IBM Content Collector Integration with IBM Classification Module

Introduction

This IBM® Redpaper™ publication describes the integration of IBM Classification Module with IBM Content Collector. Content Collector assesses, monitors, identifies, and collects virtually all content for archiving. Using Classification Module within Content Collector, you can classify the content before it is archived.

We cover the following topics in this paper:

- Introduction to Classification Module
- Integrating Classification Module
- Metadata derived from Classification Module
- Configuring task routes with knowledge base
- Configuring task routes with decision plan
- Summary
Introduction to Classification Module

Classification Module is an enterprise platform that enables applications to automatically categorize content and discover metadata by custom rules. It automates the organization of unstructured content into categories by analyzing the full text of documents and emails and by applying rules. Classification Module also helps with identifying mission-critical metadata.

When Classification Module is integrated with Content Collector, you can take advantage of custom-trained knowledge bases and decision plans for use with your archive activity.

In this section, we introduce the knowledge base and decision plan of the Classification Module. For more details about IBM Classification Module, refer to *IBM Classification Module: Make It Work for You*, SG24-7707.

Knowledge base

A *knowledge base* is an object containing the learned information that Classification Module needs to perform matching, training, and online learning. This knowledge base is filled with relevant statistical and semantic information that is derived from a number of sample texts (known as a *corpus*) by using a process known as training or online learning (also known as feedback).

The sample texts need to represent the kinds of text that the system is expected to handle. The statistical information can consist of entities, such as words in the text, the number of occurrences of those words, hints about the text, and the distance between words. The information reflects the kind of data that the system is expected to handle and that can be stored in a file or a database.

*Categories* are the fundamental elements within the knowledge base. Categories can represent the textual content of a text, or they can indicate another attribute, such as its source. A category has a set of features, which are known as concepts, that characterizes a category and distinguishes it from other categories. The creation and maintenance of these concepts are internal to Classification Module and are not controlled by users. Instead, the creation and maintenance of these concepts are affected by the training or learning processes. For more details about creating and managing knowledge bases, refer to *IBM Classification Module: Make It Work for You*, SG24-7707.
Decision plan

In addition to classification using the knowledge base, Classification Module can perform rule-based classification with the help of decision plan. A decision plan is a collection of rules that you configure to determine how Classification Module classifies content items.

Unlike a knowledge base, which can be built automatically by supplying a sample set of precategorized content items, you build a decision plan by creating and configuring one or more rules. Rules consist of triggers and actions. A trigger determines the conditions that must be met to initiate an action. Each rule has exactly one trigger; however, it can have multiple actions. An action specifies what action Classification Module performs if an associated rule triggers and returns true. The action can be to store a document in a specific folder or document class, to move or copy a document from one folder to another folder, to declare a document as a record so that it can be placed under the control of a records management system, or to extract and update metadata information from the document.

You can also configure triggers and actions based on content or metadata. A decision plan can use one or more knowledge bases for a combination of rule-based and knowledge-based classification. For example, you can add a knowledge base to your decision plan project, and you can define rules that are based on matches and scores.

You can combine multiple rules into a group. A group is a logical collection of triggers and actions designed to achieve a certain task. You can create multiple groups within a decision plan and sequence them. Each group can then be dynamically set to be activated or not to be activated based on the rule evaluation of any previous group in the sequence.

You use Classification Workbench to configure decision plans and groups of decision plans. For more details about creating and managing decision plans, refer to IBM Classification Module: Make It Work for You, SG24-7707.

Content classification for Content Collector

Classification Module can classify content and discover additional metadata. This information can then be used in Content Collector, for example, to determine if an item needs to be archived or not or how the item must be processed while it is archived and filed. With Classification Module, you can use advanced classification rather than solely relying on document metadata.
To meet compliance and record management initiatives, or to prepare collections of data for legal discovery, Classification Module can distinguish important emails from emails that have no business value. Based on the content analysis, Classification Module enables Content Collector to take the appropriate action. An email that discusses a patent application might be copied to an IBM FileNet® P8 folder and be declared as a record using IBM Enterprise Records. In contrast, an email that discusses patent leather might be filtered out and not archived.

If you use a Classification Module decision plan to classify your documents, rules can be configured to discover metadata in addition to categories. You can access all metadata fields that are filled by Classification Module and use them in Content Collector. If Classification Module extracts a reference number from all documents in one category, this reference number can be used in Content Collector, for example, to file a document in a specific folder for this reference number.

