DataparkSearch tables to perform search:

```
SELECT url.url
FROM url,dict
WHERE dict.url_id=url.rec_id
AND dict.word='someword';
```

As far as DataparkSearch 'dict' table has an index on 'word' field this query will be executed much faster than queries which use SQL LIKE search on 'messages' table.

You can also use several words in search:

```
SELECT url.url, count(*) as c
FROM url,dict
WHERE dict.url_id=url.rec_id
AND dict.word IN ('some','word')
GROUP BY url.url
ORDER BY c DESC;
```

Both queries will return 'htdb:/XXX' values in url.url field. Then your application has to cat leading 'htdb:/' from those values to get PRIMARY key values of your 'messages' table.

3.11.2.4. Indexing SQL database driven web server

You can also use htdb:/ scheme to index your database driven WWW server. It allows to create indexes without having to invoke your web server while indexing. So, it is much faster and requires less CPU resources when direct indexing from WWW server.

The main idea of indexing database driven web server is to build full text index in usual order. The only thing is that search must produce real URLs instead of URLs in 'htdb:/...' form. This can be achieved using DataparkSearch aliasing tools.

HTDBList command generates URLs in the form:

```
http://search.site.ext/board/message.php?id=XXX
```

where XXX is a "messages" table primary key values.

For each primary key value HTDBDoc command generates text/html document with HTTP headers and content like this:

```
<HTML>
<HEAD>
<TITLE> ... subject field here .... </TITLE>
<META NAME="Description" Content=" ... author here ...">
</HEAD>
<BODY> ... message text here ... </BODY>
```

At the end of `doc/samples/htdb.conf` we wrote three commands:

```
Server htdb:/
Realm  http://search.site.ext/board/message.php?id=*
Alias  http://search.site.ext/board/message.php?id=  htdb:/
```

First command says indexer to execute HTDBList query which will generate a list of messages in the form:

```
http://search.site.ext/board/message.php?id=XXX
```

Second command allow indexer to accept such message URLs using string match with '*' wildcard at the end.

Third command replaces "http://search.site.ext/board/message.php?id=" substring in URL with "htdb:/" when indexer retrieve documents with messages. It means that "http://mysearch.udm.net/board/message.php?id=xxx" URLs will be shown in search result, but "htdb:/xxx" URL will be indexed instead, where xxx is the PRIMARY key value, the ID of record in "messages" table.

3.11.3. Indexing binaries output (exec: and cgi: virtual URL schemes)

DataparkSearch supports exec: and cgi: virtual URL schemes. They allows running an external program. This program must return a result to it's stdout. Result must be in HTTP standard, i.e. HTTP response header followed by document's content.

For example, when indexing both `cgi:/usr/local/bin/myprog` and `exec:/usr/local/bin/myprog`, indexer will execute the `/usr/local/bin/myprog` program.

3.11.3.1. Passing parameters to cgi: virtual scheme

When executing a program given in cgi: virtual scheme, indexer emulates that program is running under HTTP server. It creates REQUEST_METHOD environment variable with "GET" value and QUERY_STRING variable according to HTTP standards. For example, if `cgi:/usr/local/apache/cgi-bin/test-cgi?a=b&d=e` is being indexed, indexer creates QUERY_STRING with `a=b&d=e` value. cgi: virtual URL scheme allows indexing your site without having to invoke web servers even if you want to index CGI scripts. For example, you have a web site with static documents under `/usr/local/apache/htdocs/` and with CGI scripts under `/usr/local/apache/cgi-bin/`. Use the following configuration:

```
Server http://localhost/
Alias  http://localhost/cgi-bin/ cgi:/usr/local/apache/cgi-bin/
Alias  http://localhost/  file:/usr/local/apache/htdocs/
```

3.11.3.2. Passing parameters to exec: virtual scheme

indexer does not create QUERY_STRING variable like in cgi: scheme. It creates a command line with argument given in URL after ? sign. For example, when indexing `exec:/usr/local/bin/myprog?a=b&d=e`, this command will be executed:

```
/usr/local/bin/myprog "a=b&d=e"
```

3.11.3.3. Using exec: virtual scheme as an external retrieval system

exec: virtual scheme allow using it as an external retrieval system. It allows using protocols which are not supported natively by DataparkSearch. For example, you can use curl program which is available from http://curl.haxx.se/ to index HTTPS sites.

Put this short script to `/usr/local/dpsearch/bin/` under `curl.sh` name.

```
#!/bin/sh
/usr/local/bin/curl -i $1 2>/dev/null
```

This script takes an URL given in command line argument and executes curl program to download it. -i argument says curl to output result together with HTTP headers.

Now use these commands in your `indexer.conf`:

```
Server https://some.https.site/
Alias  https://  exec:/usr/local/dpsearch/etc/curl.sh?https://
```

When indexing `https://some.https.site/path/to/page.html`, indexer will translate this URL to

```
exec:/usr/local/dpsearch/etc/curl.sh?https://some.https.site/path/to/page.html
```

execute the `curl.sh` script:

```
/usr/local/dpsearch/etc/curl.sh "https://some.https.site/path/to/page.html"
```

and take it's output.

3.11.4. Mirroring

You may specify a path to root dir to enable sites mirroring

```
MirrorRoot /path/to/mirror
```

You may specify as well root directory of mirrored document's headers indexer will store HTTP headers to local disk too.

```
MirrorHeadersRoot /path/to/headers
```

You may specify period during which earlier mirrored files will be used while indexing instead of real downloading.

```
MirrorPeriod <time>
```

It is very useful when you do some experiments with DataparkSearch indexing the same hosts and do not want much traffic from/to Internet. If MirrorHeadersRoot is not specified and headers are not stored to local disk then default Content-Type's given in AddType commands will be used. Default value of the MirrorPeriod is -1, which means `do not use mirrored files`.

<time> is in the form `xxxA[yyyB[zzzC]]` (Spaces are allowed between xxx and A and yyy and so on) where xxx, yyy, zzz are numbers (can be negative!). A, B, C can be one of the following:

```
  s - second
  M - minute
  h - hour
  d - day
  m - month
  y - year
```

(these letters are the same as in strptime/strftime functions)

Examples:

```
15s - 15 seconds
4h30M - 4 hours and 30 minutes
1y6m-15d - 1 year and six month minus 15 days
1h-10M+1s - 1 hour minus 10 minutes plus 1 second
```

If you specify only number without any character, it is assumed that time is given in seconds (this behavior is for compatibility with versions prior to 3.1.7).

The following command will force using local copies for one day:

```
MirrorPeriod 1d
```

If your pages are already indexed, when you re-index with -a indexer will check the headers and only download files that have been modified since the last indexing. Thus, all pages that are not modified will not be downloaded and therefore not mirrored either. To create the mirror you need to either (a) start again with a clean database or (b) use the -m switch.

You can actually use the created files as a full featured mirror to you site. However be careful: indexer will not download a document that is larger than MaxDocSize. If a document is larger it will be only partially downloaded. If you site has no large documents, everything will be fine.

3.11.5. Data acquisition

With **ActionSQL** command you can execute SQL-queries with document related data while indexing. The syntax of **ActionSQL** command is as follow:

```
ActionSQL [add | update | delete] <section> <pattern> <sql-template> [<dbaddr>]
```

where <section> is the name of document section to check for regex pattern >pattern> match. If a match is found then the <sql-template> is filled with regex meta-variables $1-$9 as well with search template meta-variables (as for example, $(Title), $(Last-Modified), etc.) to form a sql-query, which is executed in the first DBAddr defined in indexer.conf file. If the optional <dbaddr> paramater of ActionSQL command is set, a new connection is set according this DBAddr and sql-query is executed in this connection.

One of options `add`, `update` or `delete` specify when this command is executed, on indexinf of a new document, on reindexing of a document or on delettion of a document. If none of such option specified, the `add` option is assumed by default.

Thus you can use ActionSQL commands to mind and collect the data on pages while indexing. For example, the following commands collect phone numbers (in Russian local notation) along with titles of pages where these phone numbers have been discovered:

```
ActionSQL add body "\(([0-9]{3})\)[ ]*([0-9]{3})[- \.]*([0-9]{2})[- \.]*([0-9]{2})" "INSERT
ActionSQL update body "\(([0-9]{3})\)[ ]*([0-9]{3})[- \.]*([0-9]{2})[- \.]*([0-9]{2})" "UPD
ActionSQL delete url "." "DELETE FROM phonedata WHERE id=$(dp_id)"
```

3.12. Using syslog

DataparkSearch indexer uses syslog to log its messages. Different verbose levels could be specified with -v option or by **LogLevel** command in config files:

Table 3-2. Verbose levels

0	SILENT	suppress all log. Bad idea, better use -l option.
1	ERROR	log only critical errors
2	WARNING	log warnings as well
3	INFO	add info messages to log. Default.
4	EXTRA	extra logging

5	DEBUG	for debug purposes

You may use -l option to suppress log to stdout/stderr when running indexer via crontab. Without -l option log is sent both to stdout/stderr and to log files. If you do not like such behavior, run configure with `--disable-syslog` flag and recompile indexer. Compiled without syslog support, indexer uses only stdout/stderr.

Syslog uses different facilities to separate log messages. The indexer's default facility is LOCAL7. Facility could be changed during configure with `--enable-syslog=LOG_FACILITY` option. LOG_FACILITY should be one of the standard facilities, usually listed in `/usr/include/sys/syslog.h` header file.

Facility helps to separate DataparkSearch messages from others. You can modify `/etc/syslog.conf` to tell syslog how to treat DataparkSearch messages. For example:

```
# Log all messages from DataparkSearch to separate file
local7.*        -/var/log/DataparkSearch.log
```

Other example:

```
# Send all DataparkSearch messages to host named central
# Syslog on central should be configured to allow this
local7.*        @central
```

By default all messages are logged to `/var/log/messages` as well. DataparkSearch could populate this file with a number of messages. To avoid this, add local7.none or local7.!* (ignore any messages from local7 facility) to your 'catch-all' log files.

For example:

```
#
# Some 'catch-all' logfiles.
#
*.=info;*.=notice;*.=warn;\
        auth,authpriv.none;\
        cron,daemon.none;\
        mail,news.none;\
        local7.!*               -/var/log/messages
```

Please take a look at syslogd(8) and syslog.conf(5) man pages for more detailed information about syslog and its configuration notes.

3.13. Storing compressed document copies

In DataparkSearch it is possible to store compressed copies of indexed documents. Copies are stored and retrieved by the new daemon - **stored**, that is installed into `sbin` directory of DataparkSearch installation (default: `/usr/local/dpsearch/sbin`).

To enable documents copies archiving without **stored** usage, place **DoStore yes** command in your `indexer.conf` file instead of **stored** daemon configuration.

Stored document copies are retrieved by means of `storedoc.cgi` CGI script. It requests a saved copy of a documents from **stored**, then a copy is displayed with user's web browser with search keywords highlighted.

To enable **stored** support, compile DataparkSearch with `zlib` support:

```
./configure --with-zlib <other arguments>
```

You may use the **Store** and **NoStore** commands to allow or disallow storing several files by pattern. For arguments of those commands are exactly the same as for the **Allow** command (see Section 3.10.14>). All documents are stores by defaults, if support for stored is enabled.

3.13.1. Configure stored

To start using **stored**, please do the following:

- Copy `/usr/local/dpsearch/etc/stored.conf-dist` to `/usr/local/dpsearch/etc/stored.conf`.

  Edit `/usr/local/dpsearch/etc/stored.conf`

  There are several commands available for using with **stored**:

  - **Listen** tells **stored** which address and/or port to bind to. By default **stored** listens to port 7004 and any address. It is possible to specify port only:

    ```
    Listen 7004
    ```

    Or address only:

    ```
    Listen 127.0.0.2
    ```

    Or both address and port:

    ```
    Listen 127.0.0.2:7004
    ```

  - **VarDir** command specifies an alternate `var/` working directory, e.g.

    ```
    VarDir /mnt/d/dpsearch/var/
    ```

  - **StoredFiles** command specifies number of stored data files created in `var/stored/` directory, e.g.

    ```
    StoredFiles 256
    ```

  - **OptimizeInterval** command specifies interval in seconds between attempts to optimize a stored datafile, e.g.

    ```
    OptimizeInterval 300
    ```

- **OptimizeRatio** command specifies defragmentation threshold for a stored datafile optimization.

  ```
  OptimizeRatio 3
  ```

- Run **stored**:

  ```
  /usr/local/dpsearch/sbin/stored &
  ```

- Configure `indexer.conf` and `search.htm` (or `searchd.conf`, if **searchd** is used). Specify address and port that `indexer` will use to connect to **stored**. Use `stored` parameter for **DBAddr** command, e.g.:

  ```
  DBAddr mysql://localhost/search/?dbmode=cache&stored=localhost:7004
  ```

3.13.2. How stored works

After you have successfully configured **stored**, the `indexer` pass downloaded documents to **stored** daemon. After that, **stored** compress the received documents and save them.

3.13.3. Using stored during search

To enable displaying stored documents during search, do the following:

- Configure `storedoc.htm` (`storedoc.cgi` template) if necessary.
- Add a `storedoc.cgi` link to `search.htm` `<!--res-->` section: e.g. `<A HREF="$(stored_href)">Cached copy</A>`
- Specify `storedoc.cgi` CGI script URL in `search.htm` (by default `$(stored_href)` will return `/cgi-bin/storedoc.cgi`). In case you have to specify other URL, add to `search.htm` `variables` section the following line:

  ```
  StoredocURL /path/to/storedoc.cgi
  ```

  Or an absolute path:

  ```
  StoredocURL http://servername/path/to/storedoc.cgi
  ```

This is how **stored** works during search, if everything configured correctly:

1. `search.htm` displays a link to `storedoc.cgi`;
2. When user clicks the link, `storedoc.cgi` sends a query to **stored** daemon to the address, specified in `storedoc.htm` with the `Stored` parameter of **DBAddr** command;
3. After the query, **stored** will decompress the requested saved copy and send it to `storedoc.cgi`;
4. `storedoc.cgi` parses the received document and apply highlighting of search keywords. Highlighting method is specified with `storedoc.htm` **HlBeg** and **HlEnd** commands;

3.13.4. Document excerpts

stored is also used to make documents excerpts for search results.

You can use **ExcerptSize** command in `search.htm` template to specify average excerpt size in characters; value by default: 256.

With **ExcerptPadding** command you can specify average number of characters is taken before and after a search word in excerpts; value by default: 40.

With **ExcerptMark** command you can alter the marking character sequence which delimits excerpt chunks; value by default: " ... " (a space, a dots, a space).

You may switch off document excerpts (but retain ability to show stored copies) with **DoExcerpt no** command in your search template.

Chapter 4. DataparkSearch HTML parser

4.1. Tag parser

Tag parser understands the following tag notation:

- < ... parameter=value ... >
- < ... parameter="value" ... >
- < ... parameter='value' ... >

4.2. Special characters

indexer understands the following special HTML characters:

- < > &   "
- All HTML-4 character entities: ä ü and other.
- Characters in their Unicode code notation: ê

4.3. META tags

Indexer's HTML parser currently understands the following META tags. Note that `"HTTP-EQUIV"` or `"PROPERTY"` may be used instead of `"NAME"` in all entries.

- `<META NAME="Content-Type" Content="text/html; charset=xxxx">` This is used to detect document character set if it is not specified in `Content-type` HTTP header.
- `<META NAME="REFRESH" Content="5; URL=http://www.somewhere.com">` URL value will be inserted in database.
- `<META NAME="Keywords" Content="xxx">`
- `<META NAME="Description" Content="xxx">`
- `<META NAME="Robots" Content="xxx">` with content value `ALL, NONE, INDEX, NOINDEX, FOLLOW, NOFOLLOW, NOARCHIVE`.
- `<META NAME="DP.PopRank" Content="xxx">` with Content value as a real number. This is used to assign the initial value of PopularityRank for the page.

4.4. Links

HTML parser understand the following links:

- <A HREF="xxx">

  <A HREF="xxx" DATA-EXPANDED-URL="yyy" DATA-ULTIMATE-URL="zzz">

  Attributes priority in link selection: data-ultimate-url, data-expanded-url, href.
- <IMG SRC="xxx">
- <LINK HREF="xxx">
- <FRAME SRC="xxx">
- <AREA HREF="xxx">
- <BASE HREF="xxx">

  Note: If BASE HREF value has incorrectly formed URL, current one will be used instead to compose relative links.

However, you can specify the list of HTML which would be omitted in new href lookup with **SkipHrefIn** command.

```
SkipHrefIn "img, link, script"
```

By default, DataparkSearch does not follow links with rel=nofollow attribute specified. But you can alter this behaviour with **"DisableRelNoFollow yes"** command. You need to put this command in your `indexer.conf` file.

