WebFOCUS

Magnify Search Security and
Administration
Release 8.2 Version 01M

Contents

Preface

This content explains how to deploy security and administration options in a WebFOCUS Magnify Search environment. It is intended for WebFOCUS administrators.

How This Manual Is Organized

This manual includes the following chapters:

	Chapter/Appendix	Contents
1	Getting Started With Magnify Search	Provides an overview of Magnify Search, highlighting its features and the underlying architecture.
2	Configuring the Search Engine	Describes how to configure the search engine for use with Magnify Search.
3	Configuring Magnify Search Collections	Describes how to configure collections using individual Magnify Search libraries.
4	Using the Security Features	Discusses the Magnify Search security features and explains how to enable them.
5	Magnify Search Diagnostics	Discusses the Magnify Search diagnostics tools available for debugging the installation and Security plug-ins.
6	Customizing the Magnify Search User Interface	Describes how to use the Magnify Search style sheet to customize the end-user interface.
A	Magnify Search Demo Application	Describes how to configure and access the Magnify Search Century Electronics demo search application.

Conventions

The following table describes the conventions that are used in this manual.

Convention	Description
THIS TYPEFACE or this typeface	Denotes syntax that you must enter exactly as shown.

Convention	Description
this typeface	Represents a placeholder (or variable) in syntax for a value that you or the system must supply.
<u>underscore</u>	Indicates a default setting.
this typeface	Represents a placeholder (or variable), a cross-reference, or an important term. It may also indicate a button, menu item, or dialog box option that you can click or select.
Key + Key	Indicates keys that you must press simultaneously.
{ }	Indicates two or three choices. Type one of them, not the braces.
[ ]	Indicates a group of optional parameters. None are required, but you may select one of them. Type only the parameter in the brackets, not the brackets.
|	Separates mutually exclusive choices in syntax. Type one of them, not the symbol.
...	Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis (...).
. . .	Indicates that there are (or could be) intervening or additional commands.

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❏ Your six-digit site code (*xxxx.xx*).

❏ Your WebFOCUS configuration:

  ❏ The front-end software you are using, including vendor and release.

  ❏ The communications protocol (for example, TCP/IP or HLLAPI), including vendor and release.

  ❏ The software release.

  ❏ Your server version and release. You can find this information using the Version option in the Web Console.

❏ The stored procedure (preferably with line numbers) or SQL statements being used in server access.

❏ The Master File and Access File.

❏ The exact nature of the problem:

  ❏ Are the results or the format incorrect? Are the text or calculations missing or misplaced?

❏ Provide the error message and return code, if applicable.

❏ Is this related to any other problem?

❏ Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?

❏ What release of the operating system are you using? Has it, your security system, communications protocol, or front-end software changed?

❏ Is this problem reproducible? If so, how?

❏ Have you tried to reproduce your problem in the simplest form possible? For example, if you are having problems joining two data sources, have you tried executing a query containing just the code to access the data source?

❏ Do you have a trace file?

❏ How is the problem affecting your business? Is it halting development or production? Do you just have questions about functionality or documentation?

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Getting Started With Magnify Search

This section introduces Magnify Search.

In this chapter:

❏ About WebFOCUS Magnify Search

❏ Magnify Search Architecture

About WebFOCUS Magnify Search

WebFOCUS Magnify Search is an enterprise search tool that allows you to search your structured and unstructured business content, such as application data and database records, through an easy-to-use search interface. Because the Information Builders adapter product line provides access to over 300 data sources, Magnify Search acts as the single point of access to information that resides in multiple applications throughout your enterprise.

When you search for a keyword or phrase, Magnify Search scans the indexed content and returns a results page that includes a navigation tree to focus your search, and links that trigger dynamic WebFOCUS reports to present you with the most current information in your enterprise.

Through various configuration parameters in Magnify Search, you determine what data in your business content will be accessible to a search and which WebFOCUS report to run from a search results link. By using a combination of a Magnify Search style sheet (provided with the product) and these parameters, you can customize the appearance of your search results page.

Magnify Search Architecture

The Magnify Search platform connects end users to enterprise information through a single point of access in order to search across any content repository, including both structured and unstructured data. End users can then drill down on search results to analyze and understand their information.

Magnify Search applications are built using methods to extract raw data and transform it into search results. During this process, raw data is enriched with categorizations and other metadata that Magnify Search can use in retrieving and presenting search results. This includes item titles, images, geographical details, and drill-down links to associated reports or applications. These processes can be automated so that data storage facilities and file repositories are always kept in sync with Magnify Search. This means that whenever new information is added, old information is updated, or information has expired, Magnify Search will always be up-to-date.

As an administrator, many of the design elements in the Magnify Search interface can be configured. This includes corporate branding and how Magnify Search indexes are organized.

The following diagram shows the interaction between the major components associated with Magnify Search.

Chapter 2
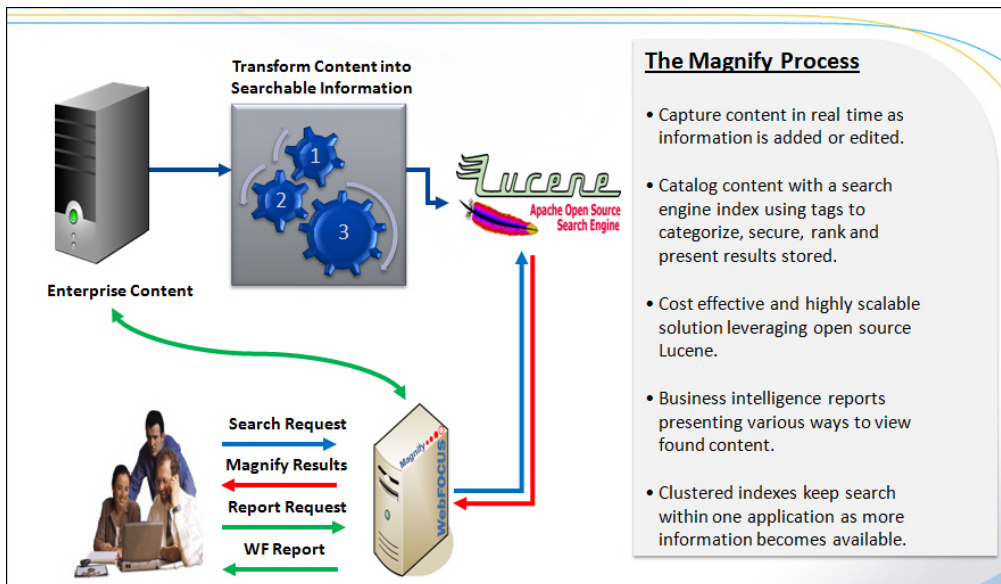
Configuring the Search Engine

This section explains how to configure the search engine you will use with Magnify Search and how to set timers for indexing data.

Note: If you performed an upgrade installation from an earlier version of WebFOCUS, you must log on WebFOCUS as an administrator and access the WebFOCUS Administration Console from the Administration menu to upgrade the variables necessary for Magnify Search to work correctly.

In this chapter:

❑ Configuring the Search Engine

❑ Integrating With Third-Party Search Engines

❑ Setting the Magnify Search Deep Sleep Duration

Configuring the Search Engine

WebFOCUS must know the location of the search engine, the XSLT style sheet to use for the Magnify Search user interface, and the maximum number of items that should be returned by the search results tree. These items have preset defaults.

The following procedure explains how to set the search engine parameters using the WebFOCUS Administration Console.

Procedure: **How to Set Search Engine Parameters in the WebFOCUS Administration Console**

To set the search engine parameters in WebFOCUS:

1. In the Configuration tab of the WebFOCUS Administration Console, expand *Application Settings* and select *Magnify*.

   The following image shows the WebFOCUS Administration Console with the default Settings for Magnify Search in the right pane.

2. Type values (or accept the default values) for the remaining parameters:
   Configuration Directory (IBI_MAGNIFY_CONFIG)

   Specifies the context of the directory where the configuration files are located.

   The default value assigned to this setting is:

   `{IBI_DOCUMENT_ROOT}/config/magnify`

where:

`{IBI_DOCUMENT_ROOT}`

is the default context for your installation of WebFOCUS. Typically, this is:

drive:/ibi/WebFOCUS82/.

Note: If your installation needs to make changes to the Magnify Search configuration directory, we recommend that you move it outside of the default location, *drive*:/ibi/WebFOCUS82/config/magnify. Doing so ensures that future WebFOCUS upgrades do not overwrite your customized configuration information.

Index Directory (IBI_MAGNIFY_LUCENE_INDEX_DIRECTORY)

Specifies the context of the directory that contains the default Lucene™ index.

The default value assigned to this setting is:

`{IBI_DOCUMENT_ROOT}/magnify/lucene4_index`

where:

`{IBI_DOCUMENT_ROOT}`

is the default context for your installation of WebFOCUS. Typically, this is:

drive:/ibi/WebFOCUS82/.

Note: The index in this directory only supports the Lucene index. Additional search directories are configured in the collections.xml file, which is located in the *drive*:/ibi/WebFOCUS82/config/magnify/ directory.

Feed Cache Directory (IBI_MAGNIFY_FEED_CACHE_DIRECTORY)

Specifies the context of the directory where Magnify Search stores records that are not yet loaded into the index. After all content is added to the Lucene index, the cached version is moved to this directory if the value assigned to the magnify_generate_deltas variable is true. If the value assigned to this variable is false, the cached version is deleted. An index created during a quiesce is loaded after the backup of the Lucene index is complete.

The default value assigned to this setting is:

`{IBI_DOCUMENT_ROOT}/magnify/feedcache`

where:

`{IBI_DOCUMENT_ROOT}`

is the default context for your installation of WebFOCUS. Typically, this is:

drive:/ibi/WebFOCUS82/.

Collections File (IBI_MAGNIFY_COLLECTIONS_FILE_NAME)

Specifies the file name where the Lucene™ indexes and collections are defined.

The default value assigned to this setting is collections.xml, but this file does not exist, by default. Instead, the Magnify Search installation provides a collections.xmltemplate file in the *drive*:/ibi/WebFOCUS82/config/magnify directory that you can use to create a collections.xml file for your installation.

The collections.xmltemplate file defines the default values for all analyzers that Magnify can use in indexing and in searching. To create a collections.xml file that conforms to your requirements, copy the collections.xmltemplate file, rename it as collections.xml, and modify it to reflect the desired settings for your Magnify Search environment.

For more information on configuring collections of indexes, see *Configuring Magnify Search Collections* on page 21.

Maximum Number of Search Results (IBI_MAGNIFY_RECORDLIMIT)

Specifies the maximum number of search results returned by a search request. Any results beyond this number are not displayed to the user. The default value is 300 results.

Enable Suggest Index Creation (IBI_MAGNIFY_ENABLE_SUGGEST_INDEX_CREATION)

When this check box is selected, Magnify Search automatically creates a dictionary file for an index or a collection that makes spelling suggestions when a user is specifying a search query. This check box is cleared, by default.

Enable Feed (IBI_MAGNIFY_ENABLE_FEEDING)

When this check box is selected, Magnify Search can receive incoming data feeds. This is the default setting. However, when this check box is selected, efforts to monitor or update indexing operations by Magnify Search developers or administrators can affect front-end operations and potentially impact performance.

When this check box is cleared, Magnify Search developers and administrators can monitor and update indexing operations without affecting front-end operations.

Feed minimum file threads (IBI_MAGNIFY_POOLSIZE_FILE_PROCESSING)

The minimum number, and initial allocation, of threads that Magnify Search can support when parsing feed files. The default value is 6 threads.

Note: Any value below the default number of threads will result in slower response times.

Feed maximum file threads (IBI_MAGNIFY_MAXPOOLSIZE_FILE_PROCESSING)

The maximum number of threads that Magnify Search can support when parsing feed files. The default value is 25 threads.

Configuring the Search Engine

Note: Any value above the default number of threads will result in slower response times.

Feed minimum record threads (IBI_MAGNIFY_FEED_MINIMUM_RECORD_THREADS)
The minimum number, and initial allocation, of threads that Magnify Search can support when feeding data to the Lucene index. The default value is 6 threads.

Note: Any value below the default number of threads will result in slower response times.

Feed maximum record threads (IBI_MAGNIFY_FEED_MAXIMUM_RECORD_THREADS)
The maximum number of threads that Magnify Search can support when feeding data to the Lucene index. The default value is 25 threads.

Note: Any value above the default number of threads will result in slower response times.

Feed keep alive duration (ms) (IBI_MAGNIFY_KEEP_ALIVE)
Identifies the maximum number of minutes that an inactive connection to the Magnify Search provider can remain open and idle during a data feed operation. If a connection remains inactive for more than the number of minutes identified in this setting, Magnify Search closes it.

Typically, administrators assign a value to this setting that minimizes the number of open and idle connections. For example, a connection expiration interval of fifteen minutes could potentially leave more connections open and idle than a connection expiration interval of five minutes.

The default value is 500 minutes.

Dynamic Partition clean up (IBI_MAGNIFY_ENABLE_CLEANUP)
When this check box is selected, Magnify Search imposes a cleanup operation that reviews all Magnify Partition Index libraries and deletes all duplicate data. The cleanup operation takes place after the interval defined in the Dynamic Partition clean up interval (minutes) (IBI_MAGNIFY_CLEANUP_INTERVAL) setting.

When this check box is cleared, no automated cleanup operation takes place. This is the default setting.

Dynamic Partition clean up interval (minutes) (IBI_MAGNIFY_CLEANUP_INTERVAL)
Identifies the number of minutes between Magnify Partition Index cleanup operations that review all Magnify Partition Index libraries and delete all duplicate data. The timer counting the number of minutes between cleanup operations is reset to zero after each cleanup operation. This setting is relevant only when the Dynamic Partition clean up (IBI_MAGNIFY_ENABLE_CLEAN_UP) check box is selected.

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Default partition size (GB) (IBI_MAGNIFY_DEFAULT_PARTITION_SIZE)

The maximum number of gigabytes that a single-partitioned index library can contain.

The default value is 10 gigabytes. Partitions are sections of an index library folder created dynamically by the Magnify Dynamic Partition feature.

Note: In addition to configuring the database connection settings, the *drive*:/ibi/ WebFOCUS*xx*/utilities/WFReposUtil/MagnifyCreateDDL.bat (for Windows) or MagnifyCreateDDL.sh (for UNIX) must be executed to create the Dynamic Partitioning database tables.

3. Click *Save*.

Configuration of the search engine for Magnify Search is complete.

Setting Timers For Feeding Data

When indexing large amounts of records, the information is not available for search until it is committed to the index. Magnify Search enables administrators to set timers for when prolonged indexing occurs. Commits can be issued during this time, thereby updating the index library. This ensures that the latest version of the index library is available when a search is performed.

Magnify Search timers regulate Magnify Search operations while transmitting feeds to the index library. This affects how and when new search content is made available to the Magnify Search-based application. This is useful when indexing large amounts of data. Timers also control Magnify Search operations such as open, close, and write. This helps tune the Magnify Search platform for various indexing activities by adjusting times to help control the frequency at which Magnify Search operations take place, thereby assisting in memory and performance allocation.

When Magnify Search receives incoming feeds, they are first held in memory for processing, and then they are written to the physical index library. Once a feed is written, then it can be made available to the Magnify Search-based application. After the search syncs its view of the index library, the newly fed record will be returned as a search result.

There are several different timers that can be configured using the settings in the following page:

```
http://server_name:port_number/context_root/search/jsp/
setIndexWriterTimers.jsp
```

Alternatively, you can access the timer settings by clicking *Magnify Search Timers* in the Magnify Search Console.

The Magnify Search Timers page opens, as shown in the following image.

You can set the following timers for the index:

❏ **Flush timer.** Controls the length of time to hold an incoming stream of Magnify Search feeds in memory before being written to the index library. Larger volumes of data should be given more time and memory. This results in less I/O usage, but it increases the latency of the feeds written to the disk. Therefore, higher times are recommended for historic, first-time, or other large batch indexing processing. For large index streams, it is recommended that the Flush timer is set to 600 or more seconds and that incremental/real-time loads is set to 60 seconds.

❏ **Commit timer.** Controls the length of time to wait at the end of an incoming stream of Magnify Search feeds before being written to the index library. The Commit timer setting must be less than or equal to the flush timer setting to avoid flushing empty memory to the index library. This is activated as soon as there is a pause or a gap in the incoming stream to Magnify Search. Usually, this value should be the same as the Flush timer.

Note: When indexing, the Magnify Search Administrator can set the Commit timer to a very low value (for example, 5 seconds) so that Magnify Search users retrieve the new search data almost immediately.

❑ **Close timer.** Sets the length of time after the last incoming document has been processed before performing closing operations on the index library. This results in disk I/O operations. With higher times, feeds that may result in small breaks between incoming streams are not required to use resources on open operations. Higher times are also recommended for bulk indexing, although higher times decrease the time to open and close indexes. The default value is 2 minutes.

❑ **Inactivity timer.** Specifies the frequency in which to check the duration of the close and commit timer cycles. It is recommended that this be the same as the close timer setting. This setting requires a very small set of I/O. Only in the most extreme cases is this setting different than the close timer setting.

❑ **Feedcache.** Sets the length of frequency for Magnify Search feeds to check for any incoming feeds from the feedcache directory.

❑ **Feedcache (Long Duration).** Sets the length of frequency for Magnify Search feeds to check for any incoming feeds from the feedcache directory after few short sleep times without any incoming feed.

❑ **Reading Refresh Rate.** Controls the intervals at which the Magnify Search application refreshes its cached view of the Magnify Search index library. This is applicable when multiple application servers are used to feed and search Magnify Search. For example when a single WebFOCUS environment is created with two application servers, one is used for WebFOCUS reporting and Magnify Search searching while the other is used for indexing. Each application server is configured with different port numbers. To sync up the searching and indexing processes, the Magnify Search readers must be refreshed.

Note: Changes made to the timer settings should be tested before being applied in a production environment, since data size, memory allocations, and CPU specifications differ between machines.

Integrating With Third-Party Search Engines

Magnify supports integration with third-party search engines, such as the Solr Enterprise Search Server. Magnify renders search results retrieved from the Solr index libraries and can support features (such as clustering and parallel search) that are inherent in the Solr search engine.

