Hewlett Packard
Enterprise

# HPE HTTP Connector

Software Version: 11.1

## HTTP Connector (CFS) Administration Guide

Document Release Date: June 2016
Software Release Date: June 2016

# Legal Notices

## Warranty

The only warranties for Hewlett Packard Enterprise Development LP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HPE shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

## Restricted Rights Legend

Confidential computer software. Valid license from HPE required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

## Copyright Notice

© Copyright 2016 Hewlett Packard Enterprise Development LP

## Trademark Notices

Adobe™ is a trademark of Adobe Systems Incorporated.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

UNIX® is a registered trademark of The Open Group.

This product includes an interface of the 'zlib' general purpose compression library, which is Copyright © 1995-2002 Jean-loup Gailly and Mark Adler.

# Documentation Updates

HPE Big Data Support provides prompt and accurate support to help you quickly and effectively resolve any issue you may encounter while using HPE Big Data products. Support services include access to the Customer Support Site (CSS) for online answers, expertise-based service by HPE Big Data support engineers, and software maintenance to ensure you have the most up-to-date technology.

### To access the Customer Support Site

- go to https://customers.autonomy.com

The Customer Support Site includes:

- **Knowledge Base**. An extensive library of end user documentation, FAQs, and technical articles that is easy to navigate and search.
- **Support Cases**. A central location to create, monitor, and manage all your cases that are open with technical support.
- **Downloads**. A location to download or request products and product updates.
- **Requests**. A place to request products to download or product licenses.

### To contact HPE Big Data Customer Support by email or phone

- go to http://www.autonomy.com/work/services/customer-support

# Support

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, visit the Knowledge Base on the HPE Big Data Customer Support Site. To do so, go to https://customers.autonomy.com, and then click **Knowledge Base**.

The Knowledge Base contains documents in PDF and HTML format as well as collections of related documents in ZIP packages. You can view PDF and HTML documents online or download ZIP packages and open PDF documents to your computer.

## About this PDF Version of Online Help

This document is a PDF version of the online help. This PDF file is provided so you can easily print multiple topics from the help information or read the online help in PDF format. Because this content was originally created to be viewed as online help in a web browser, some topics may not be formatted properly. Some interactive topics may not be present in this PDF version. Those topics can be successfully printed from within the online help.

# Contents

# Chapter 1: Introduction

This section provides an overview of the HTTP Connector.



# HTTP Connector

HTTP Connector is a powerful tool for retrieving Web site documents. The HTTP Connector uses spiders to find Web pages and to process the Web pages for content and links to other Web sites. HTTP Connector can retrieve various document types, including Web documents, Word, Excel, and PDF files.

After the HTTP Connector has identified Web content, the files are sent to a Connector Framework Server (CFS). CFS processes the information and indexes it into an IDOL Server.

After the documents are indexed, IDOL server automatically processes them, performing a number of intelligent operations in real time, such as:

- Agents
- Alerting
- Automatic Query Guidance
- Categorization
- Channels
- Clustering
- Collaboration
- Dynamic Clustering
- Dynamic Thesaurus
- Eduction
- Expertise
- Hyperlinking
- Mailing
- Profiling
- Retrieval
- Spelling Correction
- Summarization
- Taxonomy Generation

***Related Topics***

- "Connector Framework Server" on page 13
- "HPE's IDOL Platform" on page 15

## Features and Capabilities

The HTTP Connector (CFS) retrieves files from Web sites, over HTTP.

| | |
|---|---|
| **Repository** | Web sites retrieved over HTTP. |

| | |
|---|---|
| **Data the connector can retrieve** | All files hosted on a Web site. |
| **Data the connector cannot retrieve** | The connector cannot parse Javascript. This means that some Web pages (linked from Javascript) are not found by the connector and are not indexed. |

# Supported Actions

The HTTP Connector (CFS) supports the following actions:

| Action | Supported |
|---|---|
| Synchronize | ✓ |
| Synchronize (identifiers) | ✗ |
| Synchronize Groups | ✗ |
| Collect | ✗ |
| Identifiers | ✗ |
| Insert | ✗ |
| Delete/Remove | ✗ |
| Hold/ReleaseHold | ✗ |
| Update | ✗ |
| Stub | ✗ |
| GetURI | ✗ |
| View | ✗ |

# Display Online Help

You can display the HTTP Connector Reference by sending an action from your web browser. The HTTP Connector Reference describes the actions and configuration parameters that you can use with HTTP Connector.

For HTTP Connector to display help, the help data file (`help.dat`) must be available in the installation folder.

### To display help for HTTP Connector

1. Start HTTP Connector.
2. Send the following action from your web browser:

   `http://host:port/action=Help`

   where:

   *host* is the IP address or name of the machine on which HTTP Connector is installed.

   *port* is the ACI port by which you send actions to HTTP Connector (set by the `Port` parameter in the `[Server]` section of the configuration file).

   For example:

   `http://12.3.4.56:9000/action=help`

# OEM Certification

HTTP Connector works in OEM licensed environments.

# Connector Framework Server

Connector Framework Server (CFS) processes the information that is retrieved by connectors, and then indexes the information into IDOL.

A single CFS can process information from any number of connectors. For example, a CFS might process files retrieved by a File System Connector, web pages retrieved by a Web Connector, and e-mail messages retrieved by an Exchange Connector.

To use the HTTP Connector to index documents into IDOL Server, you must have a CFS. When you install the HTTP Connector, you can choose to install a CFS or point the connector to an existing CFS.

For information about how to configure and use Connector Framework Server, refer to the *Connector Framework Server Administration Guide*.

# Filter Documents and Extract Subfiles

The documents that are sent by connectors to CFS contain only metadata extracted from the repository, such as the location of a file or record that the connector has retrieved. CFS uses KeyView to extract the file content and file specific metadata from over 1000 different file types, and adds this information to the documents. This allows IDOL to extract meaning from the information contained in the repository, without needing to process the information in its native format.

CFS also uses KeyView to extract and process sub-files. Sub-files are files that are contained within other files. For example, an e-mail message might contain attachments that you want to index, or a Microsoft Word document might contain embedded objects.

# Manipulate and Enrich Documents

CFS provides features to manipulate and enrich documents before they are indexed into IDOL. For example, you can:

- add additional fields to a document.
- divide long documents into multiple sections.
- run tasks including Eduction, Optical Character Recognition, or Face Recognition, and add the information that is obtained to the document.
- run a custom Lua script to modify a document.

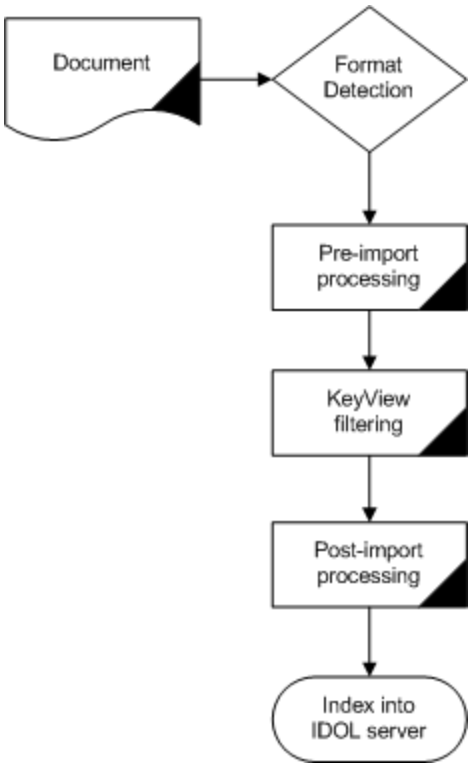
# Index Documents

After CFS finishes processing documents, it automatically indexes them into one or more indexes. CFS can index documents into:

- **IDOL Server** (or send them to a *Distributed Index Handler*, so that they can be distributed across multiple IDOL servers).
- **Haven OnDemand**.
- **Vertica**.

# Import Process

This section describes the import process for new files that are added to IDOL through CFS.




1. Connectors aggregate documents from repositories and send the files to CFS. A single CFS can process documents from multiple connectors. For example, CFS might receive HTML files from HTTP Connectors, e-mail messages from Exchange Connector, and database records from ODBC Connector.
2. CFS runs pre-import tasks. Pre-Import tasks occur before document content and file-specific metadata is extracted by KeyView.
3. KeyView filters the document content, and extracts sub-files.
4. CFS runs post-import tasks. Post-Import tasks occur after KeyView has extracted document content and file-specific metadata.
5. The data is indexed into IDOL.

# HPE's IDOL Platform

At the core of HTTP Connector is HPE's *Intelligent Data Operating Layer* (IDOL).

IDOL gathers and processes unstructured, semi-structured, and structured information in any format from multiple repositories using IDOL connectors and a global relational index. It can automatically form a contextual understanding of the information in real time, linking disparate data sources together based on the concepts contained within them. For example, IDOL can automatically link concepts contained in an email message to a recorded phone conversation, that can be associated with a stock trade. This information is then imported into a format that is easily searchable, adding advanced retrieval, collaboration, and personalization to an application that integrates the technology.

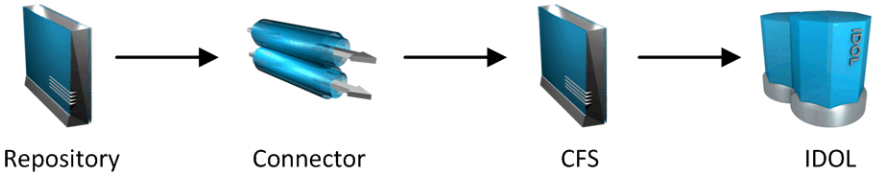
For more information on IDOL, see the *IDOL Getting Started Guide*.

# System Architecture

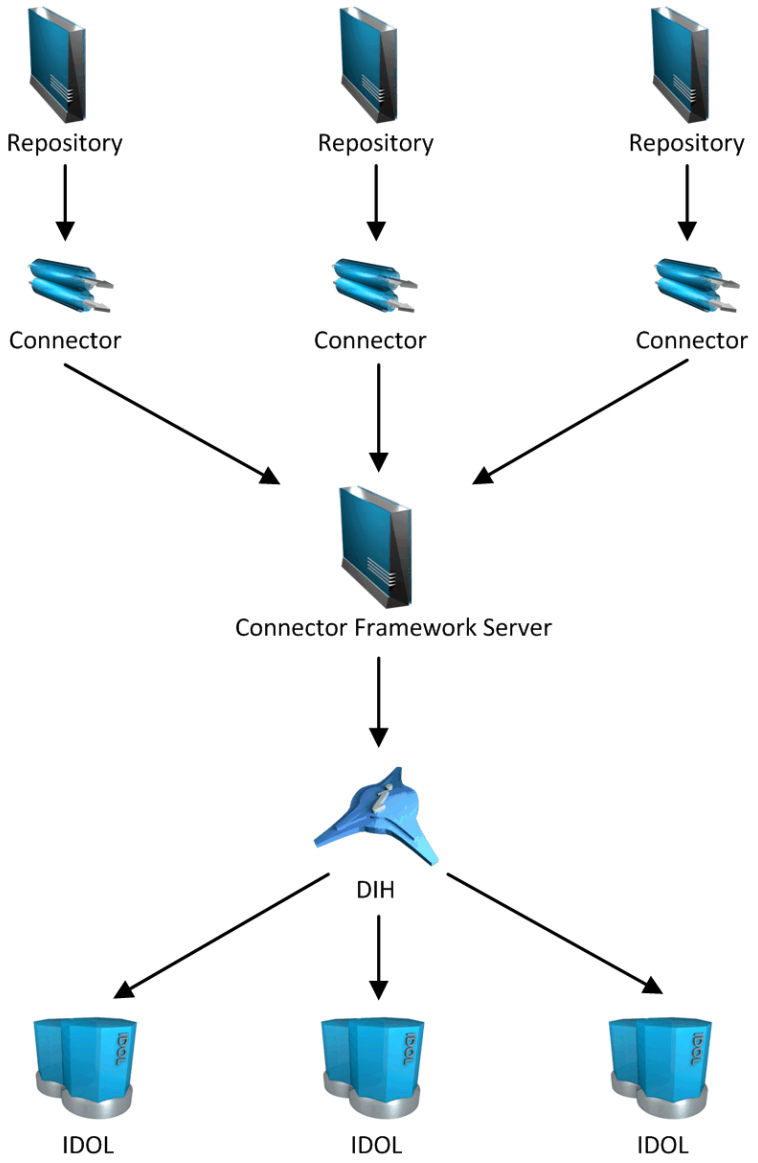
An IDOL infrastructure can include the following components:

- **Connectors**. Connectors aggregate data from repositories and send the data to CFS.
- **Connector Framework Server (CFS)**. Connector Framework Server (CFS) processes and enriches the information that is retrieved by connectors.
- **IDOL Server**. IDOL stores and processes the information that is indexed into it by CFS.
- **Distributed Index Handler (DIH)**. The Distributed Index Handler distributes data across multiple IDOL servers. Using multiple IDOL servers can increase the availability and scalability of the system.
- **License Server**. The License server licenses multiple products.

These components can be installed in many different configurations. The simplest installation consists of a single connector, a single CFS, and a single IDOL Server.



A more complex configuration might include more than one connector, or use a Distributed Index Handler (DIH) to index content across multiple IDOL Servers.




# Related Documentation

The following documents provide further information related to HTTP Connector.

- *HTTP Connector Reference*

  The *HTTP Connector Reference* describes the configuration parameters and actions that you can use with the HTTP Connector.
- *Connector Framework Server Administration Guide*

Connector Framework Server (CFS) processes documents that are retrieved by connectors. CFS then indexes the documents into IDOL Server, Haven OnDemand, or Vertica. The *Connector Framework Server Administration Guide* describes how to configure and use CFS.

- *IDOL Getting Started Guide*

  The *IDOL Getting Started Guide* provides an introduction to IDOL. It describes the system architecture, how to install IDOL components, and introduces indexing and security.

- *IDOL Server Administration Guide*

  The *IDOL Server Administration Guide* describes the operations that IDOL server can perform with detailed descriptions of how to set them up.

- *Intellectual Asset Protection System (IAS) Administration Guide*

  The *Intellectual Asset Protection System (IAS) Administration Guide* describes how to use the Intellectual Asset Protection System (IAS) to protect the information that you index into IDOL Server.

- *License Server Administration Guide*

  This guide describes how to use a License Server to license multiple services.

# Chapter 2: Install HTTP Connector

This section describes how to install the HTTP Connector.



# System Requirements

HTTP Connector can be installed as part of a larger system that includes an IDOL Server and an interface for the information stored in IDOL Server. To maximize performance, HPE recommends that you install IDOL Server and the connector on different machines.

For information about the minimum system requirements required to run IDOL components, including HTTP Connector, refer to the *IDOL Getting Started Guide*.

# Permissions

Some Web sites might require the connector to log in to retrieve some content. You can provide credentials in the connector's configuration file.

# Install HTTP Connector

The HTTP Connector can be installed using the IDOL Server installer.

For information about installing the HTTP Connector using this installer, refer to the *IDOL Getting Started Guide*.

# Configure the License Server Host and Port

HTTP Connector is licensed through HPE License Server. In the HTTP Connector configuration file, specify the information required to connect to the License Server.

### To specify the license server host and port

1. Open your configuration file in a text editor.
2. In the `[License]` section, modify the following parameters to point to your License Server.

| | |
|---|---|
| `LicenseServerHost` | The host name or IP address of your License Server. |
| `LicenseServerACIPort` | The ACI port of your License Server. |

For example:

```
[License]
LicenseServerHost=licenses
LicenseServerACIPort=20000
```

3. Save and close the configuration file.

# Chapter 3: Configure HTTP Connector

This section describes how to configure the HTTP Connector.



# HTTP Connector Configuration File

You can configure the HTTP Connector by editing the configuration file. The configuration file is located in the connector's installation folder. You can modify the file with a text editor.

The parameters in the configuration file are divided into sections that represent connector functionality.

Some parameters can be set in more than one section of the configuration file. If a parameter is set in more than one section, the value of the parameter located in the most specific section overrides the value of the parameter defined in the other sections. For example, if a parameter can be set in "*TaskName* or `FetchTasks` or `Default`", the value in the `TaskName` section overrides the value in the `FetchTasks` section, which in turn overrides the value in the `Default` section. This means that you can set a default value for a parameter, and then override that value for specific tasks.

For information about the parameters that you can use to configure the HTTP Connector, refer to the *HTTP Connector Reference*.

## Server Section

The `[Server]` section specifies the ACI port of the connector. It also contains parameters that control the way the connector handles ACI requests.

## Service Section

The `[Service]` section specifies the service port of the connector. It also specifies which machines are permitted to send service actions to the connector.

## Actions Section

The `[Actions]` section contains configuration parameters that specify how the connector processes actions that are sent to the ACI port. For example, you can configure event handlers that run when an action starts, finishes, or encounters an error.

## Logging Section

The `[Logging]` section contains configuration parameters that determine how messages are logged. You can use *log streams* to send different types of message to separate log files. The configuration file also contains a section to configure each of the log streams.

## Connector Section

The `[Connector]` section contains parameters that control general connector behavior. For example, you can specify a schedule for the fetch tasks that you configure.

## Default Section

The `[Default]` section is used to define default settings for configuration parameters. For example, you can specify default settings for the tasks in the `[FetchTasks]` section.

## FetchTasks Section

The `[FetchTasks]` section lists the fetch tasks that you want to run. A *fetch task* is a task that retrieves data from a repository. Fetch tasks are usually run automatically by the connector, but you can also run a fetch task by sending an action to the connector's ACI port.

In this section, enter the total number of fetch tasks in the `Number` parameter and then list the tasks in consecutive order starting from 0 (zero). For example:

```
[FetchTasks]
Number=2
0=MyTask0
1=MyTask1
```

## [*TaskName*] Section

The `[TaskName]` section contains configuration parameters that apply to a specific task. There must be a `[TaskName]` section for every task listed in the `[FetchTasks]` section.

## Ingestion Section

The `[Ingestion]` section specifies where to send the data that is extracted by the connector.

You can send data to a Connector Framework Server, Haven OnDemand, or another connector. For more information about ingestion, see "Ingestion" on page 57.

## DistributedConnector Section

The `[DistributedConnector]` section configures the connector to operate with the Distributed Connector. The Distributed Connector is an ACI server that distributes actions (`synchronize`, `collect` and so on) between multiple connectors.

For more information about the Distributed Connector, refer to the *Distributed Connector Administration Guide*.

## License Section

The `[License]` section contains details about the License server (the server on which your license file is located).

## Document Tracking Section

The `[DocumentTracking]` section contains parameters that enable the tracking of documents through import and indexing processes.

***Related Topics***

- "Modify Configuration Parameter Values" below
- "Customize Logging" on page 69

# Modify Configuration Parameter Values

You modify HTTP Connector configuration parameters by directly editing the parameters in the configuration file. When you set configuration parameter values, you must use UTF-8.

**Caution:** You must stop and restart HTTP Connector for new configuration settings to take effect.

This section describes how to enter parameter values in the configuration file.

## Enter Boolean Values

The following settings for Boolean parameters are interchangeable:

```
TRUE = true = ON = on = Y = y = 1

FALSE = false = OFF = off = N = n = 0
```

## Enter String Values

To enter a comma-separated list of strings when one of the strings contains a comma, you can indicate the start and the end of the string with quotation marks, for example:

*ParameterName*=**cat,dog,bird,"wing,beak",turtle**

Alternatively, you can escape the comma with a backslash:

*ParameterName*=**cat,dog,bird,wing\,beak,turtle**

If any string in a comma-separated list contains quotation marks, you must put this string into quotation marks and escape each quotation mark in the string by inserting a backslash before it. For example:

*ParameterName*=**"<font face=\"arial\" size=\"+1\"><b>","<p>"**

Here, quotation marks indicate the beginning and end of the string. All quotation marks that are contained in the string are escaped.

# Include an External Configuration File

You can share configuration sections or parameters between ACI server configuration files. The following sections describe different ways to include content from an external configuration file.

You can include a configuration file in its entirety, specified configuration sections, or a single parameter.

When you include content from an external configuration file, the `GetConfig` and `ValidateConfig` actions operate on the combined configuration, after any external content is merged in.