4.5. Comments

- Text inside the <!-- .... --> tag is recognized as HTML comment.
- You may use special <!--UdmComment--> .... <!--/UdmComment--> comment tags to exclude the text between from indexing. This may be useful to hide such things like menus and others from indexing.
- You may also use <NOINDEX> ... </NOINDEX> as a synonyms to <!--UdmComment--> and <!--/UdmComment-->
- For compatibility with ASPSeek, <!--noindex--> ... <!--/noindex--> are also equivalent to <!--UdmComment--> and <!--/UdmComment-->
- Google's special comments <!-- google_ad_section_start -->, <!-- google_ad_section_start(weight=ignore) --> and <!-- google_ad_section_end --> consider as tags to include/exclude content for indexing.

4.6. Body patterns

If you need index not whole page, for example, to exclude navigation, ads, etc., you may use **BodyPattern** command to specify a pattern to extract content of a page for indexing. For example:

```
BodyPattern "<!--content-->(.*)<!--/content-->" "$1"
```

this pattern will extract content between special comments and only that content will be indexed for this page.

You may specify several **BodyPattern** commands, but only the first match will be applied to a page. These patterns are trying to apply to all pages indexed. Beware, huge number of such body patterns may hurt indexing speed.

The **BodyBrackets** command is similar to **BodyPattern** command, but it defines two markers: beginning of the body and ending of the body, e.g.

```
BodyBrackets "<!--B-->" "<!--E-->"
```

Then fragment of the document enclosed between <!--B--> and <!--E--> is treated as document body.

4.7. Sub-documents

The sub-documents are: frames, iframes and embedded objects (flash tubes in general); temporary redirects (often used to place cookies or redirect to a page, depending on the language preferences of the user); versions of the same page in different languages obtained with Content negotiation.

The indexing of sub-documents is controlled by two commands: the **SubDocLevel** command sets the maximum nesting level of a sub-document to be indexed. The default value is 0, which prohibits the sub-document indexing. The **SubDocCnt** command sets the maximum number of sub-documents to be indexed at all nesting levels (this command is mainly to prevent endless cycles of pages nested into each others). The default value is 5.

Chapter 5. Storing data

5.1. SQL storage types

5.1.1. General storage information

DataparkSearch stores every words found in any defined section of document. The count of word appearance in the document does not affect it's weight. But the fact whether the word appears in more important parts of the document (title, description, etc.) is taken in account however.

5.1.2. Various modes of words storage

There are different modes of word storage which are currently supported by DataparkSearch: "single", "multi", "crc", "crc-multi", "cache". Default mode is "cache". Mode is to be selected by `dbmode` parameter of **DBAddr** command in both `indexer.conf` and `search.htm` files.

```
Examples:
DBAddr mysql://localhost/search/?dbmode=single
DBAddr mysql://localhost/search/?dbmode=multi
DBAddr mysql://localhost/search/?dbmode=crc
DBAddr mysql://localhost/search/?dbmode=crc-multi
```

5.1.3. Storage mode - single

When "single" is specified, all words are stored in one table with structure (url_id,word,weight), where url_id is the ID of the document which is referenced by rec_id field in "url" table. Word has `variable char(32)` SQL type.

5.1.4. Storage mode - multi

If "multi" is selected, words will be located in different 13 tables depending of their lengths. Structures of these tables are the same with "single" mode, but fixed length char type is used, which is usually faster in most databases. This fact makes "multi" mode usually faster comparing with "single" mode.

5.1.5. Storage mode - crc

If "crc" mode is selected, DataparkSearch will store 32 bit integer word IDs calculated by HASH32 algorithm instead of words. This mode requires less disc space and is faster than "single" and "multi" modes. DataparkSearch uses the fact that HASH32 calculates quite unique check sums for different words. According to our tests there are only 250 pairs of words have the same HASH32 value in the list of about 1.600.000 unique words. Most of these pairs (>90%) have at least one misspelled word. Words

information is stored in the structure (url_id,word_id,weight), where word_id is 32 bit integer ID calculated by HASH32 algorithm. This mode is recommended for big search engines.

5.1.6. Storage mode - crc-multi

When "crc-multi" mode is selected, DataparkSearch stores HASH32 word IDs in several tables with the same to "crc" structures depending on word lengths like in "multi" mode. This mode usually is the most fast and recommended for big search engines.

5.1.7. SQL structure notes

Please note that we develop DataparkSearch with PostgreSQL as back-end and often have no possibility to test each version with all of other supported databases. So, if there is no table definition in create/you_database directory, you may found PostgreSQL definition for the same table and just adopt it for your back-end. PostgreSQL table definitions are always up-to-date.

5.1.8. Additional features of non-CRC storage modes

"single" and "multi" modes support substring search. As far as "crc" and "crc-multi" do not store words themselves and use integer values generated by HASH32 algorithm instead, there is no possibility of substring search in these modes.

5.2. Cache mode storage

5.2.1. Introduction

`cache` words storage mode is able to index and search quickly through several millions of documents.

5.2.2. Cache mode word indexes structure

The main idea of cache storage mode is that word index and data for URL sorting is stored on disk rather than in a SQL database. Full URL information however is kept in SQL database (tables `url` and `urlinfo`). Word index is divided into number of files specified by **WrdFiles** command (default value is 0x300). URLs sorting information is divided into number of files specified by **URLDataFiles** command (default value is 0x300).

> **Note:** Beware: you should have identical values for WrdFiles and URLDataFiles commands in all your configs.

Word index is located in files under `/var/tree` directory of DataparkSearch installation. URLs sorting information is located in files under `/var/url` directory of DataparkSearch installation.

indexer and cached use memory buffers to cache some portion of cache mode data before flushing it to the disk. The size of such buffers can be adjusted by **CacheLogWords** and **CacheLogDels** commands in `indexer.conf` and `cached.conf` config files respectively. Default values are 1024 for **CacheLogWords** and 10240 for **CacheLogDels**. An estimation of total memory used for such buffers can be calculated as follow:

```
Volume = WrdFiles * (16 + 16 * CacheLogWords + 8 * CacheLogDels), for 32-bit systems
Volume = WrdFiles * (32 + 20 * CacheLogWords + 12 * CacheLogDels), for 64-bit systems
```

5.2.3. Cache mode tools

There are two additional programs `cached` and `splitter` used in `cache mode` indexing.

`cached` is a TCP daemon which collects word information from indexers and stores it on your hard disk. It can operate in two modes, as old `cachelogd` daemon to logs data only, and in new mode, when `cachelogd` and `splitter` functionality are combined.

`splitter` is a program to create fast word indexes using data collected by `cached`. Those indexes are used later in search process.

5.2.4. Starting cache mode

To start "cache mode" follow these steps:

1. Start `cached` server:

   `cd /usr/local/dpsearch/sbin`

   `./cached 2>cached.out &`

   It will write some debug information into `cached.out` file. `cached` also creates a `cached.pid` file in /var directory of base DataparkSearch installation.

   `cached` listens to TCP connections and can accept several indexers from different machines. Theoretical number of indexers connections is equal to 128. In old mode `cached` stores information sent by indexers in `/var/splitter/` directory of DataparkSearch installation. In new mode it stores in `/var/tree/` directory.

   By default, `cached` starts in new mode. To run it in old mode, i.e. logs only mode, run it with -l switch:

   `cached -l`

   Or by specify **LogsOnly yes** command in your `cached.conf`.

   You can specify port for `cached` to use without recompiling. In order to do that, please run

   `./cached -p8000`

   where `8000` is the port number you choose.

You can as well specify a directory to store data (it is `/var` directory by default) with this command:

`./cached -w /path/to/var/dir`

2. Configure your `indexer.conf` as usual and for **DBAddr** command add `cache` as value of `dbmode` parameter and `localhost:7000` as value of `cached` parameter (see Section 3.10.2>).
3. Run indexers. Several indexers can be executed simultaneously. Note that you may install indexers on different machines and then execute them with the same `cached` server. This distributed system allows making indexing faster.
4. Flushing cached buffers and url data, and creating cache mode limits. To flush cached buffers and url data and to create cache mode limits after indexing is done, send -HUP signal to `cached`. You can use `cached.pid` file to do this:

   `kill -HUP `cat /usr/local/dpsearch/var/cached.pid``

   N.B.: you needs wait till all buffers will be flushed before going to next step.
5. Creating word index. This stage is no needs, if `cached` runs in new, i.e. combined, mode. When some information is gathered by indexers and collected in `/var/splitter/` directory by `cached` it is possible to create fast word indexes. `splitter` program is responsible for this. It is installed in `/sbin` directory. Note that indexes can be created anytime without interrupting current indexing process.

   Run `splitter` without any arguments:

   `/usr/local/dpsearch/sbin/splitter`

   It will take sequentially all prepared files in `/var/splitter/` directory and use them to build fast word index. Processed logs in `/var/splitter/` directory are truncated after this operation.

5.2.5. Optional usage of several splitters

splitter has two command line arguments: `-f [first file] -t [second file]` which allows limiting used files range. If no parameters are specified splitter distributes all prepared files. You can limit files range using -f and -t keys specifying parameters in HEX notation. For example, `splitter -f 000 -t A00` will create word indexes using files in the range from 000 to A00. These keys allow using several splitters at the same time. It usually gives more quick indexes building. For example, this shell script starts four splitters in background:

```
#!/bin/sh
splitter -f 000 -t 3f0 &
splitter -f 400 -t 7f0 &
splitter -f 800 -t bf0 &
splitter -f c00 -t ff0 &
```

5.2.6. Using run-splitter script

There is a `run-splitter` script in `/sbin` directory of DataparkSearch installation. It helps to execute subsequently all three indexes building steps.

"run-splitter" has these two command line parameters:

run-splitter --hup --split

or a short version:

run-splitter -k -s

Each parameter activates corresponding indexes building step. `run-splitter` executes all three steps of index building in proper order:

1. Sending -HUP signal to cached. `--hup` (or `-k`) run-splitter arguments are responsible for this.
2. Running splitter. Keys `--split` (or `-s`).

In most cases just run **run-splitter** script with all `-k -s` arguments. Separate usage of those three flags which correspond to three steps of indexes building is rarely required.

run-splitter have optional parameters: `-p=n` and `-v=m` to specify pause in seconds after each log buffer update and verbose level respectively. `n` is seconds number (default value: 0), `m` is verbosity level (default value: 4).

5.2.7. Doing search

To start using **search.cgi** in the "cache mode", edit as usually your `search.htm` template and add the "cache" as value of `dbmode` parameter of **DBAddr** command.

5.2.8. Using search limits

To use search limits in cache mode, you should add appropriate `Limit` command(s) to your `indexer.conf` (or `cached.conf`, if **cached** is used) and to `search.htm` or `searchd.conf` (if `searchd` is used).

```
Limit prm:type [SQL-Request [DBAddr]]
```

To use, for example, search limit by tag, by category and by site, add follow lines to `search.htm` or to `indexer.conf` (`searchd.conf`, if `searchd` is used).

```
Limit t:tag
Limit c:category
Limit site:siteid
```

where `t` - name of CGI parameter (&t=) for this constraint, `tag` - type of constraint.

Instead of tag/category/siteid in example above you can use any of values from table below:

Table 5-1. Cache mode predefined limit types

category	Category limit.
tag	Tag limit.
time	Time limit (a hour precision).

language	Language limit.
content	Content-Type limit.
siteid	url.site_id limit.
link	Limit by pages what links to url.rec_id specified.
hostname (obsolete)	Hostname (url) limit. This limit is obsolete and should be replaced by site_id limit

If the second, optional, parameter `SQL-Request` is specified for **Limit** command, then this SQL-query is executed for limit construction. This SQL-query should return all possible pairs of limit value and url.rec_id. E.g.:

```
Limit prm:strcrc32 "SELECT label, rec_id FROM labels" pgsql://u:p@localhost/sitedb/
```

where prm - is the name of limit and the name of CGI-parameter is used for this limit; strcrc32 - is the type of limit, particularly for this limit is a string. Instead of strcrc32 it's possible to use any of the following limit types:

Table 5-2. SQL-based cache mode limit types

hex8str	Hex or hexavigesimal (base-26) string similar to those used in categories. The nested limit will be created.
strcrc32	A string, the hash32 value is calculated on, used as key for this limit.
int	An integer (4-byte wide).
hour	An integer (4-byte wide) number of seconds since epoch. The value in index is in hour precision.
minute	An integer (4-byte wide) number of seconds since epoch. The value in index is in minute precision.

With third, optional, parameter `DBAddr` for **Limit** command it's possible to specify a connection to an alternate SQL-database where to get data for this limit.

It's possible to omit optional parameters `SQL-Request` and `DBAddr` of **Limit** command in search template `search.htm` or in `searchd.conf` file (when **searchd** is used), since they are used only for limit construction.

```
Limit prm:strcrc32
```

5.3. DataparkSearch performance issues

The cache mode is the fastest DataparkSearch's storage mode. Use it if you need maximal search speed.

If your `/var` directory isn't changed since the indexing has been finished, you may disable file locking using **"ColdVar yes"** command placed in `search.htm` (or in `searchd.conf`, if **searchd** is used). This allow you to save some time on file locking.

Using **`UseCRC32URLId yes`** command (see Section 3.10.12>) allow to speed up indexing, but small number of collisions is possible, especially on large database.

5.3.1. searchd usage recommendation

If you plan use ispell data, synonym or stopword lists, it's recommended setup the **searchd** daemon for speed-up searches (See Section 5.4>). **searchd** daemon preload all these data and lists and holds them in memory. This reduce average search query execution time.

Also, **searchd** can preload url info data (20 bytes per URL indexed) and cache mode limits (4 or 8 bytes per URL depend on limit type). This allow reduce average search time.

5.3.2. Search results caching

Use "**Cache yes**" command in your `search.htm` template (or in `searchd.conf` file, if searchd is used) to enable search results cache. That allows to reduce significantly the answer time for repeating queries.

If you use search results caching, please note you need to empty `var/cache` directory after each indexing/reindexing.

5.3.3. Memory based filesystem (mfs) usage recommendation

If you use cache storage mode and you have enough RAM on your PC, you may place `/usr/local/dpsearch/var` directory on memory based filesystem (mfs). This allow speedup both indexing and searching.

If you haven't enough RAM to fit `/usr/local/dpsearch/var`, you may place on memory filesystem any of `/usr/local/dpsearch/var/tree`, `/usr/local/dpsearch/var/url` or `/usr/local/dpsearch/var/store` directories as well.

5.3.4. URLInfoSQL command

For dbmode cache, you may use **URLInfoSQL no** command to disable storing URL Info into SQL database. But using this command, you'll be unable to use limits by language and by Content-Type.

5.3.5. SRVInfoSQLcommand

With the **SRVInfoSQL no** command you can switch off storing auxiliary data into "srvinfo" SQL-table. In this case this table can not be used to load configuration with **LoadServerTable** command (See Section 3.8.1>).

5.3.6. MarkForIndex command

By default, DataparkSearch are marking all URLs selected for indexing as indexed for 4 hours. This prevent possible simultaneous indexing of the same URL by different indexer instance running. But for huge installation this feature can take some time for processing. You may switch off this markage using **"MarkForIndex no"** in your `indexer.conf` file.

5.3.7. CheckInsertSQL command

By default, DataparkSearch trying to insert data into SQL database regardless it's already present there. On some systems this raise some error loggings. To avoid such errors, you may enable additional checks, is the inserting data new, by specifying **CheckInsertSQL yes** command in your `indexer.conf`.

5.3.8. MySQL performance

MySQL users may declare DataparkSearch tables with `DELAY_KEY_WRITE=1` option. This will make the updating of indexes faster, as these are not logged to disk until the file is closed. `DELAY_KEY_WRITE` excludes updating indexes on disk at all.

With it indexes are processed only in memory and written onto disk as last resort, command **FLUSH TABLES** or mysqld shutdown. This can take even minutes and impatient user can `kill -9 mysql server` and break index files with this. Another downside is that you should run `myisamchk` on these tables before you start mysqld to ensure that they are okay if something killed mysqld in the middle.

Because of it we didn't include this table option into default tables structure. However as the key information can always be generated from the data, you should not lose anything by using `DELAY_KEY_WRITE`. So, use this option for your own risk.

5.3.9. Asynchronous resolver library

Using c-ares (http://c-ares.haxx.se/), an asynchronous resolver library (dns/c-ares in FreeBSD ports collection), allow to perform DNS queries without blocking for every indexing thread. Please note, this also increase the number of concurrent queries to your DNS server.

5.4. SearchD support

5.4.1. Why using searchd

- Faster searching, especially when using ISpell, synonyms or segmenters for east asian languages. Related files are loaded into memory when searchd is started, while `search.cgi` loads data before every query.

  Also, **searchd** can preload url info data (20 bytes per URL indexed) and cache mode limits (4 or 8 bytes per URL depend on limit type). This allow reduce average search time.
- It is possible to distribute words index and web-server between different machines.

