Information Builders

WebFOCUS

Magnify Search Security and Administration
Release 8205 and higher

June 10, 2019

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.

Related Publications

Visit our Technical Content Library at *http://documentation.informationbuilders.com*. You can also contact the Publications Order Department at (800) 969-4636.

Customer Support

Do you have questions about this product?

Join the Focal Point community. Focal Point is our online developer center and more than a message board. It is an interactive network of more than 3,000 developers from almost every profession and industry, collaborating on solutions and sharing tips and techniques. Access Focal Point at *http://forums.informationbuilders.com/eve/forums*.

You can also access support services electronically, 24 hours a day, with InfoResponse Online. InfoResponse Online is accessible through our website, *http://www.informationbuilders.com*. It connects you to the tracking system and known-problem database at the Information Builders support center. Registered users can open, update, and view the status of cases in the tracking system and read descriptions of reported software issues. New users can register immediately for this service. The technical support section of *www.informationbuilders.com* also provides usage techniques, diagnostic tips, and answers to frequently asked questions.

Call Information Builders Customer Support Services (CSS) at (800) 736-6130 or (212) 736-6130. Customer Support Consultants are available Monday through Friday between 8:00 a.m. and 8:00 p.m. EST to address all your questions. Information Builders consultants can also give you general guidance regarding product capabilities. Please be ready to provide your six-digit site code number (*xxxx.xx*) when you call.

To learn about the full range of available support services, ask your Information Builders representative about InfoResponse Online, or call (800) 969-INFO.

Information You Should Have

To help our consultants answer your questions effectively, be prepared to provide the following information when you call:

❏ 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?

User Feedback

In an effort to produce effective documentation, the Technical Content Management staff welcomes your opinions regarding this document. You can contact us through our website, *http://documentation.informationbuilders.com/connections.asp*.

Thank you, in advance, for your comments.

Information Builders Consulting and Training

Interested in training? Information Builders Education Department offers a wide variety of training courses for this and other Information Builders products.

For information on course descriptions, locations, and dates, or to register for classes, visit our website (*http://education.informationbuilders.com*) or call (800) 969-INFO to speak to an Education Representative.

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.
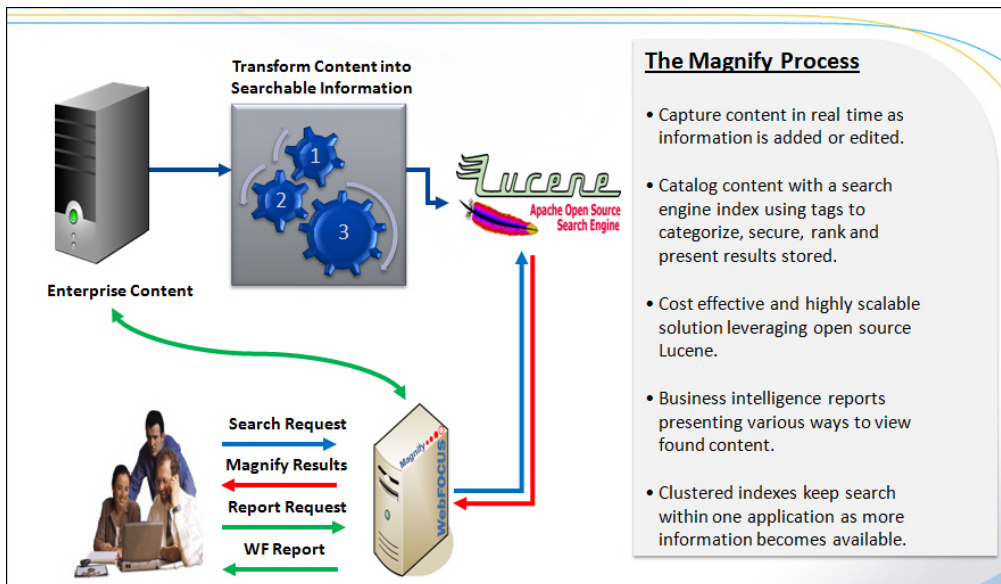
Configuring the Search Engine

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

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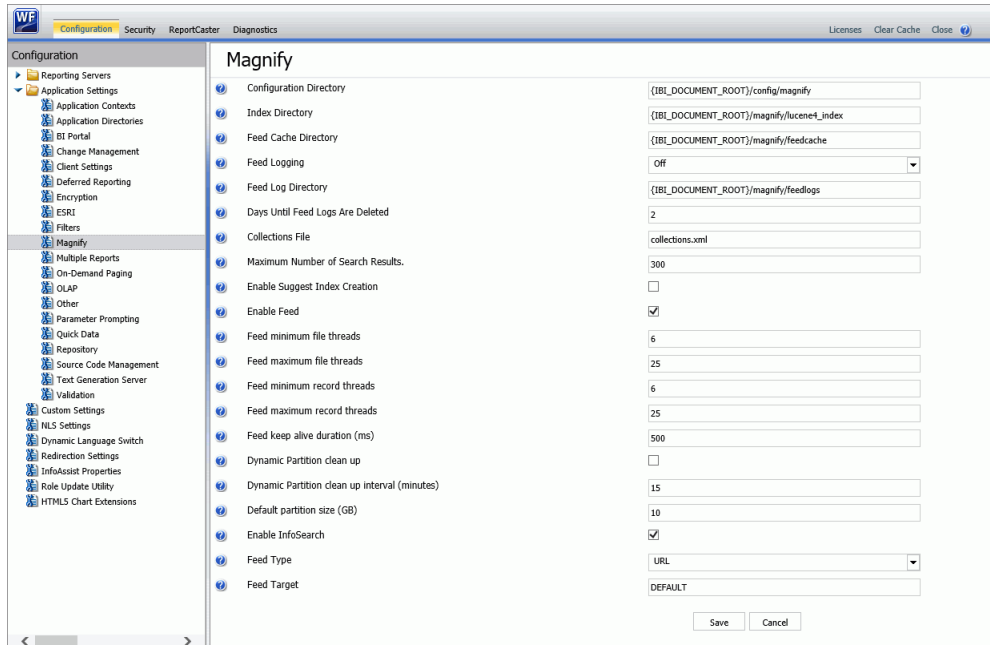
2. Type values (or accept the default values) for the remaining parameters:

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 23.

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.

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.

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.

Setting the Magnify Concurrent Merge Scheduler Thread Count

In order for a large Lucene index to remain manageable, it will periodically divide into segments, which are storage items for index data. Lucene indexes also merge smaller segments together to erase older records of deleted indexes. To govern segment merging tasks, Lucene uses the merge scheduler ConcurrentMergeScheduler.

Each segment merge process runs in it its own separate thread. In WebFOCUS Magnify Search, you can use the Magnify Merge Scheduler Thread Count setting to define the number of threads that you want to allocate for the merge process of each segment. When the maximum number of threads has been reached, further merges will wait until a merge thread becomes available.

The following example shows the format required for the setting, where n is the number of threads you want to allocate.

-DIBI_Magnify_Merge_Scheduler_Thread_Count=n

The maximum number of threads you can allocate depends on the number of processors that your system has available.

Save your thread count setting in the Java Options section of the application server that you use with your WebFOCUS environment.

Configuring Magnify Search Collections

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

In this chapter:

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.
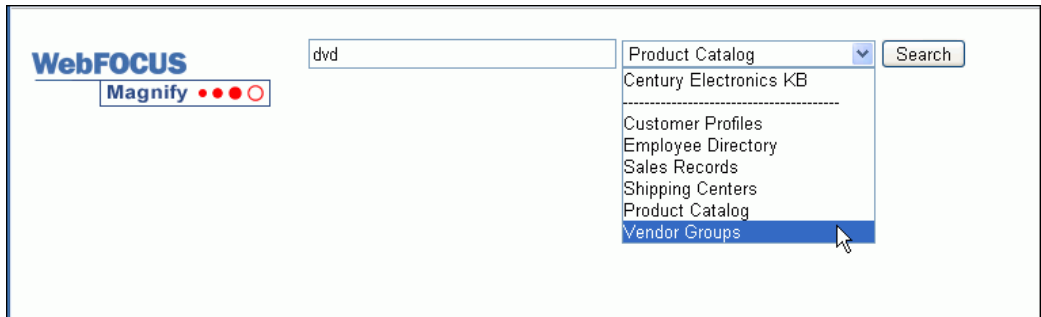
A collection can be any of the following:

❏ 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* on page 67.