In the procedures in the following sections, you can specify external configuration file locations by using absolute paths, relative paths, and network locations. For example:

```
../sharedconfig.cfg
K:\sharedconfig\sharedsettings.cfg
\\example.com\shared\idol.cfg
file://example.com/shared/idol.cfg
```

Relative paths are relative to the primary configuration file.

**Note:** You can use nested inclusions, for example, you can refer to a shared configuration file that references a third file. However, the external configuration files must not refer back to your original configuration file. These circular references result in an error, and HTTP Connector does not start.

Similarly, you cannot use any of these methods to refer to a different section in your primary configuration file.

# Include the Whole External Configuration File

This method allows you to import the whole external configuration file at a specified point in your configuration file.

### To include the whole external configuration file

1. Open your configuration file in a text editor.
2. Find the place in the configuration file where you want to add the external configuration file.
3. On a new line, type a left angle bracket (<), followed by the path to and name of the external configuration file, in quotation marks (""). You can use relative paths and network locations. For example:

   ```
   < "K:\sharedconfig\sharedsettings.cfg"
   ```

4. Save and close the configuration file.

# Include Sections of an External Configuration File

This method allows you to import one or more configuration sections from an external configuration file at a specified point in your configuration file. You can include a whole configuration section in this way, but the configuration section name in the external file must exactly match what you want to use in your file. If you want to use a configuration section from the external file with a different name, see "Merge a Section from an External Configuration File" on the next page.

### To include sections of an external configuration file

1. Open your configuration file in a text editor.
2. Find the place in the configuration file where you want to add the external configuration file section.
3. On a new line, type a left angle bracket (<), followed by the path to and name of the external configuration file, in quotation marks (""). You can use relative paths and network locations. After the configuration file name, add the configuration section name that you want to include. For example:

   ```
   < "K:\sharedconfig\extrasettings.cfg" [License]
   ```

   **Note:** You cannot include a section that already exists in your configuration file.

4. Save and close the configuration file.

# Include a Parameter from an External Configuration File

This method allows you to import a parameter from an external configuration file at a specified point in your configuration file. You can include a section or a single parameter in this way, but the value in the external file must exactly match what you want to use in your file.

### To include a parameter from an external configuration file

1. Open your configuration file in a text editor.
2. Find the place in the configuration file where you want to add the parameter from the external configuration file.
3. On a new line, type a left angle bracket (<), followed by the path to and name of the external configuration file, in quotation marks (""). You can use relative paths and network locations. After the configuration file name, add the name of the configuration section name that contains the parameter, followed by the parameter name. For example:

   ```
   < "license.cfg" [License] LicenseServerHost
   ```

   To specify a default value for the parameter, in case it does not exist in the external configuration file, specify the configuration section, parameter name, and then an equals sign (=) followed by the default value. For example:

   ```
   < "license.cfg" [License] LicenseServerHost=localhost
   ```

4. Save and close the configuration file.

# Merge a Section from an External Configuration File

This method allows you to include a configuration section from an external configuration file as part of your HTTP Connector configuration file. For example, you might want to specify a standard SSL configuration section in an external file and share it between several servers. You can use this method if the configuration section that you want to import has a different name to the one you want to use.

### To merge a configuration section from an external configuration file

1. Open your configuration file in a text editor.
2. Find or create the configuration section that you want to include from an external file. For example:

   ```
   [SSLOptions1]
   ```

3. After the configuration section name, type a left angle bracket (<), followed by the path to and name of the external configuration file, in quotation marks (""). You can use relative paths and network locations. For example:

   ```
   [SSLOptions1] < "../sharedconfig/ssloptions.cfg"
   ```

   If the configuration section name in the external configuration file does not match the name that you want to use in your configuration file, specify the section to import after the configuration file name. For example:

   ```
   [SSLOptions1] < "../sharedconfig/ssloptions.cfg" [SharedSSLOptions]
   ```

   In this example, HTTP Connector uses the values in the `[SharedSSLOptions]` section of the external configuration file as the values in the `[SSLOptions1]` section of the HTTP Connector configuration file.

   **Note:** You can include additional configuration parameters in the section in your file. If these

parameters also exist in the imported external configuration file, HTTP Connector uses the values in the local configuration file. For example:

```
[SSLOptions1] < "ssloptions.cfg" [SharedSSLOptions]
SSLCACertificatesPath=C:\IDOL\HTTPConnector\CACERTS\
```

4. Save and close the configuration file.

# Encrypt Passwords

HPE recommends that you encrypt all passwords that you enter into a configuration file.

## Create a Key File

A key file is required to use AES encryption.

***To create a new key file***

1. Open a command-line window and change directory to the HTTP Connector installation folder.
2. At the command line, type:

   `autpassword -x -tAES -oKeyFile=./MyKeyFile.ky`

   A new key file is created with the name `MyKeyFile.ky`

**Caution:** To keep your passwords secure, you must protect the key file. Set the permissions on the key file so that only authorized users and processes can read it. HTTP Connector must be able to read the key file to decrypt passwords, so do not move or rename it.

## Encrypt a Password

The following procedure describes how to encrypt a password.

***To encrypt a password***

1. Open a command-line window and change directory to the HTTP Connector installation folder.
2. At the command line, type:

   `autpassword -e -t`*`EncryptionType`* `[-oKeyFile] [-c`*`FILE`* `-s`*`SECTION`* `-p`*`PARAMETER`*`] `*`PasswordString`*

   where:

| Option | Description |
|---|---|
| `-t`*`EncryptionType`* | The type of encryption to use:<br>• **`Basic`** |

| Option | Description |
|---|---|
| | • **AES**<br>For example: **-tAES**<br>**Note:** AES is more secure than basic encryption. |
| -o*KeyFile* | AES encryption requires a key file. This option specifies the path and file name of a key file. The key file must contain 64 hexadecimal characters.<br>For example: **-oKeyFile=./key.ky** |
| -cFILE -sSECTION -pPARAMETER | (Optional) You can use these options to write the password directly into a configuration file. You must specify all three options.<br>• **-c**. The configuration file in which to write the encrypted password.<br>• **-s**. The name of the section in the configuration file in which to write the password.<br>• **-p**. The name of the parameter in which to write the encrypted password.<br>For example:<br>**-c./Config.cfg -sMyTask -pPassword** |
| *PasswordString* | The password to encrypt. |

For example:

```
autpassword -e -tBASIC MyPassword
```

```
autpassword -e -tAES -oKeyFile=./key.ky MyPassword
```

```
autpassword -e -tAES -oKeyFile=./key.ky -c./Config.cfg -sDefault -pPassword
MyPassword
```

The password is returned, or written to the configuration file.

# Decrypt a Password

The following procedure describes how to decrypt a password.

***To decrypt a password***

1. Open a command-line window and change directory to the HTTP Connector installation folder.
2. At the command line, type:

   ```
   autpassword -d -tEncryptionType [-oKeyFile] PasswordString
   ```

   where:

| Option | Description |
|---|---|
| `-t EncryptionType` | The type of encryption:<br>• **`Basic`**<br>• **`AES`**<br>For example: **`-tAES`** |
| `-oKeyFile` | AES encryption and decryption requires a key file. This option specifies the path and file name of the key file used to decrypt the password.<br>For example: **`-oKeyFile=./key.ky`** |
| *`PasswordString`* | The password to decrypt. |

For example:

```
autpassword -d -tBASIC 9t3M3t7awt/J8A
```

```
autpassword -d -tAES -oKeyFile=./key.ky 9t3M3t7awt/J8A
```

The password is returned in plain text.

# Register with a Distributed Connector

To receive actions from a Distributed Connector, a connector must register with the Distributed Connector and join a *connector group*. A connector group is a group of similar connectors. The connectors in a group must be of the same type (for example, all HTTP Connectors), and must be able to access the same repository.

To configure a connector to register with a Distributed Connector, follow these steps. For more information about the Distributed Connector, refer to the *Distributed Connector Administration Guide*.

### To register with a Distributed Connector

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[DistributedConnector]` section, set the following parameters:

| | |
|---|---|
| `RegisterConnector` | (Required) To register with a Distributed Connector, set this parameter to **`true`**. |
| `HostN` | (Required) The host name or IP address of the Distributed Connector. |
| `PortN` | (Required) The ACI port of the Distributed Connector. |
| `DataPortN` | (Optional) The data port of the Distributed Connector. |
| `ConnectorGroup` | (Required) The name of the connector group to join. The value of this parameter is passed to the Distributed Connector. |

| | |
|---|---|
| `ConnectorPriority` | (Optional) The Distributed Connector can distribute actions to connectors based on a priority value. The lower the value assigned to `ConnectorPriority`, the higher the probability that an action is assigned to this connector, rather than other connectors in the same connector group. |
| `SharedPath` | (Optional) The location of a shared folder that is accessible to all of the connectors in the `ConnectorGroup`. This folder is used to store the connectors' datastore files, so that whichever connector in the group receives an action, it can access the information required to complete it. If you set the `DataPortN` parameter, the datastore file is streamed directly to the Distributed Connector, and this parameter is ignored. |

4. Save and close the configuration file.
5. Start the connector.

   The connector registers with the Distributed Connector. When actions are sent to the Distributed Connector for the connector group that you configured, they are forwarded to this connector or to another connector in the group.

# Set Up Secure Communication

You can configure Secure Socket Layer (SSL) connections between the connector and other ACI servers.

# Configure Outgoing SSL Connections

To configure the connector to send data to other components (for example Connector Framework Server) over SSL, follow these steps.

### To configure outgoing SSL connections

1. Open the HTTP Connector configuration file in a text editor.
2. Specify the name of a section in the configuration file where the SSL settings are provided:
   - To send data to an ingestion server over SSL, set the `IngestSSLConfig` parameter in the `[Ingestion]` section. To send data from a single fetch task to an ingestion server over SSL, set `IngestSSLConfig` in a `[`*`TaskName`*`]` section.
   - To send data to a Distributed Connector over SSL, set the `SSLConfig` parameter in the `[DistributedConnector]` section.
   - To send data to a View Server over SSL, set the `SSLConfig` parameter in the `[ViewServer]` section.

   You can use the same settings for each connection. For example:

   ```
   [Ingestion]
   IngestSSLConfig=SSLOptions
   ```

```
[DistributedConnector]
SSLConfig=SSLOptions
```

3. Create a new section in the configuration file. The name of the section must match the name you specified in the `IngestSSLConfig` or `SSLConfig` parameter. Then specify the SSL settings to use.

| | |
|---|---|
| `SSLMethod` | The SSL protocol to use. |
| `SSLCertificate` | (Optional) The SSL certificate to use (in PEM format). |
| `SSLPrivateKey` | (Optional) The private key for the SSL certificate (in PEM format). |

For example:

```
[SSLOptions]
SSLMethod=SSLV23
SSLCertificate=host1.crt
SSLPrivateKey=host1.key
```

4. Save and close the configuration file.
5. Restart the connector.

***Related Topics***

- "Start and Stop the Connector" on page 35

# Configure Incoming SSL Connections

To configure a connector or Connector Framework Server to accept data sent to its ACI port over SSL, follow these steps.

### To configure an incoming SSL Connection

1. Stop the connector or CFS.
2. Open the configuration file in a text editor.
3. In the `[Server]` section set the `SSLConfig` parameter to specify the name of a section in the configuration file for the SSL settings. For example:

```
[Server]
SSLConfig=SSLOptions
```

4. Create a new section in the configuration file (the name must match the name you used in the `SSLConfig` parameter). Then, use the SSL configuration parameters to specify the details for the connection. You must set the following parameters:

| | |
|---|---|
| `SSLMethod` | The SSL protocol to use. |
| `SSLCertificate` | The SSL certificate to use (in PEM format). |
| `SSLPrivateKey` | The private key for the SSL certificate (in PEM format). |

For example:

```
[SSLOptions]
SSLMethod=SSLV23
SSLCertificate=host1.crt
SSLPrivateKey=host1.key
```

5. Save and close the configuration file.
6. Restart the connector or CFS.

***Related Topics***

- "Start and Stop the Connector" on page 35

# Backup and Restore the Connector's State

After configuring a connector, and while the connector is running, you can create a backup of the connector's state. In the event of a failure, you can restore the connector's state from the backup.

To create a backup, use the `backupServer` action. The `backupServer` action saves a ZIP file to a path that you specify. The backup includes:

- a copy of the `actions` folder, which stores information about actions that have been queued, are running, and have finished.
- a copy of the configuration file.
- a copy of the connector's datastore files, which contain information about the files, records, or other data that the connector has retrieved from a repository.

## Backup a Connector's State

### To create a backup of the connectors state

- In the address bar of your Web browser, type the following action and press **ENTER**:

  `http://`*`host`*`:`*`port`*`/action=backupServer&path=`*`path`*

  where,

  *`host`* The host name or IP address of the machine where the connector is running.

  *`port`* The connector's ACI port.

  *`path`* The folder where you want to save the backup.

  For example:

  `http://localhost:1234/action=backupServer&path=./backups`

## Restore a Connector's State

### To restore a connector's state

- In the address bar of your Web browser, type the following action and press **ENTER**:

  `http://host:port/action=restoreServer&filename=filename`

  where,

  | | |
  |---|---|
  | *host* | The host name or IP address of the machine where the connector is running. |
  | *port* | The connector's ACI port. |
  | *filename* | The path of the backup that you created. |

  For example:

  `http://localhost:1234/action=restoreServer&filename=./backups/filename.zip`

# Validate the Configuration File

You can use the `ValidateConfig` service action to check for errors in the configuration file.

**Note:** For the `ValidateConfig` action to validate a configuration section, HTTP Connector must have previously read that configuration. In some cases, the configuration might be read when a task is run, rather than when the component starts up. In these cases, `ValidateConfig` reports any unread sections of the configuration file as unused.

### To validate the configuration file

- Send the following action to HTTP Connector:

  `http://Host:ServicePort/action=ValidateConfig`

  where:

  | | |
  |---|---|
  | *Host* | is the host name or IP address of the machine where HTTP Connector is installed. |
  | *ServicePort* | is the service port, as specified in the `[Service]` section of the configuration file. |

# Example Configuration File

```
[Server]
Port = 5678
Threads = 5

[service]
```

```
ServicePort=5432
ServiceStatusClients=*
ServiceControlClients=*

[Connector]
EnableIngestion=TRUE

[Ingestion]
IngesterType=AsyncPiranha
IngestHost=localhost
IngestPort=7000
BatchSize=100

[FetchTasks]
Number=1
0=MYSITE

[MYSITE]
URL=http://my.site.com/
DIRECTORY=MYSITE

[Logging]
LogLevel=FULL
0=ApplicationLogStream
1=ActionLogStream
2=SynchronizeLogStream

[ApplicationLogStream]
LogFile=application.log
LogTypeCSVs=application
LogEcho=TRUE

[ActionLogStream]
LogFile=action.log
LogTypeCSVs=action
LogEcho=TRUE

[SynchronizeLogStream]
LogFile=synchronize.log
LogTypeCSVs=synchronize

[License]
LicenseServerHost=localhost
LicenseServerACIPort=20000
LicenseServerTimeout=600000
LicenseServerRetries=1
```

# Chapter 4: Start and Stop the Connector

This section describes how to start and stop the HTTP Connector.



**Note:** You must start and stop the Connector Framework Server separately from the HTTP Connector.

# Start the Connector

After you have installed and configured a connector, you are ready to run it. Start the connector using one of the following methods.

## Start the Connector on Windows

### To start the connector using Windows Services

1. Open the Windows Services dialog box.
2. Select the connector service, and click **Start**.
3. Close the Windows Services dialog box.

### To start the connector by running the executable

- In the connector installation directory, double-click the connector executable file.

## Start the Connector on UNIX

To start the connector on a UNIX operating system, follow these steps.

### To start the connector using the UNIX start script

1. Change to the installation directory.
2. Enter the following command:

   ```
   ./startconnector.sh
   ```

3. If you want to check the HTTP Connector service is running, enter the following command:

   ```
   ps -aef | grep ConnectorInstallName
   ```

   This command returns the HTTP Connector service process ID number if the service is running.

# Verify that HTTP Connector is Running

After starting HTTP Connector, you can run the following actions to verify that HTTP Connector is running.

- GetStatus
- GetLicenseInfo

## GetStatus

You can use the `GetStatus` service action to verify the HTTP Connector is running. For example:

`http://Host:ServicePort/action=GetStatus`

**Note:** You can send the `GetStatus` action to the ACI port instead of the service port. The `GetStatus` ACI action returns information about the HTTP Connector setup.

## GetLicenseInfo

You can send a `GetLicenseInfo` action to HTTP Connector to return information about your license. This action checks whether your license is valid and returns the operations that your license includes.

Send the `GetLicenseInfo` action to the HTTP Connector ACI port. For example:

`http://Host:ACIport/action=GetLicenseInfo`

The following result indicates that your license is valid.

```
<autn:license>
       <autn:validlicense>true</autn:validlicense>
</autn:license>
```

As an alternative to submitting the `GetLicenseInfo` action, you can view information about your license, and about licensed and unlicensed actions, on the **License** tab in the Status section of IDOL Admin.

# Stop the Connector

You must stop the connector before making any changes to the configuration file.

### To stop the connector using Windows Services

1. Open the Windows Services dialog box.
2. Select the ***ConnectorInstallName*** service, and click **Stop**.
3. Close the Windows Services dialog box.

### To stop the connector by sending an action to the service port

- Type the following command in the address bar of your Web browser, and press ENTER:

  `http://host:ServicePort/action=stop`

  | | |
  |---|---|
  | *host* | The IP address or host name of the machine where the connector is running. |
  | *ServicePort* | The connector's service port (specified in the `[Service]` section of the connector's configuration file). |

# Chapter 5: Send Actions to HTTP Connector

This section describes how to send actions to HTTP Connector.



# Send Actions to HTTP Connector

HTTP Connector actions are HTTP requests, which you can send, for example, from your web browser. The general syntax of these actions is:

`http://host:port/action=action&parameters`

where:

| | |
|---|---|
| *host* | is the IP address or name of the machine where HTTP Connector is installed. |
| *port* | is the HTTP Connector ACI port. The ACI port is specified by the `Port` parameter in the `[Server]` section of the HTTP Connector configuration file. For more information about the `Port` parameter, see the *HTTP Connector Reference*. |
| *action* | is the name of the action you want to run. |
| *parameters* | are the required and optional parameters for the action. |

**Note:** Separate individual parameters with an ampersand (&). Separate parameter names from values with an equals sign (=). You must percent-encode all parameter values.

For more information about actions, see the *HTTP Connector Reference*.

# Asynchronous Actions

When you send an asynchronous action to HTTP Connector, the connector adds the task to a queue and returns a token. HTTP Connector performs the task when a thread becomes available. You can use the token with the `QueueInfo` action to check the status of the action and retrieve the results of the action.

Most of the features provided by the connector are available through `action=fetch`, so when you use the `QueueInfo` action, query the `fetch` action queue, for example:

```
/action=QueueInfo&QueueName=Fetch&QueueAction=GetStatus
```

# Check the Status of an Asynchronous Action

To check the status of an asynchronous action, use the token that was returned by HTTP Connector with the `QueueInfo` action. For more information about the `QueueInfo` action, refer to the *HTTP Connector Reference*.

### To check the status of an asynchronous action

- Send the `QueueInfo` action to HTTP Connector with the following parameters.

| | |
|---|---|
| `QueueName` | The name of the action queue that you want to check. |
| `QueueAction` | The action to perform. Set this parameter to **`GetStatus`**. |
| `Token` | (Optional) The token that the asynchronous action returned. If you do not specify a token, HTTP Connector returns the status of every action in the queue. |

For example:

```
/action=QueueInfo&QueueName=fetch&QueueAction=getstatus&Token=...
```

# Cancel an Asynchronous Action that is Queued

To cancel an asynchronous action that is waiting in a queue, use the following procedure.

### To cancel an asynchronous action that is queued

- Send the `QueueInfo` action to HTTP Connector with the following parameters.

| | |
|---|---|
| `QueueName` | The name of the action queue that contains the action to cancel. |
| `QueueAction` | The action to perform . Set this parameter to **`Cancel`**. |
| `Token` | The token that the asynchronous action returned. |

For example:

```
/action=QueueInfo&QueueName=fetch&QueueAction=Cancel&Token=...
```

# Stop an Asynchronous Action that is Running

You can stop an asynchronous action at any point.