5.4.2. Starting searchd

To start using searchd:

- Copy `$PREFIX/etc/searchd.conf-dist` to `searchd.conf`.
- Edit `searchd.conf`.
- If you need preload url data to speed-up searches (this cost about 20 bytes of memory per url), add the following command to `searchd.conf`:

  ```
  PreloadURLData yes
  ```
- You may also preload cache mode limits for most frequently used limit values using **PreloadLimit** command in `searchd.conf` file:

  ```
  PreloadLimit <limit type> <limit value>
  ```

  For example:

  ```
  PreloadLimit tag Unix
  ```
- Add the following command to `search.htm`:

  `DBAddr searchd://hostname/` or `DBAddr searchd://hostname:port/`, e.g.

  ```
  DBAddr searchd://localhost/
  ```

  Default `port` value is 7003
- You may start several searchd's children answering search queries simultaneously. Use **MaxClients** comamnd to specify the number of searchd's children. Value by default is 1.

  ```
  MaxClients 2
  ```
- Start searchd:

  `/usr/local/dpsearch/sbin/searchd &`

To suppress output to stderr, use `-l` option. The output will go through syslog only (in case syslog support was not disabled during installation with `--disable-syslog`). In case syslog is disabled, it is possible to direct stderr to a file:

`/usr/local/dpsearch/sbin/searchd 2>/var/log/searchd.log &`

`searchd` just like `indexer` can be used with an option of a configuration file, e.g. relative path to `/etc` directory of DataparkSearch installation:

```
searchd searchd1.conf
```

or with absolute path:

```
searchd /usr/local/dpsearch/etc/searchd1.conf
```

5.5. Oracle notes

5.5.1. Introduction

5.5.1.1. Why Oracle?

Oracle is a powerful, tunable, scalable and reliable industrial RDBMS. It provides some functionalities which are absent in simple freeware RDBMS like MySQL and PostgresSQL, such as: transactions support, concurrency and consistency, data integrity, partitioning, replication, cost-based and rule-based optimizers, parallel execution, redo logs, RAW devices and many other features. Although Oracle is a very functional database, the additional qualities like reliability impose some overhead. In fact, providing many advantages Oracle has some disadvantages. For example great tenability requires more experienced DBA, redo logs support provide great reliability against instance and media failures but requires more efficient disk system. I think you should select Oracle as a database for DataparkSearch if you want to search through hundreds of megabytes or several gigabytes of information, reliability is one of the primary concerns, need high availability of the database, and you are ready to pay higher sums for hardware and Oracle DBA to achieve better quality of service.

5.5.1.2. DataparkSearch+Oracle8 Installation Requirements

In order to install DataparkSearch with Oracle RDBMS support you must ensure the following requirements:

- Oracle8 Server must be properly installed on any computer accessible from the site where DataparkSearch are to be installed. See the documentation provided with your Oracle server.
- Oracle client software and libraries must be installed on the site where you plan to install DataparkSearch. I strongly recommend to install utilities also, it help you to test the client and server accessibility.
- glibc 2.0 or glibc 2.1. Oracle 8.0.5.X libraries are built for glibc 2.0.

5.5.1.3. Currently supported/tested platforms

Oracle versions:

- Oracle 8.0.5.X

Operation systems:

- Linux RedHat 6.1 (2.2.X + glibc 2.0)

Oracle Server may be ran on any platform supporting tcp/ip connections. I see no difficulties to port DataparkSearch Oracle driver to any commercial and freeware unix systems, any contribution is appreciated.

5.5.2. Compilation, Installation and Configuration

5.5.2.1. Compilation

Oracle 8.0.5.X and Linux RedHat 6.1

```
./Configure --with-oracle8=oracle_home_dir
make
make install
```

If you have any troubles, try to put `CC = i386-glibc20-linux-gcc` in the `src/Makefile`, this is old version of gcc compiler for glibc 2.0.

5.5.2.2. Installation and Configuration

Check whether Oracle Server and Oracle Client work properly.

First, try DataparkSearch service is accessible

```
 [oracle@ant oracle]$ tnsping DataparkSearch 3

TNS Ping Utility for Linux: Version 8.0.5.0.0 - Production on 29-FEB-00 09:46:12
(c) Copyright 1997 Oracle Corporation.  All rights reserved.

Attempting to contact (ADDRESS=(PROTOCOL=TCP)(Host=ant.gpovz.ru)(Port=1521))
OK (10 msec)
OK (0 msec)
OK (10 msec)
```

Second, try to connect to Oracle Server with svrmgrl and check whether DataparkSearch tables were created

```
[oracle@ant oracle]$ svrmgrl command='connect scott/tiger@DataparkSearch'

Oracle Server Manager Release 3.0.5.0.0 - Production
```

```
(c) Copyright 1997, Oracle Corporation.  All Rights Reserved.

Oracle8 Release 8.0.5.1.0 - Production
PL/SQL Release 8.0.5.1.0 - Production

Connected.
SVRMGR> SELECT table_name FROM user_tables;
TABLE_NAME
------------------------------
DICT
DICT10
DICT11
DICT12
DICT16
DICT2
DICT3
DICT32
DICT4
DICT5
DICT6
DICT7
DICT8
DICT9
PERFTEST
ROBOTS
STOPWORD
TAB1
URL
19 rows selected.
```

Check the library paths in /etc/ld.so.conf

```
[oracle@ant oracle]$ cat /etc/ld.so.conf
/usr/X11R6/lib
/usr/lib
/usr/i486-linux-libc5/lib
/usr/lib/qt-2.0.1/lib
/usr/lib/qt-1.44/lib
/oracle8/app/oracle/product/8.0.5/lib
```

This file should contain line `oracle_home_path/lib` to ensure DataparkSearch will be able to open libclntsh.so, the shared Oracle Client library

Make symbolic link:

`ln -s /oracle8/app/oracle/product/8.0.5/network/admin/tnsnames.ora /etc`

Correct the indexer.conf file

You should specify `DBName`, `DBUser`, `DBPass` in order that DataparkSearch can connect to Oracle Server. DBName is the service name, it should have the same name that was written to `tnsnames.ora` file, DBUSer and DBPass are Oracle user and his password correspondingly. You can run indexer now.

Setting up search.cgi

Copy the file `/usr/local/dpsearch/bin/search.cgi` to `apache_root/cgi-bin/search.cgi`. Then add two lines to apache's `http.conf` file:

SetEnv ORACLE_HOME /oracle8/app/oracle/product/8.0.5
PassEnv ORACLE_HOME

Correct the `search.htm` to provide DBName, DBUser, DBPass information. `search.cgi` should work now.

Chapter 6. Subsections

6.1. Tags

Tag is a special parameter which can be given for a set of documents. The main purpose of tags is to join a number of documents into one group and then while doing search to select a group of documents to search through.

You should use **Tag** command of `indexer.conf` to assign some tag value for a server or server subset by putting it before corresponding **Server/Realm/Subnet** command. While doing search you can specify tag value to search through documents which tag matches given parameter with *`t=xxx`* parameter, which can be passed from HTML form. Take a look into Section 6.1.1>, `indexer.conf-dist` and `search.htm-dist` for explanation and examples.

> **Note:** For dbmode cache you need to have the following section defined in your `sections.conf` file:
>
> ```
> Section tag 0 64
> ```
>
> in overall you need to have the section 'tag' defined with non-zero maximum length.

6.1.1. Tag command

```
Tag <string>
```

Use this field for your own purposes. For example for grouping some servers into one group, etc... During search you'll be able to limit URLs to be searched through by their tags. Can be set multiple times before **Server** command and takes effect till the end of config file or till next **Tag** command. Default values is an empty string.

6.1.2. TagIf command

```
TagIf <tag> [Match|NoMatch] [NoCase|Case] [String|Regex] [loose] <section> <arg> [<arg> .
```

Mark document by <tag> tag, if the value of `section` match the `arg` pattern given. The meaning of first three optional parameters are exactly the same as for the **Allow** command (see Section 3.10.14>). Optional parameter `loose` specify to do not override the tag value if it has been already set from server parameters.

Example

```
TagIf Docs regex Title Manual
```

You can use template meta-variables (as for example, $(Title), $(Last-Modified), etc.) in <tag> tag. An example below shows how to assign hostname from URL as a tag for any document indexed:

```
TagIf $(url.host) match url.host *
```

6.1.3. Tags in SQL version

Tag type is CHAR. CHAR type allows to use some nice features. You can use '_' and '%' LIKE wildcards in tag parameter when doing search. It makes possible that tag, like a category, does support an idea of nesting. For example, documents with tag value "AB" can be found with both "A%" and "AB" tag limits.

Tags also give a way to make an URL a member of multiple tag selections. Playing with LIKE wildcards you can easily create two or more groups.

For example, tag "ABCDE" is the member of at least these selections:

```
_BCDE
A_CDE
AB_DE
ABC_E
ABCD_
```

Note: If you have big enough database and often use tag limits, it is useful to create an index by field "tag" in "server" table. This index is not created by default.

```
CREATE INDEX srv_tag ON "server" ("tag");
```

By default, the length of tag field in url table is limited by 16 characters. If you need more, increase this length before DB creating.

Note: For cache storage mode, you can use SQL's wildcards only with **indexer**.

6.2. Categories

There is a categories editor written in Perl. You can get it in `perl/cat_ed/` subdirectory of DataparkSearch installation.

Categories are similar to tag feature, but nested. So you can have one category inside another and so on.

Basic points:

- there are up to 6 nested levels;

- every level occupies 2 hex or 36 base digits;
- parameter for setting category is *path*, which can be empty (means root category) or up to 10 chars long (means deepest category).

You can also set up symlinks, e.g. categories that are actually links to other categories. `link` database field is used for that. In the symlink last two characters should be @@. In example above Moto->BMW is a link to Auto->BMW.

First notice that category in the server table is set to be 11 characters long. This means you can use a valid character to keep track of categories. If you are going to keep a category tree of any size, then I would suggest using the category editor. But anyways, here's how it works.

You can use either the tag column or the category column in the server for the same thing. Or you can categorize a site in two different ways. For example you could keep track of sites that are owned by a certain company and then categorize them as well. You could use the tag option to keep of ownership and use the category option for categories. When I explain the category option, it goes the same for the tag option.

A category can be broken down any way you choose. But for it to work with the category editor, I believe for now, you have to use two characters for each level. If you use the category editor you have the choice to use a hex number going from 0-F or a 36 base number going from 0-Z. Therefore a top-level category like 'Auto' would be 01. If it has a subcategory like 'Ford', then it would be 01 (the parent category) and then 'Ford' which we will give 01. Put those together and you get 0101. If 'Auto' had another subcategory named 'VW', then its id would be 01 because it belongs to the 'Ford' category and then 02 because it's the next category. So its id would be 0102. If VW had a sub category called 'Engine' then it's id would start at 01 again and it would get the 'VW' id 02 and 'Auto' id of 01, making it 010201.

If you want to search for sites under that category then you pass it `cat=010201` in the url...so create a select box and give like that:

```
<OPTION value="01">AUTO
<OPTION value="0101">Ford
```

and so on...

> **Note:** For dbmode cache you need to have the following section defined in your `sections.conf` file:
>
> ```
> Section category 0 32 single
> ```
>
> i.e. in overall you need to have the section 'category' defined with non-zero maximum length.

6.2.1. Category command

```
Category <string>
```

You may distribute documents between nested categories. Category is a string in hex number notation. You may have up to 6 levels with 256 members per level. Empty category means the root of category tree. Take a look into Section 6.2> for more information.

```
# This command means a category on first level:
Category AA
# This command means a category on 5th level:
Category FFAABBCCDD
```

6.2.2. CategoryIf command

```
CategoryIf <category> [Match|NoMatch] [NoCase|Case] [String|Regex] [loose] <section> <arg>
```

Mark document by <category> category, if the value of `section` match `arg` pattern given. The meaning of first three optional parameters is exactly the same as for the **Allow** command (see Section 3.10.14>). Optional parameter `loose` specify to do not override the category value if it has been already set from server parameters.

Example

```
CategoryIf 010F regex Title "JOB ID"
```

6.2.3. Loading categories table

When the command

```
CategoryTable mysql://user:pass@host/dbname/tablename[?charset=CHARSET]
```

is specified, indexer loads categories information from given `tablename` SQL-table. Check the structure of `categories` table in `create/mysql/create.txt` file. If there is no structure example for your database, take it as an example.

You may use several **CategoryTable** commands to load categories information from different tables. In such case, the values of `rec_id` field must be unique for all these tables.

6.2.4. FlushCategoryTable command

This command deletes all records from `categories` table. Use this command to delete outdated data before loading new data into `categories` table with **CategoryTable** commands.

Chapter 7. Languages support

7.1. Character sets

7.1.1. Supported character sets

DataparkSearch supports almost all known 8 bit character sets as well as some multi-byte charsets including Korean euc-kr, Chinese big5 and gb2312, Japanese shift-jis, euc-jp and iso-2022-jp, as well as UTF-8. Some multi-byte character sets are not supported by default, because the conversion tables for them are rather large that leads to increase of the executable files size. See `configure` parameters to enable support for these charsets.

DataparkSearch also supports the following Macintosh character sets: MacCE, MacCroatian, MacGreek, MacRoman, MacTurkish, MacIceland, MacRomania, MacThai, MacArabic, MacHebrew, MacCyrillic, MacGujarati.

Table 7-1. Language groups

Language group	Character sets
Arabic	cp864, ISO-8859-6, MacArabic, windows-1256
Armenian	armscii-8
Baltic	cp775, ISO-8859-13, ISO-8859-4, windows-1257
Celtic	ISO-8859-14
Central European	cp852, ISO-8859-16, ISO-8859-2, MacCE, MacCroatian, MacRomania, windows-1250
Chinese Simplified	GB2312, GBK
Chinese Traditional	Big5, Big5-HKSCS, cp950, GB-18030
Cyrillic	cp855, cp866, cp866u, ISO-8859-5, KOI-7, KOI8-C, KOI8-R, KOI8-U, MacCyrillic, windows-1251
Georgian	georgian-academy, georgian-ps, geostd8
Greek	cp869, cp875, ISO-8859-7, MacGreek, windows-1253
Hebrew	cp862, ISO-8859-8, MacHebrew, windows-1255
Icelandic	cp861, MacIceland
Indian	MacGujarati, tscii
Iranian	ISIRI3342
Japanese	EUC-JP, ISO-2022-JP, Shift_JIS
Korean	EUC-KR
Lao	cp1133
Nordic	cp865, ISO-8859-10

South Eur	ISO-8859-3
Tajik	KOI8-T
Thai	cp874, ISO-8859-11, MacThai
Turkish	cp1026, cp857, ISO-8859-9, MacTurkish, windows-1254
Unicode	sys-int, UTF-16BE, UTF-16LE, UTF-8
Vietnamese	VISCII, windows-1258
Western	cp437, cp500, cp850, cp860, cp863, IBM037, ISO-8859-1, ISO-8859-15, MacRoman, US-ASCII, windows-1252

7.1.2. Character sets aliases

Each charset is recognized by a number of its aliases. Web servers can return the same charset in different notation. For example, iso-8859-2, iso8859-2, latin2 are the same charsets. There is support for charsets names aliases which search engine can understand:

Table 7-2. Charsets aliases

armscii-8	armscii-8, armscii8
Big5	big-5, big-five, big5, bigfive, cn-big5, csbig5
Big5-HKSCS	big5-hkscs, big5_hkscs, big5hk, hkscs
cp1026	1026, cp-1026, cp1026, ibm1026
cp1133	1133, cp-1133, cp1133, ibm1133
cp437	437, cp437, ibm437
cp500	500, cp500, ibm500
cp775	775, cp775, ibm775
cp850	850, cp850, cspc850multilingual, ibm850
cp852	852, cp852, ibm852
cp855	855, cp855, ibm855
cp857	857, cp857, ibm857
cp860	860, cp860, ibm860
cp861	861, cp861, ibm861
cp862	862, cp862, ibm862
cp863	863, cp863, ibm863
cp864	864, cp864, ibm864
cp865	865, cp865, ibm865
cp866	866, cp866, csibm866, ibm866

cp866u	866u, cp866u
cp869	869, cp869, csibm869, ibm869
cp874	874, cp874, cs874, ibm874, windows-874
cp875	875, cp875, ibm875, windows-875
cp950	950, cp950, windows-950
EUC-JP	cseucjp, euc-jp, euc_jp, eucjp, ujis, x-euc-jp
EUC-KR	cseuckr, euc-kr, euc_kr, euckr
GB-18030	gb-18030, gb18030
GB2312	chinese, cn-gb, csgb2312, csiso58gb231280, euc-cn, euc_cn, euccn, gb2312, gb_2312-80, iso-ir-58
GBK	cp936, gbk, windows-936
georgian-academy	georgian-academy
georgian-ps	georgian-ps
geostd8	geo8-gov, geostd8
IBM037	037, cp037, csibm037, ibm037
ISIRI3342	isiri-3342, isiri3342
ISO-2022-JP	csiso2022jp, iso 2022-jp, iso-2022-jp
ISO-8859-1	cp819, csisolatin1, ibm819, iso 8859-1, iso-8859-1, iso-ir-100, iso8859-1, iso_8859-1, iso_8859-1:1987, l1, latin-1, latin1
ISO-8859-10	csisolatin6, iso 8859-10, iso-8859-10, iso-ir-157, iso8859-10, iso_8859-10, iso_8859-10:1992, l6, latin-6, latin6
ISO-8859-11	iso 8859-11, iso-8859-11, iso8859-11, iso_8859-11, iso_8859-11:1992, tactis, thai, tis-620, tis620
ISO-8859-13	iso 8859-13, iso-8859-13, iso-ir-179, iso8859-13, iso_8859-13, l7, latin-7, latin7
ISO-8859-14	iso 8859-14, iso-8859-14, iso-ir-199, iso8859-14, iso_8859-14, iso_8859-14:1998, l8, latin-8, latin8
ISO-8859-15	iso 8859-15, iso-8859-15, iso-ir-203, iso8859-15, iso_8859-15, iso_8859-15:1998, l9, latin-0, latin-9, latin0, latin9
ISO-8859-16	iso 8859-16, iso-8859-16, iso-ir-226, iso8859-16, iso_8859-16, iso_8859-16:2000
ISO-8859-2	csisolatin2, iso 8859-2, iso-8859-2, iso-ir-101, iso8859-2, iso_8859-2, iso_8859-2:1987, l2, latin-2, latin2
ISO-8859-3	csisolatin3, iso 8859-3, iso-8859-3, iso-ir-109, iso8859-3, iso_8859-3, iso_8859-3:1988, l3, latin-3, latin3