To integrate Magnify and the Solr Enterprise Search Server, edit the *drive*:/ibi/WebFOCUS*xx*/ config/magnify/collections.xml file and specify the Solr Search Server URL address for each Solr index library. For example, the following syntax illustrates the configuration of the salesdata Solr index in the collections.xml file:

```
<collections>
<group name="all" id="all">
<component id="salesdata" member="salesdata" />
<collections>
<indexes>
<index name="salesdata" url="http://solrserver.myserver.com:8983"
type="solr"/></indexes>
```

The application server must be restarted.

Setting the Magnify Search Deep Sleep Duration

The Magnify Search Deep Sleep Duration setting allows you to set the length of time Magnify Search will sleep before continuing to look for files in the directory. Enabling Magnify Search to sleep at predetermined intervals reduces processing times in your WebFOCUS environment.

The following example shows the format required for the setting, where *UnitofTime* is the unit of time of the sleep duration, and *n* is the numerical time value of the sleep duration.

-DIBI_Magnify_Deep_Sleep_Duration_*UnitofTime*=*n*

The following examples show different types of deep sleep durations that you can set for Magnify Search.

❏ -DIBI_Magnify_Deep_Sleep_Duration_**Minutes=10**

❏ -DIBI_Magnify_Deep_Sleep_Duration_**Hours=3**

❏ -DIBI_Magnify_Deep_Sleep_Duration_**Seconds=30**

Your deep sleep duration setting should be saved in the Java Options section of the application server that you use with your WebFOCUS environment.

Chapter 3

Configuring Magnify Search Collections

This section describes how to configure collections using individual Magnify Search index libraries.

In this chapter:

❏ What is a Collection?

❏ Defining Collections

❏ Searching Across Partitioned Collections

❏ Scaling Magnify Index Libraries

What is a Collection?

Collections allow you to group indexes together into one logical unit to facilitate searches across several areas. Through collections, you can organize information into specific areas of interest. For example, an enterprise could create collections for each department in the organization, such as Human Resources, Sales, Marketing, Research and Development, and Corporate, by arranging various combinations of specialized indexes on topics, such as product names, orders, monthly sales, and so on.

After you define and set up collections, the Magnify search page may display them in a drop-down list (as defined in the style sheet), allowing a user to further focus their search. You can set up collections to be searched individually (for example, Sales) or across two or more collections (for example, Sales and Widgets).

The following image shows a drop-down list of collections available in the Century Electronics search page.
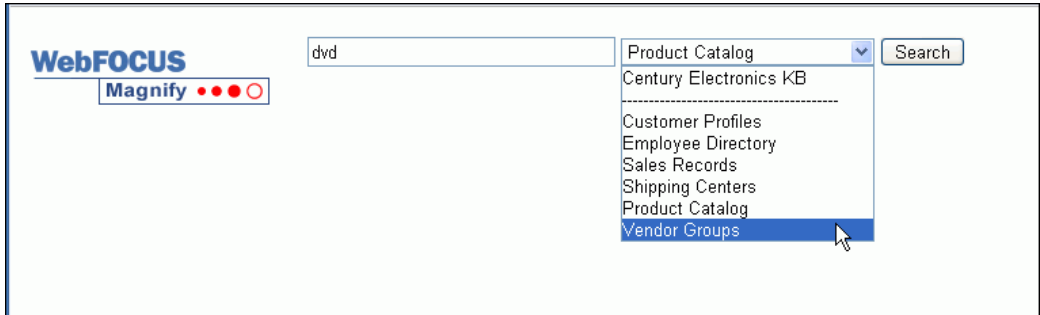
A collection can be any of the following:

❏ An index.

❏ A set of two or more indexes.

❏ A set of one or more indexes and one or more collections.

❏ A set of two or more collections.

There are two ways to define an index:

❏ Implicitly, by creating subdirectories in the Lucene index directory. This corresponds to the data source name defined in an incoming feed transmission.

❏ Explicitly, by specifying the index library locations. This is not limited to the Lucene index directory (\ibi\WebFOCUS*xx*\magnify\lucene4_index).

Defining Collections

You must edit the following XML configuration files to define collections:

❏ ibi\webfocus*xx*\config\magnify\collections.xml

The collections file configures how Magnify processes, matches, and organizes search information. The collections.xml file is not available after an installation. If one does not exist already, it is automatically generated after initiating a Magnify search or during the indexing process. To create a collections.xml file, submit a query to Magnify. Alternatively, you can rename the \ibi\webfocus*xx*\config\magnify\collections.xmltemplate file to collections.xml.

❏ One of the following Magnify XSLT style sheets. These style sheet file contain settings that control the look and behavior of the Magnify front-end interface.

  ❏ ibi\webfocus*xx*\config\magnify\included_stylesheet.xslt

  ❏ ibi\webfocus*xx*\config\magnify*locale**locale*_stylesheet.xslt

    This file contains language-specific text displayed on the Magnify front-end interface. It references the included_stylesheet.xslt file.

The collections.xml file:

1. Defines text analysis on the data to be searched.

2. Binds language attributes defined in the browser to style sheets.

3. Performs logical joins of data from different data sources.

4. Defines the location of the indexes on physical disk drives.

Note: Make sure to backup these files before you make edits. You should validate these files after you make edits using tools, such as Internet Explorer®. All edits must be saved in a UTF-8 format. After making the changes to the collections.xml file and Magnify style sheet, restart the application server.

Configuring the Magnify Environment in the Collections File

Magnify search results can be enhanced by configuring several attributes for each collection or index in the collections.xml file.

The collections.xml file contains the following sections:

❏ **Analyzers.** Assigns methods to process text.

❏ **Defaults.** Defines analyzers and style sheet configurations.

❏ **Collections.** Defines groups of index libraries.

❏ **Indexes.** Explicitly references index libraries not found in the Lucene index directory (\ibi \WebFOCUS*xx*\magnify\lucene4_index).

Magnify Analyzers

Analyzers are used to process text strings so that the most relevant information is stored in the index and returned to the Magnify search application. An analyzer is a configured set of rules that breaks up text strings into tokens. For example, the Standard analyzer breaks apart a sentence at each space and makes all characters lowercase. This results in multiple tokens represented by each word in lowercase. This occurs first at indexing time and then again on each search submission. When a group of terms is searched, they are passed through the same analyzer, resulting in tokens created in the same manner as those indexed. Search tokens are then matched with indexed tokens. Therefore, to correctly match searches with indexed content, the same analyzer used to index content must be used to search the index. Magnify supports all preconfigured Lucene and Solr analyzers that are core to the Lucene index engine, as well as custom analyzers. For more information on the available Solr analyzers, see the Solr website:

http://lucene.apache.org/solr

To review how an analyzer configuration works, enter the following URL in a browser:

`http://`*`host`*`:`*`port`*`/`*`context_root`*`/search?analyzertest=1`

where:

`host``:`*`port`*

    Specifies the host and port where Magnify is installed.

`context_root`

    Is the WebFOCUS web application alias.

For more information on testing different analyzers, see *How to Test an Analyzer*.

The Analyzers section lists all available analyzers for the current collections.xml file. However, they are not used until they are assigned to specific defaults, collections, and indexes.

The Standard analyzer, which contains a set of methods to create tokens from search content and submissions, is the most comprehensive core analyzer of Lucene. The following image illustrates the Lucene Standard analyzer configured in the collections.xml file Analyzer section.

```xml
▼<analyzers>
  ▼<analyzer name="MagnifySearchAnalyzer" id="MagnifySearchAnalyzer">
      <tokenizer class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.ASCIIFoldingFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.standard.StandardFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.synonym.SynonymFilterFactory" luceneMatchVersion="4.9" synonyms="en/en_synonyms.txt"
      ignoreCase="true" expand="true"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.WordDelimiterFilterFactory" luceneMatchVersion="4.9" splitOnCaseChange="0"
      generateWordParts="0" generateNumberParts="0" preserveOriginal="1" catenateNumbers="0" catenateWords="0" catenateAll="0"/>
      <filter class="org.apache.lucene.analysis.core.StopFilterFactory" ignoreCase="true" words="en/en_stopwords.txt" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.RemoveDuplicatesTokenFilterFactory" luceneMatchVersion="4.9"/>
  </analyzer>
  ▼<analyzer name="MagnifyIndexAnalyzer" id="MagnifyIndexAnalyzer">
      <tokenizer class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.ASCIIFoldingFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.standard.StandardFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.WordDelimiterFilterFactory" luceneMatchVersion="4.9" splitOnCaseChange="0"
      generateWordParts="0" generateNumberParts="0" preserveOriginal="1" catenateNumbers="0" catenateWords="0" catenateAll="0"/>
      <filter class="org.apache.lucene.analysis.core.StopFilterFactory" ignoreCase="true" words="en/en_stopwords.txt" luceneMatchVersion="4.9"/>
  </analyzer>
  ▼<analyzer name="MagnifySuggestAnalyzer" id="MagnifySuggestAnalyzer">
      <tokenizer class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.standard.StandardFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.miscellaneous.ASCIIFoldingFilterFactory" luceneMatchVersion="4.9"/>
      <filter class="com.ibi.magnify.lucene_4.analysis.metaphone3.Metaphone3FilterFactory" inject="true" encodeVowels="true" encodeExact="true"
      encodeLength="8" luceneMatchVersion="4.9"/>
      <filter class="org.apache.lucene.analysis.ngram.EdgeNGramFilterFactory" luceneMatchVersion="4.9" minGramSize="1" maxGramSize="30"/>
  </analyzer>
  <analyzer name="Brazilian" class="org.apache.lucene.analysis.br.BrazilianAnalyzer"/>
  <analyzer name="Chinese2" class="org.apache.lucene.analysis.cjk.CJKAnalyzer"/>
  <analyzer name="English" class="org.apache.lucene.analysis.standard.StandardAnalyzer"/>
  <analyzer name="French" class="org.apache.lucene.analysis.fr.FrenchAnalyzer"/>
  <analyzer name="German" class="org.apache.lucene.analysis.de.GermanAnalyzer"/>
  <analyzer name="Japanese" class="org.apache.lucene.analysis.cjk.CJKAnalyzer"/>
  <analyzer name="Russian" class="org.apache.lucene.analysis.ru.RussianAnalyzer"/>
</analyzers>
```

The CJKAnalyzer supports Chinese, Japanese, and Korean languages. This analyzer uses bigram to create an index. The CJK string becomes two CJK characters in an index. Therefore only two CJK characters can be searched and made a stop word with this index.

For more information on this analyzer, see the following website: *https://lucene.apache.org/ core/4_0_0/analyzers-common/org/apache/lucene/analysis/cjk/CJKAnalyzer.html*

This analyzer is included in the Analyzers section of the collections.xml file, by default. It is included in the list of other language-based analyzers.

For more information on the analyzers, see the following websites:

❏ *http://en.wikipedia.org/wiki/Apache_Solr*

❏ *http://en.wikipedia.org/wiki/Lucene*

Reference: **Custom Analyzers**

Analyzers can be customized to include additional rules. For example, words may be reduced to their roots, thereby creating singularity with plurals and reductions to a single-base tense. This helps minimize variation in words in order to increase matches. For example, matching productivity, production, products by searching for the term *product*. Therefore, as content is indexed with Magnify, each word is associated with its possible permutations of itself after being processed by the analyzer. You can also build your own analyzer by configuring filters and tokenizers to refine the search behavior in the Magnify application.

The analyzer name is case-insensitive. For each analyzer, you must define one tokenizer and any number of filters. Each filter can contain attributes that can be configured to enhance the search. For more information on each tokenizer, filter and its attributes, see the Apache Lucene website.

By default, Magnify provides the MagnifyAnalyzer custom analyzer. It is configured as a default value in the collections.xml file and contains the following tokenizer and filters.

```
<analyzer name="MagnifyAnalyzer" id="MagnifyAnalyzer">
    <tokenizer />
    <filter />
    <filter />
    <filter/>
    <filter
        splitOnCaseChange="0" generateWordParts="0"
        generateNumberParts="0" catenateNumbers="0"
        catenateWords="0" catenateAll="1"/>
    <filter ignoreCase="true"
        words="en/en_stopwords.txt"/>
    <filter/>
</analyzer>
```

The MagnifyAnalyzer provides the following functionality during the search process:

❏ **WhitespaceTokenizerFactory**. Tokenizes each search term using whitespace as a delimiter.

❏ **ASCIIFoldingFilterFactory**. Converts the search string to ASCII characters.

❏ **StandardFilterFactory**. Removes dots and apostrophes.

❏ **LowerCaseFilterFactory**. Converts each letter in a search term to lowercase.

❏ **SynonymFilterFactory**. Handles synonym mapping.

❏ **WordDelimiterFilterFactory**. Splits tokens at word delimiters. For more information, see *https://wiki.apache.org/solr/AnalyzersTokenizersTokenFilters#WordDelimiterFilter*.

❑ **StopFilterFactory**. Removes common words defined in the en_stopwords.txt file.

❑ **RemoveDuplicatesTokenFilterFactory**. Removes duplicate tokens.

Note: The collection_reference.xml is provided with the Magnify installation and contains additional default, customized, and other language-based analyzers. This should be used only after a thorough review of how it is applied to content made available with Magnify search.

Reference: ## Configuring Stop Words

You can configure Magnify to filter out common words when indexing and/or searching. These are known as stop words, and they can save disk space, increase search performance, and enhance the search by returning more relevant results. To configure the Magnify stop words feature, you must define the words that the search engine must filter out in the stopwords.txt file and add the StopFilterFactory filter in the collections_reference.xml file. Stop words can be defined for multiple languages by configuring the locale-specific configuration file and defining it for the appropriate analyzer.

Procedure: ## How to Configure Stop Words

1. Create the *locale*_stopwords.txt file in the \ibi\WebFOCUS*xx*\config\magnify*locale* directory.

   where:

   locale

   Is a two-letter language code used to identify the locale of the language-specific folder and stopwords.txt file.

   By default, there is an en_stopwords.txt file in the \ibi\WebFOCUS*xx*\config\magnify\en directory.

2. Edit the stop words configuration file and add the words to filter out when indexing or searching.

   One word must be defined for each line. For example:

   ```
   a
   an
   and
   are
   as
   at
   be
   but
   by
   ```

3. Edit the \ibi\WebFOCUS*xx*\config\magnify\collections_reference.xml and add the following syntax to the appropriate analyzer:

```
<filter words="configuration_file" ignoreCase="true"/>
```

where:

configuration_file

Is the location of the stop words configuration file. For example, en/en_stopwords.txt.

The following is an example of the analyzer that contains the StopFilterFactory filter:

```
<analyzer name="textTight" id="texttight">
  <tokenizer/>
  <filter ignoreCase="true" words="en/en_stopwords.txt"/>
  <filter/>
      <filter/>
</analyzer>
```

4. Restart the application server.

Reference: **Configuring Synonyms**

Synonyms can expand a user search by including words that have similar meaning in the search result. For example, the search term *MPThree* can return search results that include the term *MP3* and *music*. Synonyms can also be used to account for commonly misspelled words. To use the synonyms feature, you must add the solr.SynonymFilterFactory filter to the analyzers configured for your index or collections. The synonyms can be added to a file that is specified as an attribute in the filter. By default, there is a synonym file in the \ibi \WebFOCUS*xx*\config\magnify\en directory that includes examples of the syntax required to specify a synonym for a specific search term.

The following image illustrates the synonyms that are included in the search results when the search term *MPThree* is specified in the Century Electronic sample search application:
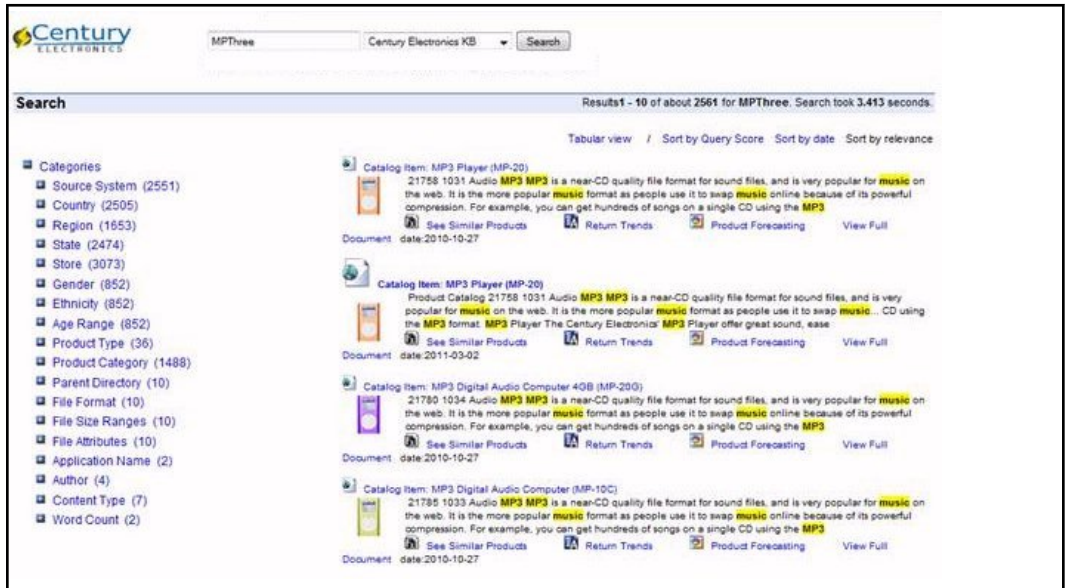
Procedure: **How to Configure Synonyms**

1. Create the *locale*_synonyms.txt file in the \ibi\WebFOCUS*xx*\config\magnify*locale* directory.

   where:

   locale

   > Is the language-specific folder where the synonym configuration file is located for each locale.

   By default, there is an en_synonyms.txt file in the \ibi\WebFOCUS*xx*\config\magnify\en directory.

2. Edit the synonyms configuration file and specify the synonyms for one or more search terms.

   For example,

   ```
   LCD => TFT, DVD
   Television=> Televisions, TV, TVs
   ```

   or

   ```
   mp3,m3p,mpthree,itunes,music
   ```

3. Edit the \ibi\WebFOCUS*xx*\config\magnify\collections_reference.xml and add the following syntax to the appropriate analyzer:

```
<filter words="configuration_file"
                        ignoreCase="true" expand="true"/>
```

where:

configuration_file

   Is the location of the synonyms configuration file. For example, en/en_synonyms.txt.