### To stop an asynchronous action that is running

- Send the `QueueInfo` action to HTTP Connector with the following parameters.

| | |
|---|---|
| `QueueName` | The name of the action queue that contains the action to stop. |
| `QueueAction` | The action to perform. Set this parameter to **`Stop`**. |
| `Token` | The token that the asynchronous action returned. |

For example:

```
/action=QueueInfo&QueueName=fetch&QueueAction=Stop&Token=...
```

# Store Action Queues in an External Database

HTTP Connector provides asynchronous actions. Each asynchronous action has a queue to store requests until threads become available to process them. You can configure HTTP Connector to store these queues either in an internal database file, or in an external database hosted on a database server.

The default configuration stores queues in an internal database. Using this type of database does not require any additional configuration.

You might want to store the action queues in an external database so that several servers can share the same queues. In this configuration, sending a request to any of the servers adds the request to the shared queue. Whenever a server is ready to start processing a new request, it takes the next request from the shared queue, runs the action, and adds the results of the action back to the shared database so that they can be retrieved by any of the servers. You can therefore distribute requests between components without configuring a Distributed Action Handler (DAH).

**Note:** You cannot use multiple servers to process a single request. Each request is processed by one server.

**Note:** Although you can configure several connectors to share the same action queues, the connectors do not share fetch task data. If you share action queues between several connectors and distribute synchronize actions, the connector that processes a synchronize action cannot determine which items the other connectors have retrieved. This might result in some documents being ingested several times.

## Prerequisites

- Supported databases:
  - PostgreSQL 9.0 or later.
  - MySQL 5.0 or later.
- If you use PostgreSQL, you must set the PostgreSQL ODBC driver setting `MaxVarChar` to **`0`** (zero). If you use a DSN, you can configure this parameter when you create the DSN. Otherwise, you can set the `MaxVarcharSize` parameter in the connection string.

# Configure HTTP Connector

To configure HTTP Connector to use a shared action queue, follow these steps.

### To store action queues in an external database

1. Stop HTTP Connector, if it is running.
2. Open the HTTP Connector configuration file.
3. Find the relevant section in the configuration file:
   - To store queues for all asynchronous actions in the external database, find the `[Actions]` section.
   - To store the queue for a single asynchronous action in the external database, find the section that configures that action.
4. Set the following configuration parameters.

| | |
|---|---|
| `AsyncStoreLibraryDirectory` | The path of the directory that contains the library to use to connect to the database. Specify either an absolute path, or a path relative to the server executable file. |
| `AsyncStoreLibraryName` | The name of the library to use to connect to the database. You can omit the file extension. The following libraries are available:<br>• **`postgresAsyncStoreLibrary`** - for connecting to a PostgreSQL database.<br>• **`mysqlAsyncStoreLibrary`** - for connecting to a MySQL database. |
| `ConnectionString` | The connection string to use to connect to the database. The user that you specify must have permission to create tables in the database. For example:<br>`ConnectionString=DSN=my_ASYNC_QUEUE`<br>or<br>`ConnectionString=Driver={PostgreSQL}; Server=10.0.0.1; Port=9876; Database=SharedActions; Uid=user; Pwd=password; MaxVarcharSize=0;` |

   For example:

```
[Actions]
AsyncStoreLibraryDirectory=acidlls
AsyncStoreLibraryName=postgresAsyncStoreLibrary
ConnectionString=DSN=ActionStore
```

5. If you are using the same database to store action queues for more than one type of component,

set the following parameter in the `[Actions]` section of the configuration file.

| | |
|---|---|
| `DatastoreSharingGroupName` | The group of components to share actions with. You can set this parameter to any string, but the value must be the same for each server in the group. For example, to configure several HTTP Connectors to share their action queues, set this parameter to the same value in every HTTP Connector configuration. HPE recommends setting this parameter to the name of the component.<br><br>**Caution:** Do not configure different components (for example, two different types of connector) to share the same action queues. This will result in unexpected behavior. |

For example:

```
[Actions]
...
DatastoreSharingGroupName=ComponentType
```

6. Save and close the configuration file.

   When you start HTTP Connector it connects to the shared database.

# Use XSL Templates to Transform Action Responses

You can transform the action responses returned by HTTP Connector using XSL templates. You must write your own XSL templates and save them with either an `.xsl` or `.tmpl` file extension.

After creating the templates, you must configure HTTP Connector to use them, and then apply them to the relevant actions.

### To enable XSL transformations

1. Ensure that the `autnxslt` library is located in the same directory as your configuration file. If the library is not included in your installation, you can obtain it from HPE Support.
2. Open the HTTP Connector configuration file in a text editor.
3. In the `[Server]` section, ensure that the `XSLTemplates` parameter is set to **`true`**.

   **Caution:** If `XSLTemplates` is set to **`true`** and the `autnxslt` library is not present in the same directory as the configuration file, the server will not start.

4. (Optional) In the `[Paths]` section, set the `TemplateDirectory` parameter to the path to the directory that contains your XSL templates. The default directory is `acitemplates`.
5. Save and close the configuration file.
6. Restart HTTP Connector for your changes to take effect.

### To apply a template to action output

- Add the following parameters to the action:

| | |
|---|---|
| `Template` | The name of the template to use to transform the action output. Exclude the folder path and file extension. |
| `ForceTemplateRefresh` | (Optional) If you modified the template after the server started, set this parameter to **`true`** to force the ACI server to reload the template from disk rather than from the cache. |

For example:

```
action=QueueInfo&QueueName=Fetch
                &QueueAction=GetStatus
                &Token=...
                &Template=myTemplate
```

In this example, HTTP Connector applies the XSL template `myTemplate` to the response from a `QueueInfo` action.

**Note:** If the action returns an error response, HTTP Connector does not apply the XSL template.

# Example XSL Templates

HTTP Connector includes the following sample XSL templates, in the `acitemplates` folder:

| XSL Template | Description |
|---|---|
| `LuaDebug` | Transforms the output from the `LuaDebug` action, to assist with debugging Lua scripts. |

# Chapter 6: Use the Connector

This section describes how to use the connector.



# Create a New Fetch Task

To automatically retrieve content from a repository, create a new *fetch task* by following these steps. The connector runs each fetch task automatically, based on the schedule that is configured in the configuration file.

### To create a new Fetch Task

1. Stop the connector.
2. Open the configuration file in a text editor.
3. In the `[FetchTasks]` section of the configuration file, specify the number of fetch tasks using the `Number` parameter. If you are configuring the first fetch task, type **`Number=1`**. If one or more fetch tasks have already been configured, increase the value of the `Number` parameter by one (1). Below the `Number` parameter, specify the names of the fetch tasks, starting from zero (0). For example:

   ```
   [FetchTasks]
   Number=1
   0=MyTask
   ```

4. Below the `[FetchTasks]` section, create a new *TaskName* section. The name of the section must match the name of the new fetch task. For example:

   ```
   [FetchTasks]
   Number=1
   0=MyTask

   [MyTask]
   ```

5. In the new section, set one of the following parameters to specify the sites that you want to index.

   `URLN` Specify the URLs where you want to start indexing.

   `URLFile` Specify the full path to a file that contains a list of URLs.

   For example:

   ```
   [MyTask]
   URL0=http://www.autonomy.com
   URL1=http://www.another-website.com
   ```

or

```
[MyTask]
URLFile=C:\autonomy\urls.txt
```

6. In the [*TaskName*] section, use further parameters to configure the task. For information about the parameters that you can use, refer to the *HTTP Connector (CFS) Reference*. For example, you can specify how links are followed or the maximum number of pages that are retrieved.
7. Save and close the configuration file. You can now start the connector.

**Note:** The connector saves a record of the data that is has retrieved for each fetch task. If you make changes to the configuration and want to reset the connector so that it retrieves all of your data again, delete the data files (`connector_[fetchtask_name]_datastore.db`) in the connector's installation folder.

***Related Topics***

- "Start and Stop the Connector" on page 35
- "Schedule Fetch Tasks" on the next page

# Retrieve Data using SSL

To retrieve data from an HTTP server using SSL or TLS, you might need to set additional parameters when you configure your fetch task.

### To retrieve data over a secure connection

1. In the HTTP Connector configuration file, find the section where you configured your fetch task:

   ```
   [MyTask]
   URL0=https://www.hpe.com
   ```

2. Specify the required SSL settings, for example:

   ```
   [MyTask]
   URL0=https://www.hpe.com
   SSLMethod=TLSV1
   SSLCheckCertificate=TRUE
   SSLCACertificate=trusted.crt
   ```

   **Tip:** In this case, you cannot use the `SSLConfig` parameter.

   For more information about the SSL configuration parameters, refer to the Secure Socket Layer Parameters in the *HTTP Connector Reference.*
3. Save and close the configuration file.

# Schedule Fetch Tasks

The connector automatically runs the fetch tasks that you have configured, based on the schedule in the configuration file. To modify the schedule, follow these steps.

### To schedule fetch tasks

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. Find the `[Connector]` section.
4. The `EnableScheduleTasks` parameter specifies whether the connector should automatically run the fetch tasks that have been configured in the `[FetchTasks]` section. To run the tasks, set this parameter to `true`. For example:

   ```
   [Connector]
   EnableScheduledTasks=True
   ```

5. In the `[Connector]` section, set the following parameters:

   | | |
   |---|---|
   | `ScheduleStartTime` | The start time for the fetch task, the first time it runs after you start the connector. The connector runs subsequent synchronize cycles after the interval specified by `ScheduleRepeatSecs`.<br>Specify the start time in the format H[H][:MM][:SS]. To start running tasks as soon as the connector starts, do not set this parameter or use the value **`now`**. |
   | `ScheduleRepeatSecs` | The interval (in seconds) from the start of one scheduled `synchronize` cycle to the start of the next. If a previous synchronize cycle is still running when the interval elapses, the connector queues a maximum of one action. |
   | `ScheduleCycles` | The number of times that each fetch task is run. To run the tasks continuously until the connector is stopped, set this parameter to **`-1`**. To run each task only one time, set this parameter to **`1`**. |

   For example:

   ```
   [Connector]
   EnableScheduledTasks=True
   ScheduleStartTime=15:00:00
   ScheduleRepeatSecs=3600
   ScheduleCycles=-1
   ```

6. (Optional) To run a specific fetch task on a different schedule, you can override these parameters in a *TaskName* section of the configuration file. For example:

   ```
   [Connector]
   EnableScheduledTasks=TRUE
   ScheduleStartTime=15:00:00
   ```

```
ScheduleRepeatSecs=3600
ScheduleCycles=-1

...

[FetchTasks]
Number=2
0=MyTask0
1=MyTask1
...

[MyTask1]
ScheduleStartTime=16:00:00
ScheduleRepeatSecs=60
ScheduleCycles=-1
```

In this example, `MyTask0` follows the schedule defined in the `[Connector]` section, and `MyTask1` follows the scheduled defined in the `[MyTask1]` *TaskName* section.

7. Save and close the configuration file. You can now start the connector.

***Related Topics***

- "Start and Stop the Connector" on page 35

# Troubleshoot the Connector

This section describes how to troubleshoot common problems that might occur when you set up the HTTP Connector.

***Connection refused***

If the connector cannot connect to the Web site that you want to index, check whether the connector machine is behind a proxy server. If this is the case, use the configuration parameters `ProxyHost` and `ProxyPort` (or `ProxyFromLua`) to specify the host name or IP address, and port, of the proxy server.

***Some pages are not indexed***

If pages are not indexed, set the configuration parameter `LogVerbose=true`. You can then view the `synchronize` log file to see the links that are extracted from pages. Check your configuration to ensure that it does not exclude the pages that you want to index. The connector cannot parse Javascript, so any links contained in Javascript are not found by the connector and those pages are not indexed.

***The connector does not log on successfully***

Some Web sites require visitors, and therefore the connector, to log on before they can retrieve content. You must set the `LoginMethod` configuration parameter and provide credentials in the connector's configuration file.

To determine the correct method to use to log in to a Web site, you can:

- View the page source. If the Web site presents an HTML form, view the page source and check whether the form uses the POST or GET method to submit the form data to the Web server.
- Use a packet analyzer to monitor the data sent from the Web browser to the Web server. Compare the data sent by the Web browser, when you log in manually, to the data that is sent by the connector.

If you configure the connector to log on to a Web site by submitting a form, ensure that the connector submits all of the required fields.

# Chapter 7: Manipulate Documents

This section describes how to manipulate documents that are created by the connector and sent for ingestion.



# Introduction

IDOL Connectors retrieve data from repositories and create documents that are sent to Connector Framework Server, another connector, or Haven OnDemand. You might want to manipulate the documents that are created. For example, you can:

- Add or modify document fields, to change the information that is indexed into IDOL Server or Haven OnDemand.
- Add fields to a document to customize the way the document is processed by CFS.
- Convert information into another format so that it can be inserted into another repository by a connector that supports the `Insert` action.

When a connector sends documents to CFS, the documents only contain metadata extracted from the repository by the connector (for example, the location of the original files). To modify data extracted by KeyView, you must modify the documents using CFS. For information about how to manipulate documents with CFS, refer to the *Connector Framework Server Administration Guide*.

# Add a Field to Documents using an Ingest Action

To add a field to all documents retrieved by a fetch task, or all documents sent for ingestion, you can use an Ingest Action.

**Note:** To add a field only to selected documents, use a Lua script (see "Run Lua Scripts" on page 52). For an example Lua script that demonstrates how to add a field to a document, see "Add a Field to a Document" on page 54.

### To add a field to documents using an Ingest Action

1. Open the connector's configuration file.
2. Find one of the following sections in the configuration file:

- To add the field to all documents retrieved by a specific fetch task, find the `[TaskName]` section.
- To add a field to all documents that are sent for ingestion, find the `[Ingestion]` section.

**Note:** If you set the `IngestActions` parameter in a `[TaskName]` section, the connector does not run any `IngestActions` set in the `[Ingestion]` section for documents retrieved by that task.

3. Use the `IngestActions` parameter to specify the name of the field to add, and the field value. For example, to add a field named `AUTN_NO_EXTRACT`, with the value `SET`, type:

   ```
   IngestActions0=META:AUTN_NO_EXTRACT=SET
   ```

4. Save and close the configuration file.

# Customize Document Processing

You can add the following fields to a document to control how the document is processed by CFS. Unless stated otherwise, you can add the fields with any value.

**AUTN_FILTER_META_ONLY**

Prevents KeyView extracting file content from a file. KeyView only extracts metadata and adds this information to the document.

**AUTN_NO_FILTER**

Prevents KeyView extracting file content and metadata from a file. You can use this field if you do not want to extract text from certain file types.

**AUTN_NO_EXTRACT**

Prevents KeyView extracting subfiles. You can use this field to prevent KeyView extracting the contents of ZIP archives and other container files.

**AUTN_NEEDS_MEDIA_SERVER_ANALYSIS**

Identifies media files (images, video, and documents such as PDF files that contain embedded images) that you want to send to Media Server for analysis, using a `MediaServerAnalysis` import task. You do not need to add this field if you are using a Lua script to run media analysis. For more information about running analysis on media, refer to the *Connector Framework Server Administration Guide*.

**AUTN_NEEDS_IMAGE_SERVER_ANALYSIS**

Identifies images that you want to send to Image Server for image analysis, using an `ImageServerAnalysis` import task. You do not need to add this field if you are using a Lua script to run image analysis. Image Server enriches documents that represent images by running operations such as optical character recognition, face recognition, and object detection. For more information about running analysis on images, refer to the *Connector Framework Server Administration Guide*.

**AUTN_NEEDS_VIDEO_SERVER_ANALYSIS**

Identifies video that you want to send to Video Server for analysis, using a `VideoServerAnalysis` import task. You do not need to add this field if you are using a Lua script to run video analysis. For more information about running analysis on video, refer to the *Connector Framework Server Administration Guide*.

**AUTN_NEEDS_TRANSCRIPTION**

Identifies audio and video assets that you want to send to an IDOL Speech Server for speech-to-text processing, using an `IdolSpeech` import task. You do not need to add this field if you are using a Lua script to run speech-to-text. For more information about running speech-to-text on documents, refer to the *Connector Framework Server Administration Guide*.

**AUTN_FORMAT_CORRECT_FOR_TRANSCRIPTION**

To bypass the transcoding step of an `IdolSpeech` import task, add the field `AUTN_FORMAT_CORRECT_FOR_TRANSCRIPTION`. Documents that have this field are not sent to a Transcode Server. For more information about the `IdolSpeech` task, refer to the *Connector Framework Server Administration Guide*.

**AUTN_AUDIO_LANGUAGE**

To bypass the language identification step of an `IdolSpeech` import task add the field `AUTN_AUDIO_LANGUAGE`. The value of the field must be the name of the IDOL Speech Server language pack to use for extracting speech. Documents that have this field are not sent to the IDOL Speech Server for language identification. For more information about the `IdolSpeech` task, refer to the *Connector Framework Server Administration Guide*.

# Standardize Field Names

Field standardization renames document fields so that they follow a standard naming scheme. You can use field standardization so that documents indexed into IDOL through different connectors use the same fields to store the same type of information.

For example, documents created by the File System Connector can have a field named `FILEOWNER`. Documents created by the Documentum Connector can have a field named `owner_name`. Both of these fields store the name of the person who owns a file. Field standardization renames the fields so that they have the same name.

Field standardization only renames fields that are specified in the standard naming scheme. If a connector or document does not have any mapping, field standardization does run but has no effect. The naming scheme is defined in XML format and is supplied with the connector.

**Note:** You can also configure CFS to run field standardization. To standardize all field names, you must run field standardization from both the connector and CFS.

### To enable field standardization

1. Stop the connector.
2. Open the connector's configuration file.
3. In the `[Connector]` section, set the following parameters:

| | |
|---|---|
| `EnableFieldNameStandardization` | A Boolean that specifies whether to enable field standardization. Set this parameter to **`true`**. |
| `FieldNameDictionaryPath` | The path to the XML file that contains the field names to use for field standardization. |

For example:

```
[Connector]
EnableFieldNameStandardization=true
FieldNameDictionaryPath=dictionary.xml
```

4. Save the configuration file and restart the connector.

# Run Lua Scripts

IDOL Connectors can run custom scripts written in Lua, an embedded scripting language. You can use Lua scripts to process documents that are created by a connector, before they are sent to CFS and indexed into IDOL Server. For example, you can:

- Add or modify document fields.
- Manipulate the information that is indexed into IDOL.
- Call out to an external service, for example to alert a user.

There might be occasions when you do not want to send documents to a CFS. For example, you might use the `Collect` action to retrieve documents from one repository and then insert them into another. You can use a Lua script to transform the documents from the source repository so that they can be accepted by the destination repository.

To run a Lua script from a connector, use one of the following methods:

- Set the `IngestActions` configuration parameter in the connector's configuration file. For information about how to do this, see "Run a Lua Script using an Ingest Action" on page 54. The connector runs ingest actions on documents before they are sent for ingestion.
- Set the `IngestActions` action parameter when using the `Synchronize` action.

# Write a Lua Script

A Lua script that is run from a connector must have the following structure:

```
function handler(config, document, params)
       ...
end
```

The `handler` function is called for each document and is passed the following arguments:

| Argument | Description |
|---|---|
| `config` | A `LuaConfig` object that you can use to retrieve the values of configuration parameters from the connector's configuration file. |

| Argument | Description |
|---|---|
| `document` | A `LuaDocument` object. The document object is an internal representation of the document being processed. Modifying this object changes the document. |
| `params` | The `params` argument is a table that contains additional information provided by the connector:<br>• **TYPE**. The type of task being performed. The possible values are `ADD`, `UPDATE`, `DELETE`, or `COLLECT`.<br>• **SECTION**. The name of the section in the configuration file that contains configuration parameters for the task.<br>• **FILENAME**. The document filename. The Lua script can modify this file, but must not delete it.<br>• **OWNFILE**. Indicates whether the connector (and CFS) has ownership of the file. A value of `true` means that CFS deletes the file after it has been processed. |

The following script demonstrates how you can use the `config` and `params` arguments:

```
function handler(config, document, params)
	-- Write all of the additional information to a log file
	for k,v in pairs(params) do
		log("logfile.txt", k..": "..tostring(v))
	end

	-- The following lines set variables from the params argument
	type = params["TYPE"]
	section = params["SECTION"]
	filename = params["FILENAME"]

	-- Read a configuration parameter from the configuration file
	-- If the parameter is not set, "DefaultValue" is returned
	val = config:getValue(section, "Parameter", "DefaultValue")

	-- If the document is not being deleted, set the field FieldName
	-- to the value of the configuration parameter
	if type ~= "DELETE" then
		document:setFieldValue("FieldName", val)
	end

	-- If the document has a file (that is, not just metadata),
	-- copy the file to a new location and write a stub idx file
	-- containing the metadata.
	if filename ~= "" then
		copytofilename = "./out/"..create_uuid(filename)
		copy_file(filename, copytofilename)
		document:writeStubIdx(copytofilename..".idx")
	end
```

```
        return true
end
```

For the connector to continue processing the document, the `handler` function must return **`true`**. If the function returns **`false`**, the document is discarded.