ISO-8859-4	csisolatin4, iso 8859-4, iso-8859-4, iso-ir-110, iso8859-4, iso_8859-4, iso_8859-4:1988, l4, latin-4, latin4
ISO-8859-5	csisolatincyrillic, cyrillic, iso 8859-5, iso-8859-5, iso-ir-144, iso8859-5, iso_8859-5, iso_8859-5:1988
ISO-8859-6	arabic, asmo-708, csisolatinarabic, ecma-114, iso 8859-6, iso-8859-6, iso-ir-127, iso8859-6, iso_8859-6, iso_8859-6:1987
ISO-8859-7	csisolatingreek, ecma-118, elot_928, greek, greek8, iso 8859-7, iso-8859-7, iso-ir-126, iso8859-7, iso_8859-7, iso_8859-7:1987
ISO-8859-8	csisolatinhebrew, hebrew, iso 8859-8, iso-8859-8, iso-ir-138, iso8859-8, iso_8859-8, iso_8859-8:1988
ISO-8859-9	csisolatin5, iso 8859-9, iso-8859-9, iso-ir-148, iso8859-9, iso_8859-9, iso_8859-9:1989, l5, latin-5, latin5
KOI-7	iso-ir-37, koi-7, koi7
KOI8-C	cskoi8c, koi8-c, koi8c
KOI8-R	cskoi8r, koi8-r, koi8r
KOI8-T	cskoi8t, koi8-t, koi8t
KOI8-U	cskoi8u, koi8-u, koi8u
MacArabic	macarabic
MacCE	cmac, macce, maccentraleurope, x-mac-ce
MacCroatian	maccroation
MacCyrillic	maccyrillic, x-mac-cyrillic
MacGreek	macgreek
MacGujarati	macgujarati
MacHebrew	machebrew
MacIceland	macisland
MacRoman	csmacintosh, mac, macintosh, macroman
MacRomania	macromania
MacThai	macthai
MacTurkish	macturkish
Shift_JIS	csshiftjis, ms_kanji, s-jis, shift-jis, shift_jis, sjis, x-sjis
sys-int	sys-int
tscii	tscii
US-ASCII	ansi_x3.4-1968, ascii, cp367, csascii, ibm367, iso-ir-6, iso646-us, iso_646.irv:1991, us, us-ascii

UTF-16BE	utf-16, utf-16be, utf16, utf16be
UTF-16LE	utf-16le, utf16le
UTF-8	utf-8, utf8
VISCII	csviscii, viscii, viscii1.1-1
windows-1250	cp-1250, cp1250, ms-ee, windows-1250
windows-1251	cp-1251, cp1251, ms-cyr, ms-cyrl, win-1251, win1251, windows-1251
windows-1252	cp-1252, cp1252, ms-ansi, windows-1252
windows-1253	cp-1253, cp1253, ms-greek, windows-1253
windows-1254	cp-1254, cp1254, ms-turk, windows-1254
windows-1255	cp-1255, cp1255, ms-hebr, windows-1255
windows-1256	cp-1256, cp1256, ms-arab, windows-1256
windows-1257	cp-1257, cp1257, winbaltrim, windows-1257
windows-1258	cp-1258, cp1258, windows-1258

7.1.3. Recoding

`indexer` recodes all documents to the character set specified in the **LocalCharset** command in your `indexer.conf` file. Internally recoding is implemented using Unicode. Please note that if some recoding can't convert a character directly from one charset to another, DataparkSearch will use HTML numeric character references to escape this character (i.e. in form &#NNN; where NNN - a character code in Unicode). Thus, for any **LocalCharset** you do not lost any information about indexed documents, but on **LocalCharset** selection depend the database volume you will get after indexing.

7.1.4. Recoding at search time

You may display search results in any charset supported by DataparkSearch. Use **BrowserCharset** command in `search.htm` to select charset for search results. This charset may be different from **LocalCharset** specified. All recodings will done automatically.

7.1.5. Document charset detection

indexer detects document character set in this order:

1. "Content-type: text/html; charset=xxx"
2. <META NAME="Content-Type" CONTENT="text/html; charset=xxx">

   Selection of this variant may be switch off by command: **GuesserUseMeta no** in your `indexer.conf`.

3. Defaults from "Charset" field in Common Parameters

7.1.6. Automatic charset guesser

DataparkSearch has an automatic charset and language guesser. It currently recognizes more than 100 various charsets and languages. Charset and language detection is implemented using "N-Gram-Based Text Categorization" (http://www.maxime.net.ru/doc/guess.en.shtml) technique. There is a number of so called "language map" files, one for each language-charset pair. They are installed under `/usr/local/dpsearch/etc/langmap/` directory by default. Take a look there to check the list of currently provided charset-language pairs. Guesser works fine for texts bigger than 500 characters. Shorter texts may not be guessed well.

7.1.6.1. LangMapFile command

Load language map for charset and language guesser from the given file. You may specify either absolute file name or a name relative to DataparkSearch `/etc` directory. You may use several **LangMapFile** commands.

```
LangMapFile langmap/en.ascii.lm
```

7.1.6.2. Build your own language maps

To build your own language map use `dpguesser` utility. In addition, your need to collect file with language samples in charset desired. For new language map creation, use the following command:

```
dpguesser -p -c charset -l language < FILENAME > language.charset.lm
```

You can also use `dpguesser` utility for guessing document's language and charset by existing language maps. To do this, use following command:

```
dpguesser [-n maxhits] < FILENAME
```

For some languages, it may be used few different charset. To convert from one charset supported by DataparkSearch to another, use `dpconv` utility.

```
dpconv [OPTIONS] -f charset_from -t charset_to [configfile] < infile > outfile
```

You may also specyfy -e switch for `dpconv` to use HTML escape entities for input, and -E switch - for output.

By default, both `dpguesser` and `dpconv` utilities is installed into `/usr/local/dpsearch/sbin/` directory.

DataparkSearch can update language and charset maps automatically while indexing, if remote server is supply exactly specified language and charset with pages. To enable this function, specify the following command in your `indexer.conf` file:

```
LangMapUpdate yes
```

By default, DataparkSearch uses only first 512 bytes of each file indexed to detect language and charset. You may change this value using **GuesserBytes** command. Use value of 0 to use all text from document indexed.

```
GuesserBytes 16384
```

7.1.7. Default charset

Use **RemoteCharset** command in `indexer.conf` to choose the default charset of indexed servers.

7.1.8. Default Language

You can set default language for Servers by using `DefaultLang` `indexer.conf` variable. This is useful while restricting search by URL language.

```
DefaultLang <string>
```

Default language for server. Can be used if you need language restriction while doing search.

```
DefaultLang en
```

7.1.9. LocalCharset command

Defines the charset which will be used to store data in database. All other character sets will be recoded into given charset. Take a look into Section 7.1> for detailed explanation how to choose a **LocalCharset** depending on languages used on your site(s). This command should be used once and takes global effect for the config file. Take a look into documentation to check whole list of supported charsets. Default LocalCharset is iso-8859-1 (latin1).

```
LocalCharset koi8-r
```

7.1.10. ForceIISCharset1251 command

This option is useful for users which deals with Cyrillic content and broken (or misconfigured ?) Microsoft IIS web servers, which tends to not report charset correctly. This is really dirty hack, but if this

option is turned on it is assumed that all servers which reports as 'Microsoft' or 'IIS' have content in Windows-1251 charset. This command should be used only once in configuration file and takes global effect. Default: no

```
ForceIISCharset1251 yes
```

7.1.11. RemoteCharset command

```
RemoteCharset <charset>
```

<charset> is default character set for the server in next **Server**, **Realm** or **Subnet** command(s). This is required only for "bad" servers that do not send information about charset in header: "Content-type: text/html; charset=some_charset" and do not have <META NAME="Content" Content="text/html; charset="some_charset"> Can be set before every **Server**, **Realm** or **Subnet** command and takes effect till the end of config file or till next **RemoteCharset** command. Default value is iso-8859-1 (latin1).

```
RemoteCharset iso-8859-5
```

7.1.12. URLCharset command

```
URLCharset <charset>
```

<charset> is character set for the URL argument in next **Server**, **Realm** or **URL** command(s). This command specify character set only for arguments in commands follow and havn't effect on charset detection for indexing pages. Have less priority than **RemoteCharset**. Can be set before every **Server**, **Realm** or **URL** command and takes effect till the end of config file or till next **URLCharset** command. Default value is ISO-8859-1 (latin1).

```
URLCharset KOI8-R
```

7.1.13. CharsToEscape command

```
CharsToEscape "\"&<>![]"
```

Use this command in your search template to specify the list of characters to escape for $&(x) search template meta-variables.

7.2. Making multi-language search pages

Original idea instructions by Craig Small <csmall@eye-net.com.au>. Some minor changes by Alex Barkov <bar@mnogosearch.org>.

It is often required to allow for different languages which means different search.htm files depending on what language users have set in their browser.

Further installation should be done in three steps.

1. Installing several templates.

   The general idea is to have one `search.php` or `search.cgi` file and then many `search.[language].htm` files. You also have a `search.htm` file (usually a symlink to `search.en.htm`) for the default.

   If the name of the script is `search.en.php` (or `search.en.cgi`) then both CGI and PHP front-ends will be looking for `/somewhere/etc/search.en.htm` assuming that `/somewhere/etc/` is `/etc/` directory of DataparkSearch installation.

   You would then populate `/somewhere/etc/` with all the `search.htm` files so `/somewhere/etc` has:

`search.en.htm`	English template
`search.pl.htm`	Polish template
`search.ru.htm`	Russian template
`search.htm`	Symlink to English template

2. Installing front-ends

   Create a directory and put `search.cgi` or `search.php` there (along with the include files if you want, but I fiddle with the php include_path and put them elsewhere).

   Then setup the symlinks:

`search.cgi`	Original file
`search.en.cgi`	symlink
`search.pl.cgi`	symlink
`search.ru.cgi`	symlink

   Or in the case of PHP front-end:

`search.php`	Original file
`search.en.php`	symlink
`search.pl.php`	symlink
`search.ru.php`	symlink

3. Configuring Apache

Then you need to make apache understand what weirdness you are doing here. So you need to get negotiation happening and some magic with the indexes. I used `.htaccess` file but you could stick it in the apache config proper.

```
AddLanguage en .en
AddLanguage pl .pl
AddLanguage ru .ru

DirectoryIndex search search.cgi  (or search.php)
Options FollowSymlinks MultiViews
```

7.2.1. How does it work?

1. You type url `http://myhost/mydir/search` *no slash at end !!*
2. Your browser says `"I like english (well language negotiation en) "`
3. Apache finds `search.en.cgi` (DirectoryIndex gives `search`, MultiViews gives the `en.cgi`)
4. The **SCRIPT_FILENAME** which is used in both `search.cgi` and `search.php` is `somepath/search.en.cgi`

   Note: Most other variables will give the wrong result, either `search` or `search.cgi`)

5. Your hack in `config.inc` means you will use `search.en.htm`.

So what happens if the user wants, say, German? Well there is no `search.de.cgi` (`search.de.php`) so the first bit of DirectoryIndex fails, so it tries the second one, `search.php` OK, they get the page in English, but it's better than a 404.

This does work, you may need some more apache fiddling to get negotiation to work because I am testing this on a server that already has it setup, so I may have missed something.

7.2.2. Possible troubles

You may get some language negotiation problems caused by:

- Dumb caches that don't follow standards
- Dumb versions of browsers that don't follow standards
- Dumb users fiddling with language settings and putting weird stuff in.

The apache team is working on some workarounds for most of these, if possible. For a reasonably heavily used web site you can expect an email about it once a week or so.

7.3. Segmenters for Chinese, Japanese, Korean and Thai languages

Chinese, Japanese, Korean and Thai writings have no spaces between words in phrase as in western languages. Thus, while indexing documents in these languages, it's need additionally to segment phrases into words.

Sometimes, a text in Chinese, Japanese, Korean or Thai can be typed with a space between every hieroglyph for better view. In this case, you may use **"ResegmentChinese yes"**, **"ResegmentJapanese yes"**, **"ResegmentKorean yes"** or **"ResegmentThai yes"** commands to index a text typed in such way. With resegmenting enabled, all spaces between characters are removing and then all the text is segmenting again using DataparkSearch's segmenters (see below).

7.3.1. Japanese language phrase segmenter

For Japanese language phrase segmenting the one of ChaSen (http://chasen.aist-nara.ac.jp/), a morphological system for Japanese language, or MeCab (http://cl.aist-nara.ac.jp/~taku-ku/software/mecab), a Japanese morphological analyser, is used. Thus, you need one of these systems to be installed before DataparkSearch's configuring and building.

To enable Japanese language phrase segmenting use `--enable-chasen` or `--enable-mecab` switch for **configure**.

7.3.2. Chinese language phrase segmenter

For Chinese language phrase segmenting the frequency dictionary of Chinese words is used. And segmenting itself is done by dynamic programming method to maximize the cumulative frequency of produced words.

To enable Chinese language phrase segmenting it's need to enable the support for Chinese charsets while DataparkSearch configuring, and specify the frequency dictionary of Chinese words by **LoadChineseList** command in `indexer.conf` file.

```
LoadChineseList [charset dictionaryfilename]
```

By default, the `GB2312` charset and `mandarin.freq` dictionary is used.

> **Note:** You need to download frequency dictionaries from our web site, or from one of our mirrors, see Section 1.2>.

7.3.3. Thai language phrase segmenter

For Thai language phrase segmenting the frequency dictionary of Thai words is used. And segmenting itself is done as for Chinese language.

To enable Thai language phrase segmenting it's need to specify the frequency dictionary of Thai words by **LoadThaiList** command in `indexer.conf` file.

```
LoadThaiList [charset dictionaryfilename]
```

By default, the `tis-620` charset and `thai.freq` dictionary is used.

> **Note:** You need to download frequency dictionaries from our web site, or from one of our mirrors, see Section 1.2>.

7.3.4. Korean language phrase segmenter

For Korean language phrase segmenting the frequency dictionary of Korean words is used. And segmenting itself is done as for Chinese language.

To enable Korean language phrase segmenting it's need to specify the frequency dictionary of Korean words by **LoadKoreanList** command in `indexer.conf` file.

```
LoadKoreanList [charset dictionaryfilename]
```

By default, the `euc-kr` charset and `korean.freq` dictionary is used.

> **Note:** You need to download frequency dictionaries from our web site, or from one of our mirrors, see Section 1.2>.

7.4. Multilingual servers support

Some web-servers can handle language negotiation for documents language. In this case, for one URL exist several copies in different languages.

For indexing all pages of such servers, **VaryLang** command is used. It specify list of languages separated by spaces. These languages will used for indexing URL with multi-language versions.

Usage example:

```
VaryLang "ru en fr"
```

index will fetch all document copies in Russian, English and French languages.

Chapter 8. Searching documents

8.1. Using search front-ends

8.1.1. Performing search

Open your preferred front-end in Web browser:

```
http://your.web.server/path/to/search.cgi
```

To find something just type words you want to find and press SUBMIT button. For example: **`mysql odbc`**. DataparkSearch will find all documents that contain word `mysql` and/or word `odbc`. Best documents having bigger weights will be displayed first.

To find a phrase, simple enclose it in quotas. For example: **`"uncontrollable sphere"`**.

8.1.2. Search parameters

DataparkSearch front-ends support the following parameters given in CGI query string. You may use them in HTML form on search page.

