Knowledge Base Tuning and End-User Experience

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Knowledge Engineer

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Agenda

• Review of search theory
  – Background on search engine technology
  – Importance of indexes

• Configuration affecting end-user experience

• RightNow tools for tuning your answers

• Determining what to tune
Search Engines

- What is a search engine and what does it do?
- Search engines are *Information Retrieval Systems*. These systems prepare a keyword index for a given *corpus* of documents and return a ranked set of documents for keyword queries.
- Google is a WWW search engine.
- RightNow Service contains both the knowledge base search engine and the intranet search engine.
What is an Index?

- Stores the information about what is searchable
- Increases speed for finding search results by not requiring each document to be scanned during the search process
- Most search engines (including RightNow) use an ‘inverted index’ which maps words to documents, or words to locations within documents
  - Similar to the index in the back of a book
  - Vs “find a word with your finger”
Creating an Index

- Identify document
- Parse content
- Remove common words (stopwords)
- Stem remaining words to base form
- Record word frequency
- Record word location
Indexing Example

Liberty: The condition of being free from restriction or control.

Four score and seven years ago our fathers brought forth on this continent, conceived in Liberty, and

The North American Continent consists of the countries: the United States of America, Canada, Mexico, ...
RightNow Index Example

- Answer ID 1895 from rightnow.custhelp.com

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Performing a Search

- Parse query
- Remove common words
- Stem words to base form
- Compare query to index
- Score results from index – weight each document
- Return documents in list
- Documents “race” to be at top of list
Using an Index for Searching

Four score and seven years ago our fathers brought forth on this continent, conceived in Liberty, and

Score:
A group of 20 items. Hence, four score is 4x20, or 80.

The North American Continent consists of the countries: the United States of America, Canada, Mexico,

Liberty:
The condition of being free from restriction or control.
Word Stemming

- Reduce similar words to the same base
- Standard natural language processing technique
- Unique stemming for each language
- CONNECT CONNECTED CONNECTING CONNECTION CONNECTIONS => CONNECT
- Generalizes searches (exact matches not considered)
Removing Stopwords

- Common connector words not generally useful in searching
  - a, an, the, or, on, for, ...
  - “To be or not to be”
- RightNow feature: editable stop word lists
- Separate exclude lists for incidents and answers
  - File Manager > wordlist files > exclude_answers.txt or exclude_incidents.txt
  - Admin > Service > Knowledge Base Configuration (in 8)
AND vs. OR Query Processing

- Do the search results contain ALL words in the search text or just SOME words?
- All major Internet search engines use AND
- RightNow uses OR by default with a heavy multi-word weight bias -- “AND-like ordering”
- Why do we use OR? AND does not work well for small documents sets (under 10,000 answers)
- Why does AND perform poorly on small document sets? Too easy for a user to construct a query with no search results.
- ANS_AND_SEARCH and SC_AND_SEARCH settings
End-User Features

• Evaluate end-user experience when searching

• Highlight keywords and search terms
  - EU_SEARCH_HIGHLIGHT_ENABLE
  - EU_SEARCH_HIGHLIGHT_TAG – defines style

• Suggest spelling corrections – Did you mean?
  - EU_SEARCH_TERM_FEEDBACK_ENABLE

• Suggest additional search phrases
  - EU_SUGGESTED_SEARCHES_ENABLE
Search Term Feedback

Did you mean: *category product*

- 585 answers returned with this search
- Restrict search results
  - SEARCH_RESULT_LIMITING – (8.0) restrict to less than one page
  - ANS_SEARCH_THRESHOLD – restrict based on weight
Limit Search Results to One Page

- SEARCH_RESULT_LIMITING setting
  - 0 – no limiting
  - 1 – < 90% of one page results
  - 2 – < 50%
  - 3 – < 20%
Additional End-user Configurations

- **Searching by answer ID: SC_ANS_ID**
  - If number is entered as a search term with a phrase search, that answer ID is returned as part of the search

- **Remove Sort By and Search By fields**
  - Remove run-time filter from 8.x report
  - Prior to 8.0: ANS_SEARCH_BY_ENABLED and ANS_SORT_BY_ENABLED settings

- **Related answers and previously viewed answers**
  - ADP_NUM_REL_ANS and ADP_NUM_PREV_ANS
  - For related answers, link data must be collected
  - Answer 356 on rightnow.custhelp.com
Evaluating Search Results

- Parse query
- Remove common words
- Stem words to base form
- Compare query to index
- Score results from index – weight each document
- Return documents in list