**Tip:** You can write a library of useful functions to share between multiple scripts. To include a library of functions in a script, add the code **`dofile("library.lua")`** to the top of the lua script, outside of the `handler` function.

# Run a Lua Script using an Ingest Action

To run a Lua script on documents that are sent for ingestion, use an Ingest Action.

### To run a Lua script using an Ingest Action

1. Open the connector's configuration file.
2. Find one of the following sections in the configuration file:
   - To run a Lua script on all documents retrieved by a specific task, find the `[*TaskName*]` section.
   - To run a Lua script on all documents that are sent for ingestion, find the `[Ingestion]` section.

   **Note:** If you set the `IngestActions` parameter in a `[TaskName]` section, the connector does not run any `IngestActions` set in the `[Ingestion]` section for that task.
3. Use the `IngestActions` parameter to specify the path to your Lua script. For example:

   **`IngestActions=LUA:C:\Autonomy\myScript.lua`**
4. Save and close the configuration file.

***Related Topics***

- "Write a Lua Script" on page 52

# Example Lua Scripts

This section contains example Lua scripts.

- "Add a Field to a Document" below
- "Merge Document Fields" on the next page

# Add a Field to a Document

The following script demonstrates how to add a field named "MyField" to a document, with a value of "MyValue".

```
function handler(config, document, params)
	document:addField("MyField", "MyValue");
	return true;
end
```

The following script demonstrates how to add the field `AUTN_NEEDS_IMAGE_SERVER_ANALYSIS` to all JPEG, TIFF and BMP documents. This field indicates to CFS that the file should be sent to an Image Server for analysis (you must also define the `ImageServerAnalysis` task in the CFS configuration file).

The script finds the file type using the `DREREFERENCE` document field, so this field must contain the file extension for the script to work correctly.

```
function handler(config, document, params)
	local extensions_for_ocr = { jpg = 1 , tif = 1, bmp = 1 };
	local filename = document:getFieldValue("DREREFERENCE");
	local extension, extension_found = filename:gsub("^.*%.(%w+)$", "%1", 1);

	if extension_found > 0 then
		if extensions_for_ocr[extension:lower()] ~= nil then
		   document:addField("AUTN_NEEDS_IMAGE_SERVER_ANALYSIS", "");
		end
	end

	return true;
end
```

# Merge Document Fields

This script demonstrates how to merge the values of document fields.

When you extract data from a repository, the connector can produce documents that have multiple values for a single field, for example:

```
#DREFIELD ATTACHMENT="attachment.txt"
#DREFIELD ATTACHMENT="image.jpg"
#DREFIELD ATTACHMENT="document.pdf"
```

This script shows how to merge the values of these fields, so that the values are contained in a single field, for example:

```
#DREFIELD ATTACHMENTS="attachment.txt, image.jpg, document.pdf"
```

## Example Script

```
function handler(config, document, params)
	onefield(document,"ATTACHMENT","ATTACHMENTS")
	return true;
end

function onefield(document,existingfield,newfield)
	if document:hasField(existingfield) then
```

```
                local values = { document:getFieldValues(existingfield) }

                local newfieldvalue=""
                for i,v in ipairs(values) do
                    if i>1 then
                        newfieldvalue = newfieldvalue ..", "
                    end

                    newfieldvalue = newfieldvalue..v
                end

                document:addField(newfield,newfieldvalue)
        end

        return true;
end
```

# Chapter 8: Ingestion

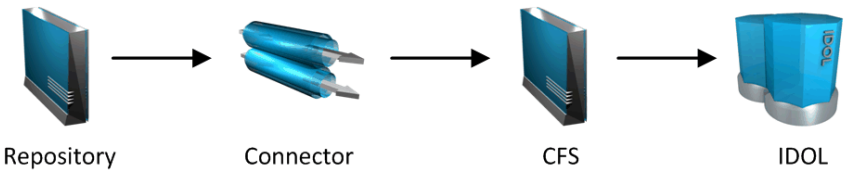
After a connector finds new documents in a repository, or documents that have been updated or deleted, it sends this information to another component called the *ingestion target*. This section describes where you can send the information retrieved by the HTTP Connector, and how to configure the ingestion target.



# Introduction

A connector can send information to a single ingestion target, which could be:

- **Connector Framework Server**. To process information and then index it into IDOL, Haven OnDemand, or Vertica, send the information to a Connector Framework Server (CFS). Any files retrieved by the connector are *imported* using KeyView, which means the information contained in the files is converted into a form that can be indexed. If the files are containers that contain *subfiles*, these are extracted. You can manipulate and enrich documents using Lua scripts and automated tasks such as field standardization, image analysis, and speech-to-text processing. CFS can index your documents into one or more indexes. For more information about CFS, refer to the *Connector Framework Server Administration Guide*.




- **Haven OnDemand**. You can index documents directly into a Haven OnDemand text index. Haven OnDemand can extract text, metadata, and subfiles from over 1000 different file formats, so you might not need to send documents to CFS.
- **Another Connector.** Use another connector to keep another repository up-to-date. When a connector receives documents, it inserts, updates, or deletes the information in the repository. For example, you could use an Exchange Connector to extract information from Microsoft Exchange, and send the documents to a Notes Connector so that the information is inserted, updated, or deleted in the Notes repository.

  **Note:** The destination connector can only insert, update, and delete documents if it supports the `insert`, `update`, and `delete` fetch actions.

In most cases HPE recommends ingesting documents through CFS, so that KeyView can extract content from any files retrieved by the connector and add this information to your documents. You can also use CFS to manipulate and enrich documents before they are indexed. However, if required you can configure the connector to index documents directly into:

- **IDOL Server**. You might index documents directly into IDOL Server when your connector produces metadata-only documents (documents that do not have associated files). In this case there is no need for the documents to be imported. Connectors that can produce metadata-only documents include ODBC Connector and Oracle Connector.
- **Vertica.** The metadata extracted by connectors is structured information held in structured fields, so you might use Vertica to analyze this information.
- **MetaStore**. You can index document metadata into a MetaStore for records management.

# Send Data to Connector Framework Server

This section describes how to configure ingestion into Connector Framework Server (CFS).

### To send data to a CFS

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[Ingestion]` section, set the following parameters:

   | | |
   |---|---|
   | `EnableIngestion` | To enable ingestion, set this parameter to **`true`**. |
   | `IngesterType` | To send data to CFS, set this parameter to **`CFS`**. |
   | `IngestHost` | The host name or IP address of the CFS. |
   | `IngestPort` | The port of the CFS. |

   For example:

   ```
   [Ingestion]
   EnableIngestion=True
   IngesterType=CFS
   IngestHost=localhost
   IngestPort=7000
   ```

4. (Optional) If you are sending documents to CFS for indexing into IDOL Server, set the `IndexDatabase` parameter. When documents are indexed, IDOL adds each document to the database specified in the document's `DREDBNAME` field. The connector sets this field for each document, using the value of `IndexDatabase`.

   | | |
   |---|---|
   | `IndexDatabase` | The name of the IDOL database into which documents are indexed. Ensure that this database exists in the IDOL Server configuration file. |

   - To index all documents retrieved by the connector into the same IDOL database, set this parameter in the `[Ingestion]` section.

- To use a different database for documents retrieved by each task, set this parameter in the *TaskName* section.

5. Save and close the configuration file.

# Send Data to Haven OnDemand

This section describes how to configure ingestion into Haven OnDemand.

### To send data to Haven OnDemand

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the [Ingestion] section, set the following parameters:

| | |
|---|---|
| EnableIngestion | To enable ingestion, set this parameter to **true**. |
| IngesterType | To send data to Haven OnDemand, set this parameter to **HavenOnDemand**. |
| HavenOnDemandApiKey | The API Key to use to index documents into Haven OnDemand. You can obtain the key from your Haven OnDemand account. |
| HavenOnDemandIndexName | The name of the Haven OnDemand text index to index documents into. |
| IngestSSLConfig | The name of a section in the connector's configuration file that contains SSL settings for connecting to the ingestion server. The connection to Haven OnDemand must be made over TLS. For more information about sending documents to the ingestion server over TLS, see "Configure Outgoing SSL Connections" on page 30. |

For example:

```
[Ingestion]
EnableIngestion=True
IngesterType=HavenOnDemand
HavenOnDemandApiKey=[Your API Key]
HavenOnDemandIndexName=MyTextIndex
IngestSSLConfig=SSLOptions

[SSLOptions]
SSLMethod=TLSV1
```

4. Save and close the configuration file.

# Send Data to Another Repository

You can configure a connector to send the information it retrieves to another connector. When the destination connector receives the documents, it inserts them into another repository. When documents are updated or deleted in the source repository, the source connector sends this information to the destination connector so that the documents can be updated or deleted in the other repository.

**Note:** The destination connector can only insert, update, and delete documents if it supports the `insert`, `update`, and `delete` fetch actions.

### To send data to another connector for ingestion into another repository

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[Ingestion]` section, set the following parameters:

| | |
|---|---|
| `EnableIngestion` | To enable ingestion, set this parameter to **`true`**. |
| `IngesterType` | To send data to another repository, set this parameter to **`Connector`**. |
| `IngestHost` | The host name or IP address of the machine hosting the destination connector. |
| `IngestPort` | The ACI port of the destination connector. |
| `IngestActions` | Set this parameter so that the source connector runs a Lua script to convert documents into form that can be used with the destination connector's insert action. For information about the required format, refer to the Administration Guide for the destination connector. |

   For example:

```
[Ingestion]
EnableIngestion=True
IngesterType=Connector
IngestHost=AnotherConnector
IngestPort=7010
IngestActions=Lua:transformation.lua
```

4. Save and close the configuration file.

# Index Documents Directly into IDOL Server

This section describes how to index documents from a connector directly into IDOL Server.

**Tip:** In most cases, HPE recommends sending documents to a Connector Framework Server (CFS). CFS extracts metadata and content from any files that the connector has retrieved, and can

manipulate and enrich documents before they are indexed. CFS also has the capability to insert documents into more than one index, for example IDOL Server and a Vertica database. For information about sending documents to CFS, see "Send Data to Connector Framework Server" on page 58

### To index documents directly into IDOL Server

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[Ingestion]` section, set the following parameters:

   | | |
   |---|---|
   | `EnableIngestion` | To enable ingestion, set this parameter to **`true`**. |
   | `IngesterType` | To send data to IDOL Server, set this parameter to **`Indexer`**. |
   | `IndexDatabase` | The name of the IDOL database to index documents into. |

   For example:

   ```
   [Ingestion]
   EnableIngestion=True
   IngesterType=Indexer
   IndexDatabase=News
   ```

4. In the `[Indexing]` section of the configuration file, set the following parameters:

   | | |
   |---|---|
   | `IndexerType` | To send data to IDOL Server, set this parameter to **`IDOL`**. |
   | `Host` | The host name or IP address of the IDOL Server. |
   | `Port` | The IDOL Server ACI port. |
   | `SSLConfig` | (Optional) The name of a section in the connector's configuration file that contains SSL settings for connecting to IDOL. |

   For example:

   ```
   [Indexing]
   IndexerType=IDOL
   Host=10.1.20.3
   Port=9000
   SSLConfig=SSLOptions

   [SSLOptions]
   SSLMethod=SSLV23
   ```

5. Save and close the configuration file.

# Index Documents into Vertica

HTTP Connector can index documents into Vertica, so that you can run queries on structured fields (document metadata).

Depending on the metadata contained in your documents, you could investigate the average age of documents in a repository. You might want to answer questions such as: How much time has passed since the documents were last updated? How many files are regularly updated? Does this represent a small proportion of the total number of documents? Who are the most active users?

**Tip:** In most cases, HPE recommends sending documents to a Connector Framework Server (CFS). CFS extracts metadata and content from any files that the connector has retrieved, and can manipulate and enrich documents before they are indexed. CFS also has the capability to insert documents into more than one index, for example IDOL Server and a Vertica database. For information about sending documents to CFS, see "Send Data to Connector Framework Server" on page 58

# Prerequisites

- HTTP Connector supports indexing into Vertica 7.1 and later.
- You must install the appropriate Vertica ODBC drivers (version 7.1 or later) on the machine that hosts HTTP Connector. If you want to use an ODBC Data Source Name (DSN) in your connection string, you will also need to create the DSN. For more information about installing Vertica ODBC drivers and creating the DSN, refer to the HPE Vertica documentation.

# New, Updated and Deleted Documents

When documents are indexed into Vertica, HTTP Connector adds a timestamp that contains the time when the document was indexed. The field is named `VERTICA_INDEXER_TIMESTAMP` and the timestamp is in the format `YYYY-MM-DD HH:NN:SS`.

When a document in a data repository is modified, HTTP Connector adds a new record to the database with a new timestamp. All of the fields are populated with the latest data. The record describing the older version of the document is not deleted. You can create a projection to make sure your queries only return the latest record for a document.

When HTTP Connector detects that a document has been deleted from a repository, the connector inserts a new record into the database. The record contains only the `DREREFERENCE` and the field `VERTICA_INDEXER_DELETED` set to `TRUE`.

# Fields, Sub-Fields, and Field Attributes

Documents that are created by connectors can have multiple levels of fields, and field attributes. A database table has a flat structure, so this information is indexed into Vertica as follows:

- Document fields become columns in the flex table. An IDOL document field and the corresponding database column have the same name.
- Sub-fields become columns in the flex table. A document field named `my_field` with a sub-field named `subfield` results in two columns, `my_field` and `my_field.subfield`.
- Field attributes become columns in the flex table. A document field named `my_field`, with an attribute named `my_attribute` results in two columns, `my_field` holding the field value and `my_field.my_attribute` holding the attribute value.

# Prepare the Vertica Database

Indexing documents into a standard database is problematic, because documents do not have a fixed schema. A document that represents an image has different metadata fields to a document that represents an e-mail message. Vertica databases solve this problem with *flex tables*. You can create a flex table without any column definitions, and you can insert a record regardless of whether a referenced column exists.

You must create a flex table before you index data into Vertica.

When creating the table, consider the following:

- Flex tables store entire records in a single column named `__raw__`. The default maximum size of the `__raw__` column is 128K. You might need to increase the maximum size if you are indexing documents with large amounts of metadata.
- Documents are identified by their `DREREFERENCE`. HPE recommends that you do not restrict the size of any column that holds this value, because this could result in values being truncated. As a result, rows that represent different documents might appear to represent the same document. If you do restrict the size of the `DREREFERENCE` column, ensure that the length is sufficient to hold the longest `DREREFERENCE` that might be indexed.

To create a flex table without any column definitions, run the following query:

```
create flex table my_table();
```

To improve query performance, create real columns for the fields that you query frequently. For documents indexed by a connector, this is likely to include the `DREREFERENCE`:

```
create flex table my_table(DREREFERENCE varchar NOT NULL);
```

You can add new column definitions to a flex table at any time. Vertica automatically populates new columns with values for existing records. The values for existing records are extracted from the `__raw__` column.

For more information about creating and using flex tables, refer to the HPE Vertica Documentation or contact HPE Vertica technical support.

# Send Data to Vertica

To send documents to a Vertica database, follow these steps.

### To send data to Vertica

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[Ingestion]` section, set the following parameters:

| | |
|---|---|
| `EnableIngestion` | To enable ingestion, set this parameter to **`true`**. |
| `IngesterType` | To send data to a Vertica database, set this parameter to **`Indexer`**. |

For example:

```
[Ingestion]
EnableIngestion=TRUE
IngesterType=Indexer
```

4. In the `[Indexing]` section, set the following parameters:

| | |
|---|---|
| `IndexerType` | To send data to a Vertica database, set this parameter to **`Library`**. |
| `LibraryDirectory` | The directory that contains the library to use to index data. |
| `LibraryName` | The name of the library to use to index data. You can omit the `.dll` or `.so` file extension. Set this parameter to **`verticaIndexer`**. |
| `ConnectionString` | The connection string to use to connect to the Vertica database. |
| `TableName` | The name of the table in the Vertica database to index the documents into. The table must be a flex table and must exist before you start indexing documents. For more information, see "Prepare the Vertica Database" on the previous page. |

For example:

```
[Indexing]
IndexerType=Library
LibraryDirectory=indexerdlls
LibraryName=verticaIndexer
ConnectionString=DSN=VERTICA
TableName=my_flex_table
```

5. Save and close the configuration file.

# Send Data to a MetaStore

You can configure a connector to send documents to a MetaStore. When you send data to a Metastore, any files associated with documents are ignored.

**Tip:** In most cases, HPE recommends sending documents to a Connector Framework Server (CFS). CFS extracts metadata and content from any files that the connector has retrieved, and can manipulate and enrich documents before they are indexed. CFS also has the capability to insert documents into more than one index, for example IDOL Server and a MetaStore. For information about sending documents to CFS, see "Send Data to Connector Framework Server" on page 58

### To send data to a MetaStore

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. In the `[Ingestion]` section, set the following parameters:

| | |
|---|---|
| `EnableIngestion` | To enable ingestion, set this parameter to **`true`**. |
| `IngesterType` | To send data to a MetaStore, set this parameter to **`Indexer`**. |

For example:

```
[Ingestion]
EnableIngestion=True
IngesterType=Indexer
```

4. In the `[Indexing]` section, set the following parameters:

| | |
|---|---|
| `IndexerType` | To send data to a MetaStore, set this parameter to **`MetaStore`**. |
| `Host` | The host name of the machine hosting the MetaStore. |
| `Port` | The port of the MetaStore. |

For example:

```
[Indexing]
IndexerType=Metastore
Host=MyMetaStore
Port=8000
```

5. Save and close the configuration file.

# Run a Lua Script after Ingestion

You can configure the connector to run a Lua script after batches of documents are successfully sent to the ingestion server. This can be useful if you need to log information about documents that were processed, for monitoring and reporting purposes.

To configure the file name of the Lua script to run, set the `IngestBatchActions` configuration parameter in the connector's configuration file.

- To run the script for all batches of documents that are ingested, set the parameter in the `[Ingestion]` section.
- To run the script for batches of documents retrieved by a specific task, set the parameter in the `[`*`TaskName`*`]` section.

> **Note:** If you set the parameter in a `[`*`TaskName`*`]` section, the connector does not run any scripts specified in the `[Ingestion]` section for that task.

For example:

```
[Ingestion]
IngestBatchActions0=LUA:./scripts/myScript.lua
```

For more information about this parameter, refer to the *HTTP Connector Reference*.

The Lua script must have the following structure:

```
function batchhandler(documents, ingesttype)
   ...
end
```

The `batchhandler` function is called after each batch of documents is sent to the ingestion server. The function is passed the following arguments:

| Argument | Description |
|---|---|
| `documents` | A table of document objects, where each object represents a document that was sent to the ingestion server.<br>A document object is an internal representation of a document. You can modify the document object and this changes the document. However, as the script runs after the documents are sent to the ingestion server, any changes you make are not sent to CFS or IDOL. |
| `ingesttype` | A string that contains the ingest type for the documents. The `batchhandler` function is called multiple times if different document types are sent. |

For example, the following script prints the ingest type (`ADD`, `DELETE`, or `UPDATE`) and the reference for all successfully processed documents to `stdout`:

```
function batchhandler(documents, ingesttype)
     for i,document in ipairs(documents) do
         local ref = document:getReference()
         print(ingesttype..": "..ref)
     end
 end
```

# Chapter 9: Monitor the Connector

This section describes how to monitor the connector.



# IDOL Admin

IDOL Admin is an administration interface for performing ACI server administration tasks, such as gathering status information, monitoring performance, and controlling the service. IDOL Admin provides an alternative to constructing actions and sending them from your web browser.

## Prerequisites

By default, the latest version of HTTP Connector should include the `admin.dat` file that is required to run IDOL Admin. If you do not have this file, you must download it separately.