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*

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*.

Note:

❏ In order to allow single digit numbers, add the following parameter to the WordDelimiterFilterFactory class:

```
generateNumberParts="1"
```

❏ If your Magnify configuration requires plural word support, and support for words ending in -ing, -ed, etc., add the following class to your analyzer definition for feed and search:

```
<filter
class="org.apache.lucene.analysis.ln.PorterStemFilterFactory"
luceneMatchVersion="4.9" />
```

Where *ln* is the language code of your WebFOCUS software.

❏ **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: **Specialized Language and Phonetic Analyzers**

The following analyzers, based on specialized language and phonetic encoding algorithms, also work with Magnify Search and InfoSearch:

❏ Soundex

❏ Refined Soundex

❏ Metaphone

❏ Double Metaphone

❏ Metaphone 3

❏ Caverphone

❏ Cologne Phonetic

None of these analyzers are included in the collections.xml file, by default. However, they can be supported when you add an Analyzer tag to the collections.xml file that contains the name and attributes that support the use of the specialized encoder.

The encoding algorithms used by these specialized analyzers work with the org.apache.lucene.analysis.phonetic.PhoneticFilterFactory. They are implemented in Java and other programming languages and are also used in several database applications. These algorithms are case sensitive when used in the collections.xml file.

Soundex

The encoder used by the Soundex analyzer supports the phonetic analysis of English-language proper names by sound as pronounced in English. The Soundex algorithm was originally developed by Margaret Odell and Robert Russell. By simplifying names according to the rules of the algorithm and converting consonants within a name to a numeric value, the algorithm is able to match similar sounding names in spite of differences in spelling. Typically, the Soundex encoding method identifies names that are similar in sound but not in spelling, but it can also be used as a method to identify related common words.

For more information about the Soundex algorithm, see the following website: *https://www.archives.gov/research/census/soundex.html*.

To include the Soundex encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config\magnify.

```
<analyzer name="Soundex" id="Soundex">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="Soundex" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Refined Soundex

The encoder used by the Refined Soundex analyzer is an enhanced version of the Soundex Analyzer encoder that includes optimization for spell checks and other refinements applied to the original Soundex algorithm over the years.

For more information about the Refined Soundex algorithm, see the following website: *http://ntz-develop.blogspot.com/2011/03/phonetic-algorithms.html*.

To include the Refined Soundex encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config\magnify.

```
<analyzer name="RefinedSoundex" id="RefinedSoundex">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="RefinedSoundex" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Metaphone

The encoder used by the Metaphone Analyzer also supports phonetic analysis of English-language proper names by sound. The Metaphone algorithm improves upon the basic Soundex phonetic analysis of words by building information about variations and inconsistencies in English spelling and pronunciation into its conversion routines. The Metaphone algorithm was developed by Lawrence Phillips, and the initial Java implementation was developed by William B. Brogden, who has provided the permission to use this code anywhere.

For more information about the Metaphone analyzer, see the following website: *http://php.net/manual/en/function.metaphone.php*.

To include the Metaphone encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config\magnify.

```
<analyzer name="Metaphone" id="Metaphone">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="Metaphone" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Double Metaphone

The encoder used by the Double Metaphone Analyzer extends the conversion rules of the Metaphone Analyzer to other languages to identify similar sounding terms.

For more information about the Double Metaphone analyzer, see the following website: *https://pypi.org/project/Metaphone#double-metaphone*.

To include the Double Metaphone encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config\magnify.

```
<analyzer name="DoubleMetaphone" id="DoubleMetaphone">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="DoubleMetaphone" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Metaphone 3

The encoder used by the Metaphone 3 Analyzer is based on the third version of the Metaphone algorithm and delivers the highest standard of accuracy for English terms and non-English terms familiar to most Americans.

For more information on the Metaphone 3 analyzer, see the following website: *https://searchcode.com/codesearch/view/2366000/*.

To include the Metaphone 3 encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config\magnify.

```
<analyzer name="metaphone3" id="metaphone3">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter
class="com.ibi.magnify.lucene_4.analysis.metaphone3.Metaphone3FilterFactory"
 inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Caverphone

The encoder used by the Caverphone Analyzer supports phonetic analysis of English-language proper names. This analyzer uses the multiple-step Caverphone algorithm to standardize all proper names into a six-character term that can be stored in an index. It was originally developed to analyze proper names used in New Zealand election roles, and it is optimized for matches based on the accent prevalent in that region.

The Caverphone analyzer implements the Caverphone 2.0 algorithm, which is a recently enhanced version of the Caverphone 1 algorithm created by the Caversham Project at the University of Otago.

For more information on this analyzer, see the following website: *https://caversham.otago.ac.nz/files/working/ctp150804.pdf*.

To include the Caverphone encoder in your set of analyzers, add the following analyzer tag to the Analyzers section of the collections.xml file, located at *drive*:\ibi\WebFOCUS82\config \magnify.

```
<analyzer name="Caverphone" id="Caverphone">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="Caverphone" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

Cologne Phonetics

The encoder used by the Cologne Phonetics Analyzer supports the phonetic analysis of words by assigning a sequence of digits to them, which becomes the phonetic code for that word. This action assigns the same phonetic code to identical-sounding words, and enables you to identify similarities between words. This analyzer implements the Kölner Phonetik (Cologne Phonetic) algorithm issued by Hans Joachim Postel in 1969. It supports words in any language, but it is optimized for the German language.

For more information on this analyzer, see the following website: *http://de.php.net/manual/de/ function.soundex.php#84881*.

To include the Cologne Phonetics encoder in your set of analyzers, add the following analyzer tag to the Analyzer section of the collections.xml file, located at *drive*:\ibi \WebFOCUS82\config\magnify.

```
<analyzer name="ColognePhonetic" id="ColognePhonetic">
<tokenizer
class="org.apache.lucene.analysis.core.WhitespaceTokenizerFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.core.LowerCaseFilterFactory"
luceneMatchVersion="4.9" />
<filter class="org.apache.lucene.analysis.phonetic.PhoneticFilterFactory"
encoder="ColognePhonetic" inject="true" luceneMatchVersion="4.9"/>
</analyzer>
```

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:
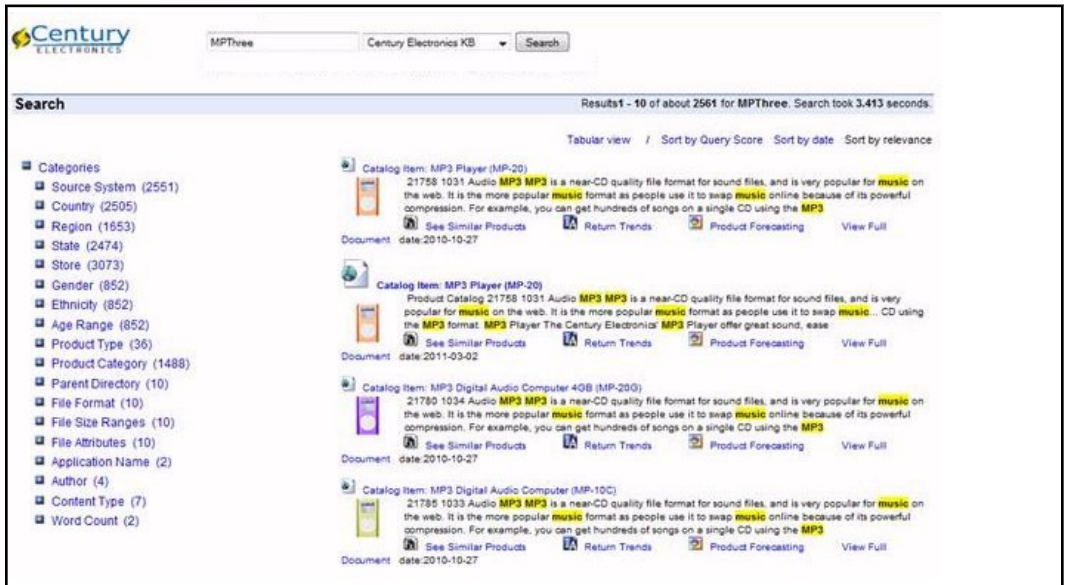
Procedure: **How to Configure Synonyms**

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.

