



Hitachi Content Platform

Searching Namespaces

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Preface

This book describes the Search Console that comes with **Hitachi Content Platform (HCP)**. It explains how to use the Console to search namespaces for objects that satisfy criteria you specify. It also explains how to manage and manipulate both search specifications and search results.

This book contains many examples, which you can use as models for your own searches.



Note: Throughout this book, the word *Unix* is used to represent all UNIX[®]-like operating systems (such as UNIX itself or Linux[®]).

Intended audience

This book is intended for anyone who needs to search for objects in HCP namespaces. You can use the results of a search to manipulate groups of objects, to collect documents to satisfy search and discovery requirements, and to analyze namespace contents.

This book assumes you are familiar with HCP object properties, your client operating system, and the browser you use for web applications.

Product version

This book applies to release 7.1 of HCP.

Syntax notation

The table below describes the conventions used for the syntax of commands, expressions, URLs, and object names in this book.

Notation	Meaning	Example
boldface	Type exactly as it appears in the syntax (if the context is case insensitive, you can vary the case of the letters you type)	This book shows: xml You enter: xml
<i>italics</i>	Replace with a value of the indicated type	This book shows: <i>element-name</i> You enter: department
	Vertical bar — Choose one of the elements on either side of the bar, but not both	This book shows: and or You enter: and or: or
[]	Square brackets — Include none, one, or more of the elements between the brackets	This book shows: [xml custommetadata] You enter: xml or: custommetadata or nothing
()	Parentheses — Include exactly one of the elements between the parentheses	This book shows: (word "phrase" numeric-value) You enter: Marketing or: "Lee Green" or: 180
...	Ellipsis — Optionally, repeat the preceding parameter as many times as needed	This book shows: (<i>xml-element-name</i> :) ... You enter: company:division:department:

Related documents

The following documents contain additional information about Hitachi Content Platform:

- *Administering HCP* — This book explains how to use an HCP system to monitor and manage a digital object repository. It discusses the capabilities of the system, as well as its hardware and software components. The book presents both the concepts and instructions you need to configure the system, including creating the tenants that administer access to the repository. It also covers the processes that maintain the integrity and security of the repository contents.

- *Managing a Tenant and Its Namespaces* — This book contains complete information for managing the HCP tenants and namespaces created in an HCP system. It provides instructions for creating namespaces, setting up user accounts, configuring the protocols that allow access to namespaces, managing search and indexing, and downloading installation files for HCP Data Migrator. It also explains how to work with retention classes and the privileged delete functionality.
- *Managing the Default Tenant and Namespace* — This book contains complete information for managing the default tenant and namespace in an HCP system. It provides instructions for changing tenant and namespace settings, configuring the protocols that allow access to the namespace, managing search and indexing, and downloading installation files for HCP Data Migrator. It also explains how to work with retention classes and the privileged delete functionality.
- *Replicating Tenants and Namespaces* — This book covers all aspects of tenant and namespace replication. Replication is the process of keeping selected tenants and namespaces in two or more HCP systems in sync with each other to ensure data availability and enable disaster recovery. The book describes how replication works, contains instructions for working with replication links, and explains how to manage and monitor the replication process.
- *HCP Management API Reference* — This book contains the information you need to use the HCP management API. This RESTful HTTP API enables you to create and manage tenants and namespaces programmatically. The book explains how to use the API to access an HCP system, specify resources, and update and retrieve resource properties.
- *Using a Namespace* — This book describes the properties of objects in HCP namespaces. It provides instructions for accessing namespaces by using the HTTP, WebDAV, CIFS, and NFS protocols for the purpose of storing, retrieving, and deleting objects, as well as changing object metadata such as retention and shred settings. It also explains how to manage namespace content and view namespace information in the Namespace Browser.
- *Using the HCP HS3 API* — This book contains the information you need to use the HCP HS3 API. This S3™-compatible, RESTful, HTTP-based API enables you to work with buckets and objects in HCP. The book introduces the HCP concepts you need to understand in order to use HS3 effectively and contains instructions and examples for each of the bucket and object operations you can perform with HS3.

- *Using the HCP OpenStack Swift API* — This book contains the information you need to use the HCP OpenStack Swift API. This S3™-compatible, RESTful, HTTP-based API enables you to work with containers and objects in HCP. The book introduces the HCP concepts you need to understand in order to use HSwift effectively and contains instructions and examples for each of the container and object operations you can perform with HSwift.
- *Using the Default Namespace* — This book describes the file system HCP uses to present the contents of the default namespace. It provides instructions for accessing the namespace by using the HCP-supported protocols for the purpose of storing, retrieving, and deleting objects, as well as changing object metadata such as retention and shred settings.
- *HCP Metadata Query API Reference* — This book describes the HCP metadata query API. This RESTful HTTP API enables you to query namespaces for objects that satisfy criteria you specify. The book explains how to construct and perform queries and describes query results. It also contains several examples, which you can use as models for your own queries.
- *Using HCP Data Migrator* — This book contains the information you need to install and use HCP Data Migrator (HCP-DM), a utility that works with HCP. This utility enables you to copy data between local file systems, namespaces in HCP, and earlier HCAP archives. It also supports bulk delete operations and bulk operations to change object metadata. Additionally, it supports associating custom metadata and ACLs with individual objects. The book describes both the interactive window-based interface and the set of command-line tools included in HCP-DM.
- *Installing an HCP System* — This book provides the information you need to install the software for a new HCP system. It explains what you need to know to successfully configure the system and contains step-by-step instructions for the installation procedure.
- *Deploying an HCP-VM System* — This book contains all the information you need to install and configure an HCP-VM system. The book also includes requirements and guidelines for configuring the VMWare® environment in which the system is installed.
- *Third-Party Licenses and Copyrights* — This book contains copyright and license information for third-party software distributed with or embedded in HCP.

- *HCP-DM Third-Party Licenses and Copyrights* — This book contains copyright and license information for third-party software distributed with or embedded in HCP Data Migrator.
- *Installing an HCP SAIN System — Final On-site Setup* — This book contains instructions for deploying an assembled and configured single-rack HCP SAIN system at a customer site. It explains how to make the necessary physical connections and reconfigure the system for the customer computing environment. It also contains instructions for configuring Hi-Track[®] Monitor to monitor the nodes in an HCP system.
- *Installing an HCP RAIN System — Final On-site Setup* — This book contains instructions for deploying an assembled and configured HCP RAIN system at a customer site. It explains how to make the necessary physical connections and reconfigure the system for the customer computing environment. The book also provides instructions for assembling the components of an HCP RAIN system that was ordered without a rack and for configuring Hi-Track Monitor to monitor the nodes in an HCP system.

Getting help

The Hitachi Data Systems[®] customer support staff is available 24 hours a day, seven days a week. If you need technical support, call:

- United States: (800) 446-0744
- Outside the United States: (858) 547-4526



Note: If you purchased HCP from a third party, please contact your authorized service provider.

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Please send us your comments on this document:

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Include the document title, number, and revision, and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems.

Thank you!

Introduction to searching in HCP

Hitachi Content Platform (HCP) is a distributed storage system designed to support large amounts of data. HCP provides access to the stored data through a variety of industry-standard protocols, as well as through an integrated **Search Console**.

The Search Console enables you to search for objects stored in HCP using either of two search facilities: the metadata query engine or the HDDS search facility.



Note: When working with the metadata query engine, the Search Console is called the **Metadata Query Engine Console**.

This chapter provides an introduction to HCP and searching namespaces, including how to use the Search Console, the types of queries you can construct, and what search results look like.

About Hitachi Content Platform

Hitachi Content Platform is the distributed, fixed-content, data storage system from Hitachi Data Systems®. HCP provides a cost-effective, scalable, easy-to-use repository that can accommodate all types of data, from simple text files to medical image files to multigigabyte database images.

A **fixed-content storage system** is one in which the data cannot be modified. HCP uses write-once, read-many (WORM) storage technology, and a variety of policies and internal processes to ensure the integrity of the stored data.

Objects

HCP stores **objects** in a repository. Each object permanently associates data HCP receives (for example, a document, an image, or a movie) with information about that data. This information is called **metadata**.

Namespaces and tenants

An HCP repository is partitioned into namespaces. A **namespace** is a logical grouping of objects such that the objects in one namespace are not visible in any other namespace.

Namespaces provide a mechanism for separating the data stored for different applications. For example, one namespace could store accounts-receivable data while another stores accounts-payable data.

Namespaces are owned and managed by administrative entities called **tenants**. A tenant typically corresponds to an organization, such as a company or a division or department within a company. A tenant can also correspond to an individual person.

A tenant can own multiple namespaces. However, one special tenant, named **default**, owns only one namespace, named **default**. This namespace has some different properties from other namespaces. These differences are pointed out, where applicable, in this book.



Note: This book refers to all tenants except the default tenant as **HCP tenants**. The namespaces owned by HCP tenants are called **HCP namespaces**.

Object metadata

HCP automatically generates metadata for each object. Some of this metadata is specific to HCP. Examples of this type of metadata are the retention setting, object creation date, and cryptographic hash value.

Objects also have POSIX metadata. **POSIX** is a set of standards that defines an application programming interface (API) for software designed to run under heterogeneous operating systems. These standards include specific types of metadata, such as permissions and ownership.

Users and applications can override the defaults for some HCP-specific and POSIX metadata when they add an object to a namespace. They can also change certain metadata values for existing objects.

Users can create their own **custom metadata** to associate additional descriptive information with an object. Custom metadata is specified as **annotations**, where each annotation is a discrete unit of information about the object.

Custom metadata enables the creation of self-describing objects. Future users and applications can use this metadata to understand and repurpose object content.

When added to a namespace, custom metadata becomes part of the target object. Custom metadata is typically but not necessarily formatted as XML.

Users can also associate **access control lists (ACLs)** with objects. An ACL grants permissions for an individual object to specified users or groups of users.

When added to a namespace, an ACL becomes part of the target object. When viewed or specified in the Search Console, ACLs are formatted as XML.

ACLs are enabled on a per-namespace basis. In namespaces where ACLs are enabled, the namespace can be configured to either enforce or ignore the permissions granted by ACLs.

For more information on metadata, see [“Understanding returned metadata”](#) on page 29, [“Showing result details”](#) on page 29, *Using a Namespace*, and *Using the Default Namespace*.

Retention settings

Each object has a **retention setting** that specifies how long the object must remain in its namespace before it can be deleted; this duration is called the **retention period**. While an object cannot be deleted due to its retention setting, it is said to be **under retention**.

The retention setting for an object can be:

- A specific date and time — This is the time before which the object cannot be deleted. If this is a date in the past, this setting is displayed as **Expired** in the Search Console.
- One of these special values:
 - **Deletion Allowed** — The object can be deleted at any time. This value is displayed as **Expired** in the Search Console.
 - **Deletion Prohibited** — The object can never be deleted.
 - **Initial Unspecified** — The object does not yet have a specific retention setting and cannot be deleted until it has a setting that allows deletion.
- A retention class — This is a named retention setting. It can be a duration (such as seven years) or one of the special values listed above.

Retention classes are namespace specific. That is, an object in one namespace cannot be assigned a retention class that's defined in a different namespace.

Retention mode

Retention mode is a property of a namespace that affects which operations are allowed on objects under retention. A namespace can be in either of two retention modes:

- In **compliance mode**, objects that are under retention cannot be deleted through any mechanism. Additionally, the duration of a retention class cannot be shortened, and retention classes cannot be deleted.
- In **enterprise mode**, users and applications can delete objects under retention if they have specific permission to do so. This is called **privileged delete**.

Also in enterprise mode, the duration of a retention class can be shortened, and retention classes can be deleted.

About searching namespaces

HCP lets you search namespaces for objects that meet specified criteria. This capability supports search and discovery to satisfy government requirements and provides support for audits and litigation. You can use the results of a search to analyze namespace contents and manipulate groups of objects.