### Supported Browsers

IDOL Admin supports the following browsers:

- Internet Explorer 11 and later
- Edge
- Chrome (latest version)
- Firefox (latest version)

## Install IDOL Admin

You must install IDOL Admin on the same host that the ACI server or component is installed on. To set up a component to use IDOL Admin, you must configure the location of the `admin.dat` file and enable Cross Origin Resource Sharing.

#### To install IDOL Admin

1. Stop the ACI server.
2. Save the `admin.dat` file to any directory on the host.
3. Using a text editor, open the ACI server or component configuration file. For the location of the

configuration file, see the ACI server documentation.

4. In the `[Paths]` section of the configuration file, set the `AdminFile` parameter to the location of the `admin.dat` file. If you do not set this parameter, the ACI server attempts to find the `admin.dat` file in its working directory when you call the IDOL Admin interface.
5. Enable Cross Origin Resource Sharing.
6. In the `[Service]` section, add the `Access-Control-Allow-Origin` parameter and set its value to the URLs that you want to use to access the interface.

   Each URL must include:

   - the `http://` or `https://` prefix

   **Note:** URLs can contain the `https://` prefix if the ACI server or component has SSL enabled.

   - The host that IDOL Admin is installed on
   - The ACI port of the component that you are using IDOL Admin for

   Separate multiple URLs with spaces.

   For example, you could specify different URLs for the local host and remote hosts:

   ```
   Access-Control-Allow-Origin=http://localhost:9010
   http://Computer1.Company.com:9010
   ```

   Alternatively, you can set `Access-Control-Allow-Origin=*`, which allows you to access IDOL Admin using any valid URL (for example, `localhost`, direct IP address, or the host name). The wildcard character (*) is supported only if no other entries are specified.

   If you do not set the `Access-Control-Allow-Origin` parameter, IDOL Admin can communicate only with the server's ACI port, and not the index or service ports.
7. Start the ACI server.

You can now access IDOL Admin (see "Access IDOL Admin" below).

# Access IDOL Admin

You access IDOL Admin from a web browser. You can access the interface only through URLs that are set in the `Access-Control-Allow-Origin` parameter in the ACI server or component configuration file. For more information about configuring URL access, see "Install IDOL Admin" on the previous page.

### To access IDOL Admin from the host that it is installed on

- Type the following URL into the address bar of your web browser:

  `http://localhost:`*`port`*`/action=admin`

  where *`port`* is the ACI server or component ACI port.

### To access IDOL Admin from a different host

- Type the following URL into the address bar of your web browser:

  `http://host:port/action=admin`

  where:

  *host* is the name or IP address of the host that IDOL Admin is installed on.

  *port* is the ACI server or component ACI port of the IDOL Admin host.

# Use the Connector Logs

As the HTTP Connector runs, it outputs messages to its logs. Most log messages occur due to normal operation, for example when the connector starts, receives actions, or sends documents for ingestion. If the connector encounters an error, the logs are the first place to look for information to help troubleshoot the problem.

The connector separates messages into the following message types, each of which relates to specific features:

| Log Message Type | Description |
|---|---|
| `Action` | Logs actions that are received by the connector, and related messages. |
| `Application` | Logs application-related occurrences, such as when the connector starts. |
| `Synchronize` | Messages related to the `Synchronize` fetch action. |

# Customize Logging

You can customize logging by setting up your own *log streams*. Each log stream creates a separate log file in which specific log message types (for example, action, index, application, or import) are logged.

### To set up log streams

1. Open the HTTP Connector configuration file in a text editor.
2. Find the `[Logging]` section. If the configuration file does not contain a `[Logging]` section, add one.
3. In the `[Logging]` section, create a list of the log streams that you want to set up, in the format *N=LogStreamName*. List the log streams in consecutive order, starting from 0 (zero). For example:

   ```
   [Logging]
   LogLevel=FULL
   LogDirectory=logs
   0=ApplicationLogStream
   1=ActionLogStream
   ```

You can also use the `[Logging]` section to configure any default values for logging configuration parameters, such as `LogLevel`. For more information, see the *HTTP Connector Reference*.

4. Create a new section for each of the log streams. Each section must have the same name as the log stream. For example:

```
[ApplicationLogStream]
[ActionLogStream]
```

5. Specify the settings for each log stream in the appropriate section. You can specify the type of logging to perform (for example, full logging), whether to display log messages on the console, the maximum size of log files, and so on. For example:

```
[ApplicationLogStream]
LogTypeCSVs=application
LogFile=application.log
LogHistorySize=50
LogTime=True
LogEcho=False
LogMaxSizeKBs=1024

[ActionLogStream]
LogTypeCSVs=action
LogFile=logs/action.log
LogHistorySize=50
LogTime=True
LogEcho=False
LogMaxSizeKBs=1024
```

6. Save and close the configuration file. Restart the service for your changes to take effect.

# Set Up Event Handlers

The fetch actions sent to a connector are asynchronous. Asynchronous actions do not run immediately, but are added to a queue. This means that the person or application that sends the action does not receive an immediate response. However, you can configure the connector to call an event handler when an asynchronous action starts, finishes, or encounters an error.

You can use an event handler to:

- return data about an event back to the application that sent the action.
- write event data to a text file, to log any errors that occur.

The connector can call an event handler for the following events:

**OnStart** The `OnStart` event is called when the connector starts processing an asynchronous action.

**OnFinish** The `OnFinish` event is called when the connector successfully finishes processing an asynchronous action.

**OnError** The `OnError` event is called when an asynchronous action fails and cannot continue.

# Event Handlers

You can configure the connector to call an internal event handler, or write your own event handler. Connectors include the following internal event handlers.

## TextFileHandler

The TextFileHandler writes event data to a text file.

## HttpHandler

The HttpHandler sends event data to a URL.

## LuaHandler

The LuaHandler runs a Lua script. The event data is passed into the script. The script must have the following form:

```
function handler(request, xml)
       ...
end
```

- `request` is a table holding the request parameters.
- `xml` is a string holding the response to the request.

# Configure an Event Handler

To configure an event handler, follow these steps.

### To configure an event handler

1. Stop the connector.
2. Open the connector's configuration file in a text editor.
3. Use the `OnStart`, `OnFinish`, or `OnError` parameter to specify the name of a section in the configuration file that contains event handler settings for the corresponding event.
   - To run an event handler for all actions, set these parameters in the `[Actions]` section. For example:

     ```
     [Actions]
     OnStart=NormalEvents
     OnFinish=NormalEvents
     OnError=ErrorEvents
     ```

   - To run an event handler for specific actions, use the action name as a section in the

configuration file. The following example runs an event handler when the *Fetch* action starts and finishes successfully:

```
[Fetch]
OnStart=NormalEvents
OnFinish=NormalEvents
```

4. Create a new section in the configuration file to contain the settings for your event handler. You must name the section using the name you specified with the `OnStart`, `OnFinish`, or `OnError` parameter.
5. In the new section, set the following parameters.

`LibraryName` (Required) The name of the library to use as the event handler. You can write your own event handler, or use one of the internal event handlers:

- To write event data to a text file, set this parameter to **`TextFileHandler`**, and then set the `FilePath` parameter to specify the path of the file.
- To send event data to a URL, set this parameter to **`HttpHandler`**, and then use the HTTP event handler parameters to specify the URL, proxy server settings, credentials and so on.
- To run a Lua script, set this parameter to **`LuaHandler`**, and then set the `LuaScript` parameter to specify the path to the Lua script.

For example:

```
[NormalEvents]
LibraryName=TextFileHandler
FilePath=./events.txt

[ErrorEvents]
LibraryName=LuaHandler
LuaScript=./error.lua
```

6. Save and close the configuration file.

# Set Up Performance Monitoring

You can configure a connector to pause tasks temporarily if performance indicators on the local machine or a remote machine breach certain limits. For example, if there is a high load on the CPU or memory of the repository from which you are retrieving information, you might want the connector to pause until the machine recovers.

**Note:** Performance monitoring is available on Windows platforms only. To monitor a remote machine, both the connector machine and remote machine must be running Windows.

### To configure the connector to pause

1. Open the configuration file in a text editor.
2. Find the `[FetchTasks]` section, or a `[TaskName]` section.
   - To pause all tasks, use the `[FetchTasks]` section.
   - To specify settings for a single task, find the `[TaskName]` section for the task.
3. Set the following configuration parameters:

| | |
|---|---|
| `PerfMonCounterNameN` | The names of the performance counters that you want the connector to monitor. You can use any counter that is available in the Windows `perfmon` utility. |
| `PerfMonCounterMinN` | The minimum value permitted for the specified performance counter. If the counter falls below this value, the connector pauses until the counter meets the limits again. |
| `PerfMonCounterMaxN` | The maximum value permitted for the specified performance counter. If the counter exceeds this value, the connector pauses until the counter meets the limits again. |
| `PerfMonAvgOverReadings` | The number of readings that the connector averages before checking a performance counter against the specified limits. For example, if you set this parameter to `5`, the connector averages the last five readings and pauses only if the average breaches the limits. Increasing this value makes the connector less likely to pause if the limits are breached for a short amount of time. Decreasing this value allows the connector to continue working faster following a pause. |
| `PerfMonQueryFrequency` | The amount of time, in seconds, that the connector waits between taking readings from a performance counter. |

   For example:

```
[FetchTasks]
PerfMonCounterName0=\\machine-hostname\Memory\Available MBytes
PerfMonCounterMin0=1024
PerfMonCounterName1=\\machine-hostname\Processor(_Total)\% Processor Time
PerfMonCounterMax1=70
PerfMonAvgOverReadings=5
PerfMonQueryFrequency=10
```

4. Save and close the configuration file.

# Set Up Document Tracking

Document tracking reports metadata about documents when they pass through various stages in the indexing process. For example, when a connector finds a new document and sends it for ingestion, a

document tracking event is created that shows the document has been added. Document tracking can help you detect problems with the indexing process.

You can write document tracking events to a database, log file, or IDOL Server. For information about how to set up a database to store document tracking events, refer to the *IDOL Server Administration Guide*.

### To enable Document Tracking

1. Open the connector's configuration file.
2. Create a new section in the configuration file, named `[DocumentTracking]`.
3. In the new section, specify where the document tracking events are sent.
   - To send document tracking events to a database through ODBC, set the following parameters:

     | | |
     |---|---|
     | `Backend` | To send document tracking events to a database, set this parameter to **`Library`**. |
     | `LibraryPath` | Specify the location of the ODBC document tracking library. This is included with IDOL Server. |
     | `ConnectionString` | The ODBC connection string for the database. |

     For example:

     ```
     [DocumentTracking]
     Backend=Library
     LibraryPath=C:\Autonomy\IDOLServer\IDOL\modules\dt_odbc.dll
     ConnectionString=DSN=MyDatabase
     ```

   - To send document tracking events to the connector's synchronize log, set the following parameters:

     | | |
     |---|---|
     | `Backend` | To send document tracking events to the connector's logs, set this parameter to **`Log`**. |
     | `DatabaseName` | The name of the log stream to send the document tracking events to. Set this parameter to **`synchronize`**. |

     For example:

     ```
     [DocumentTracking]
     Backend=Log
     DatabaseName=synchronize
     ```

   - To send document tracking events to an IDOL Server, set the following parameters:

     | | |
     |---|---|
     | `Backend` | To send document tracking events to an IDOL Server, set this parameter to **`IDOL`**. |
     | `TargetHost` | The host name or IP address of the IDOL Server. |
     | `TargetPort` | The index port of the IDOL Server. |

For example:

```
[DocumentTracking]
Backend=IDOL
TargetHost=idol
TargetPort=9001
```

For more information about the parameters you can use to configure document tracking, refer to the *HTTP Connector Reference*.

4. Save and close the configuration file.

# Chapter 10: Lua Functions and Methods Reference

This section describes the functions and methods that you can use in your Lua scripts.



# General Functions

| Function | Description |
|---|---|
| abs_path | Returns the supplied path as an absolute path. |
| base64_decode | Decodes a base64-encoded string. |
| base64_encode | Base64-encodes a string. |
| convert_date_time | Converts date and time formats using standard IDOL date formats. |
| convert_encoding | Converts the encoding of a string from one character encoding to another. |
| copy_file | Copies a file. |
| create_path | Creates the specified directory tree. |
| create_uuid | Creates a universally unique identifier. |
| delete_file | Deletes a file. |
| delete_path | Deletes a specified directory, but only if it is empty. |
| doc_tracking | Raises a document tracking event for a document. |

| Function | Description |
|---|---|
| encrypt | Encrypts a string. |
| encrypt_security_field | Encrypts the ACL. |
| extract_date | Searches a string for a date and returns the date. |
| file_setdates | Modifies the properties of a file (for example created date, last modified date). |
| get_config | Loads a configuration file. |
| get_log | Returns a LuaLog object that provides the capability to use a log stream configured in the connector's configuration file. |
| get_task_config | Returns a LuaConfig object that contains the configuration of the fetch task that called the script. |
| get_task_name | Returns the name of the fetch task that called the script. |
| getcwd | Returns the current working directory of the application. |
| gobble_whitespace | Reduces multiple adjacent while spaces. |
| hash_file | Hashes a file using the SHA1 or MD5 algorithm. |
| hash_string | Hashes a string. |
| is_dir | Checks if the supplied path is a directory. |
| log | Appends log messages to a file. |
| move_file | Moves a file. |
| parse_csv | Parse comma-separated values into individual strings. |
| parse_xml | Parse XML string to a LuaXmlDocument. |
| regex_match | Performs a regular expression match on a string. |
| regex_replace_all | Searches a string for matches to a regular expression, and replaces the matches. |
| regex_search | Performs a regular expression search on a string. |
| script_path | Returns the path and file name of the script that is running. |
| send_aci_action | Sends a query to an ACI server. |
| send_aci_command | Sends a query to an ACI server. |
| send_and_wait_for_async_aci_action | Sends a query to an ACI server and then waits for the action to finish. Use this method for sending asynchronous actions so that the action response is returned instead of a token. |

| Function | Description |
|---|---|
| sleep | Pauses the running thread. |
| string_uint_less | Compares the length of two strings. |
| unzip_file | Extracts the contents of a zip file. |
| url_escape | Percent-encode a string. |
| url_unescape | Replaces URL escaped characters and returns a standard string. |
| xml_encode | Takes a string and encodes it using XML escaping. |
| zip_file | Zips the supplied path (file or directory). |

# abs_path

The `abs_path` method returns the supplied path as an absolute path.

## Syntax

```
abs_path( path )
```

## Arguments

| Argument | Description |
|---|---|
| `path` | (string) A relative path. |

## Returns

(String). A string containing the supplied path as an absolute path.

# base64_decode

The `base64_decode` method decodes a base64-encoded string.

## Syntax

```
base64_decode( input )
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to decode. |

### Returns

(String). The decoded string.

If the input is not a valid base64-encoded string, the function returns `nil`.

## base64_encode

The `base64_encode` method base64-encodes a string.

### Syntax

```
base64_encode( input )
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to base64-encode. |

### Returns

(String). A base64-encoded string.

## convert_date_time

The `convert_date_time` method converts date and time formats using standard IDOL formats. All date and time input is treated as local time unless it contains explicit time zone information.

The `InputFormatCSV` and `OutputFormat` arguments specify date and time formats, and accept the following values:

- `AUTNDATE`. The HPE date format (1 to a maximum of 10 digits). This format covers the epoch range (1 January 1970 to 19 January 2038) to a resolution of one second, and dates between 30 October 1093 BC and 26 October 3058 to a resolution of one minute.
- date formats that you specify using one or more of the following:

| | |
|---|---|
| YY | Year (2 digits). For example, 99, 00, 01 and so on. |
| YYYY | Year (4 digits). For example, 1999, 2000, 2001 and so on. |
| #YY+ | Year (2 or 4 digits). If you provide 2 digits, then it uses the YY format. If you provide 4 digits, it uses the YYYY format.<br>For example, it interprets 07 as 2007 AD and 1007 as 1007 AD. |
| #Y | Year (1 to a maximum of 16 digits) and can be followed by AD or BC. An apostrophe (') immediately before the year denotes a truncated year. For example, 2008, '97 (interpreted as 1997), 97 (interpreted as 97 AD), '08 (interpreted as 2008), 2008 AD and 200 BC. A truncated year with a BC identifier is invalid ('08 BC). |
| #FULLYEAR | Year (1 to a maximum of 16 digits). For example 8, 98, 108, 2008, each of which is taken literally. The year is taken relative to the common EPOCH (0AD). |
| #ADBC | Time Period. For example, AD, CE, BC, BCE or any predefined list of EPOCH indicators. Typically, the year specified using the above Year formats is interpreted as un-truncated and relative to the EPOCH. For example, 84 AD is interpreted as 1984 AD and 84 BC is interpreted as 84 BC.<br>The only exception to this is when you use both #YY+ and #ADBC. In this case, the format is interpreted as un-truncated even if the year was set to truncated by #YY+. For example, 99 AD is interpreted as the year 99 AD.<br>HPE recommends you use only YY, YYYY or #FULLYEAR with #ADBC. |
| LONGMONTH | A long month, for example, January, February and so on. |
| SHORTMONTH | A short month, for example, Jan, Feb and so on. |
| MM | Month (2 digits). For example, 01, 10, 12 and so on. |
| M+ | Month (1 or 2 digits). For example, 1,2,3,10 and so on. |
| DD | Day (2 digits). For example, 01, 02, 03, 12, 23 and so on. |
| D+ | Day (1 or 2 digits). For example, 1, 2, 12, 13, 31 and so on. |
| LONGDAY | 2 digits with a postfix. For example, 1st, 2nd and so on. |
| HH | Hour (2 digits). For example, 01, 12, 13 and so on. |
| H+ | Hour (1 or 2 digits). |
| NN | Minute (2 digits). |
| N+ | Minute (1 or 2 digits). |
| SS | Second (2 digits). |
| S+ | Second (1 or 2 digits). |
| ZZZ | Time Zone, for example, GMT, EST, PST, and so on. |

| | |
|---|---|
| ZZZZZ | Time Difference (1 to 9 digits). For example, +04 denotes 4 hours ahead of UTC. Other examples include +4, +04, +0400, +0400 MSD (the string MSD is ignored). A further example is +030, in this case the time differences is interpreted as 30 minutes. |
| #PM | AM or PM indicator (2 characters). For example, 2001/09/09 02:46:40 pm |
| #S | A space |

The following table shows some example date and time formats:

| Date and time format string | Example date |
|---|---|
| DD/MM/YYYY | 09/05/2013 |
| D+ SHORTMONTH YYYY | 2 Jan 2001 |
| D+ LONGMONTH YYYY HH:NN:SS ZZZZZ | 17 August 2003 10:41:07 -0400 |

## Syntax

```
convert_date_time( Input, InputFormatCSV, OutputFormat )
```

## Arguments

| Argument | Description |
|---|---|
| Input | (string) The date and time to convert. |
| InputFormatCSV | (string) A comma-separated list of the possible date and time formats of the input. |
| OutputFormat | (string) The format of the date and time to output. |

## Returns

(String). A string containing the date and time in the desired format.

# convert_encoding

The convert_encoding method converts the encoding of a string from one character encoding to another.

## Syntax

```
convert_encoding( input, encodingTo, encodingTables [, encodingFrom])
```

## Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to convert. |
| `encodingTo` | (string) The character encoding to convert *to* (same as IDOL encoding names). |
| `encodingTables` | (string) The path to the conversion tables. |
| `encodingFrom` | (string) The character encoding to convert *from*. The default is “UTF8”. |

## Returns

(String). A string, using the specified character encoding.

# copy_file

The `copy_file` method copies a file.

## Syntax

```
copy_file( src, dest [, overwrite] )
```

## Arguments

| Argument | Description |
|---|---|
| `src` | (string) The source file. |
| `dest` | (string) The destination path and file name. |
| `overwrite` | (boolean) A boolean that specifies whether to copy the file if the destination file already exists. If this argument is `false` and the file already exists, the copy operation fails. The default is `true`, which means that the existing file is overwritten. |

## Returns

(Boolean). A Boolean, `true` to indicate success or `false` for failure.

# create_path

The `create_path` method creates the specified directory tree.

### Syntax

```
create_path( path )
```

### Arguments

| Argument | Description |
|---|---|
| path | (string) The path to create. |

## create_uuid

The create_uuid method creates a universally unique identifier.