Information Builders

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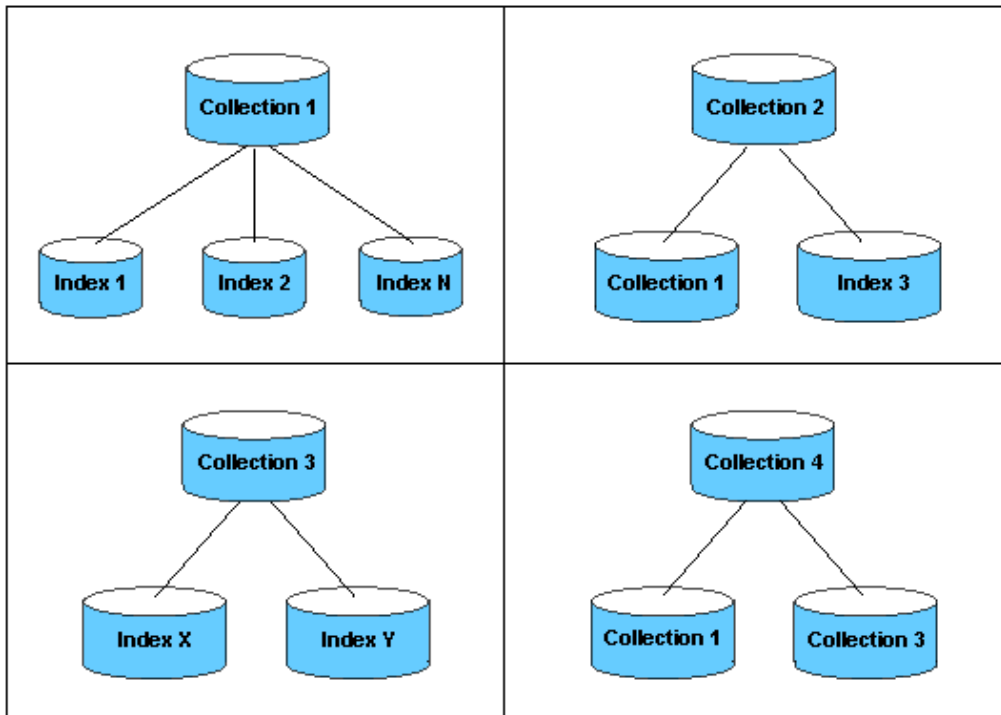
The following image illustrates the Magnify default collection defined in the collections.xml file.

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

A group can have multiple wildcard members 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 97.

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.

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:
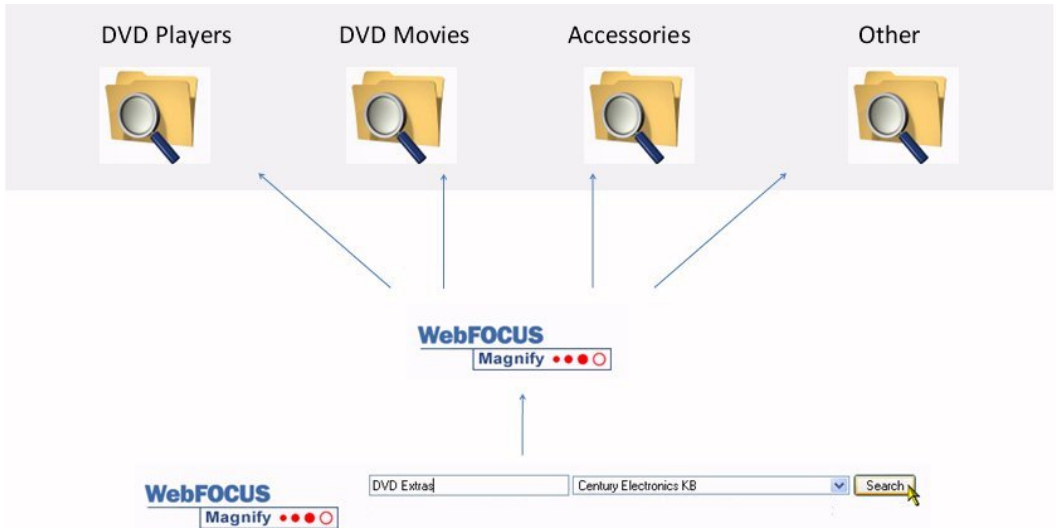
The result set returns with each search result ranked by relevancy. Each partition returns its most relevant search results (this includes relevancy rank). For example, the following illustrates the relevancy rank of each index in its result set for the *DVD Extras* search query.
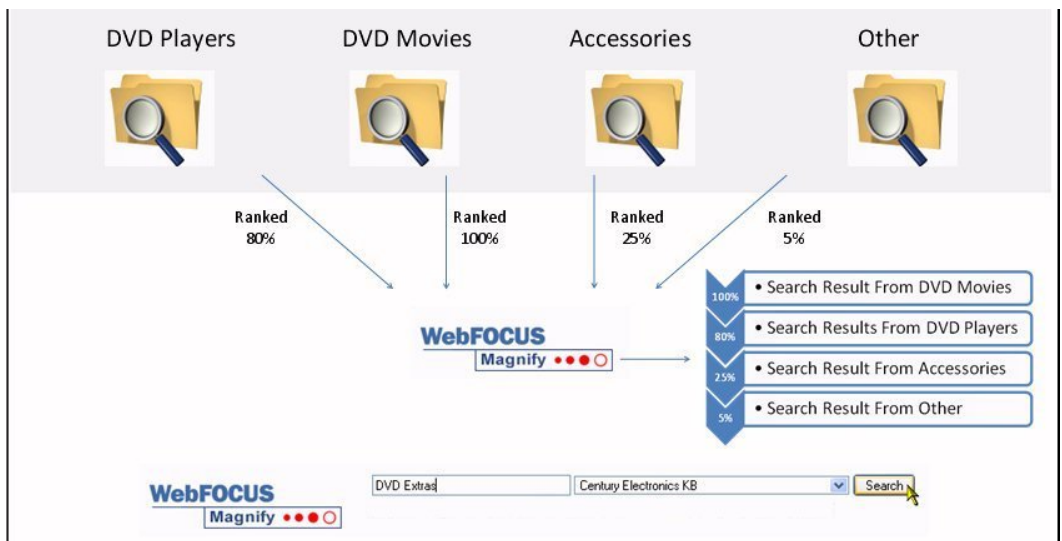
Magnify then sorts each result returned into one result set and sorts by relevancy rank. The user receives the most relevant search results across all collections.

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

❏   Authorizing Access to the Magnify Search Page and Console

❏   Granting Access to Domain-Based Magnify Search Results

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.

Authorizing Access to the Magnify Search Page and Console

The following WebFOCUS privileges control access to the Magnify Console and the Magnify Search Page:

❏ **Display Magnify Search Page (opMagnify).** Grants access to the Magnify Search Page. By default, this privilege is included in the rules assigned to the public user and to all basic domain user groups except the GroupAdmins group. Therefore, authenticated users can open and work with the Magnify Search Page within those domains that are accessible to them. As a session privilege, opMagnify enables users to see the Magnify Search Page command, located in the Tools submenu of the User menu, as soon as they are authenticated.

❏ **Display Magnify Console (opMagnifyConsole).** Grants access to the Magnify Console and the pages linked to it. By default, this privilege is included only in the rules assigned to the Administrators group, limiting access to the Magnify Console to WebFOCUS administrators. As a session privilege, opMagnifyConsole activates the ability to see the magnify Search command as soon as administrators sign-in.

Both of these privileges appear in the Role dialog box that opens from the WebFOCUS Security Center. To access the Security Center from the WebFOCUS Home Page, click the User menu, point to Administration, and then click Security Center. To access the Security Center from the Legacy home page, on the BI Portal Menu bar, click *Administration*, and then click *Security Center*. The Display Magnify Search Page (opMagnify) privilege appears in the Basic Reporting Privilege Category. The Display Magnify Console (opMagnifyConsole) privilege appears in the Administration Privilege Category.