Figure 1 shows the various components of Classification Module and its interaction with Content Collector. Refer to *IBM Classification Module: Make It Work for You*, SG24-7707, for more details about the Classification Module components. This book highlights the features that are used by the SOAP interface between Content Collector and Classification Module.

![Figure 1 Server components on Classification Module](image-url)
Integrating Classification Module

Before you can add the Classification Module task to a Content Collector task route, you must configure both the Content Collector server and the Classification Module server to enable the integration.

Make sure that the following software prerequisites are met:

- IBM Content Collector is installed successfully.
- IBM Classification Module is installed successfully.
- You deployed a knowledge base and a decision plan on the Classification Module server.

**Note:** In this book, we do not cover instructions to create, train, and manage knowledge bases and decision plans. This book is designed to work with the readily available knowledge bases and decision plans that are provided by Classification Module.

Refer to *IBM Classification Module: Make It Work for You*, SG24-7707, for detailed information about Classification Module.

Integrating Classification Module with Content Classification consists of the following steps:

1. Installing the client module for Classification Module.
2. Configuring Content Collector for using Classification Module.
3. Adding Classification Module to task routes.

**For better scaling and performance:** Install Content Collector and Classification Module on separate servers. The installation of Classification Module locally to Content Collector is also supported.

Installing the client module for Classification Module

In this book, we assume that the Classification Module is installed on a separate server.
To install the client component of Classification Module, follow these steps:

1. Launch the Classification Module installation program on the Content Collector server.

2. Select **Custom**, as shown in Figure 2, and click **Next**.

*Figure 2  Classification Module installation: Choose Install Set*
3. Select **Client Component**, as shown in Figure 3.

![Figure 3](image)

*Figure 3  Classification Module installation: Choose Client Component*

4. Click **Next**, and proceed with the normal installation.

**Configuring Content Collector for using Classification Module**

Content Collector requires access to Classification Module library (.DLL) files, which are located in the Bin directory of the Classification Module client installation.

**Note:** These binary files are not provided in the IBM Content Collector installation. You have to copy them as part of Content Collector server configuration.
To configure Content Collector server to use Classification Module, follow these steps:

1. Copy the required libraries from the Bin directory of the Classification Module client (the default directory is C:\IBM\ClassificationModule\Bin) to the ctms directory of Content Collector (the default directory is C:\Program Files\IBM\ContentCollector\ctms). The following libraries are required:
   - For IBM Classification Module Version 8.6:
     PackageDll23.dll
     stlport_ban46.dll
     bnsClient86.dll
   - For IBM Classification Module Version 8.7:
     PackageDll87.dll
     stlport_ban46.dll
     bnsClient87.dll

2. Register Classification Module as a utility connector task. To do so, open a DOS command window and enter the following commands, where <ICCdir> denotes the installation directory of Content Collector (the default is C:\Program Files\IBM\ContentCollector):
   
   cd <ICCdir>/ctms
   utilityConnector.exe -u
   utilityConnector.exe -r
3. Confirm that Classification Module exists as one of the utility connector tasks in the Content Collector Configuration Manager. Launch the Content Collector Configuration Manager and make sure that Classification Module shows up in the list of utility connector tasks. See Figure 4 for reference.

![IBM InfoSphere Content Collector V2.1.1](image)

**Figure 4** IBM Classification Module connector tasks in the Utility section
At this point, you can create task routes with the Classification Module in Content Collector.

**Configuring Classification Module for Content Collector**

In this section, we describe the server-side configuration on Classification Module that has to be completed to enable email classification from Microsoft® Exchange server.

**Email applications:** Skip this section if you intend to collect emails only from the Lotus® Domino® email server. The instructions in this section are mandatory if you are classifying emails from Microsoft Exchange server.

To configure Classification Module server, follow these steps:

1. The email archiving filter in Classification Module uses the Messaging Application Program Interface (MAPI) for parsing emails from a Microsoft Exchange server. To configure this support, complete the following steps:
   a. Install Microsoft Office Outlook 2003 or Microsoft Office Outlook 2007 on the server that hosts the Classification Module server.
   b. Select Microsoft Office Outlook as the default email application in your Web browser: Launch **Internet Explorer**, and select **Internet Options** → **Tools**. Select the **Programs** tab, and then select **Microsoft Office Outlook** as the email application. See Figure 5 on page 11 for details.
2. For Classification Module Version 8.6, configure the Classification Module server for email archiving:

   a. Log on to the server hosting Classification Module Version 8.6.

   b. Stop the Classification Module services by launching Windows® services and stopping the two services labeled “IBM Classification Module Process Manager” and “IBM Classification Module Trace”.

   c. If emails are being archived, overwrite the default document filter. Open a DOS command window, and change to the Filters directory of the Classification Module directory, for example, C:\IBM\ClassificationModule\Filters. Enter the following commands:

   ```
   copy docFilterManager.xml docFilterManager.xml.orig
   copy docFilterManager.email.xml docFilterManager.xml
   ```
d. Start the Classification Module services again by launching Windows services and starting the two services labeled “IBM Classification Module Process Manager” and “IBM Classification Module Trace”.