### Syntax

```
create_uuid()
```

### Returns

(String). A string containing the universally unique identifier.

## delete_file

The delete_file method deletes a file.

### Syntax

```
delete_file( path )
```

### Arguments

| Argument | Description |
|---|---|
| path | (string) The path and filename of the file to delete. |

### Returns

(Boolean). A boolean, true to indicate success or false for failure.

# delete_path

The `delete_path` function deletes the specified directory, but only if it is empty.

## Syntax

```
delete_path( path )
```

## Arguments

| Argument | Description |
|---|---|
| `path` | (string) The empty directory to delete. |

## Returns

Nothing.

## Example

```
delete_path( "C:\MyFolder\AnotherFolder\" )
```

# doc_tracking

The `doc_tracking` function raises a document tracking event for a document.

## Syntax

```
doc_tracking( document , eventName [, eventMetadata] [, reference] )
```

## Arguments

| Argument | Description |
|---|---|
| `document` | (LuaDocument) The document to track. |
| `eventName` | (string) The event name. You can type a description of the event. |
| `eventMetadata` | (table) A table of key-value pairs that contain metadata for the document tracking event. |
| `reference` | (string) The document reference. You can set this parameter to override the document reference used. |

### Returns

(Boolean). A Boolean that indicates whether the event was raised successfully.

### Example

```
local ref=document:getReference()

doc_tracking(document, "The document has been processed",
      {myfield="myvalue", anotherfield="anothervalue"}, ref )
```

## encrypt

The `encrypt` method encrypts a string and returns the encrypted string. It uses the same encryption method as ACL encryption.

### Syntax

```
encrypt( content )
```

### Arguments

| Argument | Description |
|---|---|
| `content` | (string) The string to encrypt. |

### Returns

(String). The encrypted string.

## encrypt_security_field

The `encrypt_security_field` method returns the encrypted form of the supplied field.

### Syntax

```
encrypt_security_field( field )
```

## Arguments

| Argument | Description |
|---|---|
| `field` | (string) An Access Control List string. |

## Returns

(String). An encrypted string.

# extract_date

The `extract_date` function searches a string for a date and returns the date. This function uses standard IDOL date formats. All date and time input is treated as local time unless it contains explicit time zone information.

The following table describes the standard IDOL date formats:

| | |
|---|---|
| `YY` | Year (2 digits). For example, 99, 00, 01 and so on. |
| `YYYY` | Year (4 digits). For example, 1999, 2000, 2001 and so on. |
| `#YY+` | Year (2 or 4 digits). If you provide 2 digits, then it uses the `YY` format. If you provide 4 digits, it uses the `YYYY` format.<br>For example, it interprets `07` as `2007 AD` and `1007` as `1007 AD`. |
| `#Y` | Year (1 to a maximum of 16 digits) and can be followed by `AD` or `BC`. An apostrophe (`'`) immediately before the year denotes a truncated year. For example, `2008`, `'97` (interpreted as `1997`), `97` (interpreted as `97 AD`), `'08` (interpreted as `2008`), `2008 AD` and `200 BC`. A truncated year with a BC identifier is invalid (`'08 BC`). |
| `#FULLYEAR` | Year (1 to a maximum of 16 digits). For example `8`, `98`, `108`, `2008`, each of which is taken literally. The year is taken relative to the common EPOCH (0AD). |
| `#ADBC` | Time Period. For example, `AD`, `CE`, `BC`, `BCE` or any predefined list of EPOCH indicators. Typically, the year specified using the above Year formats is interpreted as un-truncated and relative to the EPOCH. For example, 84 AD is interpreted as 1984 AD and 84 BC is interpreted as 84 BC.<br>The only exception to this is when you use both `#YY+` and `#ADBC`. In this case, the format is interpreted as un-truncated even if the year was set to truncated by `#YY+`. For example, 99 AD is interpreted as the year 99 AD.<br>HPE recommends you use only `YY`, `YYYY` or `#FULLYEAR` with `#ADBC`. |
| `LONGMONTH` | A long month, for example, `January`, `February` and so on. |
| `SHORTMONTH` | A short month, for example, `Jan`, `Feb` and so on. |

| | |
|---|---|
| MM | Month (2 digits). For example, 01, 10, 12 and so on. |
| M+ | Month (1 or 2 digits). For example, 1,2,3,10 and so on. |
| DD | Day (2 digits). For example, 01, 02, 03, 12, 23 and so on. |
| D+ | Day (1 or 2 digits). For example, 1, 2, 12, 13, 31 and so on. |
| LONGDAY | 2 digits with a postfix. For example, 1st, 2nd and so on. |
| HH | Hour (2 digits). For example, 01, 12, 13 and so on. |
| H+ | Hour (1 or 2 digits). |
| NN | Minute (2 digits). |
| N+ | Minute (1 or 2 digits). |
| SS | Second (2 digits). |
| S+ | Second (1 or 2 digits). |
| ZZZ | Time Zone, for example, GMT, EST, PST, and so on. |
| ZZZZZ | Time Difference (1 to 9 digits). For example, +04 denotes 4 hours ahead of UTC. Other examples include +4, +04, +0400, +0400 MSD (the string MSD is ignored). A further example is +030, in this case the time differences is interpreted as 30 minutes. |
| #PM | AM or PM indicator (2 characters). For example, 2001/09/09 02:46:40 pm |
| #S | A space |

The following table shows some example date and time formats:

| Date and time format string | Example date |
|---|---|
| DD/MM/YYYY | 09/05/2013 |
| D+ SHORTMONTH YYYY | 2 Jan 2001 |
| D+ LONGMONTH YYYY HH:NN:SS ZZZZZ | 17 August 2003 10:41:07 -0400 |

## Syntax

```
extract_date( input, formatCSV, outputFormat )
```

## Arguments

| Argument | Description |
|---|---|
| input | (string) The string that you want to search for a date. |
| formatCSV | (string) A comma-separated list of the possible date and time formats for dates |

| Argument | Description |
|---|---|
| | contained in the input. |
| `outputFormat` | (string) The format for the output. |

## Returns

(String). A string containing the date and time in the desired format.

## Example

The following example would return the value "1989/01/14":

```
extract_date("This string contains a date 14/01/1989 somewhere",
"DD/YYYY/MM,DD/MM/YYYY", "YYYY/MM/DD")
```

# file_setdates

The `file_setdates` method sets the metadata for the file specified by `path`. If the `format` argument is not specified, the dates must be specified in seconds since the epoch (1st January 1970).

## Syntax

```
file_setdates( path, created, modified, accessed [, format] )
```

## Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path or filename of the file. |
| `created` | (string) The date created (Windows only). |
| `modified` | (string) The date modified. |
| `accessed` | (string) The date last accessed. |
| `format` | (string) The format of the dates supplied. The format parameter uses the same values as other IDOL components. The default is "EPOCHSECONDS" |

## Returns

(Boolean). A Boolean indicating whether the operation was successful.

# get_config

The `get_config` function loads a configuration file.

Configuration files are cached after the first call to `get_config`, to avoid unnecessary disk I/O in the likely event that the same configuration is accessed frequently by subsequent invocations of the Lua script. One cache is maintained per Lua state, so the maximum number of reads for a configuration file is equal to the number of threads that run Lua scripts.

If you do not specify a path, the function returns the configuration file with the same name as the ACI server executable file.

## Syntax

```
get_config( [path] )
```

## Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path of the configuration file to load. |

## Returns

(LuaConfig). A LuaConfig object.

# get_log

The `get_log` method reads a configuration file and returns a LuaLog object that provides the capability to use the specified log stream.

## Syntax

```
get_log( config, logstream )
```

## Arguments

| Argument | Description |
|---|---|
| `config` | (LuaConfig) A LuaConfig object that represents the configuration file which contains the log stream. You can obtain a LuaConfig object using the function get_config. |
| `logstream` | (string) The name of the section in the configuration file that contains the settings for the log stream. |

### Returns

(LuaLog). A LuaLog object that provides the capability to use the log stream.

### Example

```
local config = get_config("connector.cfg")
local log = get_log(config, "SynchronizeLogStream")
```

## get_task_config

The `get_task_config` function returns a LuaConfig object that contains the configuration of the fetch task that called the script.

For information about the methods you can use to read information from the LuaConfig object, see "LuaConfig Methods" on page 103.

### Syntax

```
get_task_config()
```

### Returns

(LuaConfig). A LuaConfig object.

## get_task_name

The `get_task_name` function returns a string that contains the name of the fetch task that called the script.

### Syntax

```
get_task_name()
```

### Returns

(String). A string that contains the task name.

## getcwd

The `getcwd` method returns the current working directory of the application.

### Syntax

```
getcwd()
```

### Returns

(String). Returns a string containing the absolute path of the current working directory.

## gobble_whitespace

The `gobble_whitespace` method reduces multiple adjacent white spaces (tabs, carriage returns, spaces, and so on) in the specified string to a single space.

### Syntax

```
gobble_whitespace( input )
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) An input string. |

### Returns

(String). A string without adjacent white spaces.

## hash_file

The `hash_file` method hashes the contents of the specified file using the SHA1 or MD5 algorithm.

### Syntax

```
hash_file( FileName, Algorithm )
```

### Arguments

| Argument | Description |
|---|---|
| `FileName` | (string) The name of the file. |
| `Algorithm` | (string) The type of algorithm to use. Must be either SHA1 or MD5. |

### Returns

(String). A hash of the file contents.

## hash_string

The `hash_string` method hashes the specified string using the SHA1 or MD5 algorithm.

### Syntax

```
hash_string( StringToHash, Algorithm )
```

### Arguments

| Argument | Description |
|---|---|
| `StringToHash` | (string) The string to hash. |
| `Algorithm` | (string) The algorithm to use. Must be either SHA1 or MD5. |

### Returns

(String). The hashed input string.

## is_dir

The `is_dir` method checks if the supplied path is a directory.

### Syntax

```
is_dir( path )
```

### Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path to check. |

### Returns

(Boolean). Returns `true` if the supplied path is a directory, `false` otherwise.

# log

The `log` method appends log messages to the specified file.

## Syntax

```
log( file, message )
```

## Arguments

| Argument | Description |
|---|---|
| `file` | (string) The file to append log messages to. |
| `message` | (string) The message to print to the file. |

# move_file

The `move_file` method moves a file.

## Syntax

```
move_file( src, dest [, overwrite] )
```

## Arguments

| Argument | Description |
|---|---|
| `src` | (string) The source file. |
| `dest` | (string) The destination file. |
| `overwrite` | (boolean) A boolean that specifies whether to move the file if the destination file already exists. If this argument is `false`, and the destination file already exists, the move operation fails. The default is `true`, which means that the destination file is overwritten. |

## Returns

(Boolean). Returns `true` to indicate success, `false` otherwise.

# parse_csv

The `parse_csv` method parses a string of comma-separated values into individual strings. The method understands quoted values (such that parsing 'foot, "leg, torso", elbow' produces three values) and ignores white space around delimiters.

## Syntax

```
parse_csv( input [, delimiter ] )
```

## Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to parse. |
| `delimiter` | (string) The delimiter to use (the default delimiter is ","). |

## Returns

(Strings). You can put them in a table like this:

```
local results = { parse_csv("cat,tree,house", ",") };
```

# parse_xml

The `parse_xml` method parses an XML string to a LuaXmlDocument.

## Syntax

```
parse_xml( xml )
```

## Arguments

| Argument | Description |
|---|---|
| `xml` | (string) XML data as a string. |

## Returns

(LuaXmlDocument). A LuaXmlDocument containing the parsed data, or nil if the string could not be parsed.

# regex_match

The `regex_match` method performs a regular expression match on a string.

## Syntax

```
regex_match( input, regex [, case] )
```

## Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to match. |
| `regex` | (string) The regular expression to match against. |
| `case` | (boolean) A boolean that specifies whether the match is case-sensitive. The match is case sensitive by default (`true`). |

## Returns

One or more strings, or `nil`.

If the string matches the regular expression, and the regular expression has no sub-matches, the full string is returned.

If the string matches the regular expression, and the regular expression has sub-matches, then only the sub-matches are returned.

If the string does not match the regular expression, there are no return values (any results are `nil`).

You can assign multiple strings to a table. To assign the return values to a table, surround the function call with braces. For example:

```
matches = { regex_match( input, regex ) }
```

## Examples

```
local r1, r2, r3 = regex_match( "abracadabra", "(a.r)((?:a.)*ra)" )
```

Results: `r1="abr"`, `r2="acadabra"`, `r3=nil`

```
local r1, r2, r3 = regex_match( "abracadabra", "a.r(?:a.)*ra" )
```

Results: `r1="abracadabra"`, `r2=nil`, `r3=nil`

# regex_replace_all

The `regex_replace_all` method searches a string for matches to a regular expression, and replaces the matches according to the value specified by the `replacement` argument.

## Syntax

```
regex_replace_all( input, regex, replacement )
```

## Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string in which you want to replace values. |
| `regex` | (string) The regular expression to use to find values to be replaced. |
| `replacement` | (string) A string that specifies how to replace the matches of the regular expression. |

## Returns

(String). The modified string.

## Examples

```
regex_replace_all("ABC ABC ABC", "AB", "A")
-- returns "AC AC AC"

regex_replace_all("One Two Three", "\\w{3}", "_")
-- returns "_ _ _ee"


regex_replace_all("One Two Three", "(\\w+) (\\w+)", "\\2 \\1")
-- returns "Two One Three"
```

# regex_search

The `regex_search` method performs a regular expression search on a string. This method returns a LuaRegexMatch object, rather than strings.

## Syntax

```
regex_search ( input, regex [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string in which to search. |
| `regex` | (string) The regular expression with which to search. |
| `case` | (boolean) A boolean that specifies whether the match is case-sensitive. The match is case sensitive by default (`true`). |

### Returns

(LuaRegexMatch).

## script_path

The `script_path` function returns the path and file name of the script that is running.

### Syntax

```
script_path()
```

### Returns

(String, String) Returns the path of the folder that contains the script and the file name of the script, as separate strings.

### Example

```
local script_directory, script_filename = script_path()
```

You can use this function to load scripts using their location relative to the current script. In the following example only the first return value from `script_path()` - the directory - is concatenated with `"more_scripts/another_script.lua"`.

```
dofile(script_path().."more_scripts/another_script.lua")
```

## send_aci_action

The `send_aci_action` method sends a query to an ACI server. This method takes the action parameters as a table instead of the full action as a string, as with `send_aci_command`. This avoids issues with parameter values containing an ampersand (&).

## Syntax

```
send_aci_action( host, port, action [, parameters] [, timeout] [, retries] [,
sslParameters] )
```

## Arguments

| Argument | Description |
|---|---|
| `host` | (string) The ACI host to send the query to. |
| `port` | (number) The port to send the query to. |
| `action` | (string) The action to perform (for example, `query`). |
| `parameters` | (table) A Lua table containing the action parameters, for example, { param1="value1", param2="value2" } |
| `timeout` | (number) The number of milliseconds to wait before timing out. The default is 3000. |
| `retries` | (number) The number of times to retry if the request fails. The default is 3. |
| `sslParameters` | (table) A Lua table containing the SSL settings. |

## Returns

(String). Returns the XML response as a string. If required, you can call `parse_xml` on the string to return a `LuaXmlDocument`. If the request fails, it returns nil.

## Example

```
send_aci_action( "localhost", 9000, "query" ,
                      {text = "*", print = "all"} );
```

## See Also

- "send_aci_command" below

# send_aci_command

The `send_aci_command` method sends a query to an ACI server.

## Syntax

```
send_aci_command( host, port, query [, timeout] [, retries] [, sslParameters] )
```

## Arguments

| Argument | Description |
|---|---|
| `host` | (string) The ACI host to send the query to. |
| `port` | (number) The port to send the query to. |
| `query` | (string) The query to send (for example, `action=getstatus`) |
| `timeout` | (number) The number of milliseconds to wait before timing out. The default is 3000. |
| `retries` | (number) The number of times to retry if the request fails. The default is 3. |
| `sslParameters` | (table) A Lua table containing the SSL settings. |

## Returns

(String). Returns the XML response as a string. If required, you can call `parse_xml` on the string to return a `LuaXmlDocument`. If the request fails, it returns nil.

## See Also

- "send_aci_action" on page 97

# send_and_wait_for_async_aci_action

The `send_and_wait_for_async_aci_action` method sends a query to an ACI server. The method does not return until the action has completed.

You might use this method when you want to use an asynchronous action. The `send_aci_action` method returns as soon as it receives a response, which for an asynchronous action means that it returns a token. The method `send_and_wait_for_async_aci_action` sends an action and then waits. It polls the server until the action is complete and then returns the response.

| Argument | Description |
|---|---|
| `host` | (string) The ACI host to send the query to. |
| `port` | (number) The ACI port to send the query to. |
| `action` | (string) The name of the action to perform. |
| `parameters` | (table) A Lua table containing the action parameters, for example, { param1="value1", param2="value2" } |
| `timeout` | (number) The number of milliseconds to wait before timing out. The default is |

| Argument | Description |
|---|---|
| | 60000 (1 minute). |
| `retries` | (number) The number of times to retry if the connection fails. The default is 3. |
| `sslParameters` | (table) A Lua table containing the SSL settings. |

### Returns

(String). Returns the XML response as a string. If required, you can call `parse_xml` on the string to return a `LuaXmlDocument`. If the request fails, it returns nil.

### See Also

- "send_aci_action" on page 97

## sleep

The `sleep` method pauses the thread.

### Syntax

```
sleep( milliseconds )
```

### Arguments

| Argument | Description |
|---|---|
| `milliseconds` | (number) The number of milliseconds for which to pause the current thread. |

## string_uint_less

The `string_uint_less` method takes two strings and returns `True` if the second is longer than the first. It returns `False` otherwise.

### Syntax

```
string_uint_less( input1, input2 )
```

### Arguments

| Argument | Description |
|---|---|
| `input1` | (string) The string that acts as the standard for comparison. |
| `input2` | (string) The string to compare against the first string. |

### Returns

(Boolean).

## unzip_file

The `unzip_file` method extracts the contents of a zip file.

### Syntax

```
unzip_file( path, dest )
```

### Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path and filename of the file to unzip. |
| `dest` | (string) The destination path where files are extracted. |

### Returns

(Boolean). Returns a Boolean indicating success or failure.

## url_escape

The `url_escape` method percent-encodes a string.