Two primary areas to impact – stopwords and weighting

Also, force answer to return with specific searches
Evaluating Stopwords

- Separate stopword lists for answers and incidents
  - exclude_answers.txt
  - exclude_incidents.txt

- Accessed from File Manager > Wordlist files

- Keywordindexer utility must run to rebuild index
# System-Recommended Stopwords

- **8.0 and higher**: Admin > Service > Knowledge Base Configuration > Stopwords > Answers

- keywordindexer utility needs to be run

![Screenshot of the system interface for managing stopwords](image.png)

**Edit Answer Stopword list**

<table>
<thead>
<tr>
<th>Additions</th>
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<tbody>
<tr>
<td>STEPS</td>
</tr>
<tr>
<td>NAME</td>
</tr>
<tr>
<td>ADD</td>
</tr>
<tr>
<td>BELOW</td>
</tr>
<tr>
<td>NOTE</td>
</tr>
<tr>
<td>NEW</td>
</tr>
<tr>
<td>EDIT</td>
</tr>
</tbody>
</table>

**Current Stopwords**

- ALL
- AN
- AND
- ANY
- ARE
- AS
- AT
- BE
- BY
- CAN
- CLICK
- COULD
- DO
- FOR
- FROM
- HAVE
- HOW
- IF
- IN
- INFORMATION
- IS

Highlight words to add. Click to change highlighting.

**New Addition**

Enter single stopwords to add.

**Removals**

<table>
<thead>
<tr>
<th>WE</th>
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<tbody>
<tr>
<td>COULDN'T</td>
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</table>
Stopwords on End-User Pages

- Stopwords are listed when search is run
- Words with no matches are listed separately
Context-Sensitive Stopindex

- Use <!--stopindex--> and <!--startindex--> in source code of an answer
- Can exclude specific words and phrases or entire paragraphs of content

```html
<p>For more information on defining data exceptions, refer to<br>rn:answer_xref answer_id="2026" contents="Answer ID 2026: Using Data Exceptions to Customize Report Records" /></p>
<br/>
<!--stopindex-->
<h4>$fc_blue Adding Color to Rows of a 7.x View $cf</h4>
<p>In 7.x, <strong>color expressions</strong> can be configured with views to display records in different colors based on how fields are set for the record. For example, you could have an incident view at the Support Console display all incidents that are unresolved display in green and all updated incidents display in blue.</p>
<p>Within a view, to access the color expression field, click the Output tab and then click the Output option in the Output levels frame.</p>
<!--startindex-->
<p>When configuring color expressions for views, use single quotes around the color name. For the conditions, you can use either the numerical value from the database table or the language name for the value. When using the numerical value, do not use single quotes around the number. If using the language name, include single quotes.</p>
<br/>
&nbsp;</p>
```
Search Results and Weight

• Weight determined by
  - Phrase matches a two- or three-word phrase
  - Location of word or phrase in the answer summary, keyword, answer field
  - Number of occurrences – including words with similar stems
  - Word is aliased with other words

• Weight is independent of answer score
  - Weight: how well the answer meets the search term
  - Score: based on usage, number of hits, placement
Impacting Weighting and Rank

- Some words are relatively more important than others based upon location

- Configuration settings define relative weights
  
  - SRCH_KEY_WEIGHT 50 Keywords
  - SRCH_PROD_WEIGHT 50 Product Words
  - SRCH_CAT_WEIGHT 50 Category Words
  - SRCH_SUBJ_WEIGHT 45 Summary Words
  - SRCH_DESC_WEIGHT 30 Question Words
  - SRCH_BODY_WEIGHT 4 Answer Words
  - SRCH_ATTACH_WEIGHT 4 File-Attach. Words

- Accessed from Settings > Common

- Important words should be in the Summary or Question fields with Keyword field as a backup
Keywords with Answers

- Keywords – custom synonyms for each answer
- Can add individual words or phrases
- Each element MUST be separated by a comma
  
  tutorials, discussion forum, learning center, online

- Allows you to “boost” the answer for certain search terms
- Use aliases to apply keywords across all answers
- Answer 1660 on rightnow.custhelp.com
Defining Aliases

• Aliasing -- establishes a link between two words to treat them as synonyms when searching
  – FBI = Federal Bureau of Investigation
  – ticket = incident

• Typically business / industry specific synonyms

• Used with all searches

• alias.txt file accessed from File Manager > Wordlist files

• thesaurus.txt only used with Similar Phrases search
# Alias Examples

- Single word in first position
- First word in line is what user searches on
- Remaining words are words used in the answers
- Address common misspellings, words with hyphens

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<table>
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<tr>
<th>Switch to</th>
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<td><strong>Edit File</strong></td>
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<tr>
<td>wlf/en_US/aliases.txt</td>
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**WARNING**
Ensure than you have a backup copy of this file before you edit.