The following is an example of the analyzer that contains the SynonymFilterFactory filter:

```
<analyzer name="textTight" id="texttight">
  <tokenizer/>
  <filter ignoreCase="true" words="en/en_stopwords.txt"/>
  <filter words="en/en_synonyms.txt" ignoreCase="true" expand="true"/>
  <filter/>
      <filter/>
</analyzer>
```

Note: Once the filter is added to the analyzer, the content must be re-indexed to include the synonyms specified in the configuration file.

4. Restart the application server.

Reference: **Default Settings**

The collections.xml file defines the default analyzer and style sheets used during indexing and searching based on incoming language parameters. The default collections.xml file defines the Standard analyzer and style sheet as the default. However, if another language is detected, alternate language-specific analyzers and style sheets are used.

By default, Magnify includes a standard analyzer for the following languages:

❏ Chinese

❏ English

❏ French

❏ German

❏ Japanese

❏ Mandarin

❏ Portuguese

❏ Russian

❏ Spanish

Magnify selects the language analyzer using the Accept-Language field contained in the indexed data or the Accept-Language HTTP header field when a query is submitted. The value of the Accept-Language parameter is mapped to the lang attribute defined in the index or collection configured in the collections.xml file. The collection and index may also contain the names of the analyzer and style sheet that must be used.

Magnify selects the appropriate language analyzer using the Accept-Language fields contained in the incoming document being indexed or in the browser HTTP header when submitting a search query. The value of the Accept-Language parameter is mapped to the lang attribute defined in language_defaults element. The following image illustrates the default settings for each language Magnify supports.

```
▼<defaults analyzer="MagnifySearchAnalyzer" collection="default_collection" feed="default" feed_analyzer="MagnifyIndexAnalyzer"
  suggest_analyzer="MagnifySuggestAnalyzer" lang="en" stylesheet_dir="" stylesheet="en/en_stylesheet" id="defaults">
    <language_defaults lang="pt-BR" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="pt_BR/pt_BR_stylesheet"
    id="default_pt_BR_search"/>
    <language_defaults lang="zh" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="zh/zh_stylesheet"
    id="default_zh_search"/>
    <language_defaults lang="zh-TW" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="zh_TW/zh_TW_stylesheet"
    id="default_zh_TW_search"/>
    <language_defaults lang="en" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="en/en_stylesheet"
    id="default_en_search"/>
    <language_defaults lang="en-us" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="en/en_stylesheet"
    id="default_en-us_search"/>
    <language_defaults lang="es" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="es/es_stylesheet"
    id="default_es_search"/>
    <language_defaults lang="fr" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="fr/fr_stylesheet"
    id="default_fr_search"/>
    <language_defaults lang="fr-CA" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="fr_CA/fr_CA_stylesheet"
    id="default_fr_CA_search"/>
    <language_defaults lang="de" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="de/de_stylesheet"
    id="default_de_search"/>
    <language_defaults lang="ja" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="ja/ja_stylesheet"
    id="default_ja_search"/>
    <language_defaults lang="ru" analyzer="MagnifySearchAnalyzer" feed_analyzer="MagnifyIndexAnalyzer" stylesheet="ru/ru_stylesheet"
    id="default_ru_search"/>
</defaults>
```

The language_defaults element assigns language-specific analyzers and style sheets to be used when using international browsers. If the language setting is the same as the browser Accept-Language header value, Magnify uses the attributes defined in language_defaults element. Otherwise, the attributes assigned to the default tag are used.

The Accept-Language field value is configured in one of the following ways:

❏ In iSM when feeding data to the Lucene index. The lang attribute value is defined in iSM using the HTTP-HEADER field called Accept-Language. If the Accept-Language field is not defined in iSM, the locale language attribute is used, if a default language value is not already configured. The lang attribute and its analyzer are configured in the collections.xml for each data source as follows:

```
<feed datasource="index1" lang="en" analyzer="English"
id="index1_feed_english"/>
```

The following syntax provides an option of feeding all data sources to a single index, if the data source name is not defined. If a data source name is not defined, and the wildcard option (which is indicated by an asterisk *) is not configured , a new index directory is created and loaded. This creates an implicit index.

```
<feed datasource="*" lang="en" analyzer="English"
id="index2_feed_english"/>
```

❑ Retrieved from the browser HTTP-HEADER Accept-Language field. During a search, the value of the Accept-Language variable is mapped to the same value defined by a lang attribute in an index or collection in the collections.xml file. The corresponding analyzer and style sheet are then applied to the search results.

The following syntax in collections.xml defines the analyzer and style sheet for each language during a search:

```
<index>
<search lang="en" analyzer="English" stylesheet="magnify_stylesheet" />
<search lang="ja" analyzer="Japanese" stylesheet_dir="c:/ibi/mag/styles"
stylesheet="japanese" />
</index>
```

❑ The language_defaults element assigns language-specific analyzers and style sheets to use when using international browsers. If the language setting is the same as the browser Accept-Language header value, Magnify uses the attributes defined in language_defaults element. Otherwise, the attributes assigned to the default tag are used.

Reference: **Collections**

Index libraries can be explicitly joined together in the collections.xml file. Each group contains one or more components, which reference implicit collections (subdirectories with an index one-level deep, under the Magnify Lucene index directory) or indexes.

Magnify is configured to use a default collection, which includes all generated index libraries located under the Magnify root directory by specifying the wildcard (.*) as the member value. The period (.) is used to define the root directory as defined by magnify_root parameter in the WebFOCUS Administration Console. You can also specify a root word and then the wildcard (.*). For example, *cent.** searches all implicit and explicit index libraries beginning with *cent.*, such as *centstarts*, *centsales*, and *cents*.

The following image illustrates examples of collections.
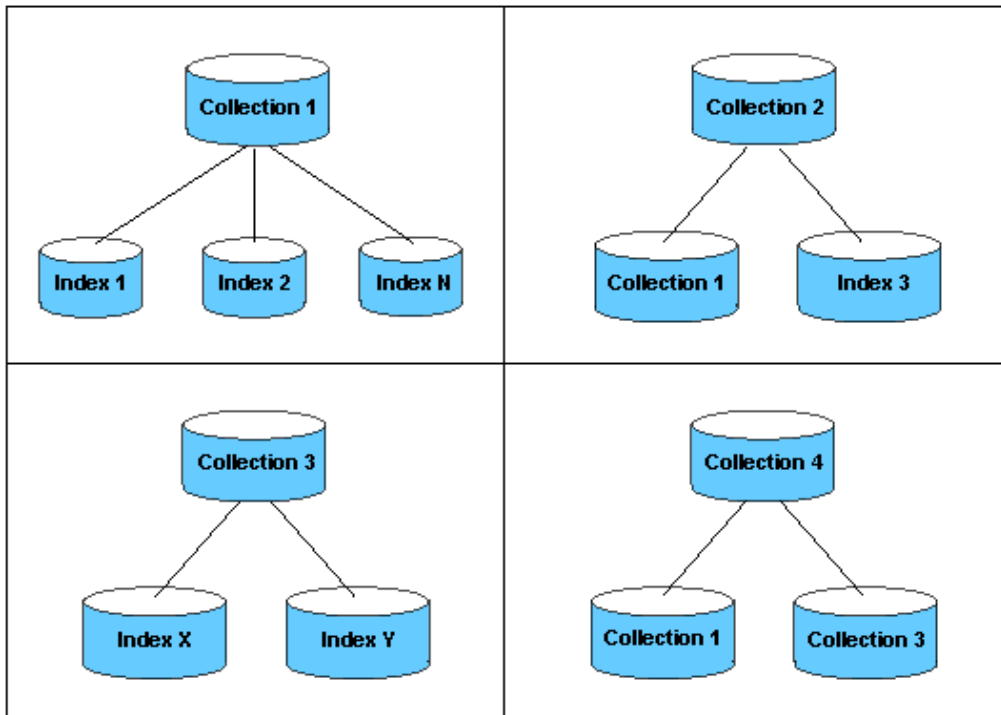
The following image illustrates the Magnify default collection defined in the collections.xml file.

```
<collections>
    <group name="default_collection" id="default_collection">
        <component id="allindexes" member=".*"/>
    </group>
</collections>
```

A group can have only one wildcard member and one or more named members. One member must be named. A member can be an implicit collection, a wildcard reference, or an index. If a named member does not exist, a warning message is logged in the application server log file.

The collections_century.xml file is provided with the Magnify installation and is used by the Century Electronics sample search application. It defines the indexes and style sheet for the sample Century Electronics search application. For more information on the Century Electronics sample search application, see *Magnify Search Demo Application* on page 87.

Procedure: **How to Define Collection Groups**

1. Open the collections.xml file located in the config/magnify directory.

2. Locate the <collections> tag.

3. Define collections using the <group> tag. The following example shows the definition of the joined collections *oneandtwo* and *onetwoandthree*.

   When editing the collections file, you should check the syntax by opening the file in Internet Explorer before restarting the application server. You should also check the application server log for messages about syntax errors.

   ```
   <collections>
       <group name="oneandtwo" id="oneandtwo">
           <component id="one" member="one"/>
           <component id="two" member="two"/>
       </group>
       <group name="onetwoandthree" id="onetwoandthree">
           <component id="onetwo" member="oneandtwo"/>
           <component id="three" member="three"/>
       </group>
   </collections>
   ```

   You can also define a wildcard collection that dynamically includes all indexes defined in the index folder. The following example includes all existing indexes that begin with the word *plant* (plant, plant1, plant2, plant3) in the centuryplants collection.

   ```
   <collections>
       <group name="centuryplants" id="centuryplants">
           <component id="plant.*" member="plant.*"/>
       </group>
   </collections>
   ```

   Using the wildcard syntax also enables you to account for Magnify indexes that are partitioned dynamically and labeled automatically.

   Note: The group name must be different from the member value.

Reference: **Indexes**

Indexes are used to also define explicit index libraries by referencing their physical locations. Absolute and relative paths can be used. Network drives can be added through network path configurations. There is no limit to the number of indexes that can be defined, but at the minimum, one is required. This can then be referenced from collections or the style sheet.

Procedure: **How to Define Explicit Indexes**

1. Open the collections.xml file, located in the config/magnify directory.

2. Locate the <indexes> tag.

3. Define the directories that contain your indexes. For each index, add an <index> tag that defines the index name and the directory where it is stored. The following example shows the definitions for four indexes: default_collection, one, two, and three.

```
<indexes>
  <index name="default_collection" directory="."/>
  <index name="one" directory="c:/one"/>
  <index name="two" directory="d:/two"/>
  <index name="three" directory="e:/three"/>
  <index name="four" directory="level1\level2" />
</indexes>
```

Note:

❏ There is no limit to the number of index tags you can add, and indexes can reside in different locations on different disk drives.

❏ Network drives can be added through network path configurations.

❏ You can specify references relative to the Magnify Lucene index directory.

Defining Collections in the Style Sheet

To add the collections that you want to appear in the Magnify search page drop-down list, you must edit the following variables in the Magnify style sheet (*locale*_stylesheet.xslt):

❏ **collections_description variable.** Identifies the collection name that will appear in the drop-down list.

❏ **collections_values variable (case-sensitive).** Identifies one or more implicit or explicit index libraries. This value is passed with the Magnify &site parameter value.

The Magnify style sheet is located in the \ibi\WebFOCUS*xx*\config\magnify*locale* directory. The following is an example of the style sheet collection variables defined with names and values.

```
<xsl:variable name="collections_descriptions">
  <xsl:choose>
    <xsl:when
        test="/GSP/PARAM[@name='collections_descriptions']/@value!=''">
      <xsl:value-of
          select="/GSP/PARAM[@name='collections_descriptions']/@value"/>
    </xsl:when>
    <xsl:otherwise>Corporate,Sales,HR,Orders,Widgets,</xsl:otherwise>
  </xsl:choose>
</xsl:variable>
<xsl:variable name="collections_values">
  <xsl:choose>
    <xsl:when
        test="GSP/PARAM[@name='collections_values']/@value!=''">
      <xsl:value-of
          select="/GSP/PARAM[@name='collections_values']/@value"/>
    </xsl:when>
    <xsl:otherwise>corporate,sales,hr,orders,widgets,</xsl:otherwise>
  </xsl:choose>
</xsl:variable>
```

To enable the collections feature, you must edit the following variable in the \ibi\WebFOCUS*xx* \config\magnify\included_stylesheet.xslt

```
<xsl:variable name="show_collections">1</xsl:variable>
```

The show_collections variable exposes (set to 1) or hides (set to 0) the collections drop-down list in the Magnify search page.

Note:

❑ The entries for the names and values in the collection variables must correspond to each other and appear in the same order. That is, description 1 must match value 1, description 2 must match value 2, and so on.

❑ A comma (,) must be added to the end of the variable entries and before the closing variable tag, as shown in the following example:

```
<xsl:otherwise>corporate,sales,hr,orders,widgets,</xsl:otherwise>
```

❑ Do not add spaces in the collection_values variable. Magnify interprets spaces to be part of the variable value and will not be able to locate the intended index.

In this example, the Magnify user will see the following in the Collections drop-down list:

❑ Corporate

❑ Sales

❑ HR

❏ Orders

❏ Widgets

You can join indexes or collections so that the user can select a single item from the drop-down list that will search across two or more specific indexes or collections. To join collections dynamically:

❏ In the collections_description variable, add the name for the combined collections that you want to appear in the Magnify search page.

❏ In the collections_values variable, add a vertical bar between the collections you want to join.

For example, you can join the Sales and Widgets collections, as shown in the following syntax.

```
<xsl:variable name="collections_descriptions">
  <xsl:choose>
    <xsl:when
        test="/GSP/PARAM[@name='collections_descriptions']/@value!=''">
      <xsl:value-of
          select="/GSP/PARAM[@name='collections_descriptions']/@value"/>
    </xsl:when>
    <xsl:otherwise>
        Corporate,Sales,HR,Orders,Widgets,Sales and Widgets,
    </xsl:otherwise>
  </xsl:choose>
</xsl:variable>
<xsl:variable name="collections_values">
  <xsl:choose>
    <xsl:when
        test="GSP/PARAM[@name='collections_values']/@value!=''">
      <xsl:value-of
          select="/GSP/PARAM[@name='collections_values']/@value"/>
    </xsl:when>
    <xsl:otherwise>
        corporate,sales,hr,orders,widgets,sales|widgets,
    </xsl:otherwise>
  </xsl:choose>
</xsl:variable>
```

Searching Across Partitioned Collections

When using collections, Magnify queries using the Lucene Parallel Multi-Search. The search term is submitted to each Magnify index library partition (collection) in parallel on multiple threads. For example, the following image illustrates Magnify sending a query for *DVD Extras* to all indexes in the Century Electronics KB collection:
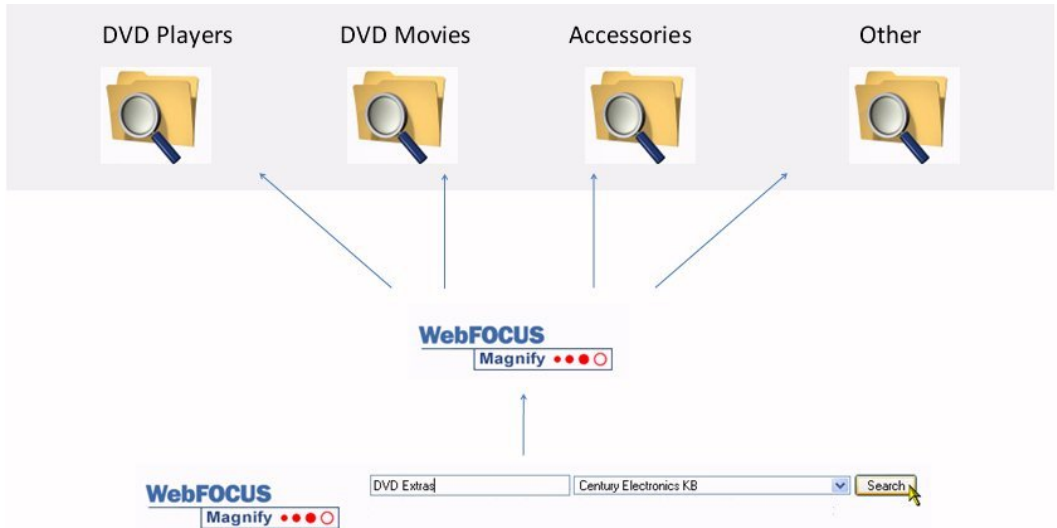
The result set returns with each search result ranked by relevancy. Each partition returns its most relevant search results (this includes relevancy rank). For example, the following illustrates the relevancy rank of each index in its result set for the *DVD Extras* search query.
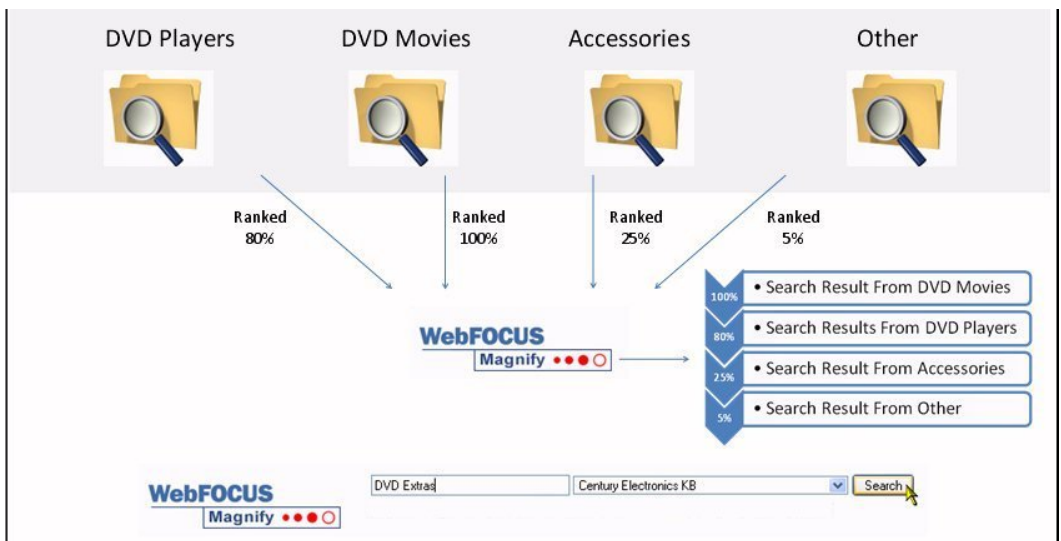
Magnify then sorts each result returned into one result set and sorts by relevancy rank. The user receives the most relevant search results across all collections.