**Note:** These instructions are for Classification Module Version 8.6 only. You do not need to complete these steps for Version 8.7.

3. Launch the Classification Module Management Console to load and start a knowledge base or decision plan. Refer to the IBM Classification Module information center for detailed information about uploading, launching, starting, and stopping an existing knowledge base.

### Metadata derived from Classification Module

Classification Module, when integrated into Content Collector, contributes to populating system metadata and other derived metadata.

**Knowledge bases** are statistical analyzers trained with sample corpus to categorize file system documents and emails (from Microsoft Exchange and Lotus Domino sources). When a document is submitted to trained knowledge bases, you can expect a list of suitable category names and their associated relevancy scores.

**Decision plans** in Classification Module allow the discovery of more metadata on the submitted content. Decision plans are built with custom rules, such as keyword searches, proximity searches, regular expressions, or boolean expressions, to help discover more metadata from the content. For example, a Social Security Number (SSN) regular expression returns SSN numbers found in the content. Decision plans also allow the submission of the content to multiple knowledge bases to derive categories and relevancy scores.

**Note:** You can only use the decision plan support in Content Collector task routes when Content Collector is configured to work with Version 8.7 or higher of Classification Module.
Table 1 shows the system-defined metadata that is populated by the Classification Module connector task.

### Table 1  System metadata that is derived from Classification Module

<table>
<thead>
<tr>
<th>Metadata type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All relevant categories</td>
<td>List of top categories returned by knowledge bases</td>
</tr>
<tr>
<td>All relevant categories and scores</td>
<td>Combined list of categories and associated relevancy scores</td>
</tr>
<tr>
<td>All relevant scores</td>
<td>List of top relevancy scores</td>
</tr>
<tr>
<td>Most relevant category</td>
<td>Category with the maximum relevancy score</td>
</tr>
<tr>
<td>Most relevant score</td>
<td>Maximum relevancy score</td>
</tr>
<tr>
<td>Decision plan results exported as XML</td>
<td>Optional: Used only when configured with decision plans. You can use this metadata type as a history of classification activities when you want to review classifications later with the Review Tool that is shipped with Classification Module.</td>
</tr>
</tbody>
</table>

**Note:** If a decision plan is engaged to interact with multiple knowledge bases, the relevant categories returned by the Classification Module connector map to a sorted list of category names across all the associated knowledge bases. The sorting is performed on the relevancy scores.

You can use this metadata to determine how documents will be processed in the task routes. The following scenarios can help you with the concepts:

- Use the top category name to archive emails or documents in predefined folders. This smart archiving helps bring structure to content.
- Use the top relevancy score or discovered sensitive data (such as SSN, credit cards, or intellectual property) to mark digital content as records.
- Populate the metadata of the archived instances with category names or discovered metadata that might be used for a parametric search or classification of search results.

In the following sections, we describe the sample Classification Module task routes for knowledge base and decision plan that achieve these scenarios.
Configuring task routes with knowledge base

**Source of the knowledge base:** The knowledge base that is used in this section is a sample published knowledge base that is available with the installation of Classification Module.

In this section, we integrate Classification Module to categorize emails as personal emails (such as jokes or spam) versus business-related emails. This scenario is useful for enterprise administrators who want to identify emails of lesser value and eventually decommission them.

We show you how to perform these tasks:

- Load and start a trained knowledge base to categorize emails.
- Use classification information to archive the emails in categorized folders.

**Launching a trained knowledge base to categorize emails**

Available with the product, Classification Module Version 8.7 delivers a knowledge base called “Personal vs Business Content”. This knowledge base is trained with a corpus of emails to identify emails that are personal in nature (for example, jokes, spam, religious, general, and sports) and of a business context (legal, meetings, travel, administration, and confidential).

In this subsection, we describe launching this knowledge base. We refer to this launched instance of a knowledge base in the following subsections where we build a task route to archive emails into categorized folders.

Perform these steps to load and start the knowledge base:

1. Log in to the Classification Module server.
2. Launch Management Console: From Microsoft Windows, select **Start** → **Programs** → **IBM Classification Module 8.7** → **Management Console**.
3. Import the knowledge base titled “Personal vs Business Content”, and start it. Figure 6 shows the relevant import window.
Figure 7 shows the started instance of the imported knowledge base.