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

The Display Magnify Search Page (opMagnify) privilege is assigned to the domain-based BasicUser, AdvancedUser, and Developer groups, enabling users to open the Magnify Search Page in any domain to which they are assigned. When the Enable Magnify Domain Level Security setting check box is selected, the Magnify Search Page only displays links to those indexes that are assigned to domains that are accessible to the user that opened the page. This limitation prevents users from searching or retrieving content from resources that are outside of their authority and responsibilities.

The Display Magnify Console (opMagnifyConsole) privilege is not assigned to domain-based groups. It is assigned, instead, to the Administration group, preventing users who do not have administration group privileges from opening or working with the Magnify Console and the settings pages linked to it. This limitation helps protect the integrity of the Magnify Console configuration by preventing anyone but administrators from changing the values assigned to configuration settings.

Opening the Magnify Search Page

Because the Magnify Search Page is available to users in all basic domain user groups except the Group Administrators group, any authenticated user can open the Magnify Search Page.

Typically, valid user credentials are required to open the Magnify Search Page or any other resource in WebFOCUS. However if one or more resources in the Public Folder are indexed, users assigned to the Anonymous group can open and view the Magnify Search Page and work with indexes assigned to the Public Folder without authentication.

If you wish to open the Magnify Search Page from the WebFOCUS Home Page, click the *User* menu, point to *Tools*, and then click *Magnify Search Page*.

If you wish to open the Magnify Search Page from the Legacy home page, in the BI Portal menu bar, click *Tools* and then click *Magnify Search Page*.

Procedure: **How to Sign in to the Magnify Search Page From a Browser Address Bar**

1. In the browser address bar, type the URL:

   `http(s)://`*`host`*`:`*`port`*`/`*`context`*`/search`

   where:

   host
   > Is the name or IP address of the host used to access WebFOCUS.

   port
   > Is the number of the port on which the Web Server or Application Server listens. This value is optional, and it should be excluded if the URL uses the default port for the protocol it uses in the scheme, which is port 80 for URLs using the http protocol or port 443 for URLs using the https protocol.

   context
   > Is the specific context used for WebFOCUS. For example, *ibi_apps*

2. If your user authentication method does not require you to sign in, or if you are already authenticated, the Magnify Search Page opens automatically.

3. If your user authentication method requires you to sign in, on the Sign In page, type a valid User name and Password, and then click *Sign In*.

The Magnify Search Page opens in response.

Opening the Magnify Console

Because the Magnify Console is available only to users in the Administrators group, only users who are assigned to that group can open the Magnify Search Page. If you are not authenticated with the credentials of an administrator, you will be unable to see the menu commands or open the URL identified in this section.

If you wish to open the Magnify Console from the WebFOCUS Home Page, click the *User* menu, point to *Administration*, and then click *Magnify Console*.

If you wish to open the Magnify Console from the Legacy home page, in the BI Portal menu bar, click *Administration* and then click *Magnify Console*.

Procedure: How to Sign in to the Magnify Console From a Browser Address Bar

1. In the browser address bar, type the URL:

   `http(s)://host:port/context/search/jsp`

   where:

   host
   > Is the name or IP address of the host used to access WebFOCUS.

   port
   > Is the number of the port on which the Web Server or Application Server listens. This value is optional, and it should be excluded if the URL uses the default port for the protocol it uses in the scheme, which is port 80 for URLs using the http protocol or port 443 for URLs using the https protocol.

   context
   > Is the specific context used for WebFOCUS. For example, *ibi_apps*

2. If your user authentication method does not require you to sign in, or if you are already authenticated, the Magnify Console opens automatically.

3. If your user authentication method requires you to sign in, on the Sign In page, type a valid User name and Password, and then click *Sign In*.

   The Magnify Console opens in response.

Granting Access to Domain-Based Magnify Search Results

By default, access to Magnify Search results does not conform to the domain-based WebFOCUS Security Model. Searches return results across all indexes, as opposed to indexes created for individual user-accessible domains.

Administrators can choose to configure access to Magnify Search content to conform to the domain-based WebFOCUS Security Model and ensure that searches return results only from those domains that are accessible to the user initiating a search. For example, an individual who is a member of the basic user group of the Sales and Marketing domains can only search indexes within those domains. By contrast, an individual in the administrator group has access to all domains, and can search indexes in any of them.

In order to impose the WebFOCUS Security Model and its domain-based security over Magnify searches, the Enable Magnify Domain Level Security check box must be selected. This check box appears on the Magnify Settings page of the WebFOCUS Administration Console Configuration tab.

When this check box is selected, WebFOCUS and Magnify searches conform to the domain-based WebFOCUS Security Model. That is, users are only able to use and see results from those Magnify Search indexes whose names match the domains to which they have access.

If you enable Magnify Search domain-level security, the List and Run role must be granted to all of the domains and their groups that will be included in Magnify Searches. This role consists of the Access Resource privilege, which allows users to view resources, such as reports, charts, and other content in a list of available resources, and the Run Resources privilege, which allows users to run resources such as reports, graphs, pages, and schedules, and to access static content.

Establishing an Index for a Domain

The use of domain-based security for Magnify Search ensures that only those users who have the privilege to review or work with the content within a specific domain can see search results taken from the index to the content of that domain when they use Magnify Search.

In order to assign an index to a domain, you must link it to the domain to which it applies by using the same value for the Name assigned to the domain and the name assigned to the index itself. Domains maintain a Title, which is visible to users on the Home Page and elsewhere within the application, and a Name based on that title, which, typically, is not visible to users. The Name is used internally to identify the domain within the IBFS (Information Builders File System).

When you create the index for the domain, use the value assigned to the domain Name field as the name of the index. By assigning the same value to name the domain and index, you clearly identify the link between the index and the content it targets. Users who are assigned to the domain will be able to see a recognizable name for the related index in the list of available indexes on the Magnify Search Page.

If users assigned to that domain require the use of additional domain based indexes to support their research, you can assign other domain indexes to a collection of indexes made available to users of that domain.

Procedure: **How to Create a Domain That Supports a Magnify Index From the WebFOCUS Home Page**

1. Sign in to WebFOCUS as an administrator.

2. On the WebFOCUS Home Page, in the WebFOCUS Explorer Resources tree, click *Domains* if it is not highlighted already

   or

   In the breadcrumb trail, click *Domains*.

3. On the actions bar, under Create New, click *Domain*, as shown in the following image.
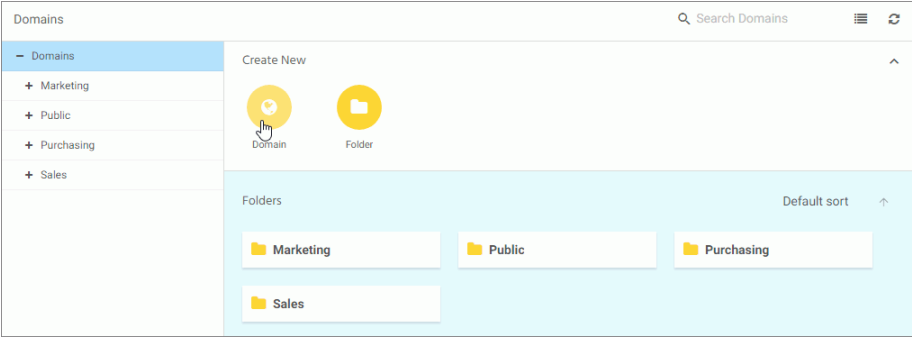
4. In the New Domain dialog box Type list, select one of the following domain types, as shown in the following image:

   ❑ Click *Enterprise Domain* to create a department or division domain for an enterprise.

   ❑ Click *Tenant Domain* to create a tenant domain for a SaaS provider.
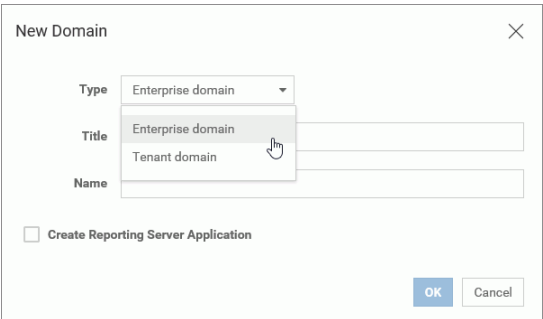
5. In the Title field, type a description of the domain, as shown in the following image.