Installation and Configuration

Magnify must be installed on every machine. For more information on installing Magnify, see the *WebFOCUS and ReportCaster Installation and Configuration* manual for your platform. Configure the collections.xml file on each machine. The following sample files apply to the preceding scenario.

The collections.xml file for the main Magnify server is:

```
.
.
.
<collections>
   <group name="all" id="all">
      <component id="accounting" member="accounting" />
      <component id="hr" member="hr" />
      <component id="it" member="it" />
      <component id="marketing" member="marketing" />
      <component id="legal" member="legal" />
   </group>
</collections>


<indexes>
   <index name="accounting" hostname="172.30.236.108" port="8080"
             useRMIremoteindex="true" type="webservice" />
   <index name="hr" hostname="174.129.39.235" port="8080"
             useRMIremoteindex="true" type="webservice" />
   <index name="it" hostname="172.30.236.50" port="8080"
             useRMIremoteindex="true" type="webservice" />
   <index name="marketing" hostname="174.23.453.33" port="8080"
             useRMIremoteindex="true" type="webservice" />
   <index name="legal" hostname="172.30.236.109" port="8080"
             useRMIremoteindex="true" type="webservice" />
</indexes>
.
.
.
```

The collections.xml file for the remote Magnify server in Houston is:

```
.
.
.
<collections>
   <group name="all" id="all">
      <component id="accounting" member="accounting" />
   </group>
</collections>
```

```
<indexes>
   <index name="accounting" directory="accounting" type="file" />
</indexes>
.
.
.
```

Scaling Magnify Index Libraries

As the size of an index library increases, the search speed decreases and can eventually cause the indexing or search process to stop working. The dynamic partitioning feature enables the scalability of local index files by splitting index folders into partitions, thereby increasing the performance of the indexing and search processes significantly. For example, once a feed process starts for a data source called *retail*, new index folders named *retail1*, *retail2*, *retail3* and so on are created dynamically.

To enable dynamic partitioning, you must complete the following steps:

❏ Specify the index folder name in the collections.xml file.

❏ Using the Magnify Console, enable the Dynamic Partition feature and specify an index size for each library.

Reference: Specifying a Data Source Value for Dynamic Partitioning

The data source value can be set depending on which indexing method you are using:

❏ **WebFOCUS Report.** If you are using FORMAT MAGNIFY to index, specify the data source value in the report procedure as follows:

```
ENGINE MAGNIFY SET DATASOURCE = index_name:folder_size
```

where:

index_name

Is the name of the index to be partitioned.

folder_size

Is the maximum size of the index before it is dynamically partitioned. The default value is 10 GB.

Note: The Dynamic Partitioning feature requires a database. For more information about configuring the database connection settings, see *How to Set Search Engine Parameters in the WebFOCUS Administration Console* on page 13. After configuring the database parameters, you must execute the \ibi\WebFOCUS*xx*\utilities\WFReposUtil\MagnifyCreateDDL scripts. The default parameter must be edited before executing the scripts. See the following procedure to edit the default parameter.

Procedure: **How to Specify Dynamic Partitioning in the Collections File**

1. Edit the \ibi\WebFOCUS*xx*\config\magnify\collections.xml file.

2. Append **.*** to each index library to be partitioned.
   For example,

   ```
   <collections>
           <group name="all" id="all">
           <component id="retail" member="retail.*" />
   <collections>
   ```

3. Save the changes to the collections.xml file and restart the application server.

Procedure: **How to Enable Dynamic Partitioning in the Magnify Console**

1. From the Magnify Console, click *General Settings*.

2. In the *Dynamic Partition Clean Up* drop-down box, select *On*.

3. In the *Clean Up Cycle Interval (minutes)* input box, type the frequency in which Magnify deletes duplicate data among the partitioned index libraries.

   Note: The default time for the Cleanup Cycle Interval is 15 minutes.

4. In the *Default_Partition_Size_In_Gigabytes* input box, type the size for each partitioned index library.

5. Click *Submit Query* to save the settings.

Using the Security Features

Magnify Search provides a security feature that controls access to the enterprise information available in a search. Additionally, WebFOCUS provides two operations that allow or deny a user access to the Magnify search page and Magnify Search console. This section discusses how to implement search-based security using the Lucene search engine and describes the two operations used to provide authorization to Magnify Search users.

In this chapter:

❏ About Magnify Security

❏ Authorization to Magnify Components

❏ Using the WebFOCUS Domain Security Model With Magnify Search

About Magnify Security

Magnify offers an optional feature to protect your enterprise data by filtering search results based on access permissions (authentication) and security rules (authorization). Magnify security allows you to control the information that is available to specific Magnify users. For example, a typical enterprise includes several departments, such as Human Resources, Finance, Sales, Marketing, and Corporate. The CEO requires access to all information in the enterprise, while employees in Sales, Finance, and Marketing would need restrictions on what, if any, information they can access from Human Resources.

The security feature is available to Magnify when using the Lucene search engine. Magnify with the Lucene security implementation involves one or more user-written Security plug-ins that define and enforce security rules that allow you to integrate with your existing security framework.

Magnify also provides role-based authorization for its Magnify Console and search page. This is configured using the WebFOCUS Security Center.

Authorization to Magnify Components

Magnify uses the following WebFOCUS operations for controlling access to its administration console and search page:

❑ **opMagnify.** Sets access privileges to the Magnify search page (http://
server_name:*port_number*/*wf_context_root*/search). By default, this is set to public access.
Therefore, no login is required to access the search page.

❑ **opMagnifyConsole.** Sets access privileges to the Magnify console and any of its links
(http://*server_name*:*port_number*/*wf_context_root*/search/jsp). By default, this is set to
administrator access. If invalid credentials are provided, the user is redirected to the
WebFOCUS BI Portal page.

Access to these components are configured using the WebFOCUS Security Center. To access
the Security Center, click *Security Center* under the *Administration* menu on the BI Portal home
page.

Note: You must have administrator privileges to access the Security Center. For more
information, see the *WebFOCUS Security and Administration* manual.

Using the WebFOCUS Domain Security Model With Magnify Search

This section describes how to configure and use the WebFOCUS domain security model with
Magnify Search.

Procedure: **How to Use the WebFOCUS Domain Security Model With Magnify Search**

1. Log on to WebFOCUS as an administrator.

2. In the Resources tree, right-click the *Domains* node, select *New* and then click *Enterprise Domain*, as shown in the following image.
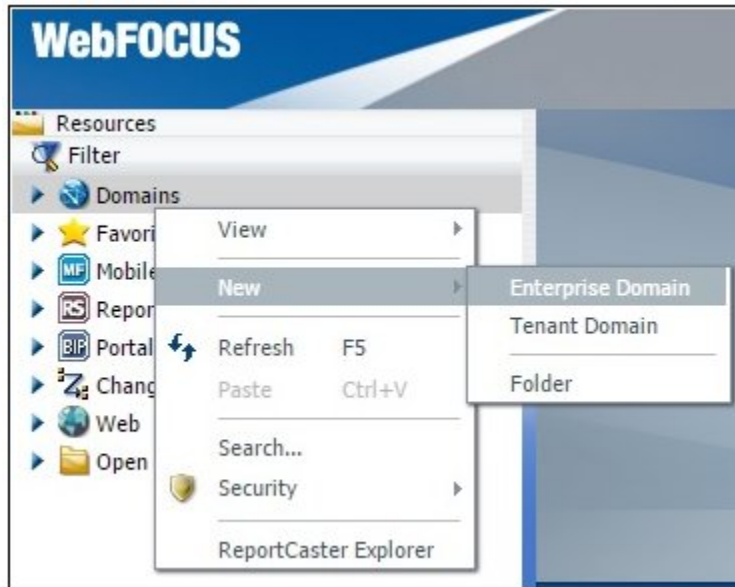
The New Enterprise Domain dialog opens, as shown in the following image.

3. In the Name field, enter the name of the index (collection) you want to control access using WebFOCUS security.

   Note: Since Magnify Search and the repository are case-sensitive, the name should be entered using lowercase characters.

4. In the Title field, enter a title that users will see in the Collection drop-down list on the Search page. This value can be string, but do not use special characters (for example, < > " ' = . & ; :).

5. Click *OK*.

   The *Resource template processing complete* message is displayed, which indicates that the domain has been created, as shown in the following image.
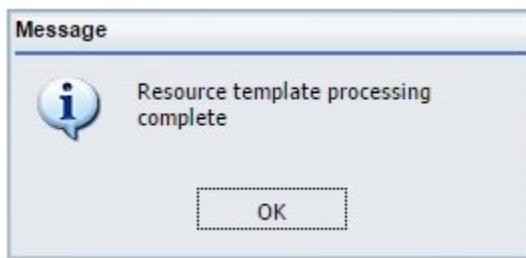
6. Click *OK*.

   The new domain (for example, *The name of my Bank*) is now listed under the Domains node in the Resources tree, as shown in the following image.

7. Right-click the new domain (for example, *The name of my Bank*), select *Security* from the context menu, and then click *Rules*, as shown in the following image.
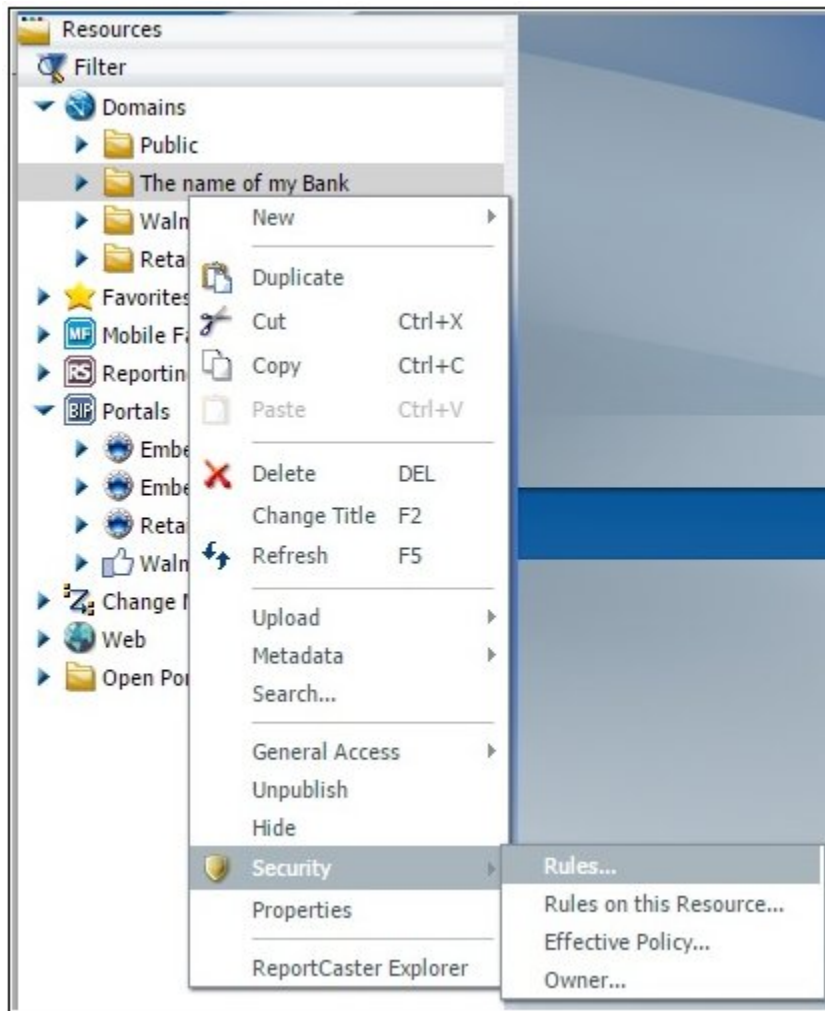
The Security Rules dialog opens for the new domain, as shown in the following image.
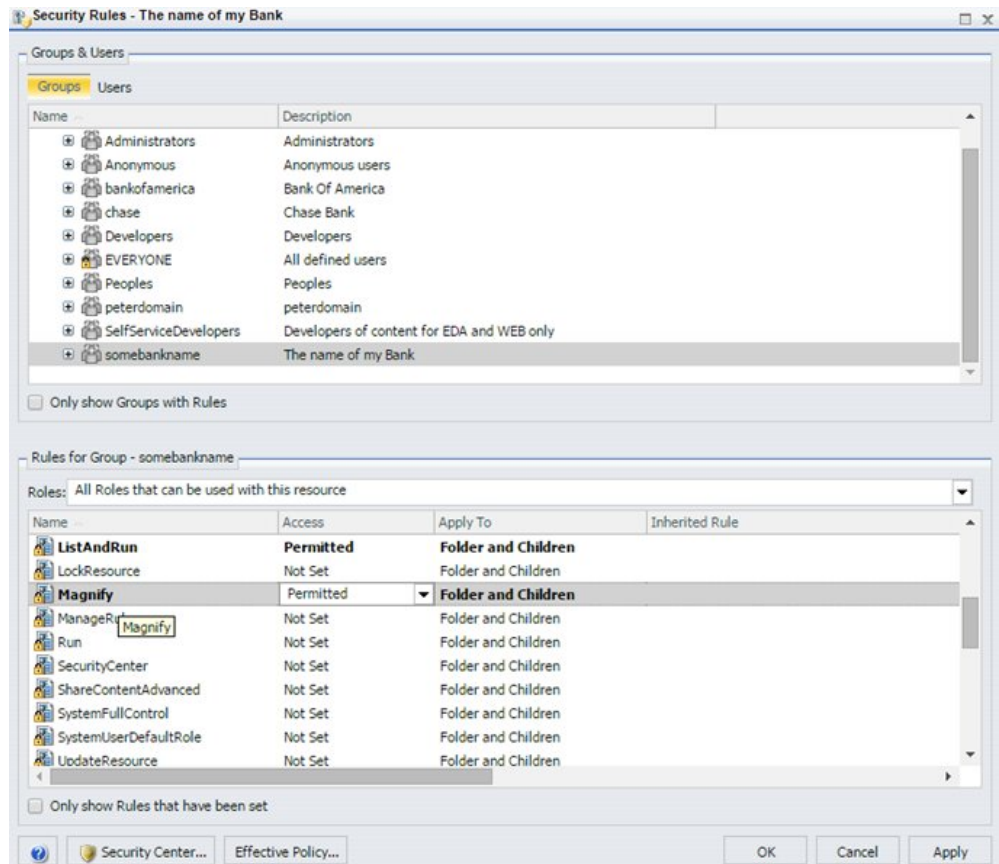
8. Perform the following steps:

   a. In the Groups tab, select your new domain (for example, *somebankname - The name of my Bank*).

      Note: You may need to deselect the *Only show Groups with Rules* check box to see the domain.

   b. In the Rules for Group section, locate the rule named *ListAndRun*, and change its access to *Permitted*.

   c. Locate the rule named *Magnify Search*, and change its access to *Permitted*.

      Note: Ensure that a Magnify Search rule has already been created before performing this step. For more information on configuring rules in WebFOCUS, see the *WebFOCUS Security and Administration* documentation.

9. Click *Apply* and then *OK*.

   You are now ready to add users that have access to this resource.

10. Click *Administration* and then select *Security Center*, as shown in the following image.
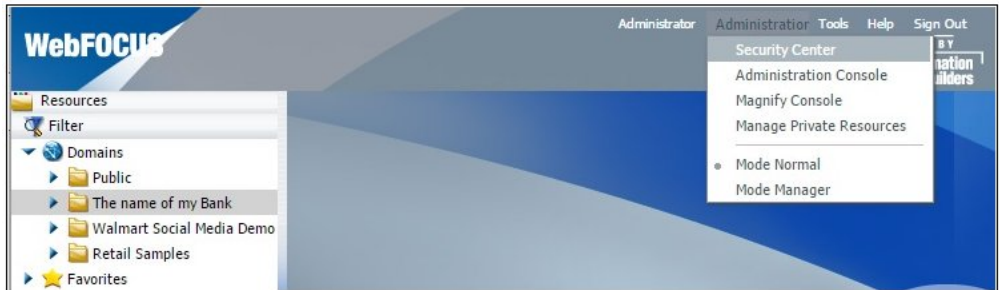
The Security Center opens, as shown in the following image.
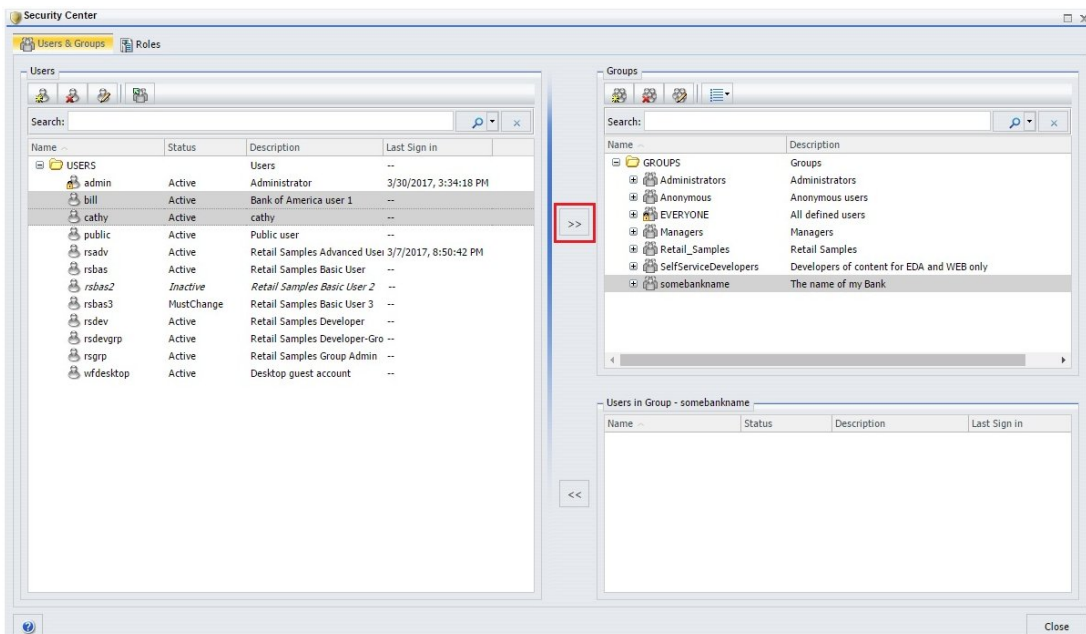
11. Perform the following steps:

   a. In the Groups section, select your new domain (for example, *somebankname - The name of my Bank*).

   b. In the Users section, select the users that you want to allow access for this group (for example, *bill* and *cathy*).

c. Add the selected users to the selected group by clicking the double-right arrows (>>).