Table 8-1. Available search parameters

q	text parameter with search query
vq	text parameter with search query in the Verity Query Language (prefix variant), see Section 8.1.8>. To use this parameter, you need to leave empty the q parameter.
s	characters sequence, specify results sorting order. Small caps specify ascendant sorting, upper caps - descendant. Following characters can be used: `R` or `r` - for sorting by relevance, `P` or `p` - for sorting by PopularityRank, `I` or `i` - for sorting by Importance (multiplication of relevance and PopularityRank), `A` or `a` - for sorting by sum of relevance and PopularityRank, `D` or `d` - for sorting by last modified date. Default value: `RP`.
ps	page size, number of search results displayed on one page, 20 by default. Maximum page size is 100. This value does not allow passing very big page sizes to avoid server overload and might be changed with MAX_PS definition in `search.c`.

np	page number, starting by 0, 0 by default (first page)
p	page number starting by 1. Suitable for use with OpenSearch
m	search mode. Currently "all","any", "near" and "bool" values are supported.
wm	word match. You may use this parameter to choose word match type. There are "wrd", "beg", "end" and "sub" values that respectively mean whole word, word beginning, word ending and word substring match.
t	Tag limit. Limits search through only documents with given tag. This parameter has the same effect with -t indexer option
c	Category limit. Take a look into Section 6.2> for details.
ul	URL limit, URL substring to limit search through subsection of database. It supports SQL % and _ LIKE wildcards. This parameter has the same effect with -u indexer option. If relative URL is specified `search.cgi` inserts % signs before and after "ul" value when compiled with SQL support. It allows to write URL substring in HTML from to limit search, for example <OPTION VALUE="/manual/"> instead of VALUE="%/manual/%". When full URL with schema is specified `search.cgi` adds % sign only after this value. For example for <OPTION VALUE="http://localhost/"> `search.cgi` will pass `http://localhost/%` in SQL LIKE comparison. Not supported for cache storage mode.
wf	Weight factors. It allows changing different document sections weights at a search time. Should be passed in the form of hex number. Check the explanation below.
g	Language limit. Language abbreviation to limit search results by url.lang field.
tmplt	Template filename (without path). To specify template file other standard `search.htm`.
type	Content-Type limit. Content-type to limit search results by url.content_type field. For cache mode storage this should be exact match. For SQL-modes it may be sql-like pattern.

sp	Words forms limit. =1, if you need search all forms (include spelling suggestions, if aspell support is enabled) for entered words. =0, if you need search only entered words. Default value is 1. You may switch it to 0 for faster search.
sy	Synonyms limit. =1, if you need add synonyms for entered words. =0, do not use synonyms. Default value is 1. You may switch it to 0 for faster search.
empty	Use limits to show results if no query words is entered (only for cache mode). =yes, to show results from limits, if no query words is entered (default). =no, do not show results from limits, if no query words is entered.
dt	Limit by time. Three types is supported. If `dt` is set to `back`, that means you want to limit result to recent pages, and you should specify this recentness in variable `dp`. If `dt` is set to `er`, that means the search will be limited to pages newer or older than date given. Variable `dx` is newer/older flag (1 means newer or after, -1 means older or before). Date is specified in variables `dm, dy, dd`. If `dt` is set to `range`, that means search within given range of dates. Variables `db` and `de` are used here and stands for beginning and end date. All times in cache mode measured in a hour precision.

dp	Limit by recentness, if `dt` value is `back`. It should be specified in `xxxA[yyyB[zzzC]]` format. Spaces are allowed between xxx and A and yyy and so on). xxx, yyy, zzz are numbers (can be negative!), A, B, C can be one of the following (the letters are the same as in strptime/strftime functions): s - second, M - minute, h - hour, d - day, m - month, y - year. Examples:
	`4h30M  - 2 hours and 30 minutes`
	`1Y6m-15d  - 1 year and six month minus 15 days`
	`1h-60M+1s  - 1 hour minus 60 minutes plus 1 sec`

dx	is newer/older flag (1 means newer or after, -1 means older or before), if `dt` value is `er`.
dm	Month, if `dt` value is `er`. 0 - January, 1 - February, ... 11 - December.

dy	Year, if `dt` value is `er`. Four digits. For example, 1999 or 2001.
dd	Day, if `dt` value is `er`. 1...31.
db	Beginning date, if `dt` value is `range`. Each date is string in the form dd/mm/yyyy, there dd is day, mm is month and yyyy is four-digits year.
de	End date, if `dt` value is `range`. Each date is string in the form dd/mm/yyyy, there dd is day, mm is month and yyyy is four-digits year.

8.1.3. Changing different document parts weights at search time

It is possible to pass `wf` HTML form variable to `search.cgi`. `wf` variable represents weight factors for specific document parts. Currently body, title, keywords, description, url parts, crosswords as well as user defined META and HTTP headers are supported. Take a look into "Section" part of `indexer.conf-dist`.

To be able use this feature it is recommended to set different sections IDs for different document parts in "Section" `indexer.conf` command. Currently up to 256 different sections are supported.

Imagine that we have these default sections in `indexer.conf`:

```
Section body        1  256
Section title       2  128
Section keywords    3  128
Section description 4  128
```

`wf` value is a string of hex digits ABCD. Each digit is a factor for corresponding section weight. The most right digit corresponds to section 1. For the given above sections configuration:

D is a factor for section 1 (body)
C is a factor for section 2 (title)
B is a factor for section 3 (keywords)
A is a factor for section 4 (description)

Examples:

wf=0001 will search through body only.

wf=1110 will search through title,keywords,description but not through the body.

wf=F421 will search through:
Description with factor 15 (F hex)
Keywords with factor 4

Title with factor 2
Body with factor 1

By default, if `wf` variable is omitted in the query, all section factors are 1, it means all sections have the same weight. If the number of sections in `wf` is less than the number of sections defined, then the rest sections are initialized by the value of highest section weight defined in `wf`. E.g.:

wf=01 will also search through body only.

If DataparkSearch has been built with fast relevance calculation (with `--enable-rel=fast` option for **configure**), in this case, only zero and non-zero values for `wf` variable take an effect (this allows only include/exclude specified sections in search results). To use full support for dynamic section weights, you need specify `--enable-rel=full` option for **configure** when configuring DataparkSearch.

8.1.4. Using front-end with an shtml page

When using a dynamic shtml page containing SSI that calls `search.cgi`, i.e. `search.cgi` is not called directly as a CGI program, it is necessary to override Apache's SCRIPT_NAME environment attribute so that all the links on search pages lead to the dynamic page and not to `search.cgi`.

For example, when a shtml page contains a line `<--#include virtual="search.cgi">`, SCRIPT_NAME variable will still point to `search.cgi`, but not to the shtml page.

To override SCRIPT_NAME variable we implemented a DPSEARCH_SELF variable that you may add to Apache's `httpd.conf` file. Thus `search.cgi` will check DPSEARCH_SELF variable first and then SCRIPT_NAME. Here is an example of using DPSEARCH_SELF environment variable with **SetEnv/PassEnv** Apache's `httpd.conf` command:

```
SetEnv DPSEARCH_SELF /path/to/search.cgi
PassEnv DPSEARCH_SELF
```

8.1.5. Using several templates

It is often required to use several templates with the same `search.cgi`. There are actually several ways to do it. They are given here in the order how `search.cgi` detects template name.

1. `search.cgi` checks environment variable DPSEARCH_TEMPLATE. So you can put a path to desired search template into this variable.
2. `search.cgi` checks path info part of URL available in the PATH_INFO environment variable. E.g. `http://localhost/cgi-bin/search.cgi/search1.html` uses `search1.htm` as its template, and `http://localhost/cgi-bin/search.cgi/search2.html` uses `search2.htm`, and so on.
3. `search.cgi` also supports Apache internal redirect. It checks REDIRECT_STATUS and REDIRECT_URL environment variables. To activate this way of template usage you may add these lines in Apache `srm.conf`:

```
AddType text/html .zhtml
AddHandler zhtml .zhtml
Action zhtml /cgi-bin/search.cgi
```

Put `search.cgi` into your `/cgi-bin/` directory. Then put HTML template into your site directory structure under any name with .zthml extension, for example template.zhtml. Now you may open search page: `http://www.site.com/path/to/template.zhtml` You may use any unused extension instead of .zthml of course.

4. If the above two ways fail, search.cgi opens a template which has the same name with the script being executed using SCRIPT_NAME environment variable. `search.cgi` will open a template `ETC/search.htm`, `search1.cgi` will open `ETC/search1.htm` and so on, where ETC is DataparkSearch `/etc` directory (usually `/usr/local/dpsearch/etc`). So, you can use the same `search.cgi` with different templates without having to recompile it. Just create one or several hard or symbolic links for `search.cgi` or copy it and put corresponding search templates into /etc directory of DataparkSearch installation.

   Take a look also into Making multi-language search pages section

8.1.6. Search operators

The operator **allin<section>:**, where <section> is the name of a section, defined in `sections.conf` file (or in any dpsearch's configuration file by **Section** command) with non-zero section number (see Section 3.10.43>), that operator allows to limit the search domain for a query word by the section specified.

This operator differ from limiting search domain using &wf= CGI-variable in a way, that such limit is imposing only on query words specified after this operator.

For example, if you have the following commands in `sections.conf` file

```
Section body 1 256
Section title 2 128
Section url 3 0 strict
```

then you can use the following operators in search query: **allinbody:**, **allintitle:** and **allinurl:**.

For the query **`computer allintitle: science`** it will be found the documents that contain the word "science" in the title and the word "computer" in any document section.

8.1.7. Advanced boolean search

If you want more advanced results you may use query language. You should select "bool" search mode in the search from.

DataparkSearch understands the following boolean operators:

`AND` or **`&`** - logical AND. For example, "**`mysql & odbc`**" or "**`mysql AND odbc`**" - DataparkSearch will find any URLs that contain both "mysql" and "odbc".

NEAR - NEAR operator, identical to AND operator, but come true if both words are within 16 words of each other. For example, "**mysql NEAR odbc**" - DataparkSearch will find any URLs that contain both "mysql" and "odbc" within 16 words of each other.

ANYWORD or ***** - ANYWORD operator, identical to AND operator, but come true if both words have any one word between and left operand have lesser position than right operand. For example, "**mysql * odbc**" - DataparkSearch will find any URLs that contain both "mysql" and "odbc" within any word between, for example, any document with "mysql via odbc" phrase.

OR or **|** - logical OR. For example, "**mysql | odbc**" or "**mysql OR odbc**" - DataparkSearch will find any URLs that contain word "mysql" or word "odbc".

NOT or **~** - logical NOT. For example, "**mysql & ~ odbc**" or "**mysql AND NOT odbc**" - DataparkSearch will find URLs that contain word "mysql" and do not contain word "odbc" at the same time. Note that ~ just excludes given word from results. Query "~ odbc" will find nothing!

() - group command to compose more complex queries. For example "(mysql | msql) & ~ postgres". Query language is simple and powerful at the same time. Just consider query as usual boolean expression.

8.1.8. The Verity Query Language, VQL

Only the prefix variant of the Verity Query Language is supported by DataparkSearch.

Also, only the following subset of VQL operators is supported by DataparkSearch:

Table 8-2. VQL operators supported by DataparkSearch

<ACCRUE>	equal to **OR** operator in boolean mode.
<AND>	equal to **AND** operator in boolean mode.
<ANY>	equal to **OR** operator in boolean mode.
<NEAR>	equal to **NEAR** operator in boolean mode.
<NOT>	equal to **NOT** operator in boolean mode.
<OR>	equal to **OR** operator in boolean mode.
<PHRASE>	equal to a phrase in boolean mode.
<WORD>	is considered as an empty operator.

8.1.9. How search handles expired documents

Expired documents are still searchable with their old content.

8.2. `mod_dpsearch` module for Apache httpd

Since version 4.19 DataparkSearch also provide the `mod_dpsearch.so` module for Apache web server.

8.2.1. Why using `mod_dpsearch`

- As for **searchd** (see Section 5.4.1>), **mod_dpsearch** can hold preloaded in memory some data to speed-up searches.
- In additional, **mod_dpsearch** hold in memory last used search template. This save time on template loading and parsing for every request since second.
- As a plus, the **mod_dpsearch** itself already loaded into memory when search request come from user, while search.cgi usualy loads from disk for every search request.

8.2.2. Configuring `mod_dpsearch`

To enable this extension, add `--enable-apache-module` switch to **configure**. In addition, the `mod_dpsearch.so` shared library will be created and installed into Apache tree. Then you need activate this module by adding following line into Apache configuration file:

```
LoadModule dpsearch_module       libexec/mod_dpsearch.so
AddModule mod_dpsearch.c

<Ifmodule mod_dpsearch.c>
DataparkSearchdConf /usr/local/dpsearch/etc/modsearchd.conf
    <Location /search>
        SetHandler dpsearch
        DataparkSearchTemplate /usr/local/dpsearch/etc/modsearch.htm
    </Location>
    <Location /storedoc>
        SetHandler dpstoredoc
        DataparkStoredocTemplate /usr/local/dpsearch/etc/modstoredoc.htm
    </Location>
</IfModule>
```

There are three configuration directives supported by this module: `DataparkSearchdConf`, `DataparkSearchTemplate` and `DataparkStoredocTemplate` . The `DataparkSearchdConf` optional directive specify a **searchd** related configuration file. It may be only one per server. The `DataparkSearchdTemplate` directive specify a search template file. The `DataparkStoredocTemplate` directive specify a storedoc template file. There can be several templates specified per servers, by one per location. If `DataparkSearchdConf` directive specified, there no need specify `DBAddr` command in templates.

8.3. How to write search result templates

DataparkSearch users have an ability to customize search results (output of `search.cgi`). You may do it by providing template file `search.htm`, which should be located in /etc/ directory of DataparkSearch installation.

Template file is usual HTML file, which is divided into sections. Keep in mind that you can just open template file in your favorite browser and get the idea of how the search results will look like.

Note: Each templates line should not exceed 1024 bytes.

Each section begins with <!--sectionname--> and ends with <!--/sectionname--> delimiters, which should reside on a separate line.

Each section consists of HTML formatted text with special meta symbols. Every meta symbol is replaced by it's corresponding string. You can think of meta symbols as of variables, which will have their appropriate values while displaying search results.

Format of variables is the following:

```
$(x) - plain value
$&(x) - HTML-escaped value and search words highlighted.
$*(x) - HTML-escaped value.
$%(x) - value escaped to be used in URLs
$^(x) - search words highlighted.
$(x:128) - value truncated to the first 128 bytes, if longer.
$(x:UTF-8) - value written in UTF-8 charset. You may specify any charset supported.
$(x:128:right) - value truncated to the last 128 bytes, if longer.
$(x:cite:160) - make value citation on search keywords, no longer than 160 characters (appr
$(url.host:idnd) - convert hostname from punycode into the BrowserCharset encoding.
$(x:json) - JSON encoding for characters.
```

8.3.1. Template sections

The following section names are defined: *TOP*>, *BOTTOM*>, *RESTOP*>, *RES*>, *BETWEENRES*>, *CLONE*>, *RESBOT*>, *navleft, navleft_nop*>, *navbar0*>, *navright, navright_nop*>, *navbar1*>, *notfound*>, *noquery*>, *error*>, *variables*>.

8.3.1.1. *TOP* section

This section is included first on every page. You should begin this section with <HTML><HEAD> and so on. Also, this is a definitive place to provide a search form. There are two special meta symbols you may use in this section:

```
$(self)  - argument for FORM ACTION tag
$(q)     - a search query
$(cat)    - current category value
$(tag)      - current tag value
$(rN) - random number (here N is a number)
```

If you want to include some random banners on your pages, please use $(rN). You should also place string like "RN xxxx" in 'variables' section (see below), which will give you a range 0..xxxx for $(rN). You can use as many up random numbers as you want.

Example: `$(r0), $(r1), $(r45)` etc.

Simple *top* section should be like this:

```
<!--top-->
<HTML>
<HEAD>
 <TITLE>Search Query: $(q)</TITLE>
</HEAD>
<BODY>

<FORM METHOD=GET ACTION="$(self)">
 <INPUT TYPE="hidden" NAME="ul" VALUE="">
 <INPUT TYPE="hidden" NAME="ps" VALUE="20">
 Search for: <INPUT TYPE="text" NAME="q" SIZE=30
 VALUE="$&(q)">
 <INPUT TYPE="submit" VALUE="Search!"><BR>
</FORM>
<!--/top-->
```

There are some variables defined in FORM.

`lang` limit results by language. Value is a two-letter language code.

```
<SELECT NAME="lang">
<OPTION VALUE="en" SELECTED="$(lang)">English
.....
</SELECT>
```

`ul` is the filter for URL. It allows you to limit results to particular site or section etc. For example, you can put the following in the form

Search through:

```
<SELECT NAME="ul">
<OPTION VALUE=""            SELECTED="$(ul)">Entire site
<OPTION VALUE="/manual/"    SELECTED="$(ul)">Manual
<OPTION VALUE="/products/"  SELECTED="$(ul)">Products
<OPTION VALUE="/support/"   SELECTED="$(ul)">Support
</SELECT>
```

to limit your search to particular section.

The expression `SELECTED="$(ul)"` in example above (and all the examples below) allows the selected option to be reproduced on next pages. If search front-end finds that expression it prints the string SELECTED only in the case OPTION VALUE given is equal to that variable.

`ps` is default page size (e.g. how many documents to display per page).

`q` is the query itself.