Search Console

HCP provides an interactive interface for searching namespaces. This interface, called the **Search Console**, is a web application that offers a structured environment for creating and executing queries. You can also use the Search Console to perform these operations on groups of objects: hold, release, delete, purge, privileged delete, privileged purge, change owner, and set ACLs.

A **query** is a request you submit that contains a collection of criteria that each object in the search results must satisfy. The response to a query is metadata about the objects that meet the query criteria. You can use this metadata to retrieve objects of interest. Additionally, from the Search Console, you can export the metadata for use as input to other applications.

Search facilities

The Search Console works with either of these search facilities:

- The **metadata query engine** — This facility is integrated with HCP and is also used by the metadata query API, which is a programmatic interface for querying namespaces.
- The **Hitachi Data Discovery Suite (HDDS) search facility** — This facility interacts with HDDS, which performs searches and returns results to the HCP Search Console. HDDS is a separate product from HCP.

This book covers aspects of HDDS that are specific to HCP. For more information on HDDS, see the HDDS documentation.

Only one search facility can be selected for use with the Search Console at any given time. This facility, called the **active search facility**, is selected at the HCP system level. If no search facility is selected, the HCP system does not support searching namespaces.

Indexes

Each search facility maintains an index of objects. The index maintained by the metadata query engine resides in HCP. The index maintained by the HDDS search facility resides in HDDS.

The metadata query engine index is based on system metadata, custom metadata that is well-formed XML, and ACLs. The index maintained by the HDDS search facility is based on object data and metadata.

Indexing is enabled on a per-namespace basis. If a namespace is not indexed, searches do not return any results for objects in the namespace.

Indexing of custom metadata is also enabled on a per-namespace basis. If indexing of custom metadata is disabled for a namespace, the index associated with the metadata query engine does not include custom metadata for objects in the namespace.

HCP namespaces can be configured to store multiple versions of objects. Each index, however, includes only the most current version of an object.

To maintain its index, each search facility periodically checks indexable namespaces for new objects and for objects with metadata that has changed since the last check. When it finds new or changed information, it updates its index. The amount of time a search facility takes to update its index depends on the amount of information to be indexed.



Note: If an index update includes a large amount of information, new objects or objects with changed metadata may be unavailable to searches until the update is complete.

Metadata query engine indexing of custom metadata can be configured as follows:

- Specific content properties can be indexed. For information on content properties see [“Content properties”](#) below.
- Specific annotations in a namespace can be excluded from indexing.

- Indexing can be enabled or disabled for the full text of custom metadata.

Content properties

Custom metadata in a namespace can be indexed based **content properties**. A content property is a named construct used to extract an element or attribute value from custom metadata that's well-formed XML. Each content property has a data type that determines how the property values are treated by the metadata query engine. Additionally, a content property is defined as either single-valued or multivalued. A multivalued property can extract the values of multiple occurrences of the same element or attribute from the XML.

Content properties are grouped into **content classes**, and each namespace can be associated with a set of content classes. The content properties that belong to a content class associated with the namespace are indexed for the namespace. Content classes are defined at the tenant level, so multiple namespaces can be associated with the same content class.

For example, if the namespace Personnel is associated with the content class MedInfo, and the content property DrName is a member of the content class, the query engine will use the DrName content property to index the custom metadata in the Personnel namespace.

Index settings

Each object has an index setting that the metadata query engine uses to determine whether to index custom metadata for the object. The metadata query engine always indexes object metadata and ACLs regardless of the index setting on an object.

Index settings do not affect HDDS search facility indexing.

Extracted metadata

In addition to object data and metadata, the index maintained by the HDDS search facility includes **extracted metadata**. Extracted metadata is metadata that's specific to a document format. Examples of this type of metadata are the author and title of a stored document.

Searchable namespaces

For a namespace to be searchable in the Search Console:

- The namespace must be indexed by the active search facility.
- The namespace must be configured to allow searches. This property of a namespace is separate from whether the namespace is indexed.

Using the Search Console

To use the Search Console, you need one of these:

- A tenant-level user account that is defined in HCP
- If HCP is configured to support Active Directory® (AD), an AD user account that is recognized at the tenant level
- A system-level user account that is defined in HCP and has the search role
- An AD user account that is recognized at the system level and has the search role

Additionally, to perform searches while the HDDS search facility is active, you need an HDDS username and password. After logging into the Search Console, you need to set your HDDS username and password in the Console. To get an HDDS username and password, see your HCP or HDDS administrator.

When you log into the Search Console with a tenant-level user account that's defined in HCP or an AD account recognized at the tenant level, you access the Console for a specific HCP tenant. You can search only searchable namespaces owned by that tenant. Your user account specifies which of those namespaces you have permission to search. If you don't have permission to search a given namespace, search results don't include any objects from that namespace.

When you log into the Search Console with a system-level user account that's defined in HCP or an AD user account recognized at the system level, you can search the default namespace and you may also be able to search the searchable namespaces belonging to one or more HCP tenants. This depends on the configuration of those tenants.

Search Console URL

Tenant-level users and system-level users specify different URLs to access the Search Console. In either case, access to the Console requires the use of SSL security with HTTP (HTTPS).



Note: If you inadvertently use *http* instead of *https* in the URL, the browser prompts you to open or save a file. Cancel out of the prompt and try again, this time using *https*.

Search Console URL for tenant-level users

To access the Search Console with a tenant-level user account, you use a URL with this format:

```
https://tenant-url-name.hcp-domain-name:8888
```

For example, to access the Search Console for the tenant named Finance in the HCP system named hcp.example.com, you use this URL:

```
https://finance.hcp.example.com:8888
```

Typically, HCP relies on DNS for hostname resolution. If this is not the case, you need to provide a mapping of the tenant hostname to an IP address for the HCP system. You specify this mapping in the `c:\windows\system32\drivers\etc\hosts` file (Windows®), the `/etc/hosts` file (Unix), or the `/private/etc/hosts` file (Mac OS® X) on the client.

Each line in a `hosts` file is a mapping of a hostname to an IP address. So, for example, if one of the IP addresses for the HCP system is 192.168.210.16, you would add this line to the `hosts` file on the client to enable access to the Search Console for the Finance tenant:

```
192.168.210.16    finance.hcp.example.com
```

For the IP addresses for the HCP system, see your HCP tenant administrator.

Search Console URL for system-level users

To access the Search Console with a system-level user account, you use a URL with this format:

```
https://search.hcp-domain-name:8888
```

For example, to access the Search Console for the HCP system named `hcp.example.com`, you use this URL:

```
https://search.hcp.example.com:8888
```

You can also use an IP address for the HCP system to access the Search Console with a system-level user account:

```
https://hcp-ip-address:8888
```

For example, to access the Search Console for an HCP system that has an IP address that is `192.168.210.16`, you use this URL:

```
https://192.168.210.16:8888
```

Search Console sessions

A Search Console session begins when you do one of these:

- Log into the Console using an HCP user account.
- Access a Console page while logged into Windows with an AD user account that HCP recognizes. This is called **single sign-on**.

For single sign-on to work, your web browser must be configured to support it. For more information on this, see [Appendix 8, "Browser configuration for single sign-on with Active Directory,"](#) on page 109.

- Log into the Console using a recognized AD user account other than the one with which you're currently logged into Windows.

A session ends when you log out.

During a session, if you don't take any action for a certain amount of time, the Console automatically logs you out if you explicitly logged in or, in the case of single sign-on, returns you to the **Simple Search** page. The exact amount of idle time allowed is determined by the tenant configuration.

Logging in

To log into the Search Console:

1. Open a web browser window.
2. In the address field, enter the URL for the Search Console.

One of these happens:

- If all of these are true, you are automatically logged into the Search Console, and the **Simple Search** page appears:
 - The tenant is configured to support AD authentication.
 - Your web browser is configured to support single sign-on with AD. For information on this, see [Appendix 8, “Browser configuration for single sign-on with Active Directory,”](#) on page 109.
 - You are currently logged into Windows with a recognized AD user account.

In this case, no further action is required.

- If the tenant is configured to support AD authentication but any of the following apply, a message appears indicating that single sign-on was not possible:
 - Your web browser is not configured to support single sign-on.
 - You are not currently logged into Windows with a recognized AD user account.
 - You are not on a Windows computer.

In these cases, you need to click on the **Console login page** link in the message to display the Search Console login page.

- If the tenant is not configured to support AD authentication, the Search Console login page appears.
3. On the Search Console login page, if HCP is configured to support AD, do either of these in the **Domain** field:
 - If you’re using an HCP user account, select the fully qualified name of the HCP system.
 - If you’re using a recognized AD user account, select the AD domain in which your user account is defined.

If HCP is not configured to support AD, the login page does not display the **Domain** field.

4. In the **Username** field, type your username.

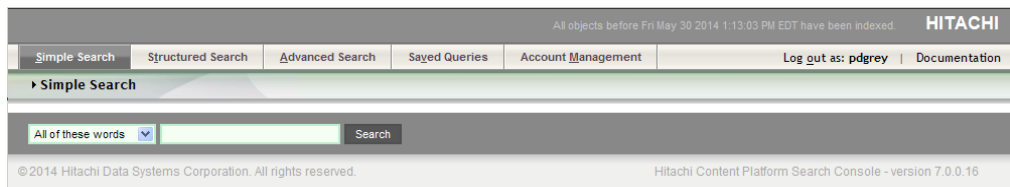
5. In the **Password** field, type your case-sensitive password.



Important: If you're using an HCP user account, you should change your password as soon as possible the first time you log into the Search Console.

6. Click on the **Log In** button.

The Search Console displays the **Simple Search** page (shown below) or, if you logged in using a user account that's defined in HCP and you're required to change your password, the **Account Management** page. You also set your HDDS credentials on the **Account Management** page if the HDDS search facility is active.



For information on:

- Using the **Simple Search** page, see [Chapter 2, “Working with simple searches,”](#) on page 15.
- Changing your password, see [“Changing your password”](#) on page 13.
- Setting your HDDS credentials, see [“Setting HDDS credentials”](#) on page 14.

Logging out

To log out of the Search Console:

1. Click on **Log out as** in the top right corner of the page.

The Console returns to the login page. To continue using the Search Console, you need to log in again.

2. If you explicitly logged in, close the browser window to ensure that other users cannot go back into the Search Console using the credentials you used to log in.

Search Console pages and navigation

Each page in the Search Console lets you perform a specific activity. To navigate among the pages, you can use the tabs at the top of the page. You can also use shortcut keys for navigation. Each link that has a shortcut key has one letter underlined. To use the shortcut key, follow the convention for the browser you're using.

While the metadata query engine is active, on each page, the Search Console indicates how current the index is by showing the date and time before which eligible objects are guaranteed to be indexed. That is, any eligible object that was added to a namespace or that had a metadata change before the indicated date and time is guaranteed to be indexed. Objects that were added or had metadata changes after that date and time may or may not be indexed.

Search Console pages do not automatically refresh themselves while they remain open. To see the latest results for the current search, use your browser refresh button.

When you switch from one page to another, the Console does not retain the search on the original page (neither the query nor the search results). To see that search again, you can either recreate it or use the browser back button to return to it. Alternatively, you can save it before you switch pages. For information on saving a search, see [Chapter 6, "Working with saved queries."](#) on page 103.

Viewing search documentation

HCP documentation is available online in PDF format. To view a document from the Search Console, do either of these:

- In the top right corner of the Search Console window, place the cursor on the **Documentation** link. Then, in the dropdown menu, click on the document you want.
- In the top right corner of the Search Console window, click on the **Documentation** link. Then, on the **Documentation** page, click on the document you want.

Changing your password

If you used a locally authenticated HCP user account to log into the Search Console, you can change your password in this Console. When you change your password in the Search Console, the password also changes for any other HCP interfaces to which your user account gives you access.

To change your password in the Search Console:

1. Click on the **Account Management** tab.
2. On the **Account Management** page, in the **Change Password for User** section:
 - In the **Existing Password** field, type your current password.
 - In the **New Password** field, type your new password. Passwords can be up to 64 characters long, are case sensitive, and can contain any valid UTF-8 characters, including white space.