   As you type, WebFOCUS automatically assigns the description you type in the Title field, adjusted to conform to IBFS rules, to the Name field.

6. Type over the automatically-assigned value in the Name field with a short, single word term that identifies the index (collection) for this domain.

   Note: Because Magnify Search and the repository are case-sensitive, use lowercase characters for the value you assign to the Name field. For example, replace a term like Human_Resources with humanresources, as shown in the following image.

7. To create an associated application directory on the Reporting Server, select the *Create Reporting Server Application* check box.

   Note: If you include the Create Reporting Server Application option, you need to create and implement an authorization strategy that grants domain users appropriate access to application directories on the Reporting Server. For more information, see Understanding Access Control Templates in the WebFOCUS Security and Administration technical content.

   As you select or clear this check box, WebFOCUS dynamically updates the value in the Name field to remove characters that are not allowed for resource names.

8. When your selections are complete, click *OK*.

Procedure: **How to Create a Domain That Supports a Magnify Index From the Legacy Home Page**

1. Sign in to WebFOCUS as an administrator, and open the Legacy home page.

2. Right-click the *Domains* node in the Resources tree and point to *New*, as shown in the following image.
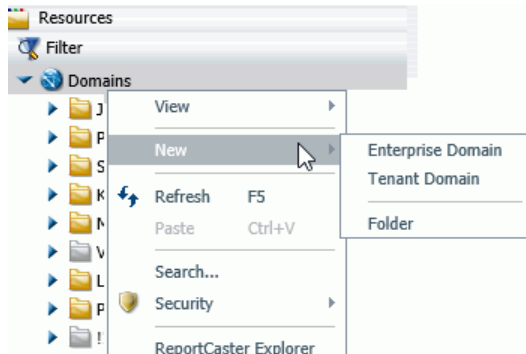
❑ Click *Enterprise Domain* to create a department or division domain for an enterprise.

❑ Click *Tenant Domain* to create a tenant domain for a SaaS provider.

If you clicked Enterprise Domain, the New Enterprise Domain dialog box opens, as shown in the following image. If you clicked Tenant Domain, the New Tenant Domain dialog box opens. Both dialog boxes include the same set of features and layout.
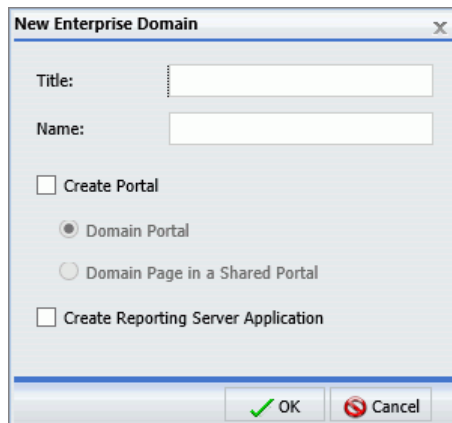
Note: When the Basic Portal check box, located on the BI Portal page of the Administration Console, is cleared, the Create Portal check box in the New Enterprise Domain and New Tenant Domain dialog boxes is also cleared, as shown in the following image. This check box, and the options associated with it, are unavailable, and you will be unable to create a domain that includes a portal or a domain page in a shared portal.

Information Builders

3. In the Title field, type a description of the domain.

   As you type, WebFOCUS automatically assigns the description you type in the Title field, adjusted to conform to IBFS rules, to the Name field.

4. Type over the automatically-assigned value in the Name field with a short, single word term that identifies the index (collection) for this domain.

   Note: Because Magnify Search and the repository are case-sensitive, use lowercase characters for the value you assign to the Name field. For example, replace a term such as Human_Resources with humanresources, as shown in the following image.

5. To create optional resources along with the domain, perform the following:

   a. To create a Portal, select the *Create Portal* check box, and then click *Domain Portal*.

   b. To create pages within a shared Portal, select the *Create Portal* check box, and then click *Domain Page in a Shared Portal*.

   c. To create an associated application directory on the Reporting Server, select the *Create Reporting Server Application* check box.

   Note: If you include the Create Reporting Server Application option, you need to create and implement an authorization strategy that grants domain users appropriate access to application directories on the Reporting Server. For more information, see *Understanding Access Control Templates* in the *Security and Administration* technical content.

   As you select or clear these check boxes, WebFOCUS dynamically updates the value in the Name field to remove characters that are not allowed for resource names.

6. When your selections are complete, click *OK*.

   You receive a message that WebFOCUS is running the resources template.

7. When you receive a message stating that the new domain has been created, click *OK*.

Assigning Users to an Indexed Domain

Indexes are assigned directly to domains, and are available only to the users who are also assigned to the Basic User, Advanced User, or Development group in those domains. For information about how to assign a user to a domain group, see *How to Add a User to a Group* in the *WebFOCUS Administration and Security* technical content.

Assigning Indexes to Domains

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 for which the index is designed to support, as shown in the following image.
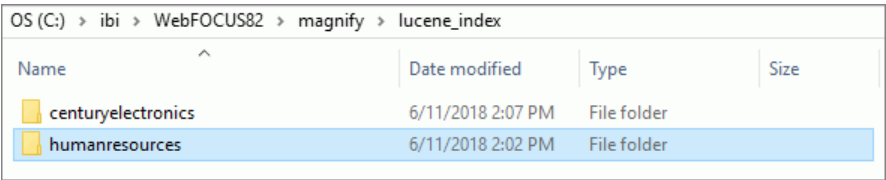
The index, with the domain name assigned to it, appears in the lucene_index directory.

For more information on how to create an index, see the *Magnify Search Developers Guide*.

Assigning Indexes to Collections

The collections.xml file is located in the *drive*:\ibi\WebFOCUS82\config\magnify directory. You can edit this file to map a name of a collection to multiple indexes using different names. By assigning a multiple indexes to a collection, and then assigning that collection to a group within a domain, you make indexes of content outside of the domain available to users when working with a particular domain.

Information Builders

```
<collections>
<group name="humanresources" id="humanresources">
<search lang="en" analyzer="MagnifyAnalyzer" stylesheet="en/
en_stylesheet_peter" id="en_search_cent_sales"/>
<component id="humanresources" member="humanresources"/>
<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>
```

In this example, the default indexes of customers and orders for century electronics are made available to users assign to the Human Resources group.

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, you can use multiple physical drives.

Chapter 5

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 sign in to WebFOCUS as an administrator, and from the WebFOCUS Home Page, click the *User* menu, point to *Administration*, and then click *Magnify Console*. To access the Magnify Console from the Legacy Home Page, on the Menu bar, click *Administration* and then click *Magnify Console*.

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* technical content.

❏ When you save or change a Magnify Console setting, the event is logged in the audit log file located in the Administration Console. Magnify Console events are logged by default. For more information, see the *WebFOCUS Security and Administration* technical content.

The Magnify Console is shown in the following image.
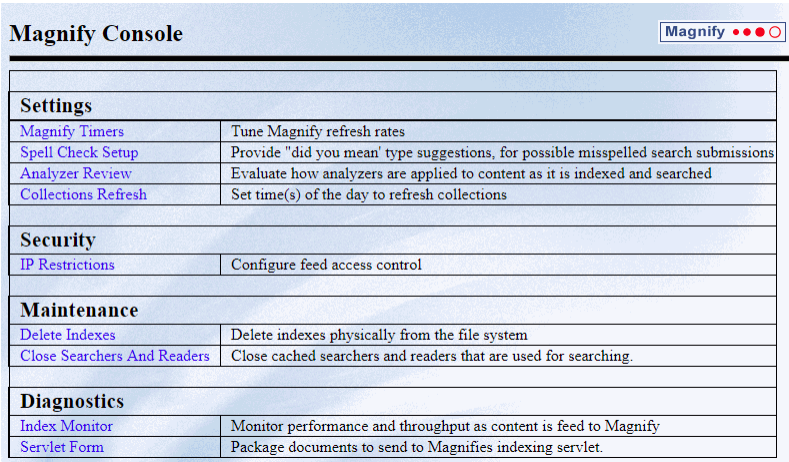
General Settings

As of WebFOCUS Release 8.2 Version 02, the General settings area in the Magnify Console has been removed. Parameters that appeared under General settings in previous releases have been moved to the Magnify section of the WebFOCUS Administration Console (Application Settings, Magnify).