`pn` is ps*np. This variable is not used by DataparkSearch, but may be useful for example in <!INCLUDE CONTENT="..."> directive if you want to include result produced by another search engine.

Following variables are concerning advanced search capabilities:

- `m` can be used to choose default search type if your query consists of more than one word. In case m=any, the search will try to find at least one word, in case m=all, the search is more restrictive - all words should be in the document. If m=bool query string is considered as a boolean expression.
- `dt` is time limiting type. There are three types supported.

  If 'dt' is 'back', that means you want to limit result to recent pages, and you should specify this "recentness" in variable 'dp' in the form `xxxA[yyyB[zzzC]]`. Spaces are allowed between xxx and A and yyy and so on). xxx, yyy, zzz are numbers (can be negative!) A, B, C can be one of the following (the letters are the same as in strptime/strftime functions):

  ```
  s - second
  M - minute
  h - hour
  d - day
  m - month
  y - year
  ```

  Examples:

  ```
  4h30m    - 2 hours and 30 minutes
  1Y6M-15d  - 1 year and six month minus 15 days
  1h-60m+1s - 1 hour minus 60 minutes plus 1 second
  ```

  If 'dt' is 'er' (which is short for newer/older), that means the search will be limited to pages newer or older than date given. Variable dx is newer/older flag (1 means "newer" or "after", -1 means "older" or "before"). Date is separated into fields as follows:

  ```
  'dm' - month (0 - January, 1 - February, .., 11 - December)
  'dy' - year (four digits, for example 1999 or 2000)
  'dd' - day (1...31)
  ```

  If 'dt' is 'range', that means search within given range of dates. Variables 'db' and 'de' are used here and stands for beginning and end date. Each date is string in the form dd/mm/yyyy, there dd is day, mm is month and yyyy is four-digits year.

  This is the example of FORM part where you can choose between different time limiting options.

```
<!-- 'search with time limits' options -->
<TR><TD>
<TABLE CELLPADDING=2 CELLSPACING=0 BORDER=0>
<CAPTION>
Limit results to pages published within
a specified period of time.<BR>
<FONT SIZE=-1><I>(Please select only one option)
</I></FONT>
</CAPTION>
<TR>
<TD VALIGN=center><INPUT TYPE=radio NAME="dt"
```

```
VALUE="back" CHECKED></TD>
<TD><SELECT NAME="dp">
<OPTION VALUE="0" SELECTED="$(dp)">anytime
<OPTION VALUE="10M" SELECTED="$(dp)">in the last ten minutes
<OPTION VALUE="1h" SELECTED="$(dp)">in the last hour
<OPTION VALUE="7d" SELECTED="$(dp)">in the last week
<OPTION VALUE="14d" SELECTED="$(dp)">in the last 2 weeks
<OPTION VALUE="1m" SELECTED="$(dp)">in the last month
<OPTION VALUE="3m" SELECTED="$(dp)">in the last 3 months
<OPTION VALUE="6m" SELECTED="$(dp)">in the last 6 months
<OPTION VALUE="1y" SELECTED="$(dp)">in the last year
<OPTION VALUE="2y" SELECTED="$(dp)">in the last 2 years
</SELECT>
</TD>
</TR>
<TR>
<TD VALIGN=center><INPUT type=radio NAME="dt" VALUE="er">
</TD>
<TD><SELECT NAME="dx">
<OPTION VALUE="1" SELECTED="$(dx)">After
<OPTION VALUE="-1" SELECTED="$(dx)">Before
</SELECT>
```

or on

```
<SELECT NAME="dm">
<OPTION VALUE="0" SELECTED="$(dm)">January
<OPTION VALUE="1" SELECTED="$(dm)">February
<OPTION VALUE="2" SELECTED="$(dm)">March
<OPTION VALUE="3" SELECTED="$(dm)">April
<OPTION VALUE="4" SELECTED="$(dm)">May
<OPTION VALUE="5" SELECTED="$(dm)">June
<OPTION VALUE="6" SELECTED="$(dm)">July
<OPTION VALUE="7" SELECTED="$(dm)">August
<OPTION VALUE="8" SELECTED="$(dm)">September
<OPTION VALUE="9" SELECTED="$(dm)">October
<OPTION VALUE="10" SELECTED="$(dm)">November
<OPTION VALUE="11" SELECTED="$(dm)">December
</SELECT>
<INPUT TYPE=text NAME="dd" VALUE="$(dd)" SIZE=2 maxlength=2>
,
<SELECT NAME="dy" >
<OPTION VALUE="1990" SELECTED="$(dy)">1990
<OPTION VALUE="1991" SELECTED="$(dy)">1991
<OPTION VALUE="1992" SELECTED="$(dy)">1992
<OPTION VALUE="1993" SELECTED="$(dy)">1993
<OPTION VALUE="1994" SELECTED="$(dy)">1994
<OPTION VALUE="1995" SELECTED="$(dy)">1995
<OPTION VALUE="1996" SELECTED="$(dy)">1996
<OPTION VALUE="1997" SELECTED="$(dy)">1997
<OPTION VALUE="1998" SELECTED="$(dy)">1998
<OPTION VALUE="1999" SELECTED="$(dy)">1999
<OPTION VALUE="2000" SELECTED="$(dy)">2000
<OPTION VALUE="2001" SELECTED="$(dy)">2001
```

```
</SELECT>
</TD>
</TR>
</TR>
<TD VALIGN=center><INPUT TYPE=radio NAME="dt" VALUE="range">
</TD>
<TD>
Between
<INPUT TYPE=text NAME="db" VALUE="$(db)" SIZE=11 MAXLENGTH=11>
and
<INPUT TYPE=text NAME="de" VALUE="$(de)" SIZE=11 MAXLENGTH=11>
</TD>
</TR>
</TABLE>
</TD></TR>
<!-- end of stl options -->
```

8.3.1.2. *BOTTOM* section

This section is always included last in every page. So you should provide all closing tags which have their counterparts in top section. Although it is not obligatory to place this section at the end of template file, but doing so will help you to view your template as an ordinary html file in a browser to get the idea how it's look like.

Below is an example of bottom section:

```
<!--bottom-->
<P>
<HR>
<DIV ALIGN=right>
<A HREF="http://www.maxime.net.ru/">
<IMG SRC="dpsearch.gif" BORDER=0
ALT="[Powered by DataparkSearch search engine software]">
</A>
</BODY>
</HTML>
<!--/bottom-->
```

8.3.1.3. *RESTOP* section

This section is included just before the search results. It's a good idea to provide some common search results. You can do so by using the next meta symbols:

- `$(first)` - number of First document displayed on this page
- `$(last)` - number of Last document displayed on this page
- `$(total)` - total number of documents found
- `$(grand_total)` - total number of documents found before grouping by site

- `$(WE)` - search results with full statistics of every word form search
- `$(W)` - search results with information about the number of the word form found and the number of all word forms found delimited with "/" sign for every search word, e.g. if the search result is `test: 25/73`, it means that the number of word form "test" found is 25, and the number of all its forms ("test", "tests", "testing", etc.) found is 73.
- `$(WS)` - search results in short form with the number of all word forms found.
- `$(SearchTime)` - search query execution time.
- `$(ndocs)` - number of documents in database.

Below is an example of 'restop' section:

```
<!--restop-->
<TABLE BORDER=0 WIDTH=100%>
<TR>
<TD>Search<BR>results:</TD>
<TD><small>$(WE)</small></TD>
<TD><small>$(W)</small></TD>
</TR>
</TABLE>
<HR>
<CENTER>
Displaying documents $(first)-$(last) of total <B>$(total)</B> found.
</CENTER>
<!--/restop-->
```

8.3.1.4. *RES* section

This section is used for displaying various information about every found document. The following meta symbols are used:

- $(URL) Document URL
- $(Title) Document Title
- $(Score) Document Rating (as calculated by DataparkSearch
- $(Body) Document text, the document excerpt, if stored is used, or the first couple of lines, otherwise, to give an idea of what the document is about).
- $(Content-Type) Document Content-type (for example, text/html)
- $(Last-Modified) Document Last-Modified date
- $(Content-Length) Document Size in bytes
- $(FancySize) Document Size in bytes, kilobytes or megabytes, what best match.
- $(Order) Overall Document Number (in order of appearance), i.e. from 1 to $(total).
- $(Pos) Document Number on the page (in order of appearance), i.e. from 1 to $(ps).
- $(meta.description) Document Description (from META DESCRIPTION tag)

- $(meta.keywords) Document Keywords (from META KEYWORDS tag)
- $(DY) Document category with links, i.e. `/home/computers/software/www/`
- $(CL) Clone List (see Section 8.3.1.6> for details)
- $(BrowserCharset) Charset used to display search results
- $(PerSite) Total number of document from this site, if grouping by site is enabled, =0 otherwise.

> **Note:** It is possible to specify maximum number of characters returned by any of the above variables. E.g. `$(URL)` may return a long URL that may break page table structure. To specify maximum number of characters in the displayed URL's, use `$(URL:xx)`, where `xx` - maximum number of characters:
>
> **`$(URL:40)`**
>
> will return a URL, and if it is longer than 40 character, only 40 characters will be displayed including the ending points:
>
> **`http://very.long.url/path/veery/long/...`**

Here is an example of res section:

```
<!--res-->
<DL><DT>
<b>$(Order).</b><a href="$(URL)" TARGET="_blank">
<b>$(Title)</b></a> [<b>$(Score)</b>]<DD>
$(Body)...<BR>
<b>URL: </b>
<A HREF="$(URL)" TARGET="_blank">$(URL)</A>($(Content-Type))<BR>
$(Last-Modified), $(Content-Length) bytes<BR>
<b>Description: </b>$(meta.description)<br>
<b>Keywords: </b>$(meta.keywords)<br>
</DL>
<UL>
$(CL)
</UL>
<!--/res-->
```

8.3.1.5. *BETWEENRES*section

The content of this section is inserted between search results shown with RES section. You can use it if the format of your search result page requires a separator between records, as in JSON, eg. (see `doc/samples/json.htm`).

8.3.1.6. *CLONE* section

The contents of this section is included in result just instead of $(CL) meta symbol for every document clone found. This is used to provide all URLs with the same contents (like mirrors etc.). You can use the

same $(D*) meta symbols here as in 'res' section. Of course, some information about clone, like $(DS), $(DR), $(DX) will be the same so it is of little use to place it here.

Below is an example of 'clone' section.

```
<!--clone-->
<li><A HREF="$(DU)" TARGET="_blank">$(DU)</A> ($(DC)) $(DM)
<!--/clone-->
```

8.3.1.7. *RESBOT* section

This is included just after last 'res' section. You usually give a navigation bar here to allow user go to next/previous results page.

This is an example of 'resbot' section:

```
<!--resbot-->
<HR>
<CENTER>
Result pages: $(NL)$(NB)$(NR)
</CENTER>
<!--/resbot-->
```

Navigator is a complex thing and therefore is constructed from the following template sections:

8.3.1.8. *navleft, navleft_nop* section

These are used for printing the link to the previous page. If that page exists, <!--navleft--> is used, and on the first page there is no previous page, so <!--navleft_nop--> is used.

```
<!--navleft-->
<TD><A HREF="$(NH)"><IMG...></A><BR>
<A HREF="$(NH)">Prev</A></TD>
<!--/navleft-->

<!--navleft_nop-->
<TD><IMG...><BR>
<FONT COLOR=gray>Prev</FONT></TD>
<!--/navleft_nop-->
```

8.3.1.9. *navbar0* section

This is used for printing the current page in the page list.

```
<!--navbar0-->
```

```
<TD><IMG...><BR>$(NP)</TD>
<!--navbar0-->
```

8.3.1.10. *navright, navright_nop* section

These are used for printing the link to the next page. If that page exists, <!--navright--> is used, and on the last page <!--navright_nop--> is used instead.

```
<!--navright-->
<TD>
<A HREF="$(NH)"><IMG...></A>
<BR>
<A HREF="$(NH)">Next</A></TD>
<!--/navright-->

<!--navright_nop-->
<TD>
<IMG...>
<BR>
<FONT COLOR=gray>Next</FONT></TD>
<!--/navright_nop-->
```

8.3.1.11. *navbar1* section

This is used for printing the links to the other pages in the page list.

```
<!--navbar1-->
<TD>
<A HREF="$(HR)">
<IMG...></A><BR>
<A HREF="$(NH)">$(NP)</A>
</TD>
<!--/navbar1-->
```

8.3.1.12. *notfound* section

As its name implies, this section is displayed in case when no documents are found. You usually give a little message saying that and maybe some hints how to make search less restrictive.

Below is an example of notfound section:

```
<!--notfound-->
<CENTER>
Sorry, but search hasn't returned results.<P>
```

```
<I>Try to compose less restrictive search query or check spelling.</I>
</CENTER>
<HR>
<!--/notfound-->
```

8.3.1.13. *noquery* section

This section is displayed in case when user gives an empty query. Below is an example of noquery section:

```
<!--noquery-->
<CENTER>
You haven't typed any word(s) to search for.
</CENTER>
<HR>
<!--/noquery-->
```

8.3.1.14. *error* section

This section is displayed in case some internal error occurred while searching. For example, database server is not running or so. You may provide the following meta symbol: `$(E)` - error text.

Example of error section:

```
<!--error-->
<CENTER>
<FONT COLOR="#FF0000">An error occured!</FONT>
<P>
<B>$(E)</B>
</CENTER>
<!--/error-->
```

8.3.2. Variables section

There is also a special variables section, in which you can set up some values for search.

Special variables section usually looks like this:

```
<!--variables
DBAddr    mysql://foo:bar@localhost/search/?dbmode=single
VarDir            /usr/local/dpsearch/var/
LocalCharset   iso-8859-1
BrowserCharset    iso-8859-1
```

```
TrackQuery   no
Cache    no
DetectClones   yes
HlBeg    <font color="blue"><b><i>
HlEnd    </i></b>
R1    100
R2    256
Synonym    synonym/english.syn
ResultContentType text/xml
Locale            fr_FR.ISO_8859-1
TZ                Australia/Sydney
-->
```

> **Note:** Database option **DBAddr** like in `indexer.conf`, host part in DBAddr argument takes affect for natively supported databases only and does not matter for ODBC databases. In case of ODBC use database name part of DBAddr to specify ODBC DSN.

VarDir command specifies a custom path to directory that indexer stores data to when use with cache mode. By default `/var` directory of DataparkSearch installation is used.

LocalCharset specifies a charset of database. It must be the same with `indexer.conf` LocalCharset.

BrowserCharset specifies which charset will be used to display results. It may differ from LocalCharset. All template variables which correspond data from search result (such as document title, description, text) will be converted from LocalCharset to BrowserCharset. Contents of template itself is not converted, it must be in BrowserCharset.

Use "**Cache** yes/no" to enable/disable search results cache.

Use "**DetectClones** yes/no" to enable/disable clones detection. This is disable by default for search.

Use "**GroupBySite** yes/no/full" to enable/disable grouping results by url.site_id. When `yes` option is used, the pages from the same site coming in a row are grouped. If `full` option is used, all pages from the same site are grouped.

> **Note:** If `searchd` is used you should place **GroupBySite** in your `searchd.conf` file, or pass it as CGI parameter.
>
> If cache storage mode is used, you need also create SITE limit (see Section 5.2.8>).
>
> Use **PagesInGroup** command to specify the number of additional results from the same site when google-like groupping is enabled.
>
> You may use **MaxSiteLevel** command to specify maximal domain name level using for site_id calculation. Default value: 2. One exception: three or less letter domains at level 2 count as domain names at level 1. For example: domain.ext - level 2, www.domain.ext - level 3, domain.com.ext - level 2. A negative value for **MaxSiteLevel** mean grouping performs on per directory basis, i.e. for level -1 www.site.ext/dir1/ and www.site.ext/dir2 group as different sites.

HlBeg and **HlEnd** commands are used to configure search results highlighting. Found words will be surrounded in those tags.

There is an **Alias** command in `search.htm`, that is similar to the one in `indexer.conf`, but it affects only search results while having no effect on indexing. See Section 3.7> for details.

R1 and **R2** specify ranges for random variables $(R1) and $(R2).

Synonym command is used to load specified synonyms list. Synonyms file name is either absolute or relative to `/etc` directory of DataparkSearch installation.

DateFormat command is used to change Last-Modified date format output. Use `strftime` function meta-variables for your own format string.

> **Note:** If `searchd` is used, you may specify **DateFormat** in your `searchd.conf` file, but there you should enclose this string in quotas (`"`), or pass it as CGI parameter.

"**Log2stderr** yes/no" command is used to enable error logging to `stderr`.

ResultsLimit command is uses to limit maximum number of results shown. If searchd is used, this command may be specified in `searchd.conf`.

ResultContentType command is uses to specify Content-Type header for results page. Default value: `text/html`.

Locale command is used to specify LC_ALL locale settings for search results output. Default value: `unspecified` (uses the value specified before in system settings).

TZ command is used to specify time zone for timestamps shown on search results pages. Default value: `system default`.