To be valid, a password must include at least one character from two of these three groups: alphabetic, numeric, and other.

The minimum length for passwords is site specific. Typically, it's six or eight characters.
 - In the **Confirm New Password** field, type the new password again.
3. Click on the **Submit** button.

Setting HDDS credentials

To set your HDDS credentials while the HDDS search facility is active:

1. In the HCP Search Console, click on the **Account Management** tab.
2. On the **Account Management** page, in the **Set HDDS Credentials** section, enter your case-sensitive HDDS username and password.
3. Click on the **Test** button to ensure that your username and password are valid.

If the test fails, contact your HCP tenant administrator. HDDS may be unavailable, or your credentials may be invalid.

4. Click on the **Save** button.



Notes:

- Once set, your HDDS credentials are saved for future Search Console sessions.
 - If the test fails, you can still set your HDDS credentials by clicking on the **Save** button. However, your queries will not return any results until you provide valid HDDS credentials.
-

Working with simple searches

Simple searches are one of the three types of searches you can perform from the HCP Search Console. A simple search is based solely on word matching. You can specify multiple words or phrases to search for, and you can use wildcards to find more matches. Simple searches do not support the use of metadata as search criteria.

This chapter provides instructions for performing simple searches. It explains the rules for specifying the search criteria and the options that determine whether objects are included in the search results. It also includes several examples.

Once you have the results of a simple search, you can filter and export them. For information on these activities, see [Chapter 3, “Working with search results,”](#) on page 25. You can also save the search criteria as a reusable query. For information on saving search criteria, see [Chapter 6, “Working with saved queries,”](#) on page 103.



Note: When the metadata query engine is active, the **Simple Search** page is called the **Simple Query** page and simple searches are called simple queries.

About simple searches

Simple searches work differently depending on the active search facility:

- While the metadata query engine is active, simple queries compare the specified text to the names of objects and, depending on how indexing is configured, the content of custom metadata that is well-formed XML. For information on indexing, see [“Indexes”](#) on page 6
- While either the HDDS search facility is active, simple searches compare the specified text to the names of objects, object content, and document titles and email subject lines where those are present in the extracted metadata.

To perform a simple search, you use the **Simple Search** page of the Search Console. On this page, you can type one or more separate words or phrases (called **search terms**) and select one of three kinds of comparison:

- **Any of these words** returns objects that match at least one of the specified search terms.
- **All of these words** returns objects that match every one of the specified search terms.
- **This exact phrase** returns objects that match a single word or phrase exactly as specified, including any white space embedded in it.

You can use wildcard characters to generate more matches for your search terms, as described in [“Wildcards”](#) on page 19. With **any** and **all**, you can also create Boolean criteria for more complex text-based searches, as described in [“Boolean criteria”](#) on page 21.

Search terms

For **any** and **all** searches, you can specify any number of search terms separated by spaces. For **exact** searches, all the text you enter is taken as one term, including any embedded spaces. Additionally, for **exact** searches, any number of consecutive embedded spaces in the term equals any number of consecutive spaces in the matching text.



Note: When comparing search terms to object content, the active search facility treats each portion of a word split by a line break, with or without a hyphen, as a separate word

Search terms are not case sensitive.

You can perform a simple search without specifying any search terms. Such a search returns all the indexed objects in each searchable namespace.

Here are sample terms for a simple search:

```
executive officer
```

Here's what a search with these terms returns:

- For an **any** search, all objects that contain at least one occurrence of the word *executive* or the word *officer*
- For an **all** search, all objects that contain at least one occurrence of the word *executive* and at least one occurrence of the word *officer*
- For an **exact** search, all objects that contain at least one occurrence of *executive* followed by *officer* with white space or special characters between the two words

Metadata query engine search terms

When you perform simple queries while the metadata query engine is active, you need to specify search terms that are complete alphabetic or complete numeric values. For example, a simple query that contains the search term *2012* finds the object named *q1_2012.ppt*. A simple query that contains the search term *12* does not find this object.

The metadata query engine treats strings of all-alphabetic characters and strings of all-numeric characters as search terms and treats all other characters as search term separators, both in the text you enter and in text being searched. Therefore, *test123* is treated as two search terms, *test* and *123*. Similarly, *left-handed* is treated as two separate search terms, *left* and *handed*. Therefore, an **any** search for *test* matches *test123* and an **any** search for *left* matches *left-handed*.

For **all** searches, however, the metadata query engine:

- Treats special characters as search term separators. For example, the search string *left-handed* consists of two search terms, *left* and *handed*
- Treats any text that is not all-alphabetic or all numeric and does not contain spaces as a phrase. For example, the search string *left-handed* is treated as a phrase, as if it were surrounded by quotation marks.

As a result, the search string *left-handed* matches these strings:

```
left-handed  
left handed
```

But does not match these strings:

```
handed left  
left right handed
```

HDDS search facility search terms

When you search for matching text while the HDDS search facility is active, special characters, except the asterisk (*), question mark (?), and backslash (\), are treated as spaces both in search terms and in text being searched. The HDDS search facility ignores leading and trailing spaces and special characters.

Directory paths and object names

A search term can be any part or all of a directory path after `rest` or `data` (HCP namespaces) or `fcfs_data` (default namespace) with or without an object name. For example, these search terms will all return the `coporate/HR/benefits_2` object:

```
coporate/HR  
HR  
HR/benefits_2  
benefits_2
```

This search term, however, will not return the `coporate/HR/benefits_2` object because it includes the `rest` directory:

```
rest/coporate/HR/benefits_2
```

Likewise, this search term will not return the `coporate/HR/benefits_2` object because it includes the `fcfs_data` directory:

```
fcfs_data/coporate/HR/benefits_2
```

Multiple exact phrases

To search for any or all of two or more exact phrases, you use quoted terms in an **any** or **all** search; for example:

```
"executive officer" "wetland permit"
```

Here's what a search like this returns:

- For an **any** search, all objects that contain a least one occurrence of the phrase *executive officer* or the phrase *wetland permit*
- For an **all** search, all objects that contain at least one occurrence of the phrase *executive officer* and at least one occurrence of the phrase *wetland permit*

Quotation marks are not meaningful in **exact** searches.

While the metadata query engine is active, you may want to use quoted terms to make your queries more precise.

Wildcards

The wildcard characters that you can use in search terms and the ways in which you can use them differ depending on the active search facility.

Wildcards with the metadata query engine

While the metadata query engine is active, you can use two wildcard characters:

- The question mark (?), which represents a single character
- The asterisk (*), which represents any number of consecutive printable characters, including none

With the metadata query engine, wildcard characters are valid at the end of a search term or within a search term. Wildcards are not valid at the beginning of a search term. That is, you cannot search for values that end with the text you specify. For example, the search terms in the first line below are valid; the one in the second line is not.

Valid: 201? **Valid:** S*day

Invalid: *day

You can use multiple wildcards in a search term. Two asterisks next to each other are treated as a single asterisk. Asterisks with characters between them are treated as separate wildcards. For example, the search term below matches the path `/Conflicts.txt`:

`c**nflict*`

Similarly, in an **all** query, the search term below matches any path with at least two directories preceding the object in the path:

```
/*/*/**
```

Two question marks next to each other are treated as separate wild cards. For example, the search term below does not match the path `/Conflicts.txt`:

```
c??nflict*
```

The question mark and asterisk characters do not function as wildcards when specified within double quotation marks (") or in an **exact** query.

Wildcards between text that the metadata query engine considers to be separate search terms are not valid. For example, the search string below does not match the path `test1.txt` because the wildcard is between an alphabetic character and a numeric character:

```
tes*1
```

Wildcards with the HDDS search facility

While the HDDS search facility is active, you can use the asterisk (*) as a wildcard character in a search term to represent any number of consecutive printable characters, including none. With the HDDS search facility, the wildcard character is valid only at the end of a term. That is, you can search only for words that begin with the text you specify. For example, the search term on the first line below is valid; the terms on the second line are not.

Valid: 201*

Invalid: S*day **Invalid:** *day

You can use the wildcard character at the end of any or all of the terms in an **any** or **all** search. For an **exact** search, you can use a wildcard only if the term doesn't include any embedded spaces. For example, the term below on the left is valid for an **exact** search; the one on the right is not.

Valid: principal* **Invalid:** principal exec*

You cannot use wildcards anywhere in quoted terms. Also, you cannot use a wildcard with a text string that has an underscore (_) anywhere in it.

Boolean criteria

You can create **any** and **all** searches that are more complex by using Boolean operations in the search criteria. To specify these operations, you use the plus and minus signs:

- A plus sign (+) prefixed to a search term means returned objects must contain that term.
- A minus sign (-) prefixed to a search term means returned objects cannot contain that term.

You can use plus signs and minus signs on multiple terms, with or without wildcards, and in any order. When used with a quoted term, the symbol comes before the opening quotation mark.

Boolean criteria in any searches

The table below describes how Boolean criteria work in **any** searches.

Symbol	Description	Examples
Plus sign (+)	Works like a logical AND. All returned objects must include the term with the plus sign.	Search terms: <i>+chief +executive</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i>
		This is equivalent to an all search using the same terms without plus signs.
		Search terms: <i>+chief +executive officer</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i> , regardless of whether they contain <i>officer</i> .
Minus sign (-)	Works like a logical NOT. Returned objects cannot include the term with the minus sign.	Search term: <i>-officer</i> Search results: Objects that do NOT contain <i>officer</i>
		Search terms: <i>+chief +executive -officer</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i> and do NOT contain <i>officer</i>
		Search terms: <i>chief executive -officer</i> Search results: Objects that contain <i>chief</i> or <i>executive</i> and do NOT contain <i>officer</i>

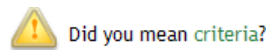
Boolean criteria in all searches

The table below describes how Boolean criteria work in **all** searches.

Symbol	Description	Examples
Plus sign (+)	Works like a logical AND. Returned objects must include the term with the plus sign.	Search terms: <i>+chief +executive</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i> This is equivalent to an all search with the same terms without plus signs.
		Search terms: <i>+chief +executive officer</i> Search results: Objects that contain <i>chief</i> AND <i>executive</i> AND <i>officer</i>
Minus sign (-)	Works like a logical NOT. Returned objects cannot include the term with the minus sign.	Search term: <i>-officer</i> Search results: Objects that do NOT contain <i>officer</i>
		Search terms: <i>+chief +executive -officer</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i> and do NOT contain <i>officer</i>
		Search terms: <i>chief executive -officer</i> Search results: Objects that contain both <i>chief</i> AND <i>executive</i> and do NOT contain <i>officer</i>

Did you mean?

With the HDDS search facility, if you specify a search term that's similar to other words or phrases in the returned objects, the Search Console may suggest a different search by asking, "Did you mean *suggested-term*?" This question appears below your search specification. In it, *suggested-term* is a hyperlink you can click on to reexecute the search with that term. For example, if you enter *criteri* as the term for your search, the Console may display:



The term the Search Console suggests may differ from the search term you specified in a variety of ways, including spelling and, for multiple words, phrasing.

Performing a simple search

To perform a simple search:

1. In the Search Console, click on the **Simple Search** tab.



Note: When the metadata query engine is active, the **Simple Search** tab is the **Simple Query** tab and the **Search** button is the **Query** button.

2. In the dropdown list on the **Simple Search** page, select the kind of results you want: **Any of these words**, **All of these words**, or **This exact phrase**. For an explanation of these options, see [“About simple searches”](#) on page 16.
3. In the text entry field, type the terms you want to search for. For information on valid terms, see [“Search terms”](#) on page 16.
4. Click on the **Search** button.

The Console displays the **Search Results** page. For more information on this page, see [Chapter 3, “Working with search results,”](#) on page 25.