The selected users (for example, *bill* and *cathy*) are added to the selected group, as shown in the following image.
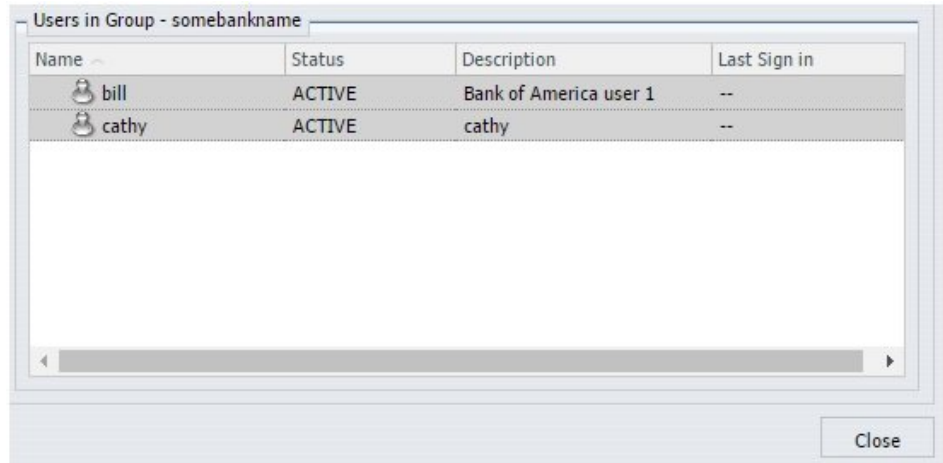
For more information on configuring users and groups in WebFOCUS, see the *WebFOCUS Security and Administration* documentation.

12. Click *Close*.

13. Log out as the administrator and then log in as the user *bill*.

Notice that the user *bill* can view three items in the Resources tree, as shown in the following image.
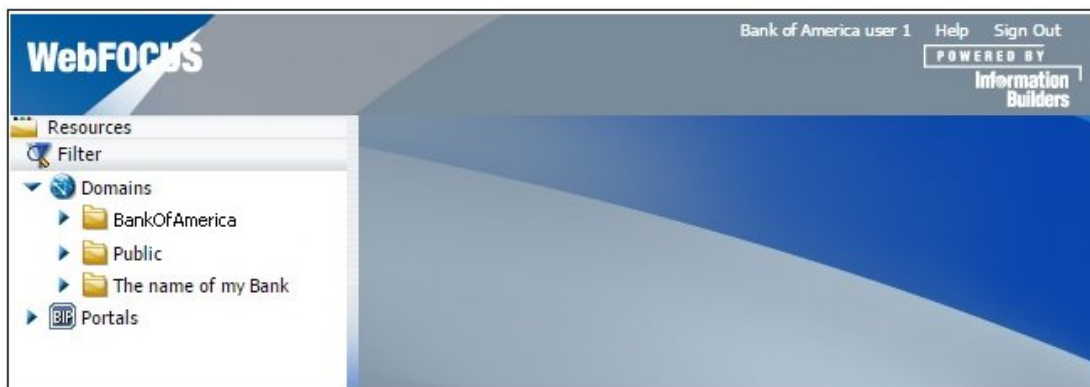
This is the list of items that Magnify Search will use to access data.

14. Log out as the user *bill* and then log in as the administrator.

Notice that the folder name is *somebankname*, as shown in the following image.
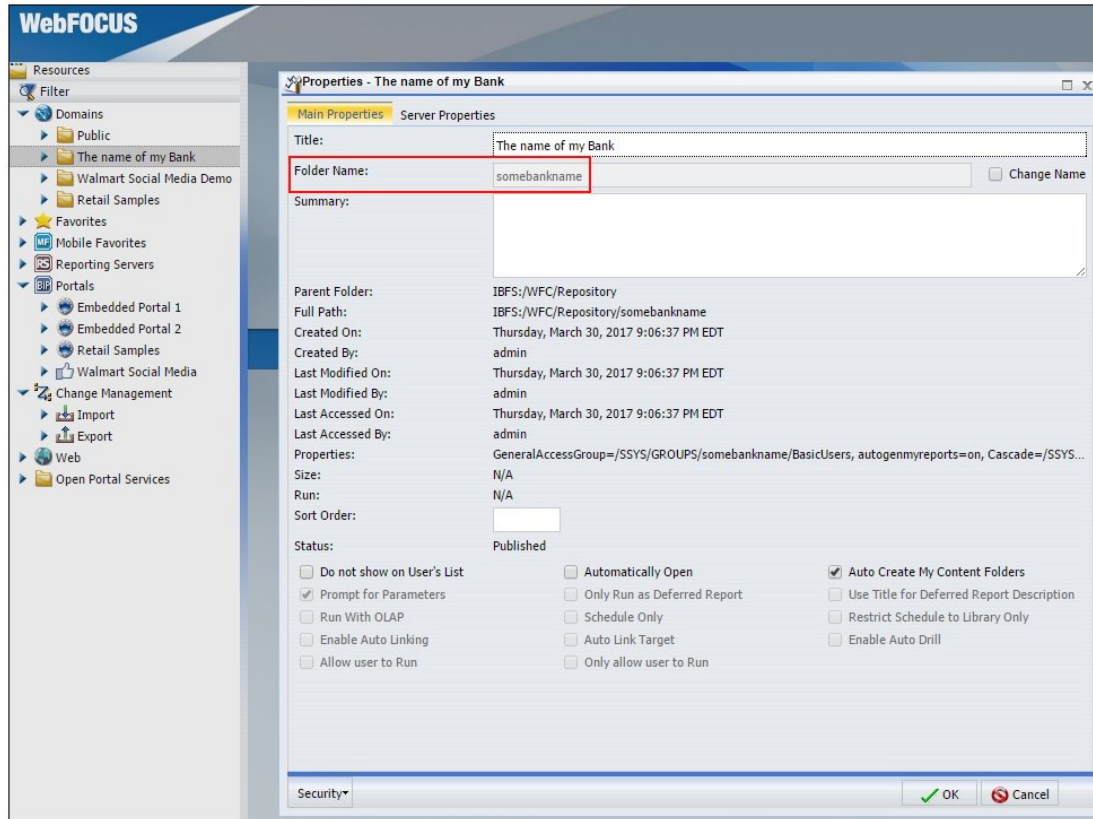
This is the name of the index that you need to create.

15. When you load data into an index, there are two methods you can use to make the name appear in the Search page.

The first method is to create an index using the same name as the domain you created earlier (for example, *somebankname*).
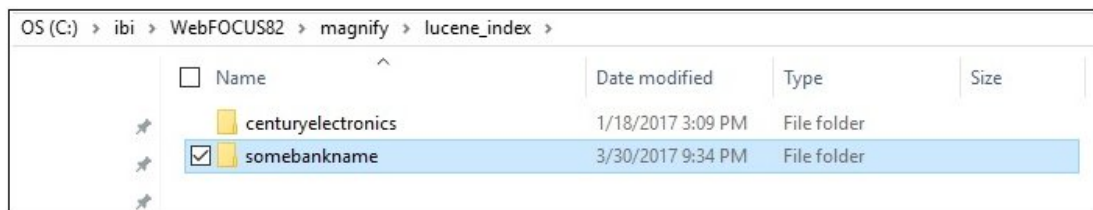
In this example, notice that *somebankname* is in the directory where the Lucene indexes are located (*lucene_index*).

The second method is to edit the *collections.xml* file, which is located in the ibi \WebFOCUS82\config\magnify directory and map a name of a collection to the index(s) with different names.

```
<collections>
<group name=" somebankname" id="somebankname">
  <search lang="en" analyzer="MagnifyAnalyzer" stylesheet="en/
en_stylesheet_peter" id="en_search_cent_sales"/>
      <component id="centurycustomers" member="centurycustomers"/>
        <component id="centuryorders" member="centuryorders"/>
</group>
</collections>
    <indexes>
    <index name="centurycustomers"    directory="centuryelectronics
\centurycustomers"></index>
    <index name="centuryorders"       directory="centuryelectronics
\centuryorders"></index>
</indexes>
```

This method allows you to join multiple indexes into a single collection, or move indexes onto other physical disks, because all of the data cannot fit on a single disk.

For performance reasons, if you have many large indexes, then you can use multiple physical drives.

16. Log on as a user to which you have granted access (for example, the user *bill*.)

When you run a search, the new collection names will appear in the drop-down list, as shown in the following image.
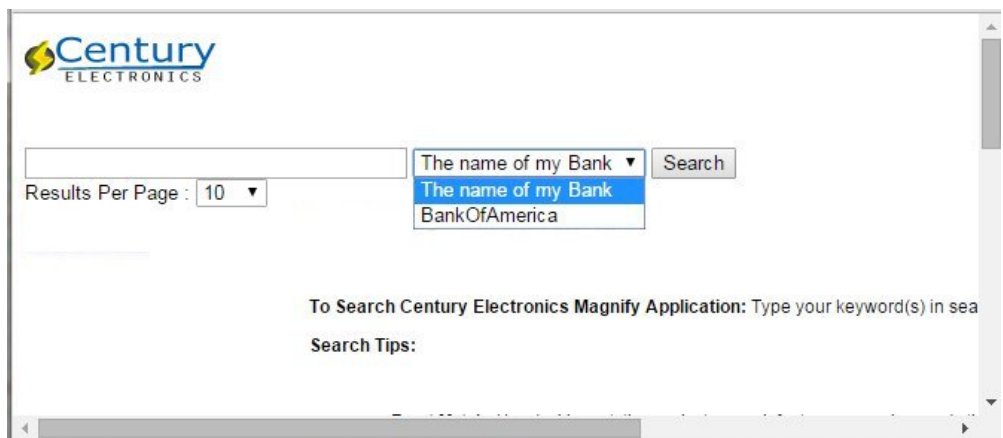
However, the domain/group/index name does not appear here. The *description* appears to the user.

17. When you run the query, then the name is passed along on the Search URL.

```
http://hostname:port/ibi_apps/search?form=3&viewname=searchresultsview
&q=a*&site=somebankname&btnG=Search&oe=utf8&ie=utf8&spelling=true&num=
10&getfields=*&parallelreaders=1&access=p
```

This is the name that is validated at search time, to ensure that the user has access to this resource. If you were to try and hack the system by changing the name, then you would not be given access to an index that you were not allowed to view.

18. Log out as the user *bill* and then log on as the user *cathy*.

Notice that the user *cathy* can view a different set of items (names) in the Resources tree, as shown in the following image.
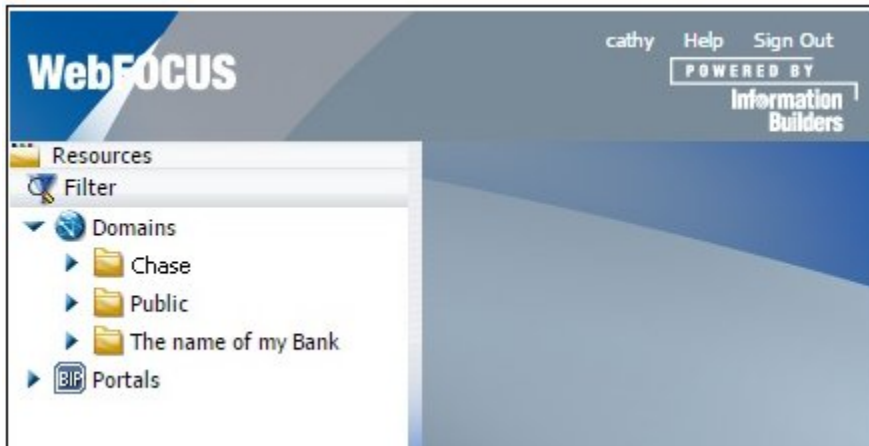
The same names are now available in the collection drop-down list. Notice that the name *Public* is missing from the Search page, as shown in the following image.
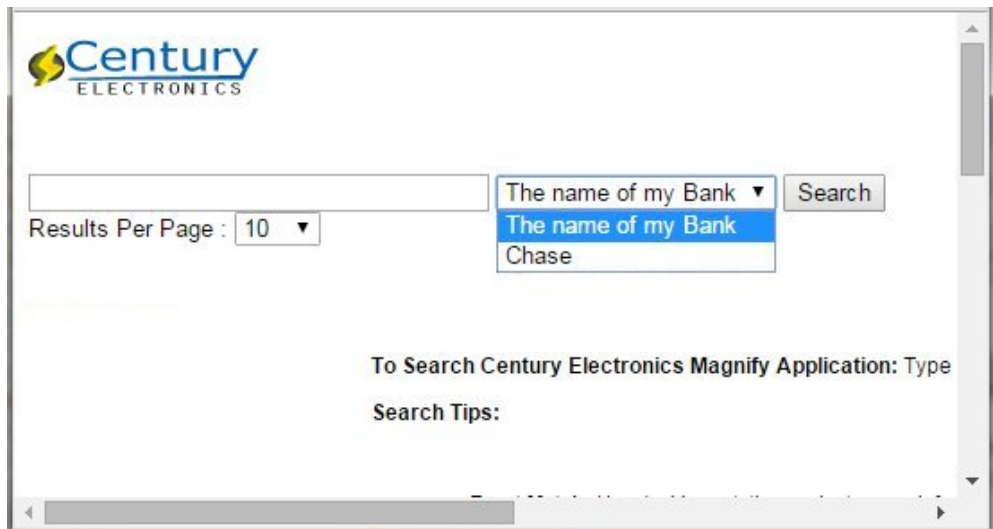
This is because there is no index named *Public* in the directory where the Lucene indexes are located (*lucene_index*). Indexes that do not exist, do not appear in the collection drop-down list.

Magnify Search Diagnostics

This chapter describes how Magnify Search monitors, traces, and debugs within the Magnify Search platform.

In this chapter:

Installation Considerations

Magnify Search requires an application server (for example, Tomcat or WebSphere) in order to read and write to index libraries. It can be installed on a Windows (64-bit preferred) or UNIX \Linux-based server, using the same language as the WebFOCUS Client.

Processing should be at least a dual-core machine. However, four CPUs are generally recommended. Moreover, a minimum of 8 GB in memory is required, while 16 GB is usually recommended. Depending on the size of the data, storage space should be anywhere between 250 GB to 1 TB or higher (it is usually estimated as three times the size of the expected dataset).

Note: This all varies depending on the type of search-based application being proposed. Indexing frequency, volume of data, and concurrent usage affect how storage space and memory are allocated. Therefore, the use of a split-tier environment is recommended for a Magnify Search platform where the Reporting Server, Magnify Search, and each data source are each provided with their own dedicated resources. Magnify Search does scale in order to accommodate any environment.

The following are the prerequisites to configuring and using Magnify Search:

❏ WebFOCUS 8.2.01M Client (with a Magnify Search license)

❏ Application Server (for example, Apache Tomcat or IBM WebSphere)

❏ Java Development Kit version 1.7 or higher

Optimizing the Java Heap Size

You may need to adjust the Java VM memory options to correct performance issues, or after receiving a Java Heap Space error message.

Note: This is applicable at the application server level for any version of Magnify Search.

The most common Java VM options you need to set include the size of the Java heap and stack, which determine memory availability for Java programs and the Java VM. Errors can occur if not enough memory is available, and the heap size impacts performance, since it determines how often garbage collection occurs.

As a best practice, add the following setting to the JVM arguments when starting Apache Tomcat:

```
-XX:MaxPermSize=256m
```

Another setting that you may also need to increase is the general memory setting. For example:

```
-mx3000m
```

Archiving Magnify Data

It is always important to create a backup of your files and work on a regular basis. This is especially significant when planning and executing an upgrade. Therefore, as a best practice, to backup Magnify, copy the following directories and be sure to maintain their original installation paths:

❏ Configuration:

```
ibi\WebFOCUS82\config\magnify
```

❏ Index Libraries:

`ibi\WebFOCUS82\magnify`

❏ Administrative Customization:

`ibi\WebFOCUS82\webapps\webfocus\search`

❏ Security Customization:

`ibi\WebFOCUS82\webapps\webfocus\WEB-INF\classes\ibi\search`

❏ Interface Image Customization:

`ibi\WebFOCUS82\webapps\webfocus\images\search`

❏ Application Directories:

`ibi\apps\<Magnify_Specific_Applications>`

where:

`<Magnify_Specific_Applications>`

Is the name of any configured and available Magnify application.

Magnify Console

The Magnify Console provides several diagnostic pages that provide more information while working within the Magnify Search platform. To access the Magnify Console, you must log on to the WebFOCUS BI Portal as an administrator and click *Magnify Console* under the Administration menu.

Note: Magnify Search users must be authorized to access the Magnify Console using the WebFOCUS Security Center. For more information, see the *WebFOCUS Security and Administration* manual.

Magnify Console

Settings

Magnify Timers	Tune Magnify refresh rates
Spell Check Setup	Provide "did you mean' type suggestions, for possible misspelled search submissions
Analyzer Review	Evaluate how analyzers are applied to content as it is indexed and searched
Collections Refresh	Set time(s) of the day to refresh collections

Security

IP Restrictions	Configure feed access control

Maintenance

Close Indexes	Close indexes that are open for reading.
Delete Indexes	Delete indexes physically from the file system

Diagnostics

Index Monitor	Monitor performance and throughput as content is feed to Magnify
Log Settings	Trace Magnify activity
Servlet Form	Package documents to send to Magnifies indexing servlet.

Setting Timers

You can incrementally commit data into the Lucene index so that it is available for searching while the indexing process is ongoing. This is useful when indexing large amounts of data that can take a long time before it is available for search. For more information on setting timers when loading data to the Lucene index, see *Setting Timers For Feeding Data* on page 17.