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 18.

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 65. Additionally, the spell checking feature is disabled 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 66.

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:
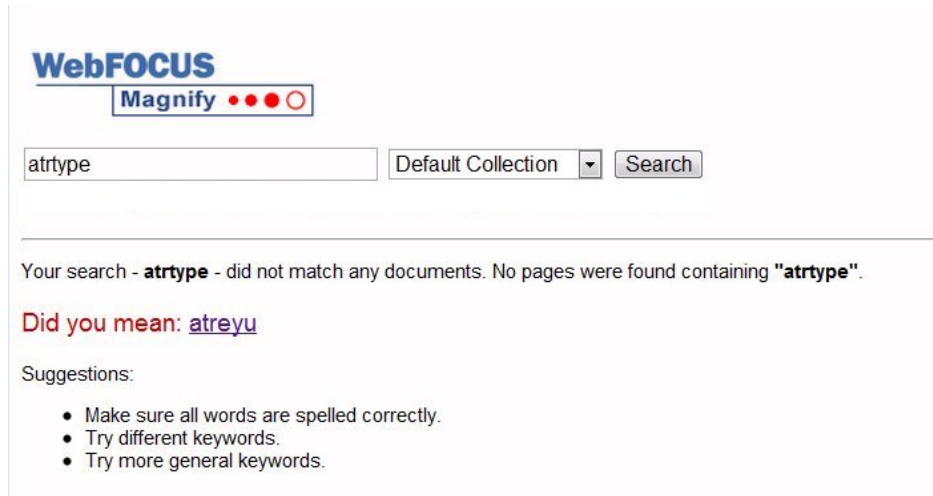
When spell checking is enabled and a collection is searched without a collection dictionary created, the default dictionary is the first index library referenced.

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.

Testing Analyzers

Each analyzer provides different functionality for manipulating either the query during a search or the data during the feed process. To test the behavior of each analyzer, you can use the Analyzer Review page accessible in the Magnify Console. All analyzers that are configured in the collections.xml file are available for testing. When testing an analyzer, the following information is provided:

❏ **Term position.** Is the location of each term in the query string.

❏ **Term text.** Each word in the query string.

❏ **Term type.** Is the tokenizer type. The default value is word.

❏ **Source start, end.** Are the character offsets from the beginning of the query string. Character offsets allow applications to reassociate a token with its source text (for example, to display highlighted query terms in a search result).

❑ **Payload.** Is an optional Lucene feature not currently used by Magnify Search.

Procedure: **How to Test an Analyzer**

1. Click the *Analyzer Review* link on the Magnify Console page.

2. Select an analyzer from the *Select Analyzer* drop-down list.

   Every analyzer that is configured in the collections.xml file is available in the drop-down list.

3. Type the query string to test in the *Enter several words of text to Analyze* input box.

4. Select the *Post* or *Get* radio button.

   Note: The Get method is the default when using Latin-1 encoding for all application servers. If your browser is using the Chinese, Japanese, or Korean language, the Post method becomes the default.

5. Click *Analyze Text*.

   The result for the analyzer and each of its filters displays.

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/WebFOCUS*xx*/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 menu.

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.

Maintaining Indexes and Searches

Magnify supports your search operations by caching indexes and searches after their initial use is complete. This precaution saves you time when you need to run a previously-opened search or index or when you need to use them as the basis for a new search.

Typically, all open indexes and searchers are closed when the application server shuts down. They open again only when a user calls them for a new search or index operation. However, too many open indexes or searches may prove to be a strain on resources. When this occurs, Administrators can overcome this default behavior by opening one of the following links in the Maintenance section of the Magnify Console.

❏ **Delete Indexes.** Deletes indexes physically from the file system.

❏ **Close Searchers and Readers.** Closes cached searchers that are used for searching, and indexes that are open for reading.

Delete Indexes

The Delete Indexes link opens the Delete Indexes page, as shown in the following image.
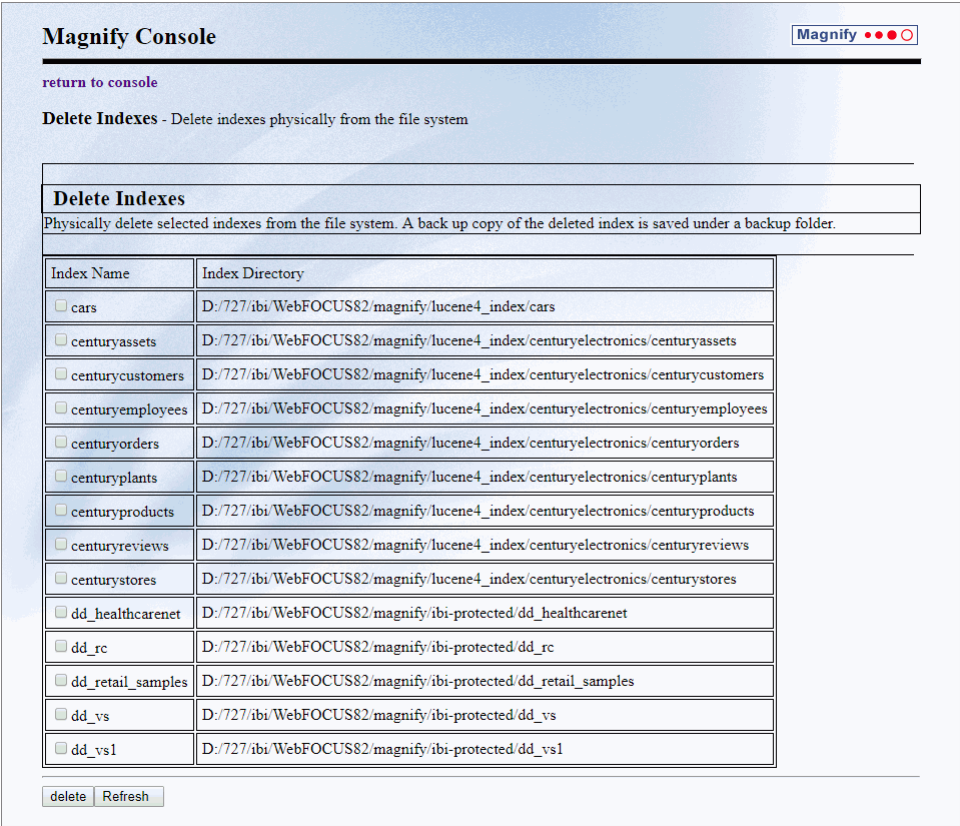
This page lists all available indexes and provides you with the tools to delete them individually.

Any indexes that must be deleted must be closed first. To delete one or more individual indexes, select the check boxes for them, and then click *delete*. To see the updated list, click *Refresh*.

If you delete an index by mistake, a backup copy of it is available in the backup folder.

You also have the option of using a web service request to delete an index. For more information, see the *WebFOCUS Embedded Business Intelligence User's Guide* technical content.

Close Searchers and Readers

The Close Searchers link opens the Close Currently Open Searchers and Currently Open Index Readers page, as shown in the following image.

This page lists all open searchers and index readers and provides you with the tools to close them individually or all of them in a single operation.

To close all open searchers, click *Select All*, and then click *Submit*. To close one or more individual open searchers, select the check boxes for them, and then click *Submit*.

When you close a searcher, you do not close or delete the indexes or index readers it uses. They remain available for future use.

To close all open indexes, click *Select All*, and then click *Submit*. To close one or more individual open indexes, select the check boxes for them, and then click *Submit*

Once you close an index reader, it must be reopened the next time a user references that index in a search, and this activity may slow the performance of the next search.

You also have the option of using a web service request to close a searcher or index. For more information, see the *WebFOCUS Embedded Business Intelligence User's Guide* technical content.

Monitoring the Indexing Process

You can monitor the performance of the index process by clicking *Index Monitor* in the Magnify Console. The Index Loading Performance graph displays the number of records indexed per minute. T-*seconds* represents the number of seconds an index feed was processed. T-60 represents a full minute.