### Syntax

```
url_escape( input )
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to percent-encode. |

### Returns

(String). The percent-encoded string.

## url_unescape

The `url_unescape` method replaces URL escaped characters and returns a standard string.

### Syntax

```
url_unescape( input )
```

### Arguments

| Argument | Description |
|---|---|
| `input` | (string) The string to process. |

### Returns

(String). The modified string.

## xml_encode

The `xml_encode` method takes a string and encodes it using XML escaping.

### Syntax

```
xml_encode ( content )
```

### Arguments

| Argument | Description |
|---|---|
| `content` | (string) The string to encode. |

### Returns

(String).

## zip_file

The `zip_file` method zips the supplied path (file or directory). It overwrites the output file only if you set the optional `overwrite` argument to `true`.

### Syntax

```
zip_file( path [, overwrite] )
```

### Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path or filename of the file or folder to zip. |
| `overwrite` | (boolean) A boolean that specifies whether to force the creation of the zip file if an output file already exists. The default is `false`. |

### Returns

(Boolean). Returns a Boolean indicating success or failure. On success writes a file called `path.zip`.

# LuaConfig Methods

A `LuaConfig` object provides access to configuration information. You can retrieve a `LuaConfig` for a given configuration file using the `get_config` function.

If you have a `LuaConfig` object called `config` you can call its methods using the `':'` operator. For example:

```
config:getValue(sectionName, parameterName)
```

| Constructor | Description |
|---|---|
| LuaConfig:new | The constructor for a `LuaConfig` object (creates a new `LuaConfig` object). |

| Method | Description |
|---|---|
| getEncryptedValue | Returns the unencrypted value from the config of an encrypted value. |
| getValue | Returns the value of the configuration parameter key in a given section. |

| Method | Description |
|---|---|
| getValues | Returns all the values of a configuration parameter if you have multiple values for a key (for example, a comma-separated list or numbered list like keyN). |

# getEncryptedValue

The `getEncryptedValue` method returns the unencrypted value from the configuration file of an encrypted value.

## Syntax

```
getEncryptedValue( section, parameter )
```

## Arguments

| Argument | Description |
|---|---|
| `section` | (string) The section in the configuration file. |
| `parameter` | (string) The parameter in the configuration file to get the value for. |

## Returns

(String). The unencrypted value.

# getValue

The `getValue` method returns the value of the configuration parameter key in a given section. If the key does not exist in the section, then it returns the default value.

## Syntax

```
getValue( section, key [, default] )
```

## Arguments

| Argument | Description |
|---|---|
| `section` | (string) The section name in the configuration file. |
| `key` | (string) The name of the key from which to read. |
| `default` | (string/boolean/number) The default value to use if no key is found. |

### Returns

A string, boolean, or integer containing the value read from the configuration file.

## getValues

The `getValues` method returns multiple values for a parameter (for example, a comma-separated list or numbered list like keyN).

### Syntax

```
getValues( section, parameter )
```

### Arguments

| Argument | Description |
|---|---|
| `section` | (string) The section in the configuration file. |
| `parameter` | (string) The parameter to find in the configuration file. |

### Returns

(Strings). The strings can be assigned to a table. To map the return values to a table, surround the function call with braces. For example:

```
values = { config:getValues( section, parameter ) }
```

## LuaConfig:new

The constructor for a `LuaConfig` object (creates a new `LuaConfig` object).

### Syntax

```
LuaConfig:new( config_buffer )
```

### Arguments

| Argument | Description |
|---|---|
| `config_buffer` | (string) The configuration to use to create the `LuaConfig` object. |

### Returns

(LuaConfig). The new `LuaConfig` object.

### Example

```
local config_buffer = "[default]\nparameter=value"
local config = LuaConfig:new(config_buffer)
```

# LuaDocument Methods

This section describes the methods provided by the `LuaDocument` object. A `LuaDocument` allows you to access and modify the reference, metadata and content of a document.

If you have a `LuaDocument` object called `document` you can call its methods using the `':'` operator. For example:

```
document:addField(name, value)
```

| Constructor | Description |
|---|---|
| LuaDocument:new | The constructor for a `LuaDocument` object (creates a new `LuaDocument` object that only contains a reference). |

| Method | Description |
|---|---|
| addField | Creates a new field. |
| addSection | Add an empty section to the end of the document. |
| appendContent | Appends content to the existing content of the document. |
| copyField | Creates a new named field with the same value as an existing named field. |
| copyFieldNoOverwrite | Copies a field to a certain name but does not overwrite the existing value. |
| countField | Returns the number of fields with the name specified. |
| deleteField | Removes a field from the document. |
| getContent | Returns the document content. |
| getField | Returns the first field with a specified name. |
| getFieldNames | Returns all the field names for the document. |
| getFields | Returns all fields with the specified name. |
| getFieldValue | Gets a field value. |

| Method | Description |
|---|---|
| getFieldValues | Gets all values of a multi-valued field. |
| getNextSection | Gets the next section in a document, allowing you to perform find or add operations on every section. |
| getReference | Returns the document reference. |
| getSection | Returns a LuaDocument object with the specified section as the active section. |
| getSectionCount | Returns the number of sections in the document. |
| getValueByPath | Gets the value of the document field or sub field with the specified path. |
| getValuesByPath | Gets all values of a multi-value document field or sub field, with the specified path. |
| hasField | Checks whether the document has a named field. |
| insertXml | Inserts XML metadata into a document. |
| insertXmlWithoutRoot | Inserts XML metadata into a document. |
| removeSection | Removes a section from a document. |
| renameField | Renames a field. |
| setContent | Sets the content for a document. |
| setFieldValue | Sets a field value. |
| setReference | Sets the document reference. |
| to_idx | Returns a string containing the document in IDX format. |
| to_json | Returns a string containing the document in JSON format. |
| to_xml | Returns a string containing the document in XML format. |
| writeStubIdx | Writes out a stub IDX document. |
| writeStubXml | Writes out a stub XML document. |

# addField

The `addField` method adds a new field to the document.

## Syntax

```
addField ( fieldname, fieldvalue )
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field to add. |
| `fieldvalue` | (string) The value to set for the field. |

## addSection

The `addSection` method adds an empty section to the end of the document.

### Syntax

```
addSection()
```

### Returns

(LuaDocument). Returns a LuaDocument object representing the document, with the new section as the active section.

### Example

```
local newSection = document:addSection()   -- Add a new section to the document
newSection:setContent("content")           -- Set content for the new section
```

## appendContent

The `appendContent` method appends `content` to the existing content (the `DRECONTENT` field) of a document or document section.

### Syntax

```
appendContent ( content [, number])
```

### Arguments

| Argument | Description |
|---|---|
| `content` | (string) The content to append. |
| `number` | (number) The document section to modify. If you do not specify this argument, `content` |

| Argument | Description |
|---|---|
| | is appended to the last section. If you specify a number greater than the number of existing sections, additional empty sections are created. |

### Examples

```
-- Append content to the last section
document:appendContent("content")

-- Append content to section 7, empty sections are created before this section if
necessary
document:appendContent("content", 7)
```

## copyField

The `copyField` method copies a field value to a new field. If the target field already exists it is overwritten.

### Syntax

```
copyField ( sourcename, targetname [, case] )
```

### Arguments

| Argument | Description |
|---|---|
| `sourcename` | (string) The name of the field to copy. |
| `targetname` | (string) The destination field name. |
| `case` | (boolean) A boolean that specifies whether `sourcename` is case-sensitive. The field name is case sensitive by default (`true`). |

## copyFieldNoOverwrite

The `copyFieldNoOverwrite` method copies a field value to a new field but does not overwrite the existing value. After calling this function the target field will contain all values of the source field in addition to any values it already had.

### Syntax

```
copyFieldNoOverwrite( sourcename, targetname [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `sourcename` | (string) The name of the field to copy. |
| `targetname` | (string) The destination field name. |
| `case` | (boolean) A boolean that specifies whether `sourcename` is case-sensitive. The name is case sensitive by default (`true`). |

## countField

The `countField` method returns the number of fields with the specified name.

### Syntax

```
countField( fieldname [, case] )
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field to count. |
| `case` | (boolean) A boolean that specifies whether `fieldname` is case sensitive. The field name is case sensitive by default (`true`). |

### Returns

(Number) The number of fields with the specified name.

## deleteField

The `deleteField` method deletes a field from a document. If you specify the optional `value` argument, the field is deleted only if has the specified value.

### Syntax

```
deleteField( fieldName [, case] )
deleteField( fieldName, value [, case] )
```

## Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field to delete. |
| `value` | (string) The value of the field. If this is specified only fields with matching names and values are deleted. If this is not specified, all fields that match `fieldname` are deleted. |
| `case` | (boolean) A boolean that specifies whether `fieldname` is case sensitive. The field name is case sensitive by default (`true`). |

# getContent

The `getContent` method gets the content (the value of the `DRECONTENT` field) for a document or document section.

## Syntax

```
getContent([number])
```

## Arguments

| Argument | Description |
|---|---|
| `number` | (number) The document section for which you want to return the content. If you do not specify this argument, the method returns the content of the active section. For the document object passed to the script's `handler` function, the active section is the first section (section 0). |

## Returns

(String). The document content as a string.

## Examples

```
local content7 = document:getContent(7)     -- Get content for section 7
local section = document:getSection(3)      -- Get document for section 3
local content3 = section:getContent()       -- Get content for section 3
local content0 = document:getContent()      -- Get content for section 0
```

# getField

The `getField` method returns a LuaField object representing the field with the specified name.

## Syntax

```
getField( name [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `name` argument is case-sensitive. The name is case sensitive by default (`true`). |

## Returns

(LuaField). A LuaField object.

# getFieldNames

The `getFieldNames` method returns all of the field names for the document.

## Syntax

```
getFieldNames()
```

## Returns

(Strings) The names of the fields. To map the return values to a table, surround the function call with braces. For example:

```
names = { document:getFieldNames() }
```

# getFields

The `getFields` method returns LuaField objects where each object represents a field that matches the specified name.

### Syntax

```
getFields( name [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `name` argument is case-sensitive. The name is case sensitive by default (`true`). |

### Returns

(LuaFields) One LuaField for each matching field. To map the return values to a table, surround the function call with braces. For example:

```
fields = { document:getFields( name ) }
```

## getFieldValue

The `getFieldValue` method gets the value of a field in a document. To return the values of a multi-value field, see "getFieldValues" on the next page.

### Syntax

```
getFieldValue( fieldname [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field to be retrieved. |
| `case` | (boolean) A boolean that specifies whether `fieldname` is case-sensitive. The argument is case sensitive by default (`true`). |

### Returns

(String). A string containing the value.

# getFieldValues

The `getFieldValues` method gets all values from all fields that have the same name.

## Syntax

```
getFieldValues( fieldname [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether `fieldname` is case-sensitive. The argument is case sensitive by default (`true`). |

## Returns

(Strings). Strings that contain the values. To map the return values to a table, surround the function call with braces. For example:

```
fieldvalues = { document:getFieldValues( fieldname ) }
```

# getNextSection

The `getNextSection` method returns the next section of a document (if the document has been divided into sections).

The document object passed to the script's `handler` function represents the first section of the document. This means that the methods described in this section read and modify only the first section.

Calling `getNextSection` on the LuaDocument passed to the `handler` function will always return the second section. To perform operations on every section, see the example below.

When a document is divided into sections, each section has the same fields. The only difference between each section is the document content (the value of the `DRECONTENT` field).

## Syntax

```
getNextSection()
```

## Returns

(LuaDocument) A LuaDocument object that contains the next DRE section.

### Example

To perform operations on every section, use the following script.

```
local section = document
while section do
       -- Manipulate section
       section = section:getNextSection()
end
```

## getReference

The `getReference` method returns a string containing the reference (the value of the `DREREFERENCE` document field).

### Syntax

```
getReference()
```

### Returns

(String). A string containing the reference.

## getSection

The `getSection` method returns a LuaDocument object with the specified section as the active section.

### Syntax

```
getSection(number)
```

### Arguments

| Argument | Description |
|---|---|
| `number` | (number) The document section for which you want to return a LuaDocument object. |

### Returns

(LuaDocument). A LuaDocument object with the specified section as the active section.

### Example

```
-- Get object for section 7 of document
local section = document:getSection(7)

-- Get the content from the section
local content = section:getContent()
```

## getSectionCount

The `getSectionCount` method returns the number of sections in a document.

### Syntax

```
getSectionCount()
```

### Returns

(Number). The number of sections.

### Example

```
local sectionCount = document:getSectionCount()
```

## getValueByPath

The `getValueByPath` method gets the value of a document field. The field is specified by its path, which means that you can get the value of a sub field. If you pass this method the path of a multi-value field, only the first value is returned. To return all of the values from a multi-value field, see "getValuesByPath" on the next page.

### Syntax

```
getValueByPath( path )
```

### Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path of the field. |

### Returns

(String). A string containing the value.

### Example

```
local value = document:getValueByPath("myfield")
local subfieldvalue = document:getValueByPath("myfield/subfield")
```

## getValuesByPath

The `getValuesByPath` method gets all values of a document field. The field is specified by its path, which means that you can get values from a sub field.

### Syntax

```
getValuesByPath( path )
```

### Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path of the field. |

### Returns

(Strings). Strings that contain the values. To map the return values to a table, surround the function call with braces. For example:

```
fieldvalues = { document:getValuesByPath("myfield/subfield") }
```

## hasField

The `hasField` method checks to see if a field exists in the current document.

### Syntax

```
hasField ( fieldname [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `fieldname` is case-sensitive. The field name is case-sensitive by default. |

### Returns

(Boolean). `True` if the field exists, `false` otherwise.

## insertXml

The `insertXml` method inserts XML metadata into the document.

### Syntax

```
insertXml ( node )
```

### Arguments

| Argument | Description |
|---|---|
| `node` | (LuaXmlNode) The node to insert. |

### Returns

(LuaField). A LuaField object of the inserted data.

## insertXmlWithoutRoot

The `insertXmlWithoutRoot` method inserts XML metadata into the document.

This method does not insert the top level node. All of the child nodes are inserted into the document. `insertXmlWithoutRoot(node)` is therefore equivalent to calling `insertXml()` for each child node.

### Syntax

```
insertXmlWithoutRoot ( node )
```

### Arguments

| Argument | Description |
|---|---|
| node | (LuaXmlNode) The node to insert. |

## LuaDocument:new

The constructor for a `LuaDocument` object (creates a new `LuaDocument` object that only contains a reference).

### Syntax

```
LuaDocument:new( reference )
```

### Arguments

| Argument | Description |
|---|---|
| reference | (string) The reference to assign to the new document. |

### Returns

(LuaDocument). The new `LuaDocument` object.

### Example

```
local reference = "my_reference"
local document = LuaDocument:new(reference)
```

## removeSection

The `removeSection` method removes a section from a document.

### Syntax

```
removeSection( sectionNumber )
```

## Arguments

| Argument | Description |
|---|---|
| `sectionNumber` | (number) A zero-based index that specifies the section to remove. For example, to remove the second section, set this argument to `1`. |

## Returns

Nothing.

## Example

```
-- Example that removes the last section of a document
if document:getSectionCount() > 0 then
   local lastSection = document:getSectionCount() - 1
   document:removeSection( lastSection )
end
```

# renameField

The `renameField` method changes the name of a field.

## Syntax

```
renameField( currentname, newname [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `currentname` | (string) The name of the field to rename. |
| `newname` | (string) The new name of the field. |
| `case` | (boolean) A boolean that specifies whether the `currentname` argument is case-sensitive. The argument is case sensitive by default (`true`). |

# setContent

The `setContent` method sets the content (the value of the `DRECONTENT` field) for a document or document section.

## Syntax

```
setContent( content [, number] )
```

## Arguments

| Argument | Description |
|---|---|
| `content` | (string) The content to set for the document or document section. |
| `number` | (number) The document section to modify. If you do not specify a number, the method modifies the active section. For the document object passed to the script's `handler` function, the active section is the first section (section 0). If you specify a number greater than the number of existing sections, additional empty sections are created. |

## Examples

```
-- Set content for section 0
document:setContent("content0")

-- Get document for section 1
local section = document:getNextSection()

-- Set content for section 1
section:setContent("content1")

-- Set content for section 7, and assign sections 2-6 to
-- empty string if non-existent
document:setContent("content7", 7)
```

# setFieldValue

The `setFieldValue` method sets the value of a field in a document. If the field does not exist, it is created. If the field already exists, the existing value is overwritten.

## Syntax

```
setFieldValue( fieldname, newvalue )
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field to set. |
| `newvalue` | (string) The value to set for the field. |

## setReference

The `setReference` method sets the reference (the value of the `DREREFERENCE` document field) to the string passed in.

### Syntax

```
setReference( reference )
```

### Arguments

| Argument | Description |
|---|---|
| `reference` | (string) The reference to set. |

## to_idx

The `to_idx` method returns a string containing the document in IDX format.

### Syntax

```
to_idx()
```

### Returns

(String). Returns the document as a string.

## to_json

The `to_json` method returns a string containing the document in JSON format.

### Syntax

```
to_json()
```

### Returns

(String). Returns the document as a string.

## to_xml

The `to_xml` method returns a string containing the document in XML format.

### Syntax

```
to_xml()
```

### Returns

(String). Returns the document as a string.

## writeStubIdx

The `writeStubIdx` method writes out a stub IDX document (a metadata file used by IDOL applications). The file is created in the current folder, but you can specify a full path and file name if you want to create the file in another folder.

### Syntax

```
writeStubIdx( filename )
```

### Arguments

| Argument | Description |
|---|---|
| `filename` | (string) The name of the file to create. |

### Returns

(Boolean). `True` if written, `false` otherwise.

## writeStubXml

The `writeStubXml` method writes out an XML file containing the metadata for the document. The file is created in the current folder but you can specify a full path and file name if you want to create the file in another folder.

### Syntax

```
writeStubXml( filename )
```

### Arguments

| Argument | Description |
|---|---|
| `filename` | (String) The name of the file to create. |

### Returns

(Boolean) `True` if successful, `false` otherwise.

# LuaField Methods

This section describes the methods provided by `LuaField` objects. A `LuaField` represents a single field in a document. You can retrieve `LuaField` objects for a document using the `LuaDocument` `getField` and `getFields` methods. In its simplest form a field has just a name and a value, but it can also contain sub-fields.

If you have a `LuaField` object called `field` you can call its methods using the `':'` operator. For example:

```
field:addField(name, value)
```

| Method | Description |
|---|---|
| addField | Adds a sub field with the specified name and value. |
| copyField | Copies the sub field to another sub field. |
| copyFieldNoOverwrite | Copies the sub field to another sub field but does not overwrite the destination. |
| countField | Returns the number of sub fields that exist with the specified name. |
| deleteAttribute | Deletes the attribute with the specified name. |

| Method | Description |
|---|---|
| deleteField | Deletes the sub field with the specified name. |
| getAttributeValue | Gets the value of an attribute. |
| getField | Gets the sub field specified by the name. |
| getFieldNames | Returns the names of all sub fields of this field. |
| getFields | Gets all the sub fields specified by the name. |
| getFieldValues | Returns all the values of the sub field with the specified name. |
| getValueByPath | Returns the value of a sub field with the specified path. |
| getValuesByPath | Returns all the values of the sub field with the specified path. |
| hasAttribute | Returns a Boolean specifying if the field has the specified attribute passed in by name. |
| hasField | Returns a Boolean specifying if the sub field exists or not. |
| insertXml | Inserts XML metadata into a document. |
| insertXmlWithoutRoot | Inserts XML metadata into a document. |
| name | Returns the name of the field object in a string. |
| renameField | Renames a sub field. |
| setAttributeValue | Sets the value for the specified attribute of the field. |
| setValue | Sets the value of the field. |
| value | Returns the value of the field object. |

# addField

The `addField` method adds a sub field with the specified name and value.

## Syntax

```
addField( fieldname, fieldvalue )
```

## Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `fieldvalue` | (string) The value of the field. |

# copyField

The `copyField` method copies a sub field to another sub field. If the target sub field exists it is overwritten.

## Syntax

```
copyField ( from, to [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `from` | (string) The name of the field to copy. |
| `to` | (string) The name of the field to copy to. |
| `case` | (boolean) A boolean that specifies whether the `from` argument is case sensitive. The argument is case sensitive by default (`true`). |

# copyFieldNoOverwrite

The `copyFieldNoOverwrite` method copies the sub field to another sub field but does not overwrite the destination. After this operation the destination field contains all the values of the source field as well as any values it already had.

## Syntax

```
copyFieldNoOverwrite( from, to [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `from` | (string) The name of the field to copy. |
| `to` | (string) The name of the field to copy to. |
| `case` | (boolean) A boolean that specifies whether the `from` argument is case sensitive. The argument is case sensitive by default (`true`). |

# countField

The `countField` method returns the number of sub fields that exist with the specified name.

## Syntax

```
countField ( fieldname [, case])
```

## Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `fieldname` argument is case sensitive. The argument is case sensitive by default (`true`). |

## Returns

(Number). The number of sub fields that exist with the specified name.

# deleteAttribute

The `deleteAttribute` method deletes the specified field attribute.

## Syntax

```
deleteAttribute( name )
```

## Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the attribute to delete. |

# deleteField

The `deleteField` method deletes the sub field with the specified name.

### Syntax

```
deleteField( name [, case] )
deleteField( name , value [, case] )
```

### Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the sub field to delete. |
| `value` | (string) The value of the sub field. If this is specified a field is deleted only if it has the specified name and value. If this is not specified, all fields with the specified name are deleted. |
| `case` | (boolean) A boolean that specifies whether the `name` argument is case sensitive. The argument is case sensitive by default (`true`). |

## getAttributeValue

The `getAttributeValue` method gets the value of the specified attribute.

### Syntax

```
getAttributeValue( name )
```

### Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the attribute. |

### Returns

(String). The attribute value.

## getField

The `getField` method returns the specified sub field.

### Syntax

```
getField ( name [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the field to return. |
| `case` | (boolean) A boolean that specifies whether the `name` argument is case sensitive. The argument is case sensitive by default (`true`). |

### Returns

(LuaField) A LuaField object.

## getFieldNames

The `getFieldNames` method returns the names of the sub fields in the LuaField object.