With **MakePrexixes yes** command you can instruct to extend a search query automatically by producing all prefixes of query words. This is suitable, for example, for making search suggestions.(See also Section 3.10.56>)

8.3.3. Includes in templates

You may use <!INCLUDE Content="http://hostname/path"> to include external URLs into search results.

WARNING: You can use <!INCLUDE> ONLY in the following template sections:

<!--top-->
<!--bottom-->
<!--restop-->
<!--resbot-->
<!--notfound-->
<!--error-->

This is an example of includes usage:

```
<!--top-->
....
<!INCLUDE CONTENT="http://hostname/banner?query=$&(q)">
...
```

```
<!--/top-->
```

8.3.4. Conditional template operators

DataparkSearch supports conditional operators in search templates: <!IF, <!ELSE, <!ENDIF, <!ELIF, <!ELSEIF, <!SET, <!COPY, <!IFLIKE, <!IFREGEX, <!ELIKE, <!EREGEX, <!ELSELIKE, <!ELSEREGEX.

```
<!IF   NAME="Content-Type" Content="application/pdf">
<img src="pdf.png">
<!ELIF NAME="Content-Type" Content="text/plain">
<img src="text.png">
<!ENDIF>
```

It's possible to use nested conditional operators. This gives more power for search template construction. See samples in `etc/search.htm-dist` file.

8.3.5. Security issues

WARNING: Since the template file contains such info as password, it is highly recommended to give the file proper permissions to protect it from reading by anyone but you and search program. Otherwise your passwords may leak.

8.4. Designing search.html

This section is assuming that you are using the CGI front end.

8.4.1. How the results page is created

The file `etc/search.htm` consists of a number of blocks delimited by HTML comments that start with <!--comment--> and end with <!--/comment-->.

The <!--variables--> block is only used by `search.cgi`. The other blocks form part of the results output depending on the situation.

The blocks <--top--> and <!--bottom--> are always returned to the user as the top and bottom part of the output respectively.

There are three series of <!--restop-->, <!--res--> and <!--resbot--> blocks. The first series is returned to users that have requested long results (default), the second one to those that have requested short results and the third one to those that have requested results as URL only. All three blocks must be present in `search.htm`. Furthermore there is a series of navigation blocks and the blocks <!--notfound-->, <!--noquery--> and <!--error-->. The latter are returned occasionally instead of results.

Any HTML that is outside the pre-defined blocks in search.htm is completely ignored.

Thus, the output of `search.cgi` will always be something like this:

```
top
restop                top                 top             top
res            or     notfound      or    error     or    noquery
resbot                bottom              bottom          bottom
(navigation)
bottom
```

The navigation part is built in the same way, with the elements that pertain to each results page. For example, <!--navleft--> and <!--navright--> are used to link to the previous and next results pages, while <!--navXXX_nop--> is used when there are no more pages in one or either direction.

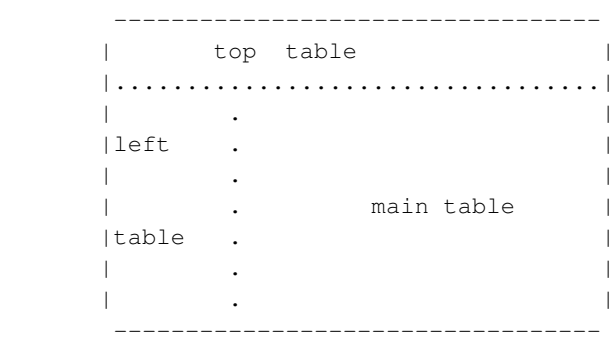
8.4.2. Your HTML

The simplest HTML is provided ready for use in `etc/search.htm-dist`. It is advisable that you use this until your back-end works fine.

Once you decide to add bells and whistles to your search, you have two options. One is to keep the simple design of `search.htm`, but make it part of a frame set. This way you can add elements such as menus etc in a frame and keep the output of `search.htm` in another.

The other option is to incorporate your entire design in `search.htm`. If you fully understand the "blocks" system described above, this should not be too difficult. The one most important factor is to keep track of elements that need to be opened in one block and closed in another.

For example, you might want a page in tables that looks like this:

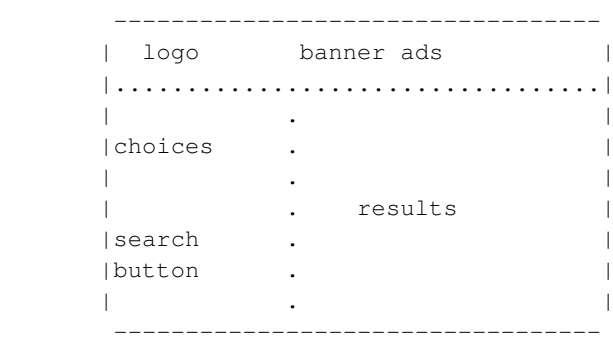


If you are planning to put your results in the main table, you can put all the HTML code in the <!--top--> block of `search.htm`, up to and including the opening of the main table (<table><tr><td>). If you then put the closing of the main table and the closing tags of the page in the

<!--bottom--> block (</table></tr></td></body></html>) and leave all other blocks unformatted, you will have the design of your choice and all your results in the right place.

In a more complicated design, where you want to format results individually, you can apply the same method as long as you keep track of the opening and closing of HTML elements. You must either open and close them in the same block, or make sure that any possible combination of blocks will result in properly opened and closed HTML tags.

What you cannot do without editing the source code, is change the order in which the blocks are parsed. Taking the above example, let's assume that you want your page to look like this:



To get this, you need to have everything except the results and navigation in the <!--top--> block, since that is the only block that can draw the page even if there are no results at all. In this case your search.htm would look like this:

```
<!--variables-->
 [your configuration]
<!--/variables-->

<!--top-->
 <html>
 <body>
 <table>
   <tr colspan="2">
   <td>[logo, banner ads]</td>
   </tr>
   <tr>
   <td>[search form]</td>
   <td>
 <!--/top-->

 [all other blocks in search.htm except "bottom"]

 <!--bottom-->
   [closing elements like the DataparkSearch link
    and a link to the webmaster]
   </td>
   </tr>
 </table>
```

```
</body>
</html>
<!--/bottom-->
```

The individual blocks can be formatted individually as long as that formatting is closed within each block. Thus, nothing stops you from doing things like

```
<!--error-->
  <table>
  <tr><td bgcolor"red">
    <font color="#ffffff">
    [error variables]
    </font>
  </tr><td>
  </table>
<!--error-->
```

as long as such formatting is opened and closed properly within the same block.

8.4.3. Forms considerations

Most modern browsers can handle forms that stretch over different tables, but writing such forms is against all standards and is bad HTML. Unless you really can't avoid it, don't do it.

For example,

```
<table>
<tr><td>
   <form>
   <input type="text" name="something">
   <input type="radio" name"button1">
   <input type="radio" name"button2">
   </form>
</tr></td>
</table>
```

is fine, but

```
<table>
  <tr><td>
     <form>
     <input type="text" name="something">
  </tr></td>
</table>
<table>
  <tr><td>
     <input type="radio" name"button1">
     <input type="radio" name"button2">
```

```
   </form>
  </tr></td>
  </table>
```

is *not*.

Note that the input forms in search.htm can be changed at will. The default is drop-down menus, but nothing stops you from using radio buttons or hidden input or even text boxes. For instance, where `search.htm` says

```
Results per page:
<SELECT NAME="ps">
<OPTION VALUE="10" SELECTED="$(ps)">10
<OPTION VALUE="20" SELECTED="$(ps)">20
<OPTION VALUE="50" SELECTED="$(ps)">50
</SELECT>
```

you can very well substitute

```
<input type="radio" name="ps" value="10" checked="$(ps)">
<input type="radio" name="ps" value="20" checked="$(ps)">
<input type="radio" name="ps" value="50" checked="$(ps)">
```

which will result in three radio buttons instead of a drop-down menu, with "20" as the default and the exact same functionality. What you obviously cannot do is provide multiple-choice menus like <type="checkbox"> or <select multiple>.

Note that you can also use the

```
<input type="hidden" name="XX" value="YY">
```

format if you want to set other defaults than the pre-defined and not allow the user to change them.

8.4.4. Relative links in search.htm

It might be worth mentioning that `search.htm` is parsed from your cgi-bin directory. The position of this directory in relation to your document root is determined by the web server, independently of its actual position in the file system. Almost invariably is http://your_document_root/cgi-bin/ . Since `search.cgi` lives in cgi-bin, any links to images etc in search.htm will assume cgi-bin as the base directory. Therefore, if you have a file system structure like

```
home/
home/your_document_root/
home/your_document_root/img/
home/cgi-bin/
```

the correct relative link from `search.cgi` to images in img/ would still be

<img src="../img/image.gif">

despite the fact that it doesn't match the file system structure.

8.4.5. Adding Search form to other pages

To place a search form to any of your pages, please place the following code where you would like the form to be displayed:

```
<FORM
 METHOD=GET
 ACTION="http://path-to-search.cgi">
      <INPUT TYPE="text" NAME="q" VALUE="">
      <INPUT TYPE="submit" VALUE="Search!">

</FORM>
```

8.5. Relevance

8.5.1. Ordering documents

DataparkSearch by default sorts results first by `relevency` and second by `popularity rank`.

8.5.2. Relevance calculation

In indexing, DataparkSearch divides every document onto sections. A section is any part of the document, for example, for HTML documents this may be TITLE or META Description tag.

In addition to sections, some document factors are also take in account for relevance calculation: the average distance between query words, the number of query word occurrences, the position of first occurrence of a query word, the difference between the distribution of query word counts and the uniform distribution.

In searching, DataparkSearch compares every document found against an "ideal" document. The "ideal" document should have query words in every section defined and should have also the predefined values of additional factors.

Since sections definition located only in `indexer.conf` file, use **NumSections** command in `searchd.conf` or in `search.htm` to specify the number od section used. By default, this value is 256. But note, **NumSections** do not affect document ordering, only the relevance value.

Table 8-3. Configure-time parameters to tune relevance calculation (switches for configure)

`--enable-rel`	This option enables "full", "fast" or "ultra" version of relevance calculation. Value by default: full (i.e. full relevance calculation).
`--disable-reldistance`	This option disables accounting of average word distance for relevance calculation. Value by default: enabled.
`--disable-relposition`	This option disables accounting of first query word position for relevance calculation. Value by default: enabled.
`--disable-relwrdcount`	This option disables accounting of word counts for relevance calculation. Value by default: enabled.
`--with-avgdist=NUM`	This option specify the `NUM` as the best average distance between words in document found. Value by default: 464.
`--with-bestpos=NUM`	This option specify the `NUM` as the best value of first word position in document found. Value by default: 4.
`--with-bestwrdcnt=NUM`	This option specify the `NUM` as the best number of each query word in document found. Value by default: 11.
`--with-distfactor=NUM`	This option specify the `NUM` as a factor for average word distance for relevance calculation. Value by default: 0.2.
`--with-lessdistfactor=NUM`	This option specify the `NUM` as factor of average word distance in relevance calculation when average distance is less than value specified with `--with-avgdist`. Default value is `--with-distancefactor` multiply by 2.
`--with-posfactor=NUM`	This option specify the `NUM` as factor for difference between first query word position in document found and best position specified by `--with-bestpos` option. Value by default: 0.5.
`--with-lessposfactor=NUM`	This option specify `NUM` as factor of first word position in relevance calculation when it less than value specified with `--with-bestpos`. Default value is `--with-posfactor` multyply by 4.
`--with-wrdcntfactor=NUM`	This option specify the `NUM` as factor for difference between count of query words in document found and the best value specified by `--with-bestwrdcnt` option. Value by default: 0.4.

`--with-lesswrdcntfactor=NUM`	This option specify `NUM` as factor of word count in relevance calculation when this word count is less than value specified with `--with-bestwrdcnt`. Default value is `--with-wrdcntfactor` multiply by 10.
`--with-wrdunifactor=NUM`	This option specify the `NUM` as factor for difference of query word counts from uniform distribution. Value by default: 1.5.

8.5.2.1. A full method of relevance calculation.

Let `x` is the weighted sum of all sections. The weights for these sections are define by `wf` parameter (see Section 8.1.3>). Let `y` is the weighted sum of differences between values of additional factors of document found and corresponding values of additional factors of the "ideal" document. And let `xy` is the weighted sum of sections where at least one query word has been found. Then value of relevance for a document found is calculates as: `0.5 * ( x + xy ) / (x + y)`.

8.5.2.2. A fast method of relevance calculation.

Let `x` is the number of bits used in weighted values of all sections defined. Let `y` is the weighted sum of differences between additional factors of document found and corresponding values of the "ideal" document. And let `xy` is the number of bits where weighted values of sections of the "ideal" document are different to weighted values of sections of document found. Then value of document relevance is calculates as: `( x - xy ) / ( x + y )`.

8.5.3. Popularity rank

DataparkSearch support two methods for popularity rank calculation. A method used in previous versions called "Goo", and new method is called "Neo". By default, the `Goo` method is used. To select desired PopRank calculation method use **PopRankMethod** command:

```
PopRankMethod Neo
```

You need enable links collection by **CollectLinks yes** command in your `indexer.conf` file for `Neo` method and for full functionality of `Goo` method. But this slow down a bit indexing speed. By default, links collection is not enabled.

By default, only intersite links (i.e. links from a page on one site to a page on an another site) are taken in account for the popularity rank calculation. If you place **PopRankSkipSameSite no** command in `indexer.conf` file, **indexer** take all links for this purpose.

You may assign initial value for page popularity rank using DP.PopRank META tag (see Section 4.3>).

8.5.3.1. "Goo" popularity rank calculation method

The popularity rank calculation is made in two stages. At first stage, the value of `Weight` parameter for every server is divide by number of links from this server. Thus, the weight of one link from this server is calculated. At second stage, for every page we find the sum of weights of all links pointed to this page. This sum is popularity rank for this page.

By default, the value of `Weight` parameter is equal to 1 for all servers indexed. You may change this value by **ServerWeight** command in `indexer.conf` file or directly in `server` table, if you load servers configuration from this table.

If you place `PopRankFeedBack yes` command in `indexer.conf` file, **indexer** will calculate site weights before page rank calculation. To do that, **indexer** calculate sum of popularity rank for all pages from same site. If this sum will great 1, the weight for site set to this sum, otherwise, site weight is set to 1.

If you place `PopRankUseTracking yes` command in `indexer.conf` file, **indexer** will calculate site weight as the number of tracked queries with restriction on this site.

If you place `PopRankUseShowCnt yes` command in `search.htm` (or `searchd.conf`) file, then for every result shown to user corresponding `url.shows` value will be increased on 1, if relevance for this result is great or equal to value specified by `PopRankShowCntRatio` command (default value is 25.0). If you place `PopRankUseShowCnt yes` in `indexer.conf` file, **indexer** will add to url's PopularityRank the value of `url.shows` multiplied by value, specified in `PopRankShowCntWeight` command (default value is 0.01).

8.5.3.2. "Neo" popularity rank calculation method

For this method is supposed all pages are neurons and links between pages are links between neurons. So it's possible use an error back-propagation algorithm to train this neural network. Popularity rank for a page is the activity level for corresponding neuron. See short description of The Neo Popularity Rank for web pages (http://www.maxime.net.ru/doc/Neo-en.pdf).

You may use `PopRankNeoIterations` command to specify the number of iterations of the Neo Popularity Rank calculation. Default value is 3.

By default, the Neo Popularity Rank is caclulated along with indexing. To speed up indexing, you may postpone Popularity Rank execution using **PopRankPostpone** command:

```
PopRankPostpone yes
```

Then you may calculate the Neo Popularity Rank after indexing in same way as for method Goo, i.e.: **indexer -TR**

8.5.4. Boolean search

Please note that in case of boolean searching for two or more words, you have to enter operators (&, |, ~, AND, OR, NOT, NEAR, ALL, etc.). I.e. it is necessary to enter **`a & book`** instead of **`a book`**. See also Section 8.1.7>.

8.5.5. Crosswords

This feature allows to assign words between and also to a document this link leads to, and the words from **alt** attribute of **img** tag to the picture this tag is pointed to. To enable Crosswords, please use **CrossWords yes** command in `indexer.conf` and `search.htm`, and define **crosswords** section in `sections.conf` file.

With the **CrossWordsSkipSameSite** command you can manage the collection of crosswords from the same site. If the option **yes** is set (by default), the crosswords from the same site doen't collected. If you wish to collect such crosswords, you need to set **no** option explicitly:

```
CrossWordsSkipSameSite no
```

8.5.6. The Summary Extraction Algorithm (SEA)

`The Summary Exctraction Algorith (SEA)` builds the summary of three or more the most relevant sentences of the each document indexed, if this document consists of six or more sentences. To enable this feature, add this command to your `seaction.conf` file:

```
Section sea x y
```

where `x` - the number of section and `y` - the maximum length of this section value, leave 0, if you do not want show this in result pages. If you specify `y` non-zero, you may use `$(sea)` meta-variable in your search template to show the summary in result pages.