Creating a Magnify Search Spelling Dictionary

A Spelling Dictionary can be used to make spelling suggestions when a user is specifying a search query to guarantee search results. You can create a dictionary file for an index or a collection by selecting the *Spell Check Setup* link on the Magnify Console page. For more information, see *How to Create a Spelling Dictionary* on page 59. Additionally, the spell checking feature is enabled in the Magnify Search style sheet by default. To modify the spell checking setting in the Magnify Search style sheet, see *How to Enable Spell Checking* on page 60.

To increase the effectiveness of the spell checker functionality, it is recommended that a large pool of words are collected and used for the dictionary. This can be obtained after a large first-time, historic, or batch indexing process.

The following image displays a spelling suggestion for a search term that did not find any matches in the default collection:
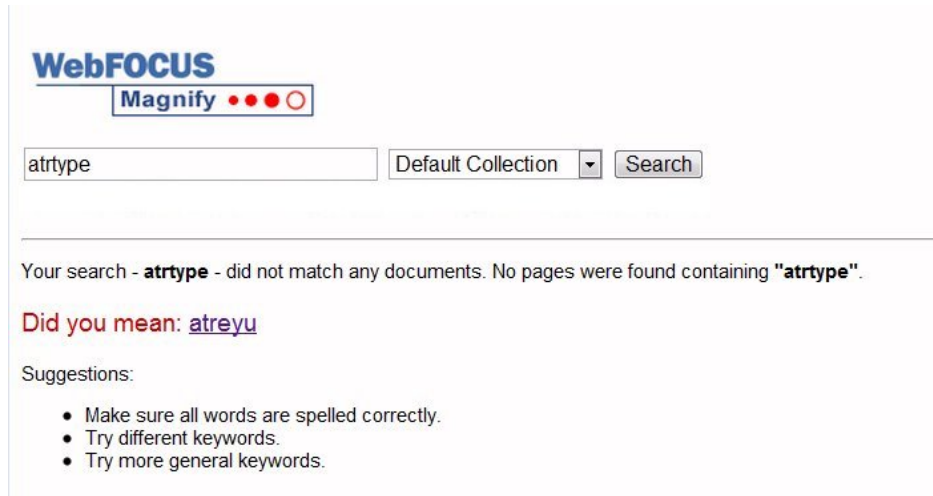
When spell checking is enabled and a collection is searched without a collection dictionary created, the default dictionary is the first index library referenced.

Dictionaries are indexes that become locked while in use. To backup or remove a dictionary, you must unlock the dictionary index files by selecting the *Close Open Dictionaries* check box.

Procedure: How to Create a Spelling Dictionary

1. Click *Spell Check Setup* on the Magnify Console home page.

   A list of available indexes and collections displays.

   Note: If a deleted index still appears on this list, you must remove the reference to this index from the collections.xml file.

2. Select the check box next to each index to create a dictionary for it.

   To create a dictionary for a collection, select one or more collections under the *Collections* column.

   Note: Before creating a collection dictionary, you must first create a dictionary for each index in the collection. Collection dictionaries are created by combining index dictionaries.

3. Optionally, select *Close Dictionaries (for backup or removal)* if you need to delete a dictionary.

4. Click the *Create Dictionary* button.

   The dictionary is created in the spellchecker directory under the Lucene index. For example, \ibi\WebFOCUS*xx*\magnify\lucene4_index\centuryelectronics\centurycustomers \spellchecker. A *Dictionary up to date* message displays under the Status column to indicate that the dictionary was successfully created.

   Note: This process may take some time depending on the size of the index.

5. Restart the application server or use the *Collections Refresh* option in the Magnify Console to start using the spelling dictionary.

Procedure: How to Enable Spell Checking

1. Edit the included_stylesheet.xslt in the \ibi\WebFOCUS*xx*\config\magnify directory.

2. Search for the following syntax in the included_stylesheet.xslt file:

   ```
   <input type="hidden" name="spelling" value="false"/>
   ```

3. Change the value attribute to *true* as follows:

   ```
   <input type="hidden" name="spelling" value="true"/>
   ```

4. Restart the application server or use the *Collections Refresh* option in the Magnify Console to reflect the changes to the style sheet.

Securing the Feed Process

You can restrict which servers can access Magnify Search and therefore prevent updates to the Lucene index from other servers. To configure the feed restrictions, you must access the Feed Security Setup Console by clicking the *IP Restrictions* link on the Magnify Console. Alternatively, you can specify the following URL:

```
http://server_name:port_number/context_root/search/jsp/
feed_security_console.jsp.
```

The following illustrates the Feed Security Setup Console.

To remove any restrictions specified in the Feed Security Setup Console, you must edit the /ibi/WebFOCUSxx/config/magnify/magnify_feed_properties_defaults.xml and manually remove the syntax that contains the restriction information.

Procedure: How to Configure Feed Security

1. Access the Feed Security Setup Console by specifying the following URL:

```
http://server_name:port_number/context_root/search/jsp/
feed_security_console.jsp
```

2. Select *ON* in the *Security enable is:* drop-down box.

3. Type the name of the server that is allowed to feed data to the Lucene index file in the *Host name* input box.

4. Alternatively, type the IP address that is allowed to feed data to the Lucene index using the *Enter IP* input boxes.

5. Click *Submit*.

6. Restart the application server.

Procedure: **How to Remove Feed Security**

1. Edit the \ibi\WebFOCUS*xx*\config\magnify\magnify_feed_properties_defaults.xml file.

2. Delete the server information contained in the *<feed_security hostname=" "/>* syntax.

3. Delete all IP addresses contained in the *<feed_security ip_address=" "/>* syntax.

4. Restart the application server.

Monitoring the Indexing Process

You can monitor the performance of the index process by clicking *Index Monitor* in the Magnify Console. Information such as the number of records indexed per minute is provided.

By default, this page refreshes every two minutes. The refresh rate can be changed by updating the refresh parameter in the \ibi\WebFOCUS*xx*\webapps\webfocus\search\jsp \loadperformance.jsp page as follows:

```
<meta http-equiv="refresh" content="120;"/>
```

The content value is in seconds.

Note: When the application server is restarted, all information displayed on the Index Monitor page is cleared.

The following status information displays in the Index Library Status chart.

❑ **Open Time.** The time that the first index writer is opened to process the incoming documents.

❑ **Close Time.** The time after the last incoming document is processed and the Close Timer value passes.

❑ **Last Deleted Time.** The time that a delete request for a document was received.

❑ **Minutes Open.** The amount of time the index writer had been opened. It is the difference between the Open Time and Close Time.

❏ **Directory Name.** The path of the index.

❏ **Count of Records Loaded.** The number of documents loaded during the feed.

❏ **Actual Documents in the index.** The number of documents in the index. Deletes are excluded from this status.

❏ **Total Documents including deletes in the index.** The number of documents in the index, including deletes.

❏ **Commit.** Flushes buffered content to the index.

❏ **Commit Count.** Count of all manual and automatic commits.

❏ **Average RAM.** The average amount of memory used while the feed was performed.

❏ **Min Document Size.** The size of the smallest document processed during the feed.

❏ **Max Document Size.** The size of the largest document processed during the feed.

❏ **Average Document Size.** The average size of all documents processed during the feed.

❏ **Total Documents Size.** The total size of all documents processed during the feed.

Magnify Search Traces

Magnify Search provides the ability to trace activity when performing a search and feeding documents to the Lucene index. The granularity and type of information written to the log files can be set using the Trace page. You can access the Trace page by clicking the *Log Settings* link on the Magnify Console. Alternatively, you can specify the following URL in the browser address bar:

`http://`*`server_name`*`:`*`port_number`*`/`*`context_root`*`/search/jsp/loggerLevel.jsp`

The following page displays.

Magnify Console   Magnify ●●●○

return to console

Log Settings - trace Magnify activity

Incoming Document Trace Logs
As Magnify receives documents from various indexing processes, they can be stored in a specific directory for review. The incoming document is xml with encoded content. Online sites for base 64 decoding can be employed to decode these documents.
Incoming Document storage is currently: Off ▾

Indexing and Searching Trace Settings
Trace logs can be enabled while Magnify processes incoming documents as well as while using the Magnify search application. This is used for debugging purposes and can show more descriptive error messages.

Log files are located in the /ibi/webfocusxx/logs

Magnify Indexing and Searching Tracing is currently: Off ▾

Performance Time Trace Logs
Performance Time traces. provide log information in order to evaluate Magnify tuning.

Log files are located in the /ibi/webfocusxx/logs

Performance Time Tracing is currently: Off ▾
Submit

Note: Magnify Search logging has been merged into a single log file.

The following log levels are available for the Indexing and Searching Trace Settings option:

Trace
   Enables tracing.

Debug
   Produces maximum tracing.

Info
   Logs informational messages.

Warn
   Logs messages that indicate a potential problem.

Error
   Logs information only if an error occurs.

Fatal
   Logs messages that indicate a fatal problem.

All
   Logs all types of messages.

Off

   No activity from the search and/or feed process is written to the log file.

The log files are located in the following folder of your WebFOCUS installation:

```
\ibi\WebFOCUSxx\logs
```

In this folder, search log information is available in the *magnify_search.log* file.

Feed record information is available in XML-formatted log files that use a date/time stamp and the following naming convention:

```
feed_record_YYYY_MM_DD_AD_HH_SS_MS-0400.xml
```

For example:

```
feed_record_2017_07_23_AD_12_52_03_995-0400.xml
```

Additionally, you can trace the amount of time it takes to complete a search query by specifying *On* in the *Performance Timing Trace* drop-down box.

Note:

❏ When tracing is enabled, several files with a *.lck* extension are created and can be removed only when the application server is restarted.

❏ Magnify search log files are time based and roll over daily.

Logging Information About Indexed Documents

You can review information about each document that is indexed in Lucene by configuring Magnify Search to log information about each record. The log information is written into the \ibi \WebFOCUSxx\logs\magnify\feedDump directory and may be encoded. For example, the contents of the following record in the log file is encoded.

```
<?xmlversion="1.0" encoding="UTF-8"?>
<gsafeed>
  <header>
     <feedtype>incremental</feedtype>
     <datasource>formatmagnify</datasource>
  </header>
  <group>
     <record action="add" mimetype="text/plain" lock="false"
             url="http://localhost:8080/ibi_apps/WFServlet?FXK=21749
             &FXF1=C_SYSTEM_SOURCE&FXV1=Product+Catalog&FXT1=%3Cspan+id
             %3D1%3ESYSTEM_SOURCE%3C%2Fspan%3E&FXF2=C_PRODUCT_TYPE
             &FXV2=Cameras&FXT2=%3Cspan+id%3D2%3EPRODUCT_TYPE
             %3C%2Fspan%3E&FXF3=C_PRODUCT_CATEGORY&FXV3=Digital+Cameras
             &FXT3=%3Cspan+id%3D3%3EPRODUCT_CATEGORY%3C%2Fspan%3E">
        <content encoding="base64binary">PD94bWwgdmVyc2lvbj0iMS
                4wIiBlbmNvZGluZz0iVVRGLTgiPz48VGFyZ2V0X1Jvb3Q+PEhFQUQ+
                xNhdGFsb2cgSXRlbTogRWFzeVNob3QgRGlnaXRhbCBDYW1lcmEgNi4x
                IE1lZ2FwaXhlbChEQQy02MTApPC9UVRMRT48TUVUQSBuYW1lPSJXR19
        </content>
     </record>
  </group>
</gsafeed>
```

There are free third-party tools available on the Internet that can be used to decode the information within the content element. For example, the following information is available after it has been decoded.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<Target_Root>
  <HEAD>
    <TITLE>
       Catalog Item: EasyShot Digital Camera 6.1 Megapixel(DC-610)
    </TITLE>
    <META name="WF_INDEX_UNIQUE_KEY" content="21749"/>
    <META name="C_SYSTEM_SOURCE" content="Product Catalog"/>
    <META name="C_PRODUCT_TYPE" content="Cameras"/>
    <META name="C_PRODUCT_CATEGORY" content="Digital Cameras"/>
    <META name="PRODUCTNAME" content="EasyShot Digital Camera 6.1
          Megapixel"/>
    <META name="PRODUCTNUMBER" content="3004"/>

    <META name="HTML_LEFT_OF_SNIPPET" content="<p><img
          src="http://localhost:8080/approot/magnify_demo/
          images/17.png" style="float:left margin:2px 18px
          5px 8px border:0"></p>"/>

    <META name="TITLE_URL" content="http://localhost:8080/ibi_apps/
          WFServlet?IBIF_ex=ibidemo_magnify_profileproducts
          &IBIAPP_app=magnify_demo&IBIF_wfdescribe=OFF&FXK=21749"/>

    <META name="LINK_DISPLAY_NAME1" content="<img
          src="http://localhost:8080/approot/magnify_demo/
          images/format_flex_16.png" border="0">
          <img src="http://localhost:8080/approot/magnify_demo/
          images/spacer.gif" VSPACE=5px HSPACE=3px border="0">
          See Similar Products <img src="http://localhost:8080/
          approot/magnify_demo/images/spacer.gif"
          VSPACE=5px HSPACE=15px border="0">"/>

    <META name="LINK_URL1" content="http://localhost:8080/ibi_apps/
          WFServlet?IBIF_ex=ibidemo_magnify_similarproductsbycategory
          &IBIAPP_app=magnify_demo&IBIF_wfdescribe=OFF&FXK= 21749"/>
```

```
<META name="LINK_DISPLAY_NAME2" content="<img
    src="http://localhost:8080/approot/magnify_demo/
    images/active_reports_16.png" border="0">
    <img src="http://localhost:8080/approot/magnify_demo/
    images/spacer.gif" VSPACE=5px HSPACE=3px border="0">
    Return Trends <img src="http://localhost:8080/
    approot/magnify_demo/images/spacer.gif" VSPACE=5px
    HSPACE=15px border="0">"/>

<META name="LINK_URL2" content="http://localhost:8080/ibi_apps/
    WFServlet?IBIF_ex=ibidemo_magnify_returnsbyproducts
    &IBIAPP_app=magnify_demo&IBIF_wfdescribe=OFF&FXK= 21749"/>

<BODY>3004 Cameras Digital Cameras With Century Electronic Digital
    Cameras you get exceptional picture quality and value for your
    money. Century Electronic Cameras continue to be one of the
    most easy to use lines of digicams. Visit to view the Century
    Electronic Camera model list, and compare different cameras
    at a glance. With Century Electronic Digital Cameras you get
    exceptional picture quality and value for your money.
    Century Electronic Cameras continue to be one of the most easy
    to use lines of digicams. Visit to view the Century Electronic
    Camera model list, and compare different cameras at a glance.
    EasyShot Digital Camera 6.1 Megapixel DC-610 21749 Summit
    Century Product Catalog
</BODY>
</HEAD>
</Target_Root>
```

Procedure: **How to Log Information About Indexed Documents**

1. Click the *Log Settings* link on the Magnify Console. Alternatively, you can specify the following URL:

    http://*server_name:port_number/context_root*/search/jsp/loggerLevel.jsp.

2. Select *ON* in the *Incoming_Document_storage_is_currently:* drop-down box.

    Real-time logging begins immediately and does not require restarting the application server.

3. Specify the trace directory location in the *Incoming Document are stored here:* input box.

    By default, the log information is written into the \ibi\WebFOCUSxx\logs\magnify \feedDump directory.

Testing the Feed Process

The Servlet Form Feed page enables you to:

❏ Debug a particular record without having to connect to the original data or feed source.

❏ Verify that a particular record exists in the index.

❏ Delete a record from the specified index.

❏ Prototype search result for a particular record.

❏ Test all meta tags.

To access the Servlet Form, click on *Servlet Form* from the Magnify Console home page. For each document you want to add, delete, or verify, you must specify the following information:

Name of datasource:

Source of the data to be fed to the search engine.

Action:

Specify whether to add, delete, or verify the document specified in the input box.

Encoding:

Specify the correct encoding for the document, for example, UTF-8.

Content Type:

MIME type of the document to be added, deleted, or verified in the Lucene index.

feedtype:

Type *full* to replace all previous data in the index from the data source specified in the *Name of datasource:* input box. Type *incremental* to add new data to the existing index specified in the *Name of datasource:* input box.

Record URL

URL to the WebFOCUS servlet (WFServlet), which runs WebFOCUS reports, followed by the meta tags to build the category tree. For more information on the available meta tags, see the *Magnify Search Search Developer's Guide*.

Feed URL

URL to the saxfeed servlet that feeds data to the search engine.

`WF_INDEX_UNIQUE_KEY:`

Optionally, you can verify a particular record by specifying a unique value. To verify a record using the WF_INDEX_UNIQUE_KEY value, click *Submit Verify via GET operation*. This verification method uses the URL and datasource values defined at the top of the page.

Note: In Version 8.0 Release 01, any feeds designated for xmlfeed or xmlfeedtest are redirected to saxfeed.

For more information on the required document structure, see the *Magnify Search Search Developer's Guide*.

Quiescing Indexes

To backup a Lucene index, all indexing transactions must be stopped or *quiesced*. When the indexing process is paused, Magnify Search finishes any processes that have already been started and prevents any new ones from occurring. Records that are available for indexing are saved to the feedcache directory location specified by the magnify_feed_cache_dir parameter in the Magnify Search menu of the WebFOCUS Administration Console. The default value is \ibi\WebFOCUS*xx*\magnify\feedcache. The search is not available when an index is quiesced. Instead, the following message displays:

```
The Search system is unavailable it is currently down for System maintenance
There is a quiesce in progress, Please try again later
```

Once all backup/recover operations are complete, all paused indexing transactions resume when Magnify Search is restarted.

Procedure: **How to Quiesce a Lucene Index**

1. Navigate to the following page:

   `http://`*server_name*`:`*port_number*`/`*context_root*`/search/jsp/quiesce.jsp`

   where:

   server_name`:`*port_number*

   Is the name of the server and its port number where Magnify Search is installed.

   context_root

   Is the WebFOCUS web application alias.

2. Click the *Pause* button.

   Any records that are available to be indexed are saved to the \ibi\WebFOCUS*xx*\magnify\feedcache directory.

3. When the backup process is complete, click the *Resume* button to index the data in the feedcache directory.

4. If the application server is restarted, the load-on-startup parameter for the Magnify Search servlet (saxfeed) in the \ibi\WebFOCUS*xx*\webapps\webfocus\WEB-INF\web.xml file must be uncommented to index the data in the feedcache folder, as follows.