### Syntax

```
getFieldNames()
```

### Returns

(Strings). The names of the sub fields. The strings can be assigned to a table. To map the return values to a table, surround the function call with braces. For example:

```
fieldnames = { field:getFieldNames() }
```

## getFields

The `getFields` method returns all of the sub fields specified by the `name` argument.

### Syntax

```
getFields( name [, case] )
```

## Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the fields. |
| `case` | (boolean) A boolean that specifies whether the `name` argument is case sensitive. The argument is case sensitive by default (`true`). |

## Returns

(LuaFields) One LuaField per matching field. The objects can be assigned to a table. To map the return values to a table, surround the function call with braces. For example:

```
fields = { field:getFields( name [, case]) }
```

# getFieldValues

The `getFieldValues` method returns the values of all of the sub fields with the specified name.

## Syntax

```
getFieldValues( fieldname [, case] )
```

## Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `fieldname` argument is case sensitive. The argument is case sensitive by default (`true`). |

## Returns

(Strings) One string for each value. The strings can be assigned to a table. To map the return values to a table, surround the function call with braces. For example:

```
fieldvalues = { field:getFieldValues( fieldname ) }
```

# getValueByPath

The `getValueByPath` method gets the value of a sub-field, specified by path. If you pass this method the path of a sub-field that has multiple values, only the first value is returned. To return all of the values

from a multi-value sub-field, see "getValuesByPath" below.

## Syntax

```
getValueByPath( path )
```

## Arguments

| Argument | Description |
|---|---|
| path | (string) The path of the sub-field. |

## Returns

(String). A string containing the value.

## Example

Consider the following document:

```
<DOCUMENT>
  ...
  <A_FIELD>
    <subfield>
      <anothersubfield>the value to return</anothersubfield>
    </subfield>
  </A_FIELD>
  ...
</DOCUMENT>
```

The following example demonstrates how to retrieve the value "the value to return" from the sub-field `anothersubfield`, using a LuaField object representing `A_FIELD`:

```
local field = document:getField("A_FIELD")
local value = field:getValueByPath("subfield/anothersubfield")
```

# getValuesByPath

The `getValuesByPath` method gets the values of a sub-field, specified by path.

## Syntax

```
getValuesByPath( path )
```

## Arguments

| Argument | Description |
|---|---|
| `path` | (string) The path of the sub-field. |

## Returns

(Strings). Strings that contain the values. To map the return values to a table, surround the function call with braces. For example:

```
fieldvalues = { myfield:getValuesByPath("subfield/anothersubfield") }
```

## Example

Consider the following document:

```
<DOCUMENT>
  ...
  <A_FIELD>
    <subfield>
      <anothersubfield>one</anothersubfield>
      <anothersubfield>two</anothersubfield>
      <anothersubfield>three</anothersubfield>
    </subfield>
  </A_FIELD>
  ...
</DOCUMENT>
```

The following example demonstrates how to retrieve the values "one", "two", and "three" from the sub-field `anothersubfield`, using a LuaField object representing `A_FIELD`:

```
local field = document:getField("A_FIELD")
local values = { field:getValuesByPath("subfield/anothersubfield") }
```

# hasAttribute

The `hasAttribute` method returns a Boolean indicating whether the field has the specified attribute.

## Syntax

```
hasAttribute( name )
```

### Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the attribute. |

### Returns

(Boolean). A Boolean specifying if the field has the specified attribute.

## hasField

The `hasField` method returns a Boolean specifying if the sub field exists.

### Syntax

```
hasField( fieldname [, case])
```

### Arguments

| Argument | Description |
|---|---|
| `fieldname` | (string) The name of the field. |
| `case` | (boolean) A boolean that specifies whether the `fieldname` argument is case sensitive. The argument is case sensitive by default (`true`). |

### Returns

(Boolean). A Boolean specifying if the sub field exists or not.

## insertXml

The `insertXml` method inserts XML metadata into the document. When called on a LuaField, the `insertXml` method inserts the fields as children of the LuaField.

### Syntax

```
insertXml ( node )
```

### Arguments

| Argument | Description |
|---|---|
| node | (LuaXmlNode) The node to insert. |

### Returns

(LuaField). A LuaField object of the inserted data.

## insertXmlWithoutRoot

The `insertXmlWithoutRoot` method inserts XML metadata into the document.

This method does not insert the top level node. All of the child nodes are inserted into the document. `insertXmlWithoutRoot(node)` is therefore equivalent to calling `insertXml()` for each child node.

### Syntax

```
insertXmlWithoutRoot ( node )
```

### Arguments

| Argument | Description |
|---|---|
| node | (LuaXmlNode) The node to insert. |

## name

The `name` method returns the name of the field object.

### Syntax

```
name()
```

### Returns

(String). The name of the field object.

## renameField

The `renameField` method renames a sub field.

### Syntax

```
renameField( oldname, newname [, case] )
```

### Arguments

| Argument | Description |
|---|---|
| `oldname` | (string) The previous name of the field. |
| `newname` | (string) The new name of the field. |
| `case` | (boolean) A boolean that specifies whether the `oldname` argument is case sensitive. The argument is case sensitive by default (`true`). |

## setAttributeValue

The `setAttributeValue` method sets the value for the specified attribute of the field.

### Syntax

```
setAttributeValue( attribute, value )
```

### Arguments

| Argument | Description |
|---|---|
| `attribute` | (string) The name of the attribute to set. |
| `value` | (string) The value to set. |

## setValue

The `setValue` method sets the value of the field.

### Syntax

```
setValue( value )
```

### Arguments

| Argument | Description |
|---|---|
| `value` | (string) The value to set. |

## value

The `value` method returns the value of the field object.

### Syntax

```
value()
```

### Returns

(String). The value of the field object.

# LuaLog Methods

A `LuaLog` object provides the capability to use a log stream defined in the connector's configuration file. You can obtain a `LuaLog` object for a log stream by using the function get_log.

If you have a `LuaLog` object called `log` you can call its methods using the '`:`' operator. For example:

```
log:write_line(level, message)
```

| Method | Description |
|---|---|
| write_line | Write a message to the log stream. |

## write_line

The `write_line` method writes a message to the log stream.

### Syntax

```
write_line( level, message )
```

### Arguments

| Argument | Description |
|---|---|
| `level` | The log level for the message. The message only appears in the log if the log level specified here is the same as, or higher than, the log level set for the log stream. To obtain the correct value for the log level, use one of the following functions:<br>• `log_level_always()`<br>• `log_level_error()`<br>• `log_level_warning()`<br>• `log_level_normal()`<br>• `log_level_full()` |
| `message` | (string) The message to write to the log stream. |

### Example

```
local config = get_config("connector.cfg")
local log = get_log(config, "SynchronizeLogStream")
log:write_line( log_level_error() , "This message is written to the synchronize
log")
```

# LuaXmlDocument Methods

This section describes the methods provided by `LuaXmlDocument` objects. A `LuaXmlDocument` object provides methods for accessing information stored in XML format. You can create a `LuaXmlDocument` from a string containing XML using the `parse_xml` function.

If you have a `LuaXmlDocument` object called `xml` you can call its methods using the `':'` operator. For example:

```
xml:root()
```

| Method | Description |
|---|---|
| root | Returns a LuaXmlNode that is the root node of the XML document. |
| XPathExecute | Returns a LuaXmlNodeSet that is the result of supplied XPath query. |
| XPathRegisterNs | Register a namespace with the XML parser. Returns an integer detailing the error code. |
| XPathValue | Returns the first occurrence of the value matching the XPath query. |
| XPathValues | Returns the values according to the XPath query. |

## root

The `root` method returns an LuaXmlNode, which is the root node of the XML document.

### Syntax

```
root()
```

### Returns

(LuaXmlNode). A LuaXmlNode object.

## XPathExecute

The `XPathExecute` method returns a LuaXmlNodeSet, which is the result of the supplied XPath query.

### Syntax

```
XPathExecute( xpathQuery )
```

### Arguments

| Argument | Description |
|---|---|
| `xpathQuery` | (string) The xpath query to run. |

### Returns

(LuaXmlNodeSet). A LuaXmlNodeSet object.

## XPathRegisterNs

The `XPathRegisterNs` method registers a namespace with the XML parser.

### Syntax

```
XPathRegisterNs( prefix, location )
```

### Arguments

| Argument | Description |
|---|---|
| `prefix` | (string) The namespace prefix. |
| `location` | (string) The namespace location. |

### Returns

(Boolean). `True` if successful, `False` in case of error.

## XPathValue

The `XPathValue` method returns the first occurrence of the value matching the XPath query.

### Syntax

```
XPathValue( query )
```

### Arguments

| Argument | Description |
|---|---|
| `query` | (string) The XPath query to use. |

### Returns

(String). A string of the value.

## XPathValues

The `XPathValues` method returns the values according to the XPath query.

### Syntax

```
XPathValues( query )
```

### Arguments

| Argument | Description |
|---|---|
| query | (string) The XPath query to use. |

### Returns

(Strings). The strings can be assigned to a table. To map the return values to a table, surround the function call with braces. For example:

```
values = { xml:XPathValues(query) }
```

# LuaXmlNodeSet Methods

A LuaXmlNodeSet object represents a set of XML nodes.

If you have a LuaXmlNodeSet object called nodes you can call its methods using the ':' operator. For example:

```
nodes:size()
```

| Method | Description |
|---|---|
| at | Returns the LuaXmlNode at position pos in the set. |
| size | Returns size of node set. |

## at

The at method returns the LuaXmlNode at position position in the set.

### Syntax

```
at( position )
```

### Arguments

| Argument | Description |
|---|---|
| position | (number) The index of the item in the array to get. |

### Returns

(LuaXmlNode).

## size

The `size` method returns the size of the node set.

### Syntax

```
size()
```

### Returns

(Number) An integer, the size of the node set.

# LuaXmlNode Methods

A `LuaXmlNode` object represents a single node in an XML document.

If you have a `LuaXmlNode` object called `node` you can call its methods using the `':'` operator. For example:

```
node:name()
```

| Method | Description |
|---|---|
| attr | Returns the first LuaXmlAttribute attribute object for this element. |
| content | Returns the content (text element) of the XML node. |
| firstChild | Returns a LuaXmlNode that is the first child of this node. |
| lastChild | Returns a LuaXmlNode that is the last child of this node. |
| name | Returns the name of the XML node. |
| next | Returns a LuaXmlNode that is the next sibling of this node. |
| nodePath | Returns the XML path to the node that can be used in another `XPath` query. |
| parent | Returns the parent LuaXmlNode of the node. |
| prev | Returns a LuaXmlNode that is the previous sibling of this node. |
| type | Returns the type of the node as a string. |

# attr

The `attr` method returns the first LuaXmlAttribute attribute object for the LuaXmlNode. If the name argument is specified, the method returns the first LuaXmlAttribute object with the specified name.

## Syntax

```
attr( [name] )
```

## Arguments

| Argument | Description |
|---|---|
| `name` | (string) The name of the LuaXmlAttribute object. |

## Returns

(LuaXmlAttribute).

# content

The `content` method returns the content (text element) of the XML node.

## Syntax

```
content()
```

## Returns

(String). A string containing the content.

# firstChild

The `firstChild` method returns the LuaXmlNode that is the first child of this node.

## Syntax

```
firstChild()
```

### Returns

(LuaXmlNode).

## lastChild

The `lastChild` method returns the LuaXmlNode that is the last child of this node.

### Syntax

```
lastChild()
```

### Returns

(LuaXmlNode).

## name

The `name` method returns the name of the XML node.

### Syntax

```
name()
```

### Returns

(String). A string containing the name.

## next

The `next` method returns the LuaXmlNode that is the next sibling of this node.

### Syntax

```
next()
```

### Returns

(LuaXmlNode).

# nodePath

The `nodePath` method returns the XML path to the node, which can be used in another XPath query.

## Syntax

```
nodePath()
```

## Returns

(String). A string containing the path.

# parent

The `parent` method returns the parent LuaXmlNode of the node.

## Syntax

```
parent()
```

## Returns

(LuaXmlNode).

# prev

The `prev` method returns a LuaXmlNode that is the previous sibling of this node.

## Syntax

```
prev()
```

## Returns

(LuaXmlNode).

# type

The `type` method returns the type of the node as a string.

### Syntax

```
type()
```

### Returns

(String) A string containing the type. Possible values are:

```
element_node comment_node element_decl
attribute_node document_node attribute_decl
text_node document_type_node entity_decl
cdata_section_node document_frag_node namespace_decl
entity_ref_node notation_node xinclude_start
entity_node html_document_node xinclude_end
pi_node dtd_node docb_document_node
```

# LuaXmlAttribute Methods

A `LuaXmlAttribute` object represents an attribute on an XML element.

If you have a `LuaXmlAttribute` object called `attribute` you can call its methods using the `':'` operator. For example:

```
attribute:name()
```

| Method | Description |
|---|---|
| name | Returns the name of this attribute. |
| next | Returns a LuaXmlAttribute object for the next attribute in the parent element. |
| prev | Returns a LuaXmlAttribute object for the previous attribute in the parent element. |
| value | Returns the value of this attribute. |

# name

The `name` method returns the name of this attribute.

### Syntax

```
name()
```

### Returns

(String). A string containing the name of the attribute.

## next

The `next` method returns a LuaXmlAttribute object for the next attribute in the parent element.

### Syntax

```
next()
```

### Returns

(LuaXmlAttribute).

## prev

The `prev` method returns a LuaXmlAttribute object for the previous attribute in the parent element.

### Syntax

```
prev()
```

### Returns

(LuaXmlAttribute).

## value

The `value` method returns the value of this attribute.

### Syntax

```
value()
```

### Returns

(String). A string containing the value of the attribute.

# LuaRegexMatch Methods

A `LuaRegexMatch` object provides information about the matches for a regular expression found in a string. For example, the `regex_search` function returns a `LuaRegexMatch` object.

If a match is found for a regular expression at multiple points in the string, you can use the `next()` method to get a `LuaRegexMatch` object for the next match.

If the regular expression contained sub-expressions (surrounded by parentheses) the methods of `LuaRegexMatch` objects can also be used to retrieve information about the sub-expression matches.

If you have a `LuaRegexMatch` object called `match` you can call its methods using the "`:`" operator. For example:

```
match:length()
```

| Method | Description |
|---|---|
| length | Returns the length of the sub match. |
| next | Returns a LuaRegexMatch for the next match. |
| position | Returns the position of the sub match as an index from 1. |
| size | Returns the number of sub matches for the current match. |
| str | Returns the string for the sub match. |

# length

The `length` method returns the length of the match. You can also retrieve the length of sub matches by specifying the `submatch` parameter.

## Syntax

```
length( [ submatch ] )
```

## Arguments

| Argument | Description |
|---|---|
| `submatch` | (number) The sub match to return the length of, starting at 1 for the first sub match. With the default value of 0 the length of the whole match is returned. |

## Returns

(Number). The length of the sub match.

# next

The `next` method returns a LuaRegexMatch object for the next match.

## Syntax

```
next()
```

## Returns

(LuaRegexMatch). A LuaRegexMatch object for the next match, or `nil` if there are no matches following this one.

# position

The `position` method returns the position of the match in the string searched, where 1 refers to the first character in the string. You can also retrieve the position of sub matches by specifying the `submatch` parameter.

## Syntax

```
position( [ submatch ] )
```

## Arguments

| Argument | Description |
|---|---|
| `submatch` | (number) The sub match to return the position of, starting at 1 for the first sub match. With the default value of 0 the position of the whole match is returned. |

## Returns

(Number). The position of the submatch as an index from 1.

# size

The `size` method returns the total number of sub matches made for the current match, including the whole match (sub match 0).

## Syntax

```
size()
```

## Returns

(Number). The number of sub matches for the current match.

# str

The `str` method returns the value of the substring that matched the regular expression. You can also retrieve the values of sub matches by specifying the `submatch` parameter.

## Syntax

```
str( [ submatch ] )
```

## Arguments

| Argument | Description |
|---|---|
| `submatch` | (number) The sub match to return the value of, starting at 1 for the first sub match. With the default value of 0 the value of the whole match is returned. |

## Returns

(String). The value of the sub match.

# Glossary

## A

**ACI (Autonomy Content Infrastructure)**
A technology layer that automates operations on unstructured information for cross-enterprise applications. ACI enables an automated and compatible business-to-business, peer-to-peer infrastructure. The ACI allows enterprise applications to understand and process content that exists in unstructured formats, such as email, Web pages, Microsoft Office documents, and IBM Notes.

**ACI Server**
A server component that runs on the Autonomy Content Infrastructure (ACI).

**ACL (access control list)**
An ACL is metadata associated with a document that defines which users and groups are permitted to access the document.

**action**
A request sent to an ACI server.

**active directory**
A domain controller for the Microsoft Windows operating system, which uses LDAP to authenticate users and computers on a network.

## C

**Category component**
The IDOL Server component that manages categorization and clustering.

**Community component**
The IDOL Server component that manages users and communities.

**connector**
An IDOL component (for example File System Connector) that retrieves information from a local or remote repository (for example, a file system, database, or Web site).

**Connector Framework Server (CFS)**
Connector Framework Server processes the information that is retrieved by connectors. Connector Framework Server uses KeyView to extract document content and metadata from over 1,000 different file types. When the information has been processed, it is sent to an IDOL Server or Distributed Index Handler (DIH).

**Content component**
The IDOL Server component that manages the data index and performs most of the search and retrieval operations from the index.

## D

**DAH (Distributed Action Handler)**
DAH distributes actions to multiple copies of IDOL Server or a component. It allows you to use failover, load balancing, or distributed content.

**DIH (Distributed Index Handler)**
DIH allows you to efficiently split and index extremely large quantities of data into multiple copies of IDOL Server or the Content component. DIH allows you to create a scalable solution that delivers high performance and high availability. It provides a flexible way to batch, route, and categorize the indexing of internal and external content into IDOL Server.

## I

**IDOL**
The Intelligent Data Operating Layer (IDOL) Server, which integrates unstructured, semi-structured and structured information from multiple repositories through an understanding of the content. It delivers a real-time environment in which operations across applications and content are automated.

**IDOL Proxy component**
An IDOL Server component that accepts incoming actions and distributes them to the appropriate subcomponent. IDOL Proxy also performs some maintenance operations to make sure that the subcomponents are running, and to start and stop them when necessary.

**Import**
Importing is the process where CFS, using KeyView, extracts metadata, content, and sub-files from items retrieved by a connector. CFS adds the information to documents so that it is indexed into IDOL Server. Importing allows IDOL server to use the information in a repository, without needing to process the information in its native format.

**Ingest**
Ingestion converts information that exists in a repository into documents that can be indexed into IDOL Server. Ingestion starts when a connector finds new documents in a repository, or documents that have been updated or deleted, and sends this information to CFS. Ingestion includes the import process, and processing tasks that can modify and enrich the information in a document.

**Intellectual Asset Protection System (IAS)**
An integrated security solution to protect your data. At the front end, authentication checks that users are allowed to access the system that contains the result data. At the back end, entitlement checking and authentication combine to ensure that query results contain only documents that the user is allowed to see, from repositories that the user has permission to access.

## K

**KeyView**
The IDOL component that extracts data, including text, metadata, and subfiles from over 1,000 different file types.

## L

**LDAP**
Lightweight Directory Access Protocol. Applications can use LDAP to retrieve information from a server. LDAP is used for directory services (such as corporate email and telephone directories) and user authentication. See also: active directory, primary domain controller.

**License Server**
License Server enables you to license and run multiple IDOL solutions. You must have a License Server on a machine with a known, static IP address.

## O

**OmniGroupServer (OGS)**
A server that manages access permissions for your users. It communicates with your repositories and IDOL Server to apply access permissions to documents.

## P

**primary domain controller**
A server computer in a Microsoft Windows domain that controls various computer resources. See also: active directory, LDAP.

## V

**View**
An IDOL component that converts files in a repository to HTML formats for viewing in a Web browser.

## W

**Wildcard**
A character that stands in for any character or group of characters in a query.

## X

**XML**
Extensible Markup Language. XML is a language that defines the different attributes of document content in a format that can be read by humans and machines. In IDOL Server, you can index documents in XML format. IDOL Server also returns action responses in XML format.

# Send Documentation Feedback

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

**Feedback on HTTP Connector (CFS) Administration Guide (HTTP Connector 11.1)**

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to AutonomyTPFeedback@hpe.com.

We appreciate your feedback!