![Image of IBM InfoSphere Classification Module Management Console](http://localhost:18087)

**Figure 7** Started instance of the knowledge base

### Using classification to categorize and archive emails

In this subsection, we discuss the procedure to use the classification capabilities of Classification Module. We discuss a task route that is tailored to perform the following tasks:

- Collect emails from an email source.
- Invoke Classification Module to retrieve categories and relevant scores.
- Incorporate a decision point with rules that use the relevant scores to archive the email to the folder mapped to the most relevant category.
To discover most relevant category and scores, follow these steps to create and enhance a task route that integrates with Classification Module:

1. Create a task route to collect emails and categorize emails with the Classification Module connector. Figure 8 depicts a pre-configured task route where emails are being collected and passed to the Classification Module connector task for content classification.

![Figure 8](image-url)  
*Figure 8  Task route with Classification Module connector and configuration*

**Note:** Insert the Classification Module only after you add the task titled “EC Prepare Email for Archiving”. 
2. The Classification Module connector task is configured to interact with the knowledge base titled “Personal versus Business Content”.

Figure 9 shows the configuration details.
3. After Classification Module is invoked, a decision point is engaged to a run rule that will decide the destination folder for the email. Figure 10 shows the definition of a rule that validates the score of the most relevant category for being greater than 55%.

![Add Conditional Clause](image)

*Figure 10  Rule to validate most relevant score to be greater than 55%*
4. After the relevancy score of the most relevant category is found to be more than 55%, the top category name is used to derive the destination folder name for the archived document. Figure 11 shows the configuration to derive the destination folder name from the *most relevant category* identified by Classification Module.

Figure 11  Folder path derived from most relevant category
5. If the value of the most relevant category score is less than 55%, the email is filed in a fixed folder so that the system administrator can manually reclassify the emails that are placed in this folder. Figure 12 shows the definition of the fixed folder path.

![Edit Folder](image)

**Figure 12** Fixed folder path

**Review tool**: Classification Module provides a review tool function that can also manually classify emails in a particular folder. You can configure the review tool to automatically classify unclassified emails or to reclassify already classified emails (with the same or revised taxonomies).
Classifying emails with attachments

Content Collector provides a feature where attachments are de-duplicated from emails and archived as individual entities. This feature ensures the optimization of disk space resources on the Content Engines and also enables the representation of the email in a custom XML format. The representation of the email as an XML file is required to enable the email body and attachments for free text search.

To classify emails as attachments, you create a task route that archives emails, classifies emails, de-duplicates attachments in the emails, and generates the XML representation of the entire email. In the same task route, we highlight the configuration that is required to ensure the classification of emails with attachments. By default, these attachments are detached and are not subjected to classification.
Figure 13 represents the task route that classifies and archives emails.

![Task route to classify emails and detach attachments](image)

*Figure 13  Task route to classify emails and detach attachments*
To ensure that the attachments in the emails are preserved for classification, the mandatory task called “EC Prepare E-Mail for Archiving” provides an option to preserve or detach attachments. As shown in Figure 14, you need to disable (not check) the option called “Save native message files without attachments”. Disable this option only for the instance of “EC Prepare E-Mail for Archiving” that precedes the task labeled “IBM InfoSphere™ Classification Module”.

![EC Prepare E-Mail for Archiving](image)

*Figure 14  Save emails with attachments*

Now that the emails with attachments are classified, introduce the task called “EC Prepare E-Mail for Archiving” before the task called “EC Extract Attachments”, in which free text from attachments is extracted to create the XML representation of the emails.
Figure 15 shows the enabled (checked) state of the option called “Save native message files without attachments”.

![Image of EC Prepare E-Mail for Archiving](image)

**Figure 15  Save emails with no attachments**

## Configuring task routes with decision plan

**Source of the decision plan:** The decision plan that is used in this section is a sample decision plan that is published by the installation of Classification Module.

In addition to the statistical analysis of content, Classification Module provides the capability to discover metadata by applying rules. The rules can be as simple as keyword searches, proximity searches, boolean expressions, or complicated regular expressions. You can use this discovered metadata to create rules in decision points, to identify sensitive information in documents that need to be declared as records, or to simply archive the documents in suggested folders.