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.

Search traces capture details of search events launched from Magnify Search and InfoSearch. Feed traces capture events that occur during index feed operations. The creation of logs containing traces of search events is activated, by default. The creation of logs containing traces of index feed events must be activated by an Administrator.

You can access the Administration Console from the WebFOCUS Home Page or the Legacy Home Page. Alternatively, you can specify the following URL in the browser address bar:

`http://server_name:port_number/context_root/admin`

In either method, you must sign in as an administrator in order to see and work with the Administration Console.

Search Traces

The magnify_search.log file contains traces of events from Magnify operations captured by the com.ibi.magnify logger. You can find a link to the current version of this file on the Log Files page of the Diagnostics tab of the WebFOCUS Administration Console, as shown in the following image.
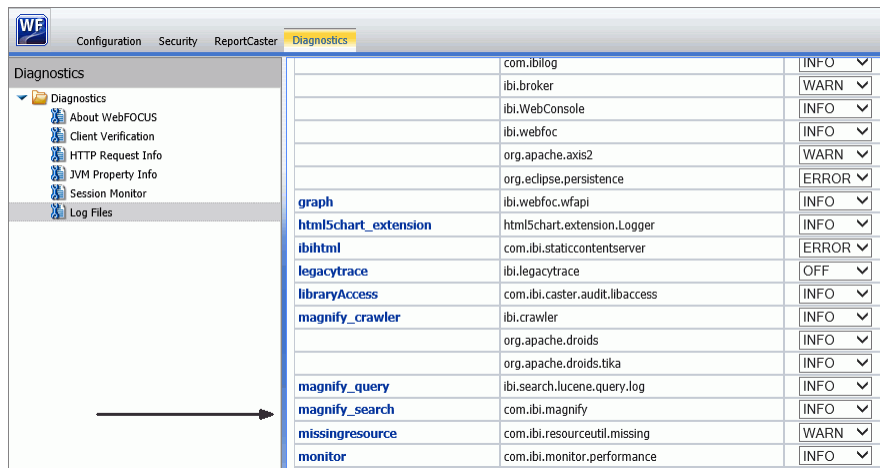
The com.ibi.magnify logger is configured to capture traces at the INFO level, by default. This is a moderate level of detail that enables you to capture information about system events without compromising performance. This log level captures events that generate informational messages in addition to warning, error, and fatal events.

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

The following log levels are available for the magnify_search.log file:

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.

Log files containing these traces are stored in the magnify_search log file, located in *drive*:\ibi\WebFOCUS82\logs

Feed Traces

The file_indexing log file contains traces of events from Magnify Feed operations. You can open and review the current version of this file in the *drive*:\ibi\WebFOCUS82\magnify\feedlogs directory.

You can activate the creation of logs containing traces of Feed events by configuring the three settings on the Magnify Page of the Configuration tab in the WebFOCUS Administration Console, as shown in the following image.

Magnify		
❷ Configuration Directory	{IBI_DOCUMENT_ROOT}/config/magnify	
❷ Index Directory	{IBI_DOCUMENT_ROOT}/magnify/lucene4_index	
❷ Feed Cache Directory	{IBI_DOCUMENT_ROOT}/magnify/feedcache	
❷ Feed Logging	On	▾
❷ Feed Log Directory	{IBI_DOCUMENT_ROOT}/magnify/feedlogs	
❷ Days Until Feed Logs Are Deleted	2	

When you select the On value in the Feed Logging (IBI_MAGNIFY_FEED_LOGGING) setting, you activate tracing for Index operations.

When you activate the Feed Logging setting, the Feed Log Directory (IBI_MAGNIFY_FEED_LOG_DIRECTORY) location identifies the location for logs containing traces of Index events. This location is *drive*:\ibi\WebFOCUS82\magnify\feedlogs, by default. We do not recommend that you change this location without consulting the Customer Service team.

In addition, the number of days that logs containing traces of Index events remain on file is established in the Days Until Feed Logs Are Deleted (IBI_MAGNIFY_FEED_LOG_RETAIN_DAYS) setting. By default, feed log records remain available for two days after they are created, but administrators can adjust this value to suit their requirements.

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

Logging Information About Indexed Documents

You can review information about each document that is indexed in Lucene by configuring Magnify Feed Log settings in the WebFOCUS Administration Console to log information about each record. The log information is written into the \ibi\WebFOCUS*xx*\magnify\feedlogs directory and may be encoded. For example, the contents of the following record in the log file is Base64-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
              IE1lZ2FwaXhlbChEQy02MTApPC9USVRMRT48TUVUQSBuYW1lPSJXR19
      </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. Sign in to WebFOCUS as an administrator and open the Administration Console.

    Or

    In your browser address bar, type the following URL:

    `http://server_name:port_number/context_root/admin.`

    and sign in to WebFOCUS if prompted.

2. On the Configuration tab, under the Applications Settings folder, click *Magnify*.

3. In the Magnify Settings pane, click *On* in the Feed Logging list.

4. Accept the default location for the trace directory identified in the *Feed Log Directory* setting.

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

    Consult the Customer Service team if you must define a different location for feedlogs.

5. Click *Save*.

6.   When you receive the Successfully Saved message, click *OK*.

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: As of Release 8.0 Version 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.

You also have the option of using a web service request to start or end a system quiesce. For more information, see the *WebFOCUS Embedded Business Intelligence User's Guide* technical content.

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.

Chapter 6

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

❑ Adding Date Information to Magnify Search Results

❑ Understanding the JSON Template

❑ Exporting Search Results In XSLX Format

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:

| mp3 10GB | Search |

Search result information:

Results **1 - 10** for **mp3 10GB**. Search took **0** seconds.

```
<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**

[Product] CD Changer / CD Player (CD-100CP)
CDs, CD-Rs, CD-RWs, and **MP3s**. Fade in/fade out between songs, text display of artist names and CD info

```
<!-- *** 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.

Understanding the JSON Template

The JSON Template is an alternative to the current XML Stylesheet Language Template, also known as XSLT. Since XSLT can be too complicated for many users to understand, the JSON Template has been made available for use. The JSON Template utilizes HTML and JavaScript, which are more well-known languages.

Note: When using the JSON Template, the links *image view* and *facetcounts* are not available. They are available in the XSLT Template.

The JSON Template supports active reports. Click the *Tabular view* link to display your search results in tabular format. If your search results contain active reports, navigate to the title column and click the link for the active report to display the report.

Activating the JSON Template

To use the JSON template for your Magnify search result page, place the following two attributes in the DEFAULTS section of the collections.xml file:

❏ *template_dir="web_resource/magnify"*. This attribute states the location of the template.

❏ *template="magnify_json_default.htm"*. This attribute states the name of the template.

The following image shows the DEFAULTS section of the collections.xml file with the two attributes included.

After adding the attributes, save the *collections.xml* file.

When you refresh the Magnify search result page, the JSON Template will now be in use. There will be slight appearance differences between the previous XSLT Template and the JSON Template.

Exporting Search Results In XSLX Format

The Magnify Search page has the ability to export search results in .xslx format, which is the current Excel format supported by Microsoft.

Procedure: **How to Configure Search Results to Export in XSLX Format**

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

2. Locate the following syntax:

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

3. Change the *show_export* variable to 1, as follows:

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

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.
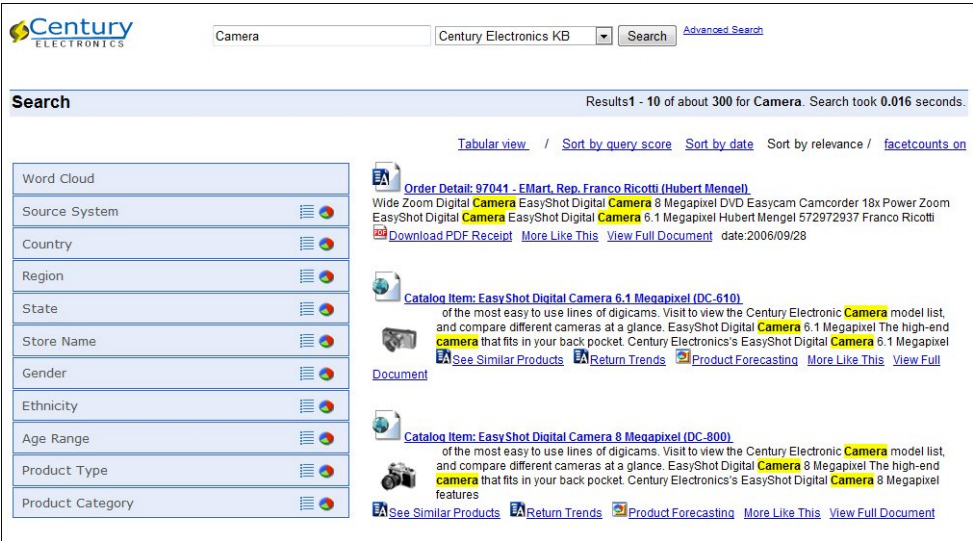
❑ **General Information.** Notice the number of records and speed.