Note: While the HDDS search facility is active, you need valid HDDS credentials to search. If your credentials are invalid, the Search Console displays a user authentication error when you try to perform a search. For information on specifying HDDS credentials, see [“Setting HDDS credentials”](#) on page 14.

Examples of simple searches

This section shows examples of simple searches.

Example 1: Search for any of four terms

To search for any of the terms *Europe*, *accounting*, *report*, *2011*, select **Any of these words** as the comparison type and enter this in the text field:

Europe accounting report 2011

Example 2: Search for any of two wildcarded terms

To search for any terms beginning with *prod* or *doc*, select **Any of these words** as the comparison type and enter this in the text field:

```
prod* doc*
```

Each term is wildcarded in order to find objects in which it occurs either as a whole word or as the beginning of a word, such as in *product*, *produces*, *documents*, or *documentation*.

Example 3: Search for all of three terms — one wildcarded, two not

To search for both of the terms *development* and *slides* and also terms beginning with *present*, select **All of these words** as the comparison type and enter this in the text field:

```
development present* slides
```

The second term is wildcarded in order to find objects in which it occurs either as a whole word or as the beginning of a word, such as in *presentation* or *presenter*.

Example 4: Search for an exact multiword term

To search for the exact term *chief financial officer*, select **This exact phrase** as the comparison type and enter this in the text field:

```
chief financial officer
```

Example 5: Search for all of two terms — one included, one excluded

To search for *image* but not *x-ray*, select **All of these words** as the comparison type and enter this in the text field:

```
+image -"x-ray"
```

Example 6: Search for an exact object name

To search for the object named *Q1_2012.pdf*, select **This exact phrase** as the comparison type and enter this in the text field:

```
Q1_2012.pdf
```

Working with search results

The **Search Results** page shows the list of objects returned for a query. For each object, this page shows specific metadata. Using options on this page, you can:

- Show additional object metadata
- Open the object to see its content
- Change the sort order of the listed objects
- Use filters to narrow down the list
- Hold objects
- Release objects
- Delete objects
- Purge objects
- Change object ownership (metadata query engine only)
- Add, replace, or delete ACLs for objects (metadata query engine only)
- Export the search results

This chapter describes the **Search Results** page and explains how to perform each of the activities listed above.



Note: While the metadata query engine is active, the **Search Results** page is called the **Query Results** page.

About search results

The HCP Search Console uses the **Search Results** page to list the objects that satisfy the criteria you specify for a search. This page has four areas of information:

- The criteria you specified for the query.
- Options for working with the search results.
- Filters for refining the search results.
- The list of returned objects. The objects are numbered for ease of reference.

The screenshot displays the HCP Search Console interface. At the top, there's a navigation bar with tabs for 'Simple Query', 'Structured Query', 'Advanced Query', 'Saved Queries', and 'Account Management'. The user is logged in as 'pdgrey'. Below the navigation bar, the 'Query Results' section is visible. A search bar contains the text 'Query'. To the right of the search bar are 'Show Query' and 'Hide Query' buttons. Below the search bar, there's a 'Result filters' table with columns for 'Retention' and 'Count'. The table lists various retention policies and their counts. To the right of the search bar, there's a 'Work Options' section with a 'page 1 of 1' indicator, a 'go to page' field, a 'Go' button, a 'save as' field, and a 'Save' button. Below the search bar, there's a list of search results. The first result is '/eco_systems/Topographical Maps.ppt' with an object URL and a change time. The second result is '/eco_systems/Alkaline Test Res' with an object URL and a change time. The third result is '/eco_systems/Land Mineral Compositions.doc' with an object URL and a change time. The fourth result is '/eco_systems/Ecological_Assessment.pdf' with an object URL and a change time. Each result has a 'Show details' button next to it.



Note: Under certain circumstances, the results of a search may be incomplete. To indicate this, the **Search Results** page shows this message:

Partial results.

If this message persists, see your HCP tenant administrator.

Initial search results for individual objects

The information initially returned for each object differs depending on the active search facility. Once you have retrieved the initial information you can ask for additional information for any given object.

For more instructions on viewing additional information, see [“Showing result details”](#) on page 29. For more information on metadata displayed in both the initial and expanded views, see [“Understanding returned metadata”](#) on page 29.

Initial results with the metadata query engine

While the metadata query engine is active, the **Search Results** page initially returns this information for each object in the search results:

- Object directory path and name.
- URL. This is the absolute path to the object. The location is the HCP system, and the root directory is `rest` for HCP namespaces or `fcfs_data` for the default namespace.

You can click on the URL to access the object.

- Change time.

Here’s an example of the information initially returned for an object while the metadata query engine is active:

1	/eco_systems/Topographical Maps.ppt
<small>Object URL: https://Wetlands.Region-1.hcp.example.com/rest/eco_systems/Topographical%20Maps.ppt</small>	
<small>Change time: 2014-05-30T12:15:06-0400</small>	
<small>Show details</small>	

The metadata query engine can return a maximum of ten thousand objects in response to a single query. If your query would return more than ten thousand objects, you should run a query with more precise search criteria to ensure that you get all the objects you want.

If you delete an object from the repository, the deleted object will be returned in the search results until it is removed from the metadata query engine index. The **Search Results** page returns the following information for such objects:

- Object directory path and name
- URL
- A message indicating that the object has been deleted

Initial results with the HDDS search facility

While the HDDS search facility is active, the **Search Results** page initially returns this information for each object in the search results:

- Title (if available) or object name.
- URL. This is the absolute path to the object. The location is the HCP system, and the root directory is `rest` for HCP namespaces or `fcfs_data` for the default namespace.

You can click on the URL to access the object.

- Size.
- Change time.

Here's an example of the information initially returned for an object while the HDDS search facility is active:

1 Topographical Maps.ppt

Object URL: https://Wetlands.Region-1.hcp.example.com/rest/eco_systems/Topographical%20Maps.ppt

Size: 669696 bytes Change time: 2014-05-30T12:15:06-0400 [Show details](#)

HDDS can return a maximum of ten thousand objects in response to a single query. If your search would return more than ten thousand objects, you should run a query with more precise search criteria to ensure that you get all the objects you want.

Viewing returned objects

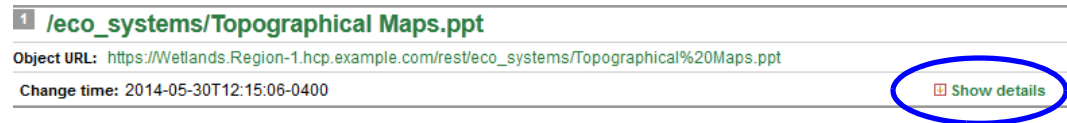
If you are logged into the Search Console as a tenant-level user, you can view the content of any object in the search results by clicking on the object name or URL. If you are logged into the Search Console as a system-level user, you do not have permission to view object content. In this case, when you click on the object, the Namespace Browser opens and displays the login page. After you log into the Namespace Browser, it displays the object content. If you then return to the Search Console, you need to log in again.

While the HDDS search facility is active, you can also view the content of an object by clicking on the object title (if available).

Depending on the browser you're using and the object type, you may be asked whether you want to open the object or save it to disk. When you view the object, it opens in the default application for that object type.

Showing result details

The **Search Results** page includes a **Show details** link for each returned object.



When you click on this link for an object, the **Search Results** page shows additional metadata. For information on this metadata, see [“Understanding returned metadata”](#) below.

To hide additional metadata after displaying it, click on the **Hide details** link.

Understanding returned metadata

The **Search Results** page shows metadata for each listed object. You can see some metadata initially. You can view the remaining metadata by showing result details.

The metadata shown varies depending on namespace type and object type. The **Search Results** page shows as much of this metadata as is available:

- For all objects:
 - **Size** — The object size, in bytes.
 - **Version ID** — The version ID of the object.
 - **Retention** — The retention setting for the object, shown as one of these:
 - A specific date and time in the future.
 - Deletion Prohibited.
 - Initial Unspecified.
 - A retention class.
 - Expired — This includes objects whose retention setting is either a specific date and time in the past or Deletion Allowed.

For more information on retention settings, see [“Retention settings”](#) on page 4.



Note: HCP cannot represent dates later than February 18, 2038, at 22:14:07. Later dates appear as **2/18/2038 22:14:07 (overflow)**.

- **Hold** — An indication of whether the object is on hold. While an object is on hold, it cannot be deleted under any circumstances until it is explicitly released, nor can its retention setting be changed.

While the metadata query engine is active, for an object that’s on hold, the retention setting is followed by | **HOLD**.

While the HDDS search facility is active, this setting is shown as either **Held** or **Not Held**.

- **Custom metadata annotation(s)** (metadata query engine only)
If the object has one or more custom metadata annotations, a list of the annotation names. You can click on any annotation name to view the content of that annotation. You can right-click on the link to copy the URL for the annotation.
- **Access control list URL** (metadata query engine only) — If the object has an ACL, the URL for that ACL. You can click on this URL to view the content.

The access control list URL consists of the object path followed by a `type=ac1` query parameter. For example, this URL specifies the ACL for an object named Q1_2012.ppt:

```
https://finance.europe.hcp.example.com/rest/presentations/  
Q1_2012.ppt?type=ac1
```

For information on the content of ACLs, see [“Access control lists”](#) on page 44.

- **Ingest time** — The date and time the object was created (that is, when the data was added to the namespace).
- **Access time** — The POSIX `atime` for the object. Users and applications can change this metadata.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

- **Modify time** — The POSIX **mtime** for the object. Users and applications can change this metadata.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

- **Change time** — The POSIX **ctime** for the object. This is the last time the object metadata changed.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

- **Hash value** — The cryptographic hash value for the object. The label for this value is the name of the cryptographic hash algorithm used to calculate the value.
- **DPL** — The number of copies of the object data HCP must maintain, as dictated by the service plan that applies to the namespace. DPL stands for data protection level.
- **Shredding** — The shred setting for the object, which indicates whether the object will be shredded when it's deleted. Shredding is the process of deleting an object and overwriting the place where it was stored in such a way that none of its data or metadata can be reconstructed.
- **Replication** — An indication of whether the object has been replicated to another HCP system.
- **MIME type** (HDDS search facility only) — The MIME type of the object content. For a list of the MIME types that the HDDS search facility recognizes for search operations, see the applicable HDDS documentation.
- **Format** (HDDS facility only) — The format of the object content. For a list of the content formats that the HDDS search facility recognizes for search operations, see the applicable HDDS documentation.
- **Language** (HDDS search facility only) — The language of the object content.
- **User ID** — The POSIX user ID of the object owner.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

- **Group ID** — The POSIX ID of the owning group.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

- **Permissions** — The object permissions in POSIX format and as an octal value.

While the metadata query engine is active, this metadata is shown for all objects. While the HDDS search facility is active, this metadata is shown only for objects in the default namespace.

For information on permission values, see [“POSIX permissions”](#) and [“Octal permission values”](#) below.

- **Owner** (metadata query engine only) — For objects in HCP namespaces, the user that owns the object. The owner is an HCP-specific metadata property and does not correspond to the POSIX UID of an object. This value has this format:

USER,location,username

For objects with no owner, this value has this format:

GROUP,location,all_users

In these formats:


- *location* is the location in which the user account of the object owner is defined. For objects with no owner, this is the tenant that owns the namespace that contains the object.

This value can be the name of an HCP tenant or the name of an Active Directory domain preceded by an at sign (@).

- *username* is the username of the object owner. This value can be the username of a user account that's defined in HCP or the username of an Active Directory user account. The username for an AD user account can be either the user principal name or the Security Accounts Manager (SAM) account name.

For objects in the default namespace, the value for owner is an empty string.

For objects in HCP namespaces that existed before the HCP system was upgraded from a pre-5.0 release and that have not subsequently had their owner changed, the value for owner is **nobody**. These objects effectively have no owner.