Related configuration directives:

The **SEASentenceMinLength** command specify the minimal length of sentence to be used in summary construction using the SEA. Default value: 64.

The **SEASentences** command uses to specify the maximal number of sentences with length greater or equal to the value specified by the **SEASentenceMinLength** command, which are used for summary construction in the SEA. Default value: 32. Since the summary construction using SEA is nonlinear expensive (affects only indexing), you may adjust this value according to desired indexing performance.

With **SEASections** command you can specify the list of document sections which are used to construct SEA summary. By default, only the "body" section is used for SEA summary construction.

```
SEASections "body, title"
```

This algorithm of automatic summary construction is based on ideas of Rada Mihalcea described in the paper Rada Mihalcea and Paul Tarau, An Algorithm for Language Independent Single and Multiple Document Summarization, in Proceedings of the International Joint Conference on Natural Language Processing (IJCNLP), Korea, October 2005 (http://www.cs.unt.edu/~rada/papers/mihalcea.ijcnlp05.pdf).

Differences in DataparkSearch's SEA:

- Initial weights for graph edges are calculates as a measure of similarity between 3-gram distributions of corresponding sentences.

- Initial value for all graph vertexes is equal to the value of 1 / (number of sentences + 1) in the current implementation.
- The Neo PopRank algorithm is used as ranking algorithm to iterate values assigned to vertexes.

After indexing of document collection with this section defined, you may use $(sea) meta-variable in your template to show summary for a search result.

8.6. Search queries tracking

DataparkSearch supports query tracking.

When doing a search, front-end uses table `qtrack` to store query words, client IP address, a number of found documents and current UNIX timestamp in seconds and table `qinfo` to store all search parameters.

To enable tracking, add the `trackquery` parameter to **DBAddr** command (see Section 3.10.2>) in your search template. For example:

```
DBAddr pgsql://user:pass@localhost/search/?dbmode=cache&trackquery
```

> **Note:** If you use `searchd`, you should add this parameter only in your `searchd.conf` file.
>
> You may use **TrackDBAddr** command to specify different database to store query tracking data. This database should have the same `qtrack` and `qinfo` tables as in DataparkSearch's database.

Query tracking is useful to have a statistics of your search engine usage. To make a search queries summary, you may execute, for example, this SQL expression:

```
SELECT qwords,count(*),sum(found),avg(found) FROM qtrack GROUP BY qwords;
```

8.7. Search results cache

Search results cache allows `search.cgi` to make very fast response on recently used queries as well as user's navigation though the pages of the same result.

Search results cache is disabled by default. You may use **Cache yes** command in `search.htm` to enable results caching. If you use `searchd`, add "**Cache yes**" command to `searchd.conf` file.

Search cache is located in `$PREFIX/var/cache/` subdirectory, where `$PREFIX` is DataparkSearch installation base directory. Each result is stored in a separate file.

By defaults, search results cache is not deleted automatically. You have to delete it every time after indexer's work to avoid displaying non-recent cached results. Or you may specify a refresh period for search results cache using **HoldCache** command:

```
HoldCache <time>
```

For <time> format see description of **Period** command in Section 3.10.28>.

```
HoldCache 3h
```

8.8. Fuzzy search

8.8.1. Ispell

When DataparkSearch is used with ispell support enabled, it automatically extend search query by all grammatical forms of the query words. E.g. search front-end will try to find the word "test" if "testing" or "tests" is given in search query.

8.8.1.1. Two types of ispell files

DataparkSearch understands two types of ispell files: affixes and dictionaries. Ispell affixes file contains rules for words and has approximately the following format:

```
Flag V:
       E   > -E, IVE      # As in create> creative
      [^E] > IVE          # As in prevent > preventive
Flag *N:
       E   > -E, ION      # As in create > creation
       Y   > -Y, ICATION  # As in multiply > multiplication
     [^EY] > EN           # As in fall > fallen
```

Ispell dictionary file contains words themselves and has the following format:

```
wop/S
word/DGJMS
wordage/S
wordbook
wordily
wordless/P
```

8.8.1.2. Using Ispell

To make DataparkSearch support ispell you must specify **Affix** and **Spell** commands in `search.htm` file. The format of commands:

```
Affix [lang] [charset] [ispell affix file name]
Spell [lang] [charset] [ispell dictionary filename]
```

The first parameter of both commands is two letters language abbreviation. The second is ispell files charset. The third one is filename. File names are relative to DataparkSearch `/etc` directory. Absolute paths can be also specified.

Note: Simultaneous loading of several languages is supported, e.g.:

```
Affix en iso-8859-1 en.aff
Spell en iso-8859-1 en.dict
Affix de iso-8859-1 de.aff
Spell de iso-8859-1 de.dict
```

Will load support for both English and German languages.

If you use `searchd`, add the same commands to `searchd.conf`.

When DataparkSearch is used with ispell support it is recommended to use `searchd`, especially for several languages support. Otherwise the starting time of `search.cgi` increases.

8.8.1.3. Customizing dictionary

It is possible that several rare words are found in your site which are not in ispell dictionaries. In such case, an entry with longest match suffix is taking to produce word forms.

But you can also create the list of such words in plain text file with the following format (one word per line):

```
rare.dict:
----------
webmaster
intranet
.......
www
http
---------
```

You may also use ispell flags in this file (for ispell flags refer to ISpell documentation). This will allow not writing the same word with different endings to the rare words file, for example "webmaster" and "webmasters". You may choose the word which has the same changing rules from existing ispell dictionary and just to copy flags from it. For example, English dictionary has this line:

```
postmaster/MS
```

So, webmaster with MS flags will be probably OK:

```
webmaster/MS
```

Then copy this file to `/etc` directory of DataparkSearch and add this file by **Spell** command in DataparkSearch configuration:

During next reindexing using of all documents new words will be considered as words with correct spelling. The only really incorrect words will remain.

8.8.1.4. Where to get Ispell files

You may find ispell files for many of languages at this page (http://fmg-www.cs.ucla.edu/geoff/ispell-dictionaries.html).

For Japanese language there exist quasi-ispell files suitable for use with DataparkSearch only. You may get this data from our web site (http://www.dataparksearch.org/) or from one of our mirrors. See Section 1.2>.

8.8.1.5. Query words modification

```
Quffix [lang] [charset] [ispell-like suffix file name]
```

The **Quffix** command is similar to **Affix** command described above, except that these rules apply to the query words, bot not to the normal word forms as it is done for **Affix** command. The file loaded with this command must contain only suffix rules (in terms of ispell affix files).

This command is suitable, for example, to specify the rules to switch from one part of speech to an another for the Russian language when it is appropriate.

8.8.2. Aspell

With Aspell support compiled, it's possible automatically extend search query by spelling suggestions for query words. To enable this feature, you need to install Aspell (http://aspell.net/) at your system before DataparkSearch build. Then you need to place **`AspellExtensions yes`** command into your `indexer.conf` and `search.htm` (or into `searchd.conf`, if **searchd** is used) files to activate this feature.

Automatically spelling suggestion for search query words is going only if `sp` search parameter is set, see Section 8.1.2>.

8.8.3. Synonyms

DataparkSearch also support a synonyms-based fuzzy search.

Synonyms files are installed into `etc/synonym` subdirectory of DataparkSearch installation. Large synonyms files you need to download separately from our web site, or from one of our mirrors, see Section 1.2>.

To enable synonyms, add to `search.htm` search template commands like `Synonym <filename>`, e.g.:

```
Synonym synonym/english.syn
Synonym synonym/russian.syn
```

Filenames are relative to `etc` directory of DataparkSearch installation or absolute if begin with /

If you use `searchd`, add the same commands to `searchd.conf`.

You may create your own synonyms lists. As an example you may take the English synonyms file. In the beginning of the list please specify the following two commands:

```
Language: en
Charset:  us-ascii
```

- `Language` - standard (ISO 639) two-letter language abbreviation.
- `Charset` - any charset supported by DataparkSearch (see Section 7.1>).

You can use '\' character to escape '#' character in your acronyms or its extensions which usually it's considered as beginning of a comment.

Optionaly you may specify following command in the list:

```
Thesaurus: yes
```

This command enable thesaurus mode for synonyms list. For this mode, only words at one line treats as synonyms.

8.8.4. Accent insensitive search

Since version 4.17 DataparkSearch also support an accent insensitive search.

To enable this extension, use **AccentExtensions** command in your `search.htm` (or in `searchd.conf`, if **searchd** is used) to make automatically accent-free copies for query words, and in your `indexer.conf` config file to produce accent-free word's copies to store in database.

```
AccentExtensions yes
```

If **AccentExtensions** command is placed before **Spell** and **Affix** commands, accent-free copies for those data also will be loaded automaticaly.

8.8.5. Acronyms and abbreviations

Since version 4.30 DataparkSearch also support search fuzzying based on acronyms and abbreviation.

Acronyms files are installed into `etc/acronym` subdirectory of DataparkSearch installation.

To enable acronyms, add to `search.htm` search template commands like `Acronym <filename>`, e.g.:

```
Acronym acronym/en.fido.acr
Acronym acronym/en.acr
```

Filenames are relative to `etc` directory of DataparkSearch installation or absolute if begin with /

If you use `searchd`, add the same commands to `searchd.conf`.

You may create your own acronyms lists. As an example you may take the English acronyms file. In the beginning of the list please specify the following two commands:

```
Language: en
Charset:  us-ascii
```

- `Language` - standard (ISO 639) two-letter language abbreviation.
- `Charset` - any charset supported by DataparkSearch (see Section 7.1>).

You can use '\' character to escape '#' character in your acronyms or its extensions which usually it's considered as beginning of a comment.

Also, you can extend queries by special comments specifying regular expression modifications. E.g.:

```
#* regex last "([0-9]{2})[- \.]?([0-9]{2})[- \.]?([0-9]{2})" "+78622$1$2$3"
```

This specify a transformation from widely used format of local phone numbers, 99-99-99, into canonical format, +78622XXXXXX. So the phone numbers become searchable regardless the format they were written. The **`last`** option here means that the process of regex application stops after applying this rule.

Please send your own acronym files to <`maxime@maxime.net.ru`>, if you want share its with other users.

Chapter 9. Miscellaneous

9.1. Reporting bugs

When reporting bugs, please specify DataparkSearch version and provide us as much information about your problem as possible. Such information as your platform and OS details, database version, database statistics like number of URLs in database or probably count of records in different tables would be very helpful to find and fix possible bugs.

Please, submit bug reports using our Bug Reporting System (http://www.dataparksearch.org/cgi-bin/bt.pl) at DataparkSearch web site (http://www.dataparksearch.org/). Please do not send reports to mailing list or to personal authors addresses!

9.1.1. Currently known bugs

Use DataparSearch Bug Reporting System (http://code.google.com/p/dataparksearch/issues/list) to view active and fixed bug statistics. As well, you can use this system to submit new bug-reports and proposals for new feature or improvements

9.1.2. Core dump reports

If indexer or `search.cgi` die during their work and produce core, it would be very helpful to send us gdb (The GNU Debugger) output. To do this, please make the following steps. Make sure you have DataparkSearch built with `--with-debug` option for configure. If not, please rebuild it with this option and repeat the command leads to core dump. Then, e.g. your binary is "indexer" and core file name is `indexer.core` (or may be just `core` on some platforms).

Run GNU Debugger with executable as the first argument and with core file as the second:

`gdb indexer indexer.core`

Some information about the crash location will appear:

```
Core was generated by `indexer'.
Program terminated with signal 8, Floating point exception.
Reading symbols from /usr/lib/libc.so.3...done.
Reading symbols from /usr/libexec/ld-elf.so.1...done.
#0  0x80483f3 in main () at indexer.c:4
4               printf("%d",0/0);
```

Then type `thread apply all backtrace` command:

```
(gdb) thread apply all bt
#0  0x80483f3 in main () at indexer.c:4
#1  0x804837d in _start ()
```

Send us either first and second outputs or just a screenshot of gdb session.

9.2. Using `libdpsearch` library

The `libdpsearch` is available for using it in third party applications. You can easily add search into your own application using library and include files installed in `/lib` and `/include` DataparkSearch directories. Each application which uses `libdpsearch` must have `dpsearch.h` header file included.

9.2.1. `dps-config` script

When compiled with one of supported SQL back-end, `libdpsearch` requires some dependent libraries, for example `libmysqlclient`. You can find `dps-config` script in `/bin` directory of DataparkSearch installation. This script helps to take in account required dependencies. `dps-config` script can take several options in it's command line. By default `dps-config` outputs all available options:

```
Usage: ./dps-config [OPTIONS]
Options:
        [--version]
        [--libs]
        [--cflags]
```

When executed with `--libs` command line option `dps-config` outputs all required to `libdpsearch` linker flags, for example:

```
# ./dps-config --libs
-lm -L/usr/local/mysql/lib/mysql -lmysqlclient \
-L/usr/local/dpsearch/lib -ldpsearch
```

So you may insert `dps-config --libs` into CC compiler command line:

```
cc myprog.c -o myprog `dps-config --libs`
```

9.2.2. DataparkSearch API

There is no detailed description of DataparkSearch API yet. This is because API is currently under rapid development and may have major changes from version to version. You may use `search.c` as an example of application which uses `libdpsearch` library.

9.3. Database schema

Full database schema used by DataparkSearch is defined in appropriate sql-scipts for database creation located under `create` subdirectory.

Table 9-1. `server` table schema

`rec_id`	Unique record identificator.
`enabled`	A flag to enable/disable record for **indexer**.
`url`	URL or pattern.
`tag`	Tag value.
`category`	`Categories` table rec_id.
`command`	=S - this record is a `server`. =F - this record is a `filter`.
`ordre`	Sorting key, it define records order for `server` table loading.
`parent`	If not null, this record is added automaticaly by **indexer** and `url` field contain a server name accepted on record pointed by this filed value.
`weight`	This record weight for PopRank calculation.
`pop_weight`	One link weight from pages of this server. Calculated automatically. Manually change will have no effect.

Other server's parameters store in `srvinfo` table. Possible values for several parameters is given in table below.

Table 9-2. Several server's parameters values in `srvinfo` table

`sname` value	**Possible `sval` values.**
`Alias`	Alias used for `url`.
`Period`	Reindexing period in seconds.
`DeleteOlder`	How much time to hold URLs before deleting them from the database.
`RemoteCharset`	Default charset value.
`DefaultLang`	Default language value.
`Request.Authorization`	For basic authorization.
`Request.Proxy`	Proxy server to access documents from this resource.
`Request.Proxy-Authorization`	Proxy server authorization.

sname value	**Possible sval values.**
MaxHops	Maximum depth of way in "mouse" clicks from start url.
Index	A flag to enable/disable documents indexing.
Follow	=0, "page" =1, "path" =2, "site" =3, "world"
Robots	A flag to enable/disable robots.txt file using.
DetectClones	A flag to enable/disable "clones" detection.
MaxNetErrors	Maximum network errors for this server.
NetDelayTime	Indexing delay time if a network error is occurred.
ReadTimeout	Network timeout value.
match_type	=0, DPS_MATCH_FULL - full coincidence. =1, DPS_MATCH_BEGIN - pattern is a URL prefix. =2, DPS_MATCH_SUBSTR - pattern is a URL substring. =3, DPS_MATCH_END - pattern is a URL suffix. =4, DPS_MATCH_REGEX - pattern is a regular expression. =5, DPS_MATCH_WILD - pattern is a wildcards pattern (* and ? wildcards may be used). =6, DPS_MATCH_SUBNET - < not yet supported >.
case_sense	=1, - case insensitive comparison. =0, - case sensitive comparison.
nomatch	=1, - URLs not match this record is accepted. =0, - URL match this record is accepted.

sname value	**Possible sval values.**
Method	Specify a document action for this command. =Allow, - all corresponding documents will be indexed and scanned for new links. =Disallow, - all corresponding documents will be ignored and deleted from database. =HrefOnly, - all corresponding documents will be only scanned for new links (not indexed). =CheckOnly, - all corresponding documents will be requested by HTTP HEAD request, not HTTP GET, i.e. inly brief info about documents (size, last modified, content type) will be fetched. =Skip, - all corresponding documents will be skipped while indexing. =CheckMP3, - all corresponding documents will be checked for MP3 tags along if its Content-Type is equal to audio/mpeg. =CheckMP3Only, - is equal to CheckMP3, but if MP3 tag is not present, processing on Content-Type will not be taken. =TagIf, - all documents will be maked by tag specified. =CategoryIf, - all documents will be maked by category specified. =IndexIf, - all documents will be indexed, if the value of section specified match the pattern given. =NoIndexIf, - all documents will be ignored and deleted from database, if the value of section specified match the pattern given.
Section	Section name used in pattern matching for IndexIf and NotIndexIf methods.

Appendix A. Donations

If you like the DataparkSearch Engine and want to encourage further development, feel free to make a donation with Kagi (http://order.kagi.com/?6CYPQ) or a donation with PayPal (https://www.paypal.com/cgi-bin/webscr?cmd=_s-xclick&hosted_button_id=ZTJBFWQUMTDPG) to support this project. Any donation is gratefully appreciated.

Index