❑ **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.
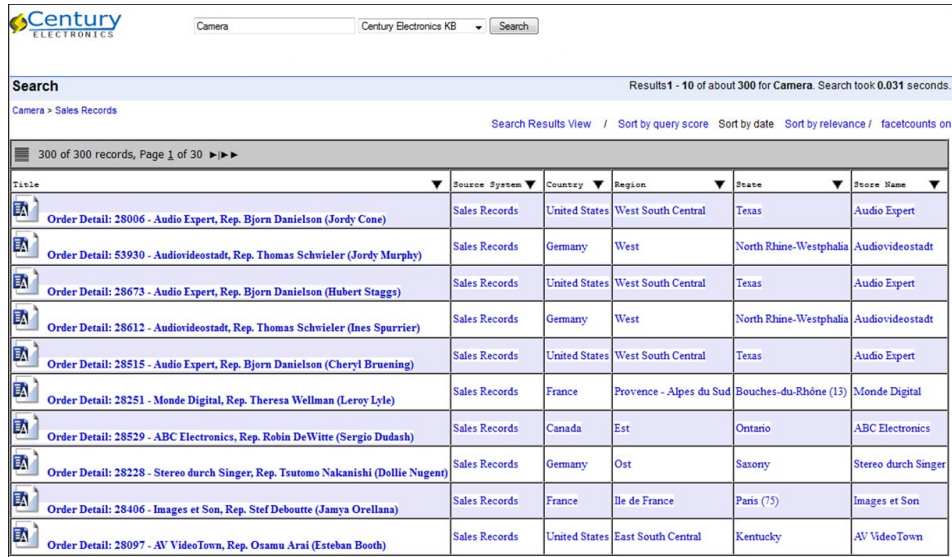
❑ **Breadcrumb Trail.** Each category selected is mapped.

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.
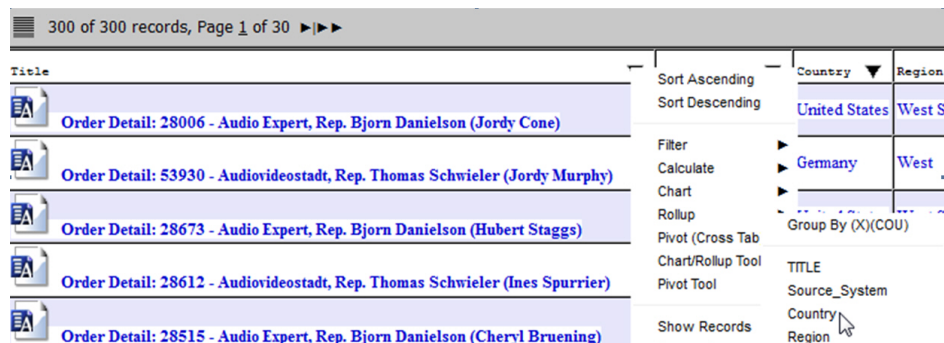
For sorting purposes, click *Sort by date*. Click *Tabular View* to change the layout, as shown in the following image.

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.
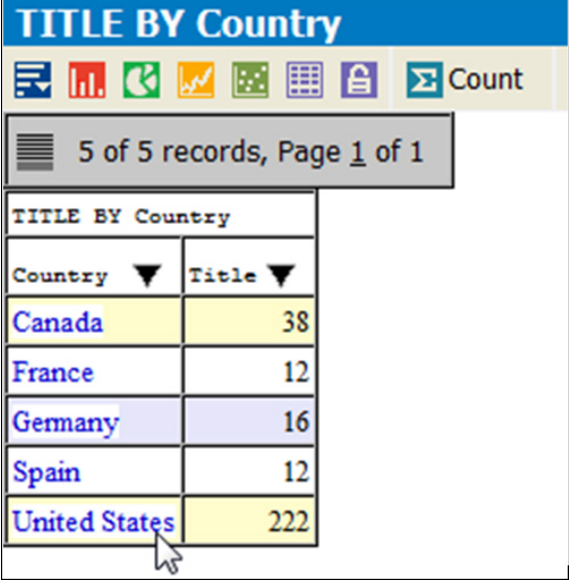
d. In the Rollup Chart tab, filter the search results by *Country*.

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.
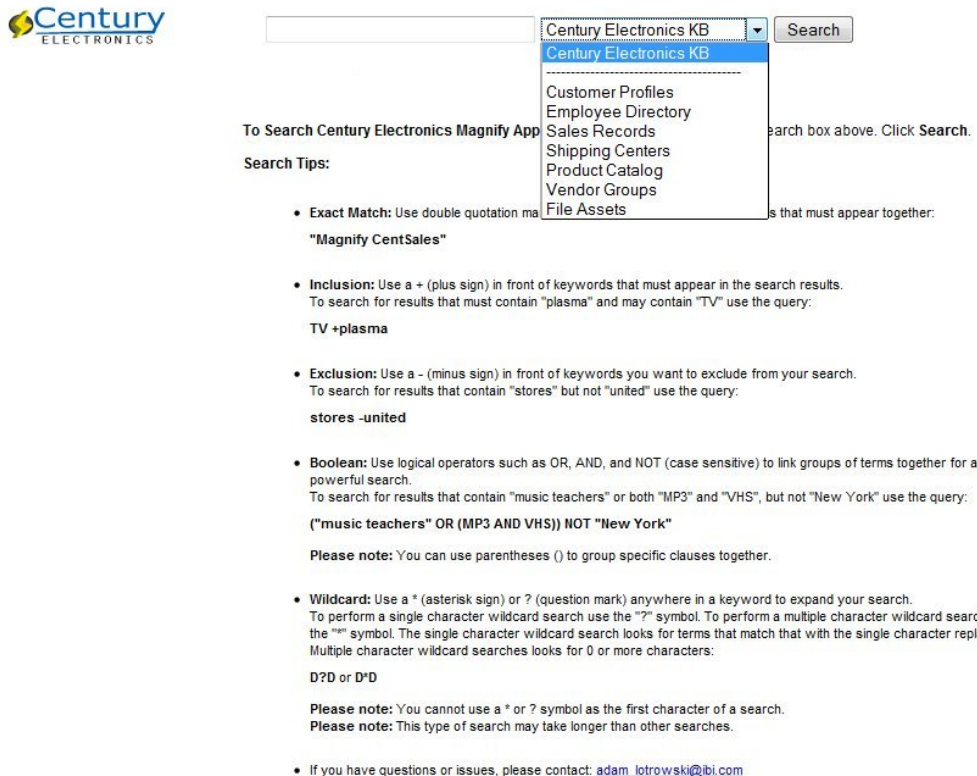
App Studio and WebFOCUS Installation

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

Feedback

Customer success is our top priority. Connect with us today!

Information Builders Technical Content Management team is comprised of many talented individuals who work together to design and deliver quality technical documentation products. Your feedback supports our ongoing efforts!

You can also preview new innovations to get an early look at new content products and services. Your participation helps us create great experiences for every customer.

To send us feedback or make a connection, contact Sarah Buccellato, Technical Editor, Technical Content Management at *Sarah_Buccellato@ibi.com.*

To request permission to repurpose copyrighted material, please contact Frances Gambino, Vice President, Technical Content Management at *Frances_Gambino@ibi.com.*

WebFOCUS

Magnify Search Security and Administration
Release 8205 and higher

Information Builders