- With the HDDS search facility, for many document formats, such as Word documents and PDFs:
 - **Author** — The author of the object content
 - **Title** — The title of the object content
 - **Subject** — The subject of the object content
 - **Category** — The category of the object content
- With the HDDS search facility, for email objects:
 - The text in the email subject field
 - The message ID
 - **From** — The email address of the sender
 - **To** — The email addresses of the recipients
 - Attachments () — The names of any files attached to the email
 - **CC** — The exposed email addresses of additional recipients
 - **BCC** — The hidden email addresses of additional recipients
 - **Send date** — The date and time the email was sent

POSIX permissions

POSIX permissions are represented by three 3-character strings — one for the user identified by the POSIX user ID, one for the group identified by the POSIX group ID, and one for all others. From left to right, the positions in each string represent read (r), write (w), and execute (x). Each position has either the character that identifies the applicable permission, meaning the permission is allowed, or a hyphen (-), meaning the permission is denied. Each string is preceded by a hyphen (-).

For example, the string below means that the user identified by the POSIX user ID has all permissions for the object, the group identified by the POSIX group ID has read and execute permissions, and others have only read permission:

`-rwxr-xr--`

Octal permission values

Permissions are also represented by octal values. Each object has an octal permission value that's the sum of the octal permission values specified for the object owner, the owning group, and all other users not in that group. The table below shows the value that corresponds to each permission.

	Read	Write	Execute
Owner	400	200	100
Group	040	020	010
Other	004	002	001

For example, given the permissions below, the octal value is 755:

POSIX owner has read, write, and execute permissions (700).
POSIX group has read and execute permissions (050).
Other has read and execute permissions (005).

Paging through search results

The **Search Results** page shows both the number of objects in the search results and the number of pages required to list them, as well as how long the search took, in seconds. The number of pages depends on both the number of objects returned and the number of objects listed on each page.

By default, the Search Console displays ten objects per page. You can use the **results/page** option on the **Search Results** page to select a different number. The choices are 10, 20, 50, 75, 100, and 200.

When you select a number of objects, the **Search Results** page immediately changes the number of objects it lists on each page.

To page through the search results, you can do either of these:

- To go forward or backward one page at a time, click on the next or back arrow on either side of the page number information.

- To go to a specific page:
 1. In the **go to page** field, type the number of the page you want.
 2. Click on the **Go** button.

Sorting search results

The default order in which the **Search Results** page lists returned objects differs depending on the active search facility:

- While the metadata query engine is active, returned objects are listed in the order of the number of search criteria the object matches. Objects that match the same number of criteria are not listed in any specific order.
- While the HDDS search facility is active, returned objects are listed in order by their relevance to the search. Relevance is determined by factors such as the creation date of the object and the distance between occurrences of search terms in the object.

You can change the order in which returned objects are listed on the **Search Results** page by selecting a different sort order:

- While the metadata query engine is active, you can sort in ascending or descending order by:
 - Object size
 - Change time
 - Ingest time
 - Retention setting
- While the HDDS search facility is active, you can sort in ascending or descending order by:
 - Object size
 - Ingest time
 - Retention setting
 - For email only, the time the email was sent

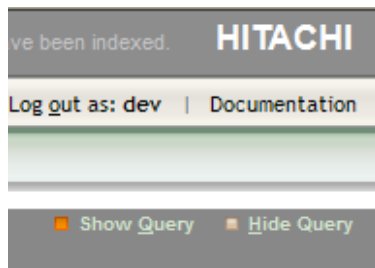
To change the sort order on the **Search Results** page, select the order you want in the **Sort results** field.

When you select a sort option, the **Search Results** page immediately reorders the list of objects.

Showing or hiding the query

When you perform a search, the criteria you used to form the query remain displayed on the **Search Results** page. You can hide or redisplay these criteria at any time:

- To hide the query criteria, click on **Hide Query** in the upper right portion of the page.



- To redisplay the query after hiding it, click on **Show Query**.

Filtering search results

The **Search Results** page includes several types of filters that you can use to refine the results of a search:

- Document format; that is, the format of the object content (HDDS search facility only)
- Retention setting (metadata query engine only)
- Retention class (metadata query engine only)
- Hold status (metadata query engine only)
- Namespace



Note: By default, the Metadata Query Engine Console does not display the filters. Instead, it displays a **Result Filters** option that you can click on to display the filters.

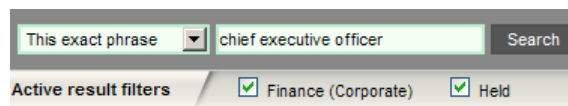
When you select a filter, the **Search Results** page immediately redisplay the search results with only the objects that match that filter.

You can apply multiple filters to the same list of objects to remove the objects that aren't of interest. For example if your results included objects in a namespace named finance, you could first refine the list by filtering for objects in the finance namespace, thereby excluding objects in all other namespaces. Then you could further refine the same list by filtering for objects currently on hold, thereby excluding objects that are not on hold. The resulting list would include only objects in the finance namespace that are on hold.



Note: HCP forms a URL with the filters you apply to a search. If you specify a large number of filters, the URL may become too long for the browser to handle. If this happens, the browser displays an error message.

The **Search Results** page shows each filter currently in effect as a checkbox option in the **Active result filters** area below the search criteria.



To remove a filter, deselect it in the **Active result filters** area. Again, the **Search Results** page immediately redisplay the search results, this time including the objects previously removed by that filter.

When you apply filters, they remain in effect until you clear the search results either by moving to a different page or, for structured searches only, by clicking on the **Clear** button. If you change the query criteria without first clearing the current search results, any filters currently in effect are applied to the results of the new search.



Note: Filtering does not change the order of the objects in the search results.

Filtering by document format

While the HDDS facility is active, the **Search Results** page lists the document formats of the objects in the search results, along with the number of returned objects in each format. The **document format** of an object is the format of its data content before that data was added to the namespace. Examples of document formats are PDF, JPEG, and XML.

The document formats on the **Search Results** page are listed in descending order of frequency. You can select only one document format to use as a filter in any given search.

When you select a document format, the **Search Results** page redisplay the search results, including only objects whose content is in the selected format. The name of the format appears in the **Active result filters** area.

Objects with an unrecognized format are listed as **Unknown format**. Objects whose content is larger than ten MB or whose compressed content expands to more than ten MB are also listed this way. Additionally, plain text objects that use EBCDIC encoding are listed this way.

For information on the document formats recognized by HDDS for search operations, see the applicable HDDS documentation.

Filtering by retention setting

While the metadata query engine is active, the **Search Results** page lists the possible object retention settings, along with the number of returned objects with each setting. The possible retention settings are **Initial Unspecified**, **Deletion Prohibited**, **Expired**, and **Not Expired**. **Expired** means the retention setting is either a specific date and time in the past or Deletion Allowed. **Not Expired** means the retention setting is a specific date and time in the future.

When an object is assigned to a retention class, HCP indexes it by that class but does not remove the preexisting retention setting from the index. Therefore, if an object is assigned to a retention class after it was stored, it is still included in the count for the retention setting that it initially had.



Note: The **Expired** object count includes all objects that are assigned to a retention class, even if their retention periods have not expired.

You can select only one retention setting to use as a filter in any given search.

When you select a retention setting, the **Search Results** page redisplay the search results, including only objects with the selected setting. The setting itself appears in the **Active result filters** area.

For more information on retention settings, see [“Retention settings”](#) on page 4.

Filtering by retention class

While the metadata query engine is active, the **Search Results** page lists retention classes to which objects in the search results belong, along with the number of returned objects in each class. The list includes only the one hundred classes that occur most often in the search results.



Tip: You can use a structured search to find objects that belong to any class, not just the one hundred most frequent classes.

The retention classes on the **Search Results** page are listed in descending order of frequency. You can select only one retention class to use as a filter in any given search.

When you select a retention class, the **Search Results** page redisplay the search results, including only objects in the selected class. The name of the retention class appears in the **Active result filters** area.

Filtering by hold status

While the metadata query engine is active, the **Search Results** page lists the possible hold statuses, **Held** or **Not Held**, along with the number of returned objects to which each setting applies.

When you select **Held** or **Not Held**, the **Search Results** page redisplay the search results, including only objects with the selected hold status. The setting itself appears in the **Active result filters** area.

Filtering by namespace

The **Search Results** page lists namespaces in which objects in the search results are located, along with the number of returned objects in each namespace. The name of the tenant that owns the namespace follows the namespace name, in parentheses. The list includes only the 15 namespaces that appear most often in the search results.



Tip: You can use a structured search to find objects in any indexed namespace for which you have search permission, not just the 15 that appear most frequently.

The namespaces on the **Search Results** page are listed in descending order of frequency. You can select only one namespace to use as a filter in any given search.

When you select a namespace, the **Search Results** page redisplay the search results, including only objects in the selected namespace. The name of the namespace appears in the **Active result filters** area.

Performing operations on returned objects

The Search Console allows you to perform operations on multiple objects at a time. You can use the Console to:

- Hold objects or release objects that are on hold.
- Delete or purge objects. Purge applies only to HCP namespaces, which can store multiple versions of objects. Purging an object deletes all versions of that object, including the current version. Deleting an object with multiple versions deletes only the current version.



Note: HCP can delete or purge up to 2,000 objects in a single operation. If the search results include more than that, only the first 2,000 are deleted or purged. For all other operations, the operation works on the entire set of search results.

- Perform privileged delete or privileged purge operations. These operations work on objects that are under retention as well as on those that are not. When you perform a privileged operation, you're required to specify a reason for it.
- While the metadata query engine is active, change object owners to an HCP user, an Active Directory user, or no owner. This operation applies only to objects in HCP namespaces.
- While the metadata query engine is active, set ACLs on objects. With this operation, the ACL you specify is added to any object without an ACL and replaces any existing ACLs on objects with ACLs. This operation applies only to objects in HCP namespaces.

For more information on ACLs, see ["Access control lists"](#) below.

- While the metadata query engine is active, update ACLs on objects. With this operation:
 - For objects without ACLs, the ACL you specify is set for those objects.
 - For objects with ACLs, the existing ACLs are updated with the grants in the ACL you specify.

If an existing ACL doesn't have a grant for a user or group that you specify, a grant for that user or group is added to the existing ACL. If an existing ACL already has a grant for a user or group that you specify, the grant in the existing ACL is replaced with the grant you specify for that user or group.

This operation applies only to objects in HCP namespaces.



Note: ACLs are enabled on a per-namespace basis. If ACLs are not enabled for a namespace and you try to set or update ACLs on objects in that namespace, the operation fails for those objects.

For any of the operations mentioned above to work on the objects in any given namespace:

- The namespace must be configured to allow the operation.
- You must have permission to perform the operation.

A requested operation works only on the objects in namespaces that support the operation and for which you have permission to perform the operation. Other objects in the search results are not affected.

You select the operation you want to perform from the **Control operations** field. In some cases, this field may show operations that are not allowed for some or all of the listed objects. If you try to perform an invalid operation on an object, the operation fails for that object.

Performing actions on returned objects causes the metadata query engine to update its index. However, even though these actions happen immediately, they may not be reflected in search results until the index update is complete.

While the HDDS search facility is active, changes caused by performing these operations are reflected in the next update of the index.

For more information on the indexes associated with each search facility, see ["Indexes"](#) on page 6.



Important: Before performing an operation on multiple objects, ensure that the search results include only the objects you want to affect. To narrow down the results of a search, you can use one or more filters, as well as specify additional search criteria. For information on filters, see ["Filtering search results"](#) on page 36.