```
<servlet>
  <servlet-name>saxfeed</servlet-name>
  <servlet-class>
     ibi.search.lucene.feed.LuceneFastXmlFeedServlet
  </servlet-class>
  <load-on-startup>10</load-on-startup></servlet>
```

Setting the Number of Slices and Color in a Chart

When working with charts, you can modify the number of slices that display. You can specify up to 18 slices, for which a unique color will be assigned. For any number of slices larger than 18, colors will begin repeating within charts. You can use the following procedure to alter the number of slices in your chart.

Note: It is recommended that you avoid the addition of too many more slices as the chart becomes unreadable when too many slices are displayed.

Procedure: **How to Specify the Number of Slices**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following variable in the included_stylesheet.xslt file:

```
var category_top_chart_slices=7;
```

Note: By default, this value is set to 7 (excluding the Other slice). The value must be a numerical value (1 or higher).

3. Save the modified included_stylesheet.xslt file.

You can use the following procedure to enable auto-coloring for your chart, which will apply the automatic rule of 18 colors for any given chart.

Procedure: **How to Enable Auto-Coloring for Charts**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Set chart.getDefaultSeries().color = undefined

3. Save the modified included_stylesheet.xslt file.

Indexing Large Files

When indexing large documents, it is recommended that you use an HTTP POST operation to change the application server limits for the files that it accepts. For example, in the Tomcat application server, the maxPostSize parameter can be updated to remove the limit in the \Program Files\Apache Software Foundation\Tomcat 6.0\conf\server.xml file, as follows:

```
<Connector port="8080" protocol="HTTP/1.1"
connectionTimeout="20000"
redirectPort="8443" maxPostSize="0"/>
```

Note: If the Tomcat application server was installed during the WebFOCUS installation, the maxPostSize limit is already removed.

If the maxPostSize parameter is not set, the default value is 2097152 (2 megabytes). If this limit is exceeded, the following error is written to the Tomcat log:

```
java.lang.IllegalStateException: Post too large
at org.apache.catalina.connector.Request.parseParameters(Request.java:2368)
at org.apache.catalina.connector.Request.getParameter(Request.java:1005)
```

Magnify Request Parameters

The following are query parameters that you can set on the HTTP URL for Magnify:

❏ **q.** Specifies the search query.

❏ **site.** Specifies the folder name of the collection, or implicit index.

Verifying Documents in the Lucene Index

You can check whether a document exists in a particular Lucene index library using the following URL:

```
http://server_name:port_number/context_root/saxfeed?verify=true
&WF_INDEX_UNIQUE_KEY=unique_key&datasource=site_name
```

where:

servername:port_number

Is the name of the server and its port number where Magnify is installed.

context_root

Is the WebFOCUS web application alias.

unique_key

Is the unique identifier of the record you want to verify.

site_name

Is the name of the collection or index that contains the record you want to verify.

Magnify returns a XML result set specifying the status of the record specified in the URL.

The following syntax illustrates the status result of a record that was found in the specified centurycustomers Lucene index:

```
<? xml version="1.0" encoding="UTF-8" standalone="yes"?>
<magnifyfeedresponse>
    <recordStatus url="null"uniqueKeyEncoded="22060" uniqueKey="22060"
        status="found" datetime="2010-08-14 16:38:18.897-0400"
        datasource="centurycustomers" />
</magnifyfeedresponse>
```

Retrieving Index Library Properties

You can retrieve information about a specific Magnify index library using the following API commands in the request URL:

```
http://host:[port]/context_root/saxfeed?
datasource=iindex_name&dirdetails=1
```

where:

host:[*port*]

Is the name of the server and its port number where Magnify is installed.

context_root

Is the WebFOCUS web application alias.

datasource=*index_name*

Specifies the name of the Lucene index library.

dirdetails=1

Enables retrieving the size of the specified index.

The following syntax illustrates the status and size of the specified centurystores index:

```
<dirdetails returncode="success"
  datetime="Fri, 22 Oct 2010 14:03:42 -0400"
  datasource="centurystores" dirname="" size="25952676"
  sizeformatted="25,952,676" freespace="unavailable"
  freespaceformatted="" lastmodifieddate="0"
  lastmodifieddateformatted="Fri, 22 Oct 2010 14:03:42 -0400" />
```

Retrieving Field Values From the Lucene Index

Administrators can retrieve the values of one or more field names in a Lucene index library using the following request URL:

```
http://host:[port]/context_root/saxfeed?
  fieldvalues=true&datasource=index_name&field=field_name
```

where:

host:[*port*]

Is the name of the server and its port number where Magnify is installed.

context_root

Is the WebFOCUS web application alias.

`fieldvalues`

If set to *true*, enables the ability to retrieve field name values from the Lucene index.

`datasource=`*index_name*

Specifies the name of the Lucene index library.

`field=`*field_name*

Specifies a field name in the Lucene index. You must specify the field parameter for each field name. For example, to retrieve the value of the datetime, productid, and store fields, specify each field name as follows in the URL:

```
field=datetime&field=productid&field=store
```

An XML document is returned to the browser that contains the values for each field name specified in the URL.

The following example retrieves the value for the datetime field in the centuryproducts Lucene index.

```
http://localhost:8080/ibi_apps/saxfeed?fieldvalues=true
&datasource=centuryproducts\&field=datetime

<? xml version="1.0" encoding="UTF-8" ?>
- <fieldvalues>
 - <record documentnumber="0">
   <datetime>2010-08-14 16:38:15.97-0400</datetime>
   <datetime>2010-08-14 16:38:15.97-0400</datetime>
   </record>
- <record documentnumber="1">
   <datetime>2010-08-14 16:38:15.280-0400</datetime>
   <datetime>2010-08-14 16:38:15.280-0400</datetime>
   </record>
- <record documentnumber="2">
   <datetime>2010-08-14 16:38:15.472-0400</datetime>
   <datetime>2010-08-14 16:38:15.472-0400</datetime>
   </record>
- <record documentnumber="3">
   <datetime>2010-08-14 16:38:15.595-0400</datetime>
   <datetime>2010-08-14 16:38:15.595-0400</datetime>
   </record>
-</fieldvalues>
```

Online Lucene Resources

Lucene Luke is a development and diagnostic tool, which accesses already existing Lucene indexes and allows you to display and modify their content.

The Lucene Index tool should not be used on a Magnify Search index that is being updated or created, since this may corrupt the records in the index. Instead, create a backup of the Magnify Search index and use this copy to analyze with the Luke Lucene index tool.

Customizing the Magnify Search User Interface

This section describes how to update the default Magnify Search style sheet to customize the end user interface.

In this chapter:

Customization Overview

Magnify provides a simple, easy-to-use interface that is very similar to the one used by the Google Search Appliance. Magnify uses an XSLT style sheet to create the interface by which the user interacts. Developers can use this style sheet to customize various elements on the interface. Also, search results can be enhanced to contain more information (such as date or custom snippet content) by configuring fields stored in the index and exposing their values in each search result. The customizations described in the following sections apply when Magnify is configured with a Lucene index.

Any changes made to the Magnify style sheet requires you to restart the application server.

By default, the Magnify XSLT style sheet is located in:

`\ibi\WebFOCUS82\config\magnify\`*locale*`\`*locale*`_stylesheet.xslt`

where:

locale

Is the subfolder name for each language Magnify supports to provide localized interfaces. The following languages are available:

❏   Chinese

❏   English

❏   French

❏   French Canadian

❏   German

❏   Japanese

❑ Mandarin

❑ Portuguese

❑ Russian

❑ Spanish

The \ibi\WebFOCUS82\config\magnify\included_stylesheet.xslt file contains templates for customizing the various components on the Magnify interface and is dynamically included in the Magnify style sheet at run time. Each component can be hidden or displayed and contains customizable attributes, such as color, alignment, and size, as shown in the following example.

❑ **Global Style Variables**

```
<xsl:variable name="global_font">Arial,sans-serif</xsl:variable>
<xsl:variable name="global_font_size">1em</xsl:variable>
<xsl:variable name="global_bg_color">#fff</xsl:variable>
<xsl:variable name="global_text_color">#000</xsl:variable>
<xsl:variable name="global_link_color">#00c</xsl:variable>
<xsl:variable name="global_vlink_color">#551a8b</xsl:variable>
<xsl:variable name="global_alink_color">#f00</xsl:variable>
<xsl:variable name="global_co_color">#2f2f2f</xsl:variable>
```

❑ **Result Page Components**

Search input box:

Search result information:


```
<xsl:variable name="show_result_page_help_link">0</xsl:variable>
<xsl:variable name="show_alerts_link">0</xsl:variable>
<!-- *** search boxes (size in # of characters) *** -->
<xsl:variable name="show_top_search_box">1</xsl:variable>
<xsl:variable name="show_bottom_search_box">1</xsl:variable>
<xsl:variable name="search_box_size">32</xsl:variable>
```

❑ **Result Title and Snippet**

```
<!-- *** result title and snippet *** -->
<xsl:variable name="show_res_title">1</xsl:variable>
<xsl:variable name="res_title_color">#00c</xsl:variable>
<xsl:variable name="res_title_size">1.35em</xsl:variable>
<xsl:variable name="res_type_size">.85em</xsl:variable>
<xsl:variable name="show_res_snippet">1</xsl:variable>
<xsl:variable name="res_snippet_size">1.05em</xsl:variable>
```

❑ **Keyword Match**

Did you mean: mp3

```
<!-- *** keyword match (in title or snippet) *** -->
<xsl:variable name="res_keyword_color"></xsl:variable>
<xsl:variable name="res_keyword_size"></xsl:variable>
<xsl:variable name="res_keyword_format">strong</xsl:variable>
```

You can expose additional information in the interface to enhance the search results of your Magnify application. To use information stored in the index, the field name and its value must be retrieved and configured in the style sheet. By default, the Magnify style sheet has immediate access to field names and values contained in the XML that Magnify returns. For example,

❑ HTML_LEFT_OF_SNIPPET

❑ Any parameter that begins with LINK_, TITLE_, FOC, or IBI

❑ date

❑ datetime

❑ mimetype

❑ feedtype

❑ SECURITY_PLUGIN

❑ url_encoded

Procedure: **How to Sort by the Sentiment Score**

By default, the Magnify interface enables users to sort by the sentiment score. The sorting option is configured in \ibi\WebFOCUS*xx*\config\magnify\included_stylesheet.xslt.

1. Edit the \ibi\WebFOCUS*xx*\config\magnify\included_stylesheet.xslt file.

2. To enable sorting by the sentiment score, edit the *show_sort_by_sentiment* variable as follows:

   ```
   <xsl:variable name="show_sort_by_sentiment">1</xsl:variable>
   ```

3. To disable sorting by the sentiment score, edit the *show_sort_by_sentiment* variable as follows:

```
<xsl:variable name="show_sort_by_sentiment">0</xsl:variable>
```

4. Reload the Magnify stylesheet by restarting the application server.

Procedure: **How to Enable Spell Checking**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax in the included_stylesheet.xslt file:

```
<input type="hidden" name="spelling" value="false"/>
```

3. Change the value attribute to *true* as follows:

```
<input type="hidden" name="spelling" value="true"/>
```

4. Restart the application server or use the *Refresh Collections* option in the Magnify administration console to reflect the changes to the style sheet.

Procedure: **How to Enable Mobile Auto-Detection**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the isMobile template (<xsl:template name="isMobile">).

3. For each of the <xsl:when test="contains($useragent,'*devicex*')">false</xsl:when> tags, where *devicex* is the device you are enabling or disabling, set the value to *true* (enable) or *false* (disable).

   Note: Blackberry® is disabled by default.

Procedure: **How to Style Match Content in a Search Result Title**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax in the included_stylesheet.xslt file:

```
span.highlighttitle { font-weight: normal }
```

3. Change the span.highlighttitle attribute to one of the following:

```
span.highlighttitle { font-weight: bold }
```

or

```
span.highlighttitle { font-weight: bold; font-size:15px;text-
decoration:underline  }
```

Editing a Procedure to Style a Search Result Title

In addition to editing the included_stylesheet.xslt file to adjust the appearance of a search result title, you can add styling instructions to the procedure before it is fed into Magnify Search and converted into a search index. In this file, you can edit the *SEARCHTITLE/A1000* code line to make search result titles appear in italics or in bold.

Note: You cannot add search result title styling options to both the included_stylesheet.xslt file and the procedure at the same time. Choose one file that will contain these styling conditions.

The following example shows the *SEARCHTITLE/A1000* code line edited to make search result titles display as bold.

```
SEARCHTITLE/A1000='<b>' || CAR | ' (' || COUNTRY || ')</b>';
```

The following example shows the *SEARCHTITLE/A1000* code line edited to make search result titles display as italic

```
SEARCHTITLE/A1000='<i>' || CAR | ' (' || COUNTRY || ')</i>';
```

Procedure: How to Define a Single Default Collection

1. Locate the following syntax in the included_stylesheet.xslt file:

   ```
   <xsl:variable name="show_collections">1</xsl:variable>
   ```

2. Disable the collections drop-down list as follows:

   ```
   <xsl:variable name="show_collections">0</xsl:variable>
   ```

3. Edit the \ibi\WebFOCUS82\config\magnify\collections.xml file and rename the default collection defined in the indexes element tag as follows:

   ```
   <indexes>
        <index name="default_collection_old" directory="."/>
   </indexes>
   ```

4. In the collections.xml file, create a group under the collections element tag called *default_collection* as follows:

   ```
   <collections>
       <group name="default_collection" id="default_collection">
          <component id="customers" member="customers"/>
          <component id="employees" member="employees"/>
       </group>
   </collections>
   ```

Procedure: **How to Configure the Magnify Logo**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax:

```
<xsl:variable name="logo_url">images/search/magnify/logo.png</
xsl:variable>
```

3. Modify the logo_url value to contain the path to an image that is accessible using the web server or on a physical drive.

Procedure: **How to Enable the Secure Radio Button**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax in the included_stylesheet.xslt file:

```
<xsl:variable name="show_secure_radio">0</xsl:variable>
```

3. Change the *show_secure_radio* variable as follows:

```
<xsl:variable name="show_secure_radio">1</xsl:variable>
```

Procedure: **How to Configure the Spacing Between Main Title Link and Snippet**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax in the included_stylesheet.xslt file:

```
<p/>
<xsl:choose>
<xsl:when test="$type ='snippet'">
<xsl:call-template name="nbsp"/>
<div>
<xsl:variable name="br_html">&lt;br&gt;</xsl:variable>
```

3. Comment out the <p> as follows:

```
<!--p--><xsl:choose>
<xsl:when test="$type ='snippet'">
<xsl:call-template name="nbsp"/>
<div>
<xsl:variable name="br_html">&lt;br&gt;</xsl:variable>
```

Procedure: **How to Modify the Magnify Home Page**

1. Edit the included_stylesheet.xslt file in the \ibi\WebFOCUS82\config\magnify directory.

2. Locate the following syntax in the included_stylesheet.xslt file:

```
<!--
********************************************************************
My global page header/footer (can be customized)
********************************************************************
-->
<xsl:template name="my_page_header">
<!-- *** add your xhtml here - suggest styling via #ph (header) or .phf
(header/footer) -->
</xsl:template>
<xsl:template name="my_page_footer">
<!-- *** add your xhtml here - suggest styling via #pf (footer) or .phf
(header/footer) -->
</xsl:template>
```

3. Create a template using HTML syntax for the page body section (such as the following) that will display in the Magnify home page.

```
<xsl:template name="customhomepage">
    <xsl:text disable-output-escaping="yes">
        <Encoded HTML>
    </xsl:text>
</xsl:template>
```

Note: All HTML syntax must be encoded.

4. Locate the following syntax:

```
<!--
*********************************************************************
 Search result page header (can be customized): logo and search box

*********************************************************************
-->
<xsl:template name="result_page_header">
    <xsl:if test="/GSP/PARAM[@name='usernametodisplay']/@value != ''">
        <div style="text-align:right"> <xsl:value-of select="$user"/>
          <xsl:call-template name="nbsp"/>
          <xsl:value-of select="/GSP/PARAM[@name='usernametodisplay']/
@value"/>
        </div>
    </xsl:if>

    <xsl:if test="$show_logo != '0'">
      <xsl:call-template name="logo"/>
    </xsl:if>
    <xsl:if test="$media != 'handheld'">
        <xsl:if test="$show_skip_links != '0'">
          <xsl:call-template name="skip_links"/>
        </xsl:if>
        <xsl:if test="$show_top_search_box != '0'">
            <xsl:call-template name="search_box">
                <xsl:with-param name="type" select="'std_top'"/>
            </xsl:call-template>
        </xsl:if>
    </xsl:if>
  <xsl:if test="/GSP/CT">
    <p id="sw"><xsl:call-template name="stopwords"/></p>
  </xsl:if>
</xsl:template>
```

5. Add the following syntax to the result_page_header template:

```
 <!--
 *********************************************************************
 Search result page header (can be customized): logo and search box

 *********************************************************************
 -->
 <xsl:template name="result_page_header">
    <xsl:if test="/GSP/PARAM[@name='usernametodisplay']/@value != ''">
       <div style="text-align:right"> <xsl:value-of select="$user"/>
          <xsl:call-template name="nbsp"/>
          <xsl:value-of select="/GSP/PARAM[@name='usernametodisplay']/
@value"/>
       </div>
    </xsl:if>

    <xsl:if test="$show_logo != '0'">
       <xsl:call-template name="logo"/>
    </xsl:if>
    <xsl:if test="$media != 'handheld'">
        <xsl:if test="$show_skip_links != '0'">
           <xsl:call-template name="skip_links"/>
        </xsl:if>
        <xsl:if test="$show_top_search_box != '0'">
           <xsl:call-template name="search_box">
              <xsl:with-param name="type" select="'std_top'"/>
           </xsl:call-template>
        </xsl:if>
    </xsl:if>
    <xsl:if test="/GSP/Q =''">
       <xsl:call-template name="customhomepage"/></p>
    </xsl:if>    <xsl:if test="/GSP/CT">
       <p id="sw"><xsl:call-template name="stopwords"/></p>
    </xsl:if>
 </xsl:template>
```

Adding Date Information to Magnify Search Results

By default, Magnify includes the date in which a record was indexed in the datetime field of the index. If date information was provided for each record during the feed process, the value is stored in the datetime field of the index. Once the date and time information is available in the index, the Magnify style sheet can be modified to display the date information for each search result and change the date format, if necessary. The date information is displayed by default.

Procedure: **How to Display Date Information**

1. Edit the \ibi\WebFOCUS82\config\magnify\magnify_stylesheet.xslt file.

2. Locate the *show_crawldate* variable in the style sheet.

   ```
   <xsl:variable name="show_crawldate">0</xsl:variable>
   ```

3. Change the *show_crawldate* variable value to *1* as follows:

```
<xsl:variable name="show_crawldate">1</xsl:variable>
```

4. Restart the application server on which Magnify is installed.

The next time a search is performed, the date information is displayed in the search results as follows:

Procedure: How to Display Date and Time Information

1. Edit the \ibi\WebFOCUS82\config\magnify\magnify_stylesheet.xslt file.

2. Locate the following syntax:

```
<xsl:if test="$show_crawldate !='0'">
        <xsl:value-of select="$html_text_date" disable-output-
escaping="yes"/>
        <xsl:variable name="datestr" select="MT[@N='date']/@V"/>
        <xsl:value-of disable-output-escaping='yes' select='substring
          ($datestr,1,10)'/>
        <!-- <xsl:value-of disable-output-escaping='yes'
                             select='$datestr'/>-->
</xsl:if>
```

3. Comment out the following syntax:

```
 <!--<xsl:value-of disable-output-escaping='yes'
select='substring($datestr,1,10)'/>-->
```

4. Uncomment the following syntax:

```
<xsl:value-of disable-output-escaping='yes'
                   select='$datestr'/>
```

5. Restart the application server.

A

Magnify Search Demo Application

This section explains how to configure and access the Magnify Search Century Electronics demo application.

In this appendix:

Introducing Magnify Search: The Century Electronics Example

Magnify allows you to ask a question across the whole enterprise. By clicking the Search button, Magnify will look for all relevant data across various platforms and applications. It will look for reports, and it will even look for unstructured content, such as static documents and database BLOB fields. This example describes:

❏   The Magnify Search home page.

❏   Magnify search results.

❏   Search result analytics.

❏   Drill down into BI reports for more detail.

Before you configure and use the Magnify Century Electronics Example, you will need to remove all references to any combination of the following query string parameters:

```
proxyreload=1
clearcache=1
collections=<any_value>
```

Any changes made to the collections file or style sheet file will be available after the application server is restarted. To apply changes directly to the collections file without restarting the application server, use the *Refresh Collections* option in the Magnify administration console.

To use the Magnify Century Electronics Example:

1. Navigate to the Magnify Century Electronics Example home page using the following URL:

```
http://server_name:port_number/wfcontext_root/
/search
```

where:

```
server_name:port_number
```

Is the machine name and port number where WebFOCUS is installed.

```
wfcontext_root
```

Is the WebFOCUS application root.

The Magnify Search home page displays, as shown in the following image.

❏ **Input Box.** Enter the search term *Camera*.

❏ **Collection List.** Expand and review the drop-down list.

❏ **Search Help.** Notice advance search features.

❏ **Content Access.** Keep *public content* selected.

❏ **Search Button.** Submit the search by clicking the *Search* button.

2. Explore the Magnify search results, as shown in the following image.
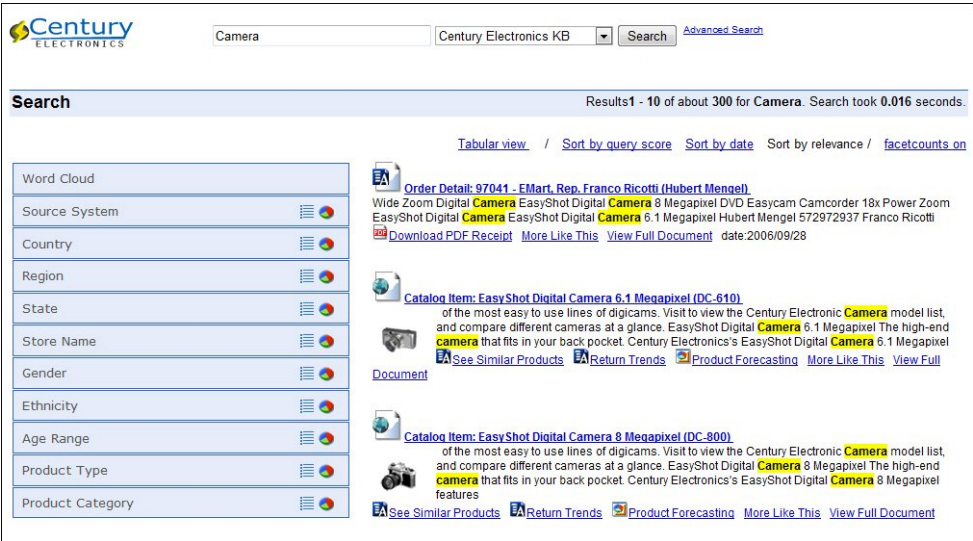
❑ **General Information.** Notice the number of records and speed.

❑ **Search Results.** Notice the main link, snippet, and additional links.

❑ **Dynamic Categorization Tree.** Expand *Categories*, then *Source System*, and click on *Sales Records* as shown in the following image.
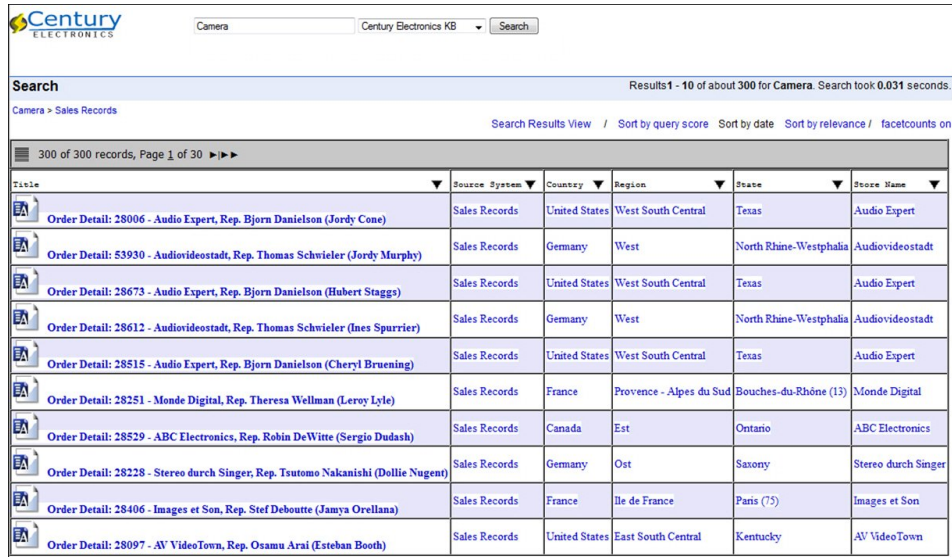
❑ **Breadcrumb Trail.** Each category selected is mapped.

3. Perform search result analytics.

   Sort search results by various ranking attributes and use the tabular view to perform additional analytics on your search results with its embedded analytic engine. For example, review how many camera orders are sold by country.
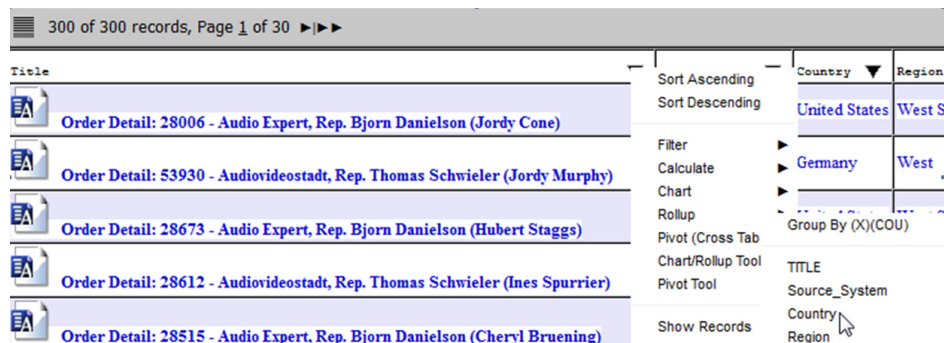
   For sorting purposes, click *Sort by date*. Click *Tabular View* to change the layout, as shown in the following image.

   a. Click the drop-down arrow on the Title column.

   b. Click *Rollup*.

   c. Select the *Country* Group By option, as shown in the following image.
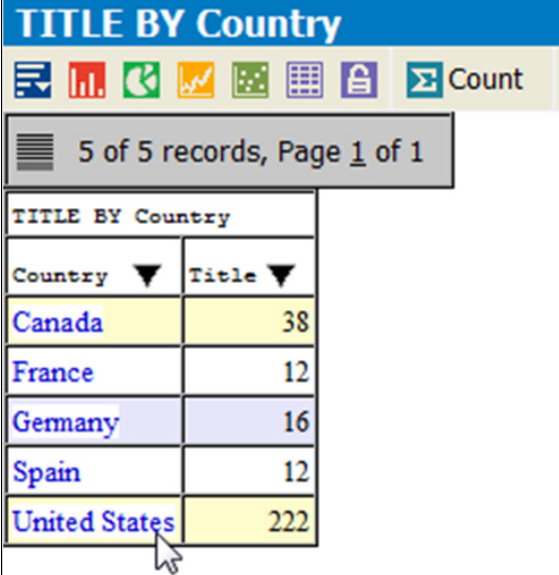
   d. In the Rollup Chart tab, filter the search results by *Country*.

e. Drill down on *United States*, as shown in the following image.

f. Close the browser window.

4. Drill down into BI Reports for more detail.

a. Click the first main title link, *Order Detail: 28006*, as shown in the following image.

Notice that multiple purchases have been aggregated into a single searchable order, as shown in the following image.

b. Close the browser window.

Summary

Magnify transforms raw data into search content by identifying relationships in the data, categorizing metadata, and making searchable all fields, tables, and datasources while, at the same time, associating each result with BI reports tailored by context.

Century Electronics Sample Search Application

Magnify provides the Century Electronics sample search application, which uses sample indexes and a sample style sheet that can be used to preview some Magnify features. Century Electronics is a consumer electronics manufacturer that distributes products through retailers around the world. Its intranet search application enables executives and analysts to see how their business is performing through Key Performance Indicator reports and typical business reports, such as detailed trend analysis.

Before you configure and use the Century Electronics sample search application, you will need to remove all references to any combination of the following query string parameters:

```
proxyreload=1
clearcache=1
collections=<any_value>
```

Any changes made to the collections file or style sheet file will be available after the application server is restarted. To apply changes directly to the collections file without restarting the application server, use the *Refresh Collections* option in the Magnify administration console.

To use the Century Electronics sample search application, type the following URL in the address bar:

```
http://server_name:port_number/wf_context_root/search
```

where:

`server_name:port_number`

Is the server name of where Magnify is installed and the HTTP port of the application server. For Tomcat stand-alone configurations, the default port number is 8080. If you require SSL, use HTTPS instead of HTTP.

`wf_context_root`

Is the alias of the WebFOCUS Web application specified during the installation. The default is ibi_apps.

The Century Electronics data is available in the \ibi\WebFOCUS\utilities\demos\ibimagn.zip file and can be used to create your own sample indexes using the iWay Transformer, Prototype Wizard, or the FORMAT MAGNIFY command.

The following image illustrates the Century Electronics search application and its various collections.

App Studio and WebFOCUS Installation

The following describes the differences between the App Studio and WebFOCUS installations for the Magnify sample search application.

App Studio. Includes the ibimagn folder under the ibi\apps directory. This includes:

❏ All procedures used as links in the search-based application.

❏ All FOCUS databases that were created using the Unicode UTF8 NLS setting on the WebFOCUS Reporting Server.

❏ Report procedures that use the FORMAT MAGNIFY command to feed the index libraries (Files and Products). No international characters are included in the data.

WebFOCUS Client. Includes the ibimagn.zip file under the utilities\demo directory, which must be unzipped in the ibi\apps directory. This includes:

❏ All procedures used as links in the search-based application.

❏ All FOCUS databases that were created using the 65001-Unicode (UTF-8) setting on the WebFOCUS Reporting Server.

❏ Report procedures that use the FORMAT MAGNIFY command to feed the index libraries (Customers, Employees, Files, Orders, Products, Plants, and Stores). These procedures require the 65001-Unicode (UTF-8) NLS setting on the WebFOCUS Reporting Server.

❏ All FOCUS databases that were created using the Unicode UTF8 NLS setting on the WebFOCUS Reporting Server.

If App Studio is not installed and the WebFOCUS Reporting Server NLS setting is 437-English, the 437-based FOCUS databases must be replaced with those included at the root.

❏ The files\Scripts directory, which contains files for creating the FOCUS databases into SQL Server in order to feed using iWay Service Manager.

This requires a database, iWay Service Manager, and includes examples of indexing different file formats, such as zip archives, SQL, XML, and miscellaneous ASCII files.

Note:

❏ All feed procedures can be used with the UTF-8 FOCUS files and when the WebFOCUS Reporting Server is set to UTF-8.

❏ The Files and Product feed procedures cannot be used with the 437-based FOCUS files, which are located in the \ibimagn\files\437 directory.

❏ All drill-down reports that contain special characters display as spaces.

❏ For more information on changing the WebFOCUS Reporting Server NLS setting, see the *National Language Support for International Computing* manual.

Configuring a Port Number

By default, the Century Electronics sample application uses port number 8080. To use sample indexes that contain port number 80, modify the collections_century.xml file index section by uncommenting one section for the next, as follows:

```
<!--
<index name="centuryassets" directory="centuryelectronics\centuryassets">
</index>
<index name="centurycustomers" directory="centuryelectronics
\centurycustomers"></index>
<index name="centuryemployees" directory="centuryelectronics
\centuryemployees"></index>
<index name="centuryorders" directory="centuryelectronics\centuryorders">
</index>
<index name="centuryplants" directory="centuryelectronics\centuryplants">
</index>
<index name="centuryproducts" directory="centuryelectronics
\centuryproducts"></index>
<index name="centurystores" directory="centuryelectronics\centurystores">
</index>
-->
<index name="centuryassets" directory="centuryelectronics
\port80\centuryassetsp80"></index>
<index name="centurycustomers" directory="centuryelectronics
\port80\centurycustomersp80"></index>
<index name="centuryemployees" directory="centuryelectronics
\port80\centuryemployeesp80"></index>
<index name="centuryplants" directory="centuryelectronics
\port80\centuryplantsp80"></index>
<index name="centuryproducts" directory="centuryelectronics
\port80\centuryproductsp80"></index>
<index name="centurystores" directory="centuryelectronics
\port80\centurystoresp80"></index>
```

To use other port numbers, the Century Electronics data must be recreated using the feed procedures. All port number references in the magdemo_index_magnifyprops.fex report procedure must be updated accordingly.

Feeding Content to Magnify

❑ The WebFOCUS Client includes the ibimagn.zip in the ibi\WebFOCUS*xx*\utilities\demos directory. This creates a folder called ibimagn with the procedures and FOCUS databases used by this demo.

  ❑ The ibimagn\files\scripts directory contains all files needed to set up with iWay.

  ❑ The ibimagn directory contains procedures beginning with *magdemo_index_* that will index data from FOCUS.

Additional Features

❑ **Joined Tables.**

The Century Electronics sample application joins the following tables:

❏ Customers table is enriched with information from Stores, Orders, and Products tables.

❏ Employees table is enriched with information from Product, Customer, and Orders tables.

❏ Orders are enriched with information from Customers, Employees, Orders, Product, Stores, and Plants tables.

❏ Plants are enriched with information from Stores tables.

❏ Stores are enriched with information from Employees and Products tables.

❏ **Security.**

Files located in the files\Records directory will be secured by default using the ReturnAllRecords security plug-in specified in the file magdemo_index_files.fex feed procedure as follows:

```
SYSSOURCE/A25='File Server';
SECURITY_PLUGIN/A50=IF FILEPARTFOLDER EQ 'Records' THEN
'ReturnAllRecords' ELSE '';
```

❏ **Synonyms.**

The Century Electronics data was indexed using the MagnifySearchAnalyzer custom analyzer and configured to use the synonyms and stop words features. Examples of synonyms and stop words are provided in the \ibi\WebFOCUS\config\magnify\en \en_synonyms_century.txt file, as shown in the following image.

```
#----------------------------------------
#
pbells,pda,qwe,poi,pfa
mp3,m3p,mpthree,itunes,music
```
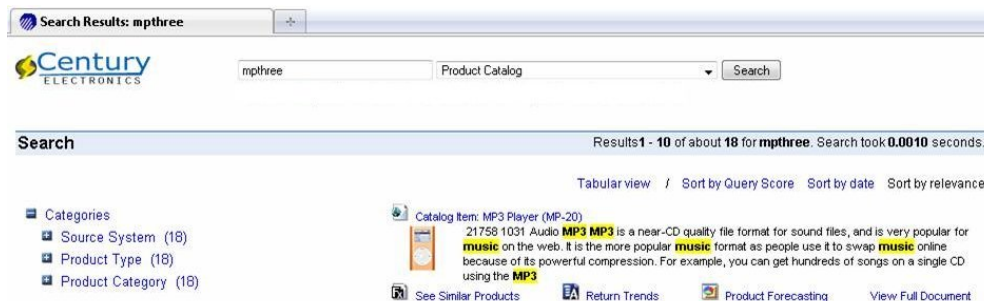
Collection Security

To use collection-level security, you must enable it in the Magnify Console, and the collections_century.xml file must be renamed as the default file, collections.xml.

Multiple Categorizations

The Magnify demo illustrates the search results appearing in multiple categories: Customers, Stores, Employees, Product Categories, Plants and Stores.

Process Flow

Product and Plant process flows illustrate basic error handling. Customers and Orders process flows have the batch size set.

Deleting Extraneous Files

When creating projects in App Studio, you must delete files in the feedcache directory before indexing data. Otherwise, the following extraneous files, segments.gen and segments_# (where # is a generated number), are created in the lucene_index\centuryelectronics directory. These extraneous files should be deleted.

Previous Versions

The ibi\apps\magnify_demo directory has been replaced with the \ibi\apps\ibimagn directory.

Index

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