In this section, we show you how to perform these tasks:

- Launch a decision plan to categorize and discover metadata from file system documents.
- Use classification information to identify sensitive information for declaring records.
Using a decision plan to categorize and discover metadata

Classification Module Version 8.7 delivers a decision plan called “Rules for file system”. This decision plan is integrated with a knowledge base called “IBM Products” in which documents are analyzed to map documents to IBM brands, such as BladeCenter®, DB2®, Rational®, and Lotus®. The decision plan also has a number of pre-configured rules that help identify critical documents related to US policies, regular expressions to detect serial numbers of products, or rules to detect a class of products and emphasize a discount promotion.

To load and start the decision plan, follow these steps:

1. Log in to the Classification Module server.

2. Start Management Console. From the Microsoft Windows startup menu, select Programs → IBM Classification Module 8.7 → Management Console.
3. Load the decision plan titled “Rules for file system”, and start it. Figure 16 shows importing the decision plan.

Figure 16 Importing the decision plan
Figure 17 shows the started instance of the decision plan.

![Decision plan started status](image)

**Figure 17  Decision plan started status**

**Using classification to identify sensitive records information**

Decision plans allow for more elaborate classification and analysis of documents. If you use a decision plan, you can access the metadata fields that Classification Module provides for the documents, in addition to the system metadata that Classification Module provides.

If you use a Classification Module decision plan, the system metadata is populated in the same way that a knowledge base is populated. In addition, the system metadata property “Decision plan results exported as XML” can be filled with the decision plan results in XML format. You can then use this property as a history of classification activities when you want to review classifications later with the review tool.

In addition to the system metadata, you can access metadata that is discovered by rules that are configured in the decision plan. For each discovered metadata that you want to use, you must define a metadata property in Content Collector and map the Classification Module property to the Content Collector user-defined metadata.

In this subsection, we discuss the procedure to use the decision plan capabilities of the Classification Module. We discuss a task route that is tailored to perform the following tasks:

1. Collect documents from the file system.
2. Invoke the decision plan on Classification Module to retrieve the categories and derived metadata.
3. Incorporate a decision point with rules that use the values of the derived metadata to archive emails into the folder mapped to relevant categories.
To add a user-defined metadata property in Content Collector and to map the same property to a discovered metadata property from Classification Module, follow these steps:

1. In the Navigation section of the Configuration Manager, click **Metadata and Lists**. The pane changes to display Metadata and Lists.
2. In the Metadata and Lists box, select **User-Defined Metadata**.
3. Add the metadata properties that you plan to use. These properties are not related to the properties in Classification Module, so you can choose any name. However, it is convenient to use the same name that is used in Classification Module. Figure 18 shows a sample window of the user-defined metadata properties.

![Figure 18 User-defined metadata](image)

4. In the Navigation section of the Configuration Manager, click **Task Routes**, and select the task route that contains your Classification Module task.
5. Select the Classification Module task. Make sure that the task uses a decision plan.
6. Go to the Map Decision Plan Results tab.
7. Select the metadata set that you want to use. The mapping table is populated with the metadata properties. Figure 19 depicts the required mapping.

Figure 19  Field mapping between user-defined and decision point fields
8. Click the metadata property that you want to map, and select a Classification Module decision plan property. Figure 20 shows a completed task route and the associated mapping window.

![Figure 20 Task route with decision plan](image)

In the task route, we use the metadata that is discovered by the decision plan to be used in rules that make up the decision point.
We describe each rule:

- Legal US agreement: The decision plan field called `Legal_Agreement` is used to identify documents with legal concerns. These documents are filed in folders and declared as records. Figure 21 depicts the rule in which the decision plan field is validated for a string literal called “US”.

![Rule to identify the value of a decision plan field, Legal Agreement](image)
Figure 22 depicts the computation of the destination folder field from the value of the metadata field that is returned by the decision plan.

![Diagram of folder creation options](image)

Figure 22  The folder name that is derived from the decision plan field
Product related document: Documents with no legal information but that have product categorization are simply archived in respective folders. Figure 23 depicts the validation of the decision plan metadata field called “Product Category”. This rule is activated only when the value of the metadata field is not empty.

![Rule](image)

*Figure 23  Validating the non-empty value for the Product Category field*

- Manual classification: The documents that do not have legal information or are not categorized as products are archived in a folder where administrators can manually review and archive the documents or use the Classification Center tool that is bundled with Classification Module.

**Summary**

In this paper, we introduced the integration of Classification Module to use content classification and rule-based metadata to influence the archiving of emails and file system documents. The task routes that are introduced in this paper demonstrate the use of metadata in identifying documents for records declaration and destination folder names and to be used in rules that drive decision points. Similarly, the derived metadata can also be populated as attribute values of the archived documents.
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