To perform an operation on objects in the current search results, do one of these on the **Search Results** page:

- To place all the objects in the current search results on hold:
 1. In the **Control operations** field, select **Place results on hold**.
 2. In the window that opens, click on the **Continue** button.
- To release all held objects in the current search results:
 1. In the **Control operations** field, select **Release hold on results**.
 2. In the window that opens, click on the **Continue** button.
- To delete all the objects in the current search results except those that are under retention or on hold:
 1. In the **Control operations** field, select **Delete results**.
 2. In the window that opens, click on the **Continue** button.
- To delete all the objects in the current search results, including those that are under retention but excluding those that are on hold:
 1. In the **Control operations** field, select **Privileged Delete results**.
 2. In the field in the window that opens, type a reason for the delete operation. The reason text must be from one through 1,024 characters long and can contain any UTF-8 characters, including white space.
 3. Click on the **Continue** button.
- To purge all versions of all the objects in the current search results except those that are under retention or on hold:
 1. In the **Control operations** field, select **Purge results**.
 2. In the window that opens, click on the **Continue** button.
- To purge all versions of all the objects in the current search results, including those that are under retention but excluding those that are on hold:
 1. In the **Control operations** field, select **Privileged Purge results**.

2. In the field in the window that opens, type a reason for the purge operation. The reason text must be from one through 1,024 characters long and can contain any UTF-8 characters, including white space.
 3. Click on the **Continue** button.
- While the metadata query engine is active, to change the ownership of all objects in the current search results:
 1. In the **Control operations** field, select **Change owner of results**.
 2. In the window that opens:
 - To specify an HCP user account, type the username of the account in the **Username** field. Leave the **Domain** field blank.
 - To specify an Active Directory user, type the username of an AD user account in the **Username** field and the domain in which the account is defined in the **Domain** field.

The username can be either the user principal name or the Security Accounts Manager (SAM) account name for the AD user account.
 - To specify that the objects have no owner, leave both the **Username** and **Domain** fields blank.
 3. Click on the **Continue** button.
 - While the metadata query engine is active, to set an ACL on each object in the current search results:
 1. In the **Control operations** field, select **Set ACL on results**.
 2. In the field in the window that opens, type the ACL XML. This XML can be at most 8,192 characters long.

For information on specifying ACL XML, see ["XML format"](#) on page 45.
 3. Click on the **Continue** button.
 - While the metadata query engine is active, to update the existing ACLs for all objects in the current search results:
 1. In the **Control operations** field, select **Update ACL on results**.

2. In the field in the window that opens, type the ACL XML. This XML can be at most 8,192 characters long.
3. Click on the **Continue** button.

When you click on the **Continue** button, HCP immediately begins the requested operation and opens a new window in which it shows its progress. For each object, the window shows whether the operation succeeded or failed. The sample window below shows objects that have successfully been placed on hold.

Applying hold to object 12 of 12	
Status	Path
Success	/operations/HCP_HTTPAPI.ppt
Success	/status/bulletin10.pdf
Success	/operations/UsingANamespace.pdf
Success	/HCP/fire.jpg
Success	/operations/FileSys.htm
Success	/operations/Metadata.htm
Success	/HCP/earth.jpg
Success	/HCP/SavedQueries.doc
Success	/HCP/FileFormats.doc
Success	/HCP/wind.jpg
Success	/HCP/advancedSearchTips.doc
Success	/HCP/SearchResults.doc
Status	Path

100% Close

Access control lists

An access control list grants permissions for individual objects to specified users or groups of users. ACLs are specified in XML format.

An ACL contains up to one thousand **access control entries (ACEs)**. Each ACE specifies one user or one group of users and the permissions granted to that user or group. In the ACL body, an ACE is represented by the **grant** element.

The permissions you grant to users and groups in an ACL must be equal to or less than your permissions for the object. You cannot use an ACL to grant a permission that you don't already have.

ACL permissions

The following table lists the permissions you can grant through an ACL along with the operations they let you perform.

Permission	Operations
Read	<ul style="list-style-type: none"> Retrieve objects and system metadata Check for and retrieve custom metadata
Read_ACL	<ul style="list-style-type: none"> Check for and retrieve ACLs
Write	<ul style="list-style-type: none"> Add objects Create directories Set and change system and custom metadata
Write_ACL	<ul style="list-style-type: none"> Set and change ACLs
Delete	<ul style="list-style-type: none"> Delete objects, empty directories, custom metadata, and ACLs

XML format

The body of an ACL has the XML elements shown below. The elements at each hierarchical level can occur in any order.

```
<?xml version="1.0" ?>
<accessControlList>
  <grant>
    <grantee>
      <type>(user | group)</type>
      <name>(hcp-username |
active-directory-username |
active-directory-group-name |
all_users |
authenticated)
</name>
      If the name element specifies an Active Directory user or
group, include the domain entry
      <domain>active-directory-domain</domain>
    </grantee>
    <permissions>
      Any combination of the following
      <permission>READ</permission>
      <permission>READ_ACL</permission>
      <permission>WRITE</permission>
      <permission>WRITE_ACL</permission>
      <permission>DELETE</permission>
    </permissions>
  </grant>
  Up to 999 additional grant elements
</accessControlList>
```

Here is an example of an ACL that grants read and write permission to all users and grants read, write, and delete permission to the tenant-level HCP user with the username lgreen:

```
<?xml version="1.0" ?>
<accessControlList>
  <grant>
    <grantee>
      <name>all_users</name>
      <type>group</type>
    </grantee>
    <permissions>
      <permission>READ</permission>
      <permission>WRITE</permission>
    </permissions>
  </grant>
  <grant>
    <grantee>
      <name>lgreen</name>
      <type>user</type>
    </grantee>
    <permissions>
      <permission>READ</permission>
      <permission>WRITE</permission>
      <permission>DELETE</permission>
    </permissions>
  </grant>
</accessControlList>
```

XML elements

The XML for an ACL has a single top-level **accessControlList** element. All ACLs must contain this element. The XML for an ACL also contains the elements listed in the table below.

Element	Valid values	Description
grant	N/A	Container for the grantee and permissions elements. Identifies one user or one group of users and the permissions granted to that user or group. An ACL can contain up to one thousand grant elements.
grantee	N/A	Child of the grant element. Container for the name , type , and domain elements.

(Continued)

Element	Valid values	Description
name	One of: <ul style="list-style-type: none"> • The username of a tenant-level user account that's defined in HCP. • The username of an Active Directory user account. This can be either the user principal name or the Security Accounts Manager (SAM) account name for the AD user account. • The name of an Active Directory group. • all_users. • authenticated. 	Specifies the user or group of users to which the ACL grants permissions. HCP has two special groups that you can specify in an ACL: <ul style="list-style-type: none"> • all_users — Grants permissions to all users, including those that access the namespace anonymously • authenticated — Grants permissions to all authenticated users To grant permissions to one of these special groups, specify group in the type element and omit the domain element. The Search Console returns an error if a given user or group is specified in more than one name element.
type	One of: <ul style="list-style-type: none"> • user — The name element specifies an HCP or Active Directory user account • group — The name element specifies an Active Directory group, all_users, or authenticated 	Specifies the type of the value specified in the name element. The Search Console returns an error if the value of the type element doesn't correspond to the value of the name element.
domain	The name of an Active Directory domain	Specifies the Active Directory domain that contains the user account or group specified in the name element. This element is required if the name element specifies an Active Directory user account or group. This element is invalid if the name element specifies the username of a user account that's defined in HCP.
permissions	N/A	Container for any combination of permission entries.

(Continued)

Element	Valid values	Description
permission	One of: <ul style="list-style-type: none"> • READ • READ_ACL • WRITE • WRITE_ACL • DELETE 	Child of permissions entry. Specifies a permission granted to the user or group specified in the name entry. For more information on these permissions, see "ACL permissions" on page 45.

Exporting search results

You can export the results of a search as a comma-separated-values (CSV) or XML file for use with other applications. For example, you could use a CSV or XML file containing exported search results to generate a list of selected objects for a regulatory body. Or, you could use an export file as input to an application that analyzes namespace content.



Note: While the metadata query engine is active, you can export up to 102,000 search results. If the search results include more than that, only 102,000 are exported.

For each object in the search results, an export file contains either the object URL alone (metadata query engine only) or the URL along with a specific subset of the object metadata. The file does not contain the object content. However, you can use the object URL to retrieve the object content in a separate operation.

When the export file includes object metadata, the values for each object in the file are, in order:

- Object URL
- Object size, in bytes
- Content format (always blank when the metadata query engine is active)
- Cryptographic hash algorithm used to calculate the cryptographic hash value of the object

- Cryptographic hash value of the object



Note: If HCP has not yet calculated the cryptographic hash value for an object, the value in the export file is an empty string.

The same metadata is exported for each object, regardless of whether its details are showing on the **Search Results** page and regardless of which search facility is active.

To export the current search results, select the format you want in the **Export results** field. The available formats are:

- While the metadata query engine is active:
 - To export only the object URLs:
 - **XML format (short)**
 - **CSV format (short)**
 - To export both the object URLs and the object metadata:
 - **XML format (detailed)**
 - **CSV format (detailed)**



Note: Exporting only object URLs is significantly faster than exporting both the URLs and the object metadata. Additionally, when exporting both the URLs and metadata for a large number of objects, the resulting export file may not contain all the expected objects.

- While the HDDS search facility is active:
 - **XML format**
 - **CSV format**

Depending on the browser you're using and the file type you've selected, you may be asked whether you want to open or save the export file.

Export files are named `results.selected-type`, where *selected-type* is either CSV or XML. To prevent a subsequent export operation from overwriting an exported file, you should give the file a new name that identifies its contents (for example, `held_objects_06082012.xml`).

Working with structured searches

Structured searches are one of the three types of searches you can perform from the HCP Search Console. A structured search can be based on metadata values as well as on text matching. You can specify multiple criteria for structured searches and indicate whether objects need to satisfy any or all of them.

This chapter provides instructions for performing structured searches. It explains the rules for specifying the search criteria and the options that determine whether objects are included in the search results. It also includes several examples.

Once you have the results of a structured search, you can filter and export them. For information on these activities, see [Chapter 3, “Working with search results,”](#) on page 25. You can also save the search criteria as a reusable query. For information on saving search criteria, see [Chapter 6, “Working with saved queries,”](#) on page 103.

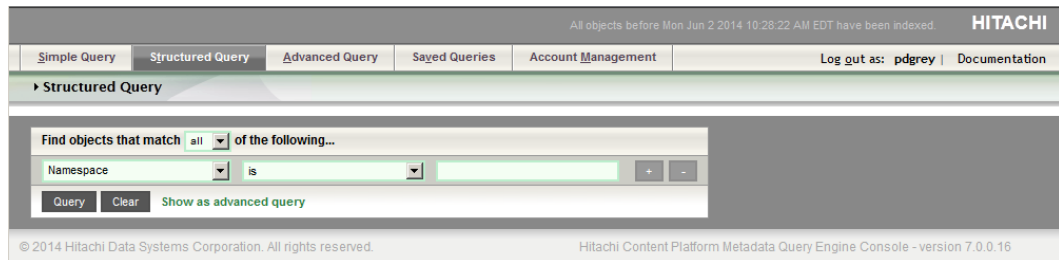


Note: While the metadata query engine is active, structured searches are called structured queries.

About structured searches

Structured searches work by comparing criteria you specify to various properties of objects. These criteria can be based on object metadata as well as on object content. You can also specify whether objects need to meet **any** or **all** of the specified criteria.

To perform a structured search, you use the **Structured Search** page of the Search Console.

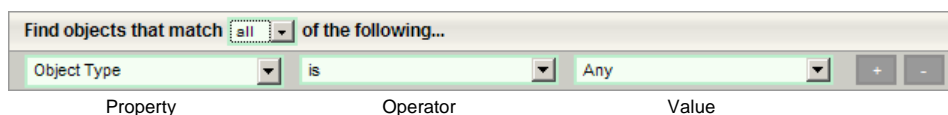


Note: While the metadata query engine is active, the **Structured Search** page is called the **Structured Query** page.

Within a single structured search, you can specify multiple criteria. With the exception of the content class property (metadata query engine only), each criterion has the form:

property operator value

On the **Structured Search** page, you select both properties and operators from dropdown lists. Depending on the property, you either select or type the value.



Examples of criteria for structured searches are:

Object Size	less than	2049
Namespace	is	finance (europe)
Title	contains	budget proposal
Shredding	is not	Shred on Delete
Ingest Time	before	2011-11-30T14:55:55-0500

For a complete list of the properties, operators, and values for structured searches, see [“Properties for structured searches”](#) below.