- ADD, CREATE
- CREATE, ADD
- ADMIN, ADMINISTRATION
- AGENT, STAFF
- STAFF, AGENT
- ANALYSER, ANALYZE
- AUDITLOG, AUDIT LOG
- AUTO, AUTOMATICALLY
- BLOCK, EXCLUDE, RESTRICT
- EXCLUDE, BLOCK, RESTRICT
- RESTRICT, BLOCK, EXCLUDE
- CATALOGUE, CATALOG
- CENTRE, CENTER
Topic Words

- Answer or WWW document
- Can always show the document or return with search
- Force an answer to display at the top for specific search
- Displays above answers section
- Useful for directed information, notices, announcements
- Path: Service Administration > Knowledge Base Configuration > Topic Words
**Topic Word Example**

**Topic Words - Edit**

- **Name**: PS Offerings
- **Keywords**:
  - SmartGuide
  - Smart Guide
  - RightNow Telesales
  - Outsourced Administration
  - OSA
  - Outsourced Solution Administration

Separate words or phrases with comma, semicolon or new line.

**Search by Product**

Search by Keyword:

- **Search Tips**
  - smart guide

**Recommended Documents**

1. Professional services and add-on purchases available
   - RightNow offers additional services related to SmartGuide, Outsourced Solution Administration (OSA) and many other features.

76 Answers Available

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<tr>
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Manually Relating Answers

- Related answers are defined based on end-user activity
- Can manually associate answers to another answer
## Promoted Answer Example

### How well did this answer your question?

- 100%
- 75%
- 50%
- 25%
- 0%

Submit Rating

### Answers others found helpful

- Bob’s 100-mile leash

### Users who viewed this answer have also viewed

- Who is Bob?
- Gas mileage
- Bob’s cookie jar

### Previously Viewed Answers

- Bob’s 100-mile leash
- Who is Bob?

---

Manually promoted answers

Answers related by user activity
KB Tuning Best Practices

1. Determine scope/completeness of KB
2. Create list of important search terms and preferred answers for each
3. Run the search queries and evaluate the results for each
4. Tune your answers
5. Read relevant analytics reports
6. Tune the knowledge base settings
7. Repeat
Determining What to Tune

• Intuition
  – What would you want to have answers to?
  – Put your customer hat on

• Feedback from agents
  – If they have difficulty, they need to let you know

• Analytics
  – Keyword Search
  – Information Gap

• Session data
Feedback from Agents

- Agents see what questions are coming in
- Can evaluate session data
- Can report if agents themselves are having a hard time finding an answer
- Report to knowledge engineer
  - Answer feedback
  - Flag incident for KB review
  - Forward incident or email KB group
Keyword Search Report

- Search terms with large amount of answers returned > indicates possible stopwords
- Search terms with no answers returned > possible holes in the knowledge base
- Scan search terms for possible aliases
# Most Common Searches

## Keyword Searches

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Searches with No Answers

Keyword Searches
Phrase Stem

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Keyword Searches
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Information Gap Report

- Lists clusters of incidents that do not seem to match published answers

Information Gap Summaries

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Evaluate Session Data

- Indicates effort to find information in the knowledge base
- Session data is in the clicktrack table and gets purged after incident is solved for 30 or fewer days
- For high traffic sites, use replication database
- Use small time period to evaluate data
- Custom report to list
  - Incidents from Ask a Question page
  - Number of searches
  - Number of answers viewed
Evaluate Session Data

Incidents -- AAQ -- w Session Data

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Filtering Session Data

- Filters on session data

- Logical expression
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### Session Parameter Values

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Additional References

• Manuals
  – Service Administrator manual, chapter 4 (in 8.x)
  – Standard Reports Catalogue
  – Analytics manual – custom reporting

• RightNow knowledgebase at rightnow.custhelp.com

• Discussion forum
Key Steps for Successful Tuning

• Understand how answers are indexed
• Evaluate user experience
• End-user page configuration
• Evaluate stopwords
• Evaluate weighting used
• Determine what needs tuning