After creating a structured search, you can change it to an advanced search by clicking on the **Show as advanced** link. The **Advanced Search** page opens and shows the specified search criteria translated into the search query language. For more information on advanced searches, see [Chapter 5, “Working with advanced searches,”](#) on page 71.



Note: After displaying a structured search as an advanced search, you cannot change it back to a structured search. You can, however, use your browser back button to return to the page showing the structured search.

Properties for structured searches

The properties available for structured searches depend on the active search facility. The tables in the following sections present the properties you can use for structured queries with the metadata query engine and structured searches with the HDDS search facility.

Properties for structured queries with the metadata query engine

The table below shows the properties you can use for structured queries when the metadata query engine is active. For each property, the table shows the available operators and the values you can select or type. For descriptions of the properties in the table, see [“Understanding returned metadata”](#) on page 29.

Property	Operators	Values
<i>General</i>		
Namespace	is is not	<i>Name of a namespace searchable by the user</i> To specify a value for this property, type the name of a namespace in the value field and then click on a namespace name in the dropdown list. Each namespace name is followed by the name of the owning tenant in parentheses.
Object Path	contains does not contain contains phrase does not contain phrase	<i>Part or all of an object path or name, not including rest or data (HCP namespaces) or fcfs_data (default namespace)</i>
Object Name	is is not	<i>Part or all of an object name</i>

(Continued)

Property	Operators	Values
Security		
ACL	does does not	Exist
Owner	is user is not user	<i>User currently logged into the Metadata Query Engine Console</i> These operators do not appear if the user is logged in using a system-level user account.
	is is not	<i>Specified user</i> For information on specifying a value for this property, see “Specifying an owner” on page 58.
Grant	contains does not contain	One of: <ul style="list-style-type: none"> <i>Specified set of permissions</i> <i>Specified set of permissions and user or group to which those permissions are granted</i> <p>This property returns objects with ACLs that contain the specified grant.</p> <p>For information on specifying a value for this property, see “Specifying an ACL grant” on page 59.</p>
Dates		
Retention ¹	is value is not value	Expired Not Expired Deletion Prohibited Initial Unspecified
	is date is not date before date after date	<i>Specified date²</i>
Retention Class	is is not	<i>Selected retention class</i> No Retention Class
	contains does not contain	<i>Part or all of a retention class name</i>
Ingest Time	is is not before after	<i>Specified date²</i> <i>Selected date</i> \$now

(Continued)

Property	Operators	Values
Change Time	is is not before after	<i>Specified date</i> ² <i>Selected date</i> \$now
Access Time	is is not before after	<i>Specified date</i> ² <i>Selected date</i> \$now
Miscellaneous		
Size	is is not greater than less than	<i>Object size, in bytes</i> This is the exact size of the object content. For example, to search for a two KB object, you need to specify 2048, not 2000.
Retention Hold	is is not	Held
Shredding	is is not	Shred on Delete
Hash	is is not	<i>Cryptographic hash algorithm followed by a space and the cryptographic hash value for an object</i>
Custom Metadata	does does not	Exist
Custom Metadata Annotation	is is not	<i>The name of a custom metadata annotation</i>
Custom Metadata Content	contains does not contain contains phrase does not contain phrase	<i>One or more search terms</i> ³ If full text of custom metadata is indexed, this property returns the objects associated with the matching custom metadata.
Replication Collision	is is not	True False If the value of this property is True, the property returns objects that are flagged as replication collisions. If the value is False, the property returns objects that are not flagged as replication collisions.

(Continued)

Property	Operators	Values
Content Classes		
Content class names ⁴	N/A	N/A
1. For information on retention settings, see “Retention settings” on page 4. 2. For valid date formats, see “Specifying dates” on page 64. For information on the different metadata time properties, see “Understanding returned metadata” on page 29. 3. Search terms containing Boolean operators in the form of plus and minus signs are not valid in structured queries. For more information on specifying search terms, see “Search terms” on page 16. 4. For information on the content class list and its use, see “Content classes” below.		

Content classes

The **Content Classes** section displays a list of the content classes defined for the tenant. When you select a content class, an additional field appears in the query area, as shown below.

The screenshot shows a search query builder interface. At the top, it says "Find objects that match all of the following...". Below this, there are four fields in a row: "Bookstore" (labeled "Content class"), "price" (labeled "Content property"), "greater than" (labeled "Operator"), and "29.99" (labeled "Value"). There are plus and minus buttons to the right of the "29.99" field.

The dropdown list for the added field contains the content properties in the selected content class.

Each content property has a data type, such as integer or string, that determines the operators and values you can specify. The table below lists the possible data types.

Data type	Operators	Values
Boolean	is is not	True (<i>matches 1 or strings starting with T or t</i>) False (<i>matches all other values</i>)
	does does not	exist
Datetime	is is not before after	<i>Specified date</i> ¹
	does does not	exist

(Continued)

Data type	Operators	Values
Float	is is not greater than less than greater than or equals less than or equals	<i>Floating point number.</i> Floating point numbers can include a positive or negative sign, digits, a decimal point, and an exponent that starts with E. Here are some sample floating point numbers: 1328.978 -3746.12 954.33E5
	does does not	exist
Integer	is is not greater than less than greater than or equals less than or equals	<i>Positive or negative integer</i>
	does does not	exist
String	is is not	<i>Text string</i>
	does does not	exist
Tokenized	contains does not contain contains phrase does not contain phrase	<i>One or more search terms</i>
	does does not	exist
1. For valid datetime formats, see "Specifying dates" on page 64.		

The **does** and **does not** operators test for the existence of the specified content property. That is, **does exist** condition matches only objects with custom metadata that have the specified content property. One use for the **does exist** condition is to limit the scope of the **is not** and **does not contain** operators.


The **is not** and **does not contain** operators match all objects that don't have the content property value specified by the value field. As a result, the criterion matches objects without the content property, and even those with no custom metadata at all. To make sure that a query matches only objects with custom metadata identified by the content property, use two criteria for the content property, one with an **is not** or **does not contain** operator and one with a **does** operator with the **exist** value.

Specifying an owner

With the **Owner** property, you can specify an owner using the **Find Objects by Owner** window or you can type a value. You can specify an owner only when the operator is **is** or **is not**.

Using the Find Objects by Owner window

To specify an owner using the **Find Objects by Owner** window:

1. Click on the select owner control () next to the value field.
2. In the **Find Objects by Owner** window:
 - To query for objects owned by a specified user:
 - In the **Tenant or Domain** section, type the name of the tenant or AD domain in which the user account of the object owner is defined. If you type an AD domain, precede it with an at sign (@).
 - In the **Owner Type** section, select **User**.
 - In the **Owner Name** section, type the username of the user account of the object owner.
 - To query for objects that have no owner:
 - In the **Tenant or Domain** section, type the name of the tenant that owns the namespace that contains the object.
 - In the **Owner Type** section, select **Anonymous**.
 - To query for objects that existed before the HCP system was upgraded from a pre-5.0 release and that have not subsequently had their owner changed, in the **Owner Type** section, select **nobody**.
3. Click on the **Submit** button. On the **Structured Query** page, a value appears in the value field for the **Owner** property.

Typing an owner value


Values for the **Owner** property for structured queries use the same formats as values for the **owner** property for advanced queries. For information on these formats, see [“Properties for advanced queries with the metadata query engine”](#) on page 82.

Specifying an ACL grant

With the **Grant** property, you can specify an ACL grant using the **Find Objects by Permissions** window or you can type a value.

Using the Find Objects by Permissions window

To specify an ACL grant using the **Find Objects by Permissions** window:

1. Click on the select permissions control () next to the value field.
2. In the **Find Objects by Permissions** window:
 - To query for objects with ACLs that grant permissions to a specified user:
 - In the **Grantee has these permissions** section, select any combination of **Read**, **Write**, **Delete**, **Read ACL**, and **Write ACL**. ACLs on returned objects can grant more permissions than the ones you select.
 - If you do not select any permissions, ACLs on returned objects grant any combination of permissions.
 - In the **Tenant or Domain** section, type the name of the HCP tenant or AD domain in which the user account of the grantee is defined. If you type an AD domain, precede it with an at sign (@).
 - In the **Grantee Type** section, select **User**.
 - In the **Grantee Name** section, type the username of the grantee.
 - To query for objects with ACLs that grant permissions to the user account you’re using to access the Console:
 - In the **Grantee has these permissions** section, select any combination of **Read**, **Write**, **Delete**, **Read ACL**, and **Write ACL**. ACLs on returned objects can grant more permissions than the ones you select.

If you do not select any permissions, ACLs on returned objects grant any combination of permissions.

- In the **Grantee Type** section, select **User**.
 - Leave the **Tenant or Domain** and **Grantee Name** fields blank.
- To query for objects with ACLs that grant permissions to an AD group:
- In the **Grantee has these permissions** section, select any combination of **Read**, **Write**, **Delete**, **Read ACL**, and **Write ACL**. ACLs on returned objects can grant more permissions than the ones you select.

If you do not select any permissions, ACLs on returned objects grant any combination of permissions.

- In the **Tenant or Domain** section, type the name of the AD domain in which the group is defined, preceded by an at sign (@).
 - In the **Grantee Type** section, select **Group**.
 - In the **Grantee Name** section, type the name of the AD group.
- To query for objects with ACLs that grant permissions to all users, including those that access the namespace anonymously:
- In the **Grantee has these permissions** section, select any combination of **Read**, **Write**, **Delete**, **Read ACL**, and **Write ACL**. ACLs on returned objects can grant more permissions than the ones you select.

If you do not select any permissions, ACLs on returned objects grant any combination of permissions.

- In the **Tenant or Domain** section, type the name of an HCP tenant.
- In the **Grantee Type** section, select **Anonymous**.

- To query for objects with ACLs that grant permissions to all authenticated users:
 - In the **Grantee has these permissions** section, select any combination of **Read**, **Write**, **Delete**, **Read ACL**, and **Write ACL**. ACLs on returned objects can grant more permissions than the ones you select.

If you do not select any permissions, ACLs on returned objects grant any combination of permissions.

 - In the **Tenant or Domain** section, type the name of an HCP tenant.
 - In the **Grantee Type** section, select **Group**.
 - In the **Grantee Name** section, type **authenticated**. This value is case sensitive.
3. Click on the **Submit** button. On the **Structured Query** page, a value appears in the value field for the **Grant** property.

Typing a grant value

Values for the **Grant** property for structured queries use the same formats as values for the **aclGrant** property for advanced queries. For information on these formats, see [“aclGrant property”](#) on page 93.

Properties for structured searches with the HDDS search facility

The table below presents the properties you can use for structured searches when the HDDS search facility is active. For each property, the table shows the available operators and the values you can select or type. For descriptions of the properties in the table, see [“Understanding returned metadata”](#) on page 29.

Property	Operators	Values
<i>General</i>		
Object Type	is is not contains does not contain	Any Document Email Image Multimedia XML Unknown

(Continued)

Property	Operators	Values
Object Content	contains all of contains any of contains exactly does not contain all of does not contain any of does not contain exactly	<i>One or more search terms</i> ¹ This property is the equivalent of a simple search.
Object Path	contains does not contain	<i>Part or all of an object path or name, not including rest or data (HCP namespaces) or fcfs_data (default namespace)</i>
Object Format	contains does not contain	<i>File name extension of a recognized document format</i>
Namespace	is is not	<i>Name of a namespace searchable by the user</i> To specify a value for this property, type the name of a namespace in the value field and then click on a namespace name in the dropdown list. Each namespace name is followed by the name of the owning tenant in parentheses.
Security		
UID ²	is is not greater than less than	<i>Integer greater than or equal to 0 (zero)</i> This is the POSIX user ID of the object owner.
GID ²	is is not greater than less than	<i>Integer greater than or equal to 0 (zero)</i> This is the POSIX ID of the owning group for the object.
Permissions ²	is is not greater than less than	<i>Octal number greater than or equal to 0 (zero)</i> ³
Dates		
Retention ⁴	is value is not value is date is not date before date after date	Deletion Prohibited Expired Not Expired <i>Specified date</i> ⁵ <i>Selected date</i>
Retention Class	is is not contains does not contain	<i>Part or all of a retention class name</i>

(Continued)

Property	Operators	Values
Ingest Time	is is not before after	<i>Specified date</i> ⁵ <i>Selected date</i> \$now
Change Time ²	is is not before after	<i>Specified date</i> ⁵ <i>Selected date</i> \$now
Modification Time ²	is is not before after	<i>Specified date</i> ⁵ <i>Selected date</i> \$now
Access Time ²	is is not before after	<i>Specified date</i> ⁵ <i>Selected date</i> \$now
Miscellaneous		
Size	is is not greater than less than	<i>Object size, in bytes</i> This is the exact size of the object content. For example, to search for a two KB object, you need to specify 2048, not 2000.
Retention Hold	is is not	Held
Shredding	is is not	Shred on Delete
Hash	is is not	<i>Cryptographic hash value for an object</i>
Language	is is not	<i>Selected language</i>
Character Set	contains does not contain	<i>Part or all of the name of the character set or encoding used in the document or unknown</i> Use unknown for documents for which HCP cannot determine the character set.
Email		
Email To	contains does not contain	<i>Part or all of an email recipient name</i>
Email From	contains does not contain	<i>Part or all of an email sender name</i>

(Continued)


Property	Operators	Values
Email CC	contains does not contain	<i>Part or all of an email cc name</i>
Email BCC	contains does not contain	<i>Part or all of an email bcc name</i>
Email Subject	contains does not contain	<i>Part or all of an email subject</i>
Email Sent Date	is is not before after	<i>Specified date⁵</i> <i>Selected date</i> <i>\$now</i>
Email Message ID	contains does not contain	<i>Part or all of an email message ID</i>
Email Attachment Name	contains does not contain	<i>Part or all of the name of a file attached to an email</i>
Documents		
Author	contains does not contain	<i>Part or all of a document author's name</i>
Subject	contains does not contain	<i>Part or all of a document subject</i>
Title	contains does not contain	<i>Part or all of a document title</i>
Category	contains does not contain	<i>Part or all of a document category name</i>
<p>1. Search terms in structured searches cannot include Boolean operators. For more information on specifying search terms, see “Search terms” on page 16.</p> <p>2. This property applies only to objects in the default namespace.</p> <p>3. For information on octal values for permissions, see “Octal permission values” on page 34.</p> <p>4. For information on retention settings, see “Retention settings” on page 4.</p> <p>5. For valid date formats, see “Specifying dates” below. For information on the different metadata time properties, see “Understanding returned metadata” on page 29.</p>		

Specifying dates

When a metadata property requires a date value, you can either select the date from a calendar, select the current date and time, or type a value. The first two options appear when you select the metadata property.

Selecting a calendar date

To select a date from a calendar:

1. Click on the calendar icon () next to the value field.
2. In the calendar window that appears, either click on the date you want or click on **Today**. To display the next or previous month, click on the forward or back pointer, respectively, in the area showing the month and year.

The selected date appears in the value field in this format:

YYYY-MM-DD

In this format, *YYYY* is the four-digit year, *MM* is the two-digit month, and *DD* is the two-digit day. For example, if you select the day shown on the calendar above, the value field shows:

2011-11-05

Typing a date

You can use these three formats to specify the date and, optionally, time for a metadata property:

YYYY-MM-DD
YYYY-MM-DDThh:mm:ss
YYYY-MM-DDThh:mm:ssZ

In these formats:


- *YYYY* is the four-digit year, *MM* is the two-digit month, and *DD* is the two-digit day.
- *hh* is hours on a 24-hour clock, *mm* is minutes, and *ss* is seconds.
- **z** means the time is in UTC.

The first two of these formats are assumed to be in the same time zone as the HCP time setting. The third one is in UTC.

Here's an example of a date and time in the second format shown above:

2011-11-04T14:00:00

Selecting the current date and time

To select the current date and time, click on the icon () to the right of the calendar icon. The value field shows:

\$now

Each time you run a saved query that uses the **\$now** variable, the variable is replaced by the current date and time.


Performing a structured search

To perform a structured search:


1. In the Search Console, click on the **Structured Search** tab.



Note: When the metadata query engine is active, the **Structured Search** tab is called the **Structured Query** tab and the **Search** button is called the **Query** button.

2. In the **Find objects that match** field on the **Structured Search** page:
 - Select **any** to return objects that satisfy at least one of the criteria you specify.
 - Select **all** to return objects that satisfy every one of the criteria you specify.
3. Specify the first search criterion:
 - a. From the property dropdown list, select the property for the criterion.
 - b. If you selected a content class in step a, select a content property from the content property dropdown list.
 - c. From the operator dropdown list, select the operator for the criterion.
 - d. In the value field, either select or type the value for the criterion.
4. For each additional criterion, if any:
 - a. Click on the add button () to the right of the criterion after which you want to insert the new criterion.

- b. Repeat the actions in [step 3](#) above.
5. Click on the **Search** button.

To remove a criterion from a structured search, click on the remove button () to the right of that criterion. To see the new results, click on the **Search** button.

Examples of structured searches

This section shows examples of criteria for structured searches.

Example 1: Search for any of three using the same property

This example shows an **any** search for objects with a retention class of HlthReg-107, HlthReg-225, or HlthReg-312. On the **Structured Search** page, the search criteria look like this:

Find objects that match any of the following...				
Retention Class	is	HlthReg-107	+	-
Retention Class	is	HlthReg-225	+	-
Retention Class	is	HlthReg-312	+	-

Example 2: Search for all five, including a time span

This example shows an **all** search for objects in a namespace named Finance that expire between December 31, 2014 and January 1, 2016, are not on hold, and will be shredded on delete. On the **Structured Search** page, the search criteria look like this:

Find objects that match all of the following...				
Namespace	is	Finance (Europe)	+	-
Retention	before date	2016-01-01	+	-
Retention	after date	2014-12-31	+	-
Retention Hold	is not	Held	+	-
Shredding	is	Shred on Delete	+	-

Example 3: Search for held objects in a retention class

This example shows an **all** search for objects in the finance namespace owned by the europe tenant that belong to the SEC-17a retention class and are on hold. On the **Structured Search** page, the search criteria look like this:

Find objects that match all of the following...					
Namespace	is	finance (europe)	+	-	
Retention Class	is	SEC-17a	+	-	
Retention Hold	is	Held	+	-	

Example 4: Search for objects with specified text in their custom metadata (metadata query engine only)

This example shows an **all** search for objects that have custom metadata that contains *x-ray*. On the **Structured Search** page, the search criterion looks like this:

Find objects that match all of the following...					
Custom Metadata Content	contains	x-ray	+	-	

Example 5: Search for objects with a specified ACL grant (metadata query engine only)

This example shows an **all** search for objects with ACLs that grant delete permission to the user pdgrey, whose user account is defined in the europe tenant. On the **Structured Search** page, the search criterion looks like this:

Find objects that match all of the following...					
Grant	is	d,USER,europe,pdgrey	+	-	

Example 6: Search using a content property (metadata query engine only)

This example shows a query using the Sales content property of the Regions content class. The Sales content property has the Float data type. The query will find any object with custom metadata that identifies the region as having aggregate sales of at least \$3,000,000.00. To search for a floating point number, you need to type only the numeric value, without a dollar sign or commas. Because the query is for a whole dollar figure, the decimal value is optional and has been omitted.

Find objects that match all of the following...					
Regions	Sales	greater than or equals	30000000	+	-

Example 7: Search for an extracted metadata property (HDDS search facility only)

This example shows an **all** search for objects that have an extracted metadata property named **Security** set to *classified* and contain either *environmental impact* or *impact statement*. On the **Structured Search** page, the search criteria look like this:

Find objects that match all of the following...			
Key == Value	Security	classified	+ -
Object Content	contains any of	"environmental impact" "impact sta	+ -

Example 8: Search for expired objects of a particular type (HDDS search facility only)

This example shows an **all** search for image objects that have expired. On the **Structured Search** page, the search criteria look like this:

Find objects that match all of the following...			
Object Type	is	Image	+ -
Retention	is value	Expired	+ -

Working with advanced searches

Advanced searches are one of the three types of searches you can perform from the HCP Search Console. For an advanced search, you can specify queries equivalent to those for simple and structured searches. However, in an advanced query, you can combine criteria with various operators to refine your searches in more ways.

This chapter provides instructions for performing advanced searches. It provides an introduction to specifying advanced queries and contains many examples.

Once you have the results of an advanced search, you can filter and export them. For information on these activities, see [Chapter 3, “Working with search results.”](#) on page 25. You can also save the search criteria as a reusable query. For information on saving search criteria, see [Chapter 6, “Working with saved queries.”](#) on page 103.

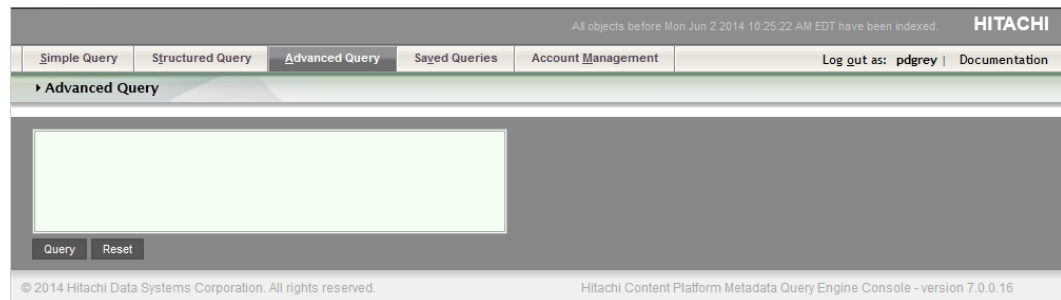


Note: While the metadata query engine is active, advanced searches are called advanced queries.

About advanced searches

Advanced searches provide more flexibility than both simple and structured searches. They enable you not only to search for text and metadata with multiple search criteria but also to nest and combine those criteria by using parentheses and Boolean and other operators.

To perform an advanced search, you use the **Advanced Query** page of the Search Console. On this page, you write your own query (called an **advanced query**) using a query language. The language you use depends on the active search facility.



Tip: You can generate advanced queries from the **Structured Search** page. To do this, construct the query on the **Structured Search** page and then click on the **Show as advanced search** link. The **Advanced Search** page opens and shows the specified search criteria translated into the applicable query language.



Note: While the metadata query engine is active, the **Advanced Search** page is called the **Advanced Query** page and the **Show as advanced search** link is called the **Show as advanced query** link.

Criteria for advanced queries

The format you use to specify criteria for advanced queries depends on the active search facility.

Criteria for advanced queries with the metadata query engine

This section describes the formats for the criteria you use to construct advanced queries while the metadata query engine is active. For more information on the query language used with the metadata query engine, see the applicable Apache Solr documentation at <http://lucene.apache.org/solr>.

Query expressions

With the metadata query engine, query expressions have this format:

```
[+|-]criteria [[+|-]criteria]. . .
```

In this expression, [+|-] is an optional Boolean operator and *criteria* is one of:

- A simple criterion as described in [“Criterion format”](#) below.
- One or more criteria in parentheses, in this format:

```
([+|-]criteria [[+|-]criteria]. . .)
```

In this expression *criteria* can be a simple criterion or one or more criteria in parentheses.

For example, here is one possible query expression:

```
-(namespace:"finance.europe") +(retention:0 index:1)
```

Query expressions can contain only valid UTF-8 characters.

Criterion format

The format for a simple advanced criterion is:

```
property:value
```

For example, this expression finds objects that are on hold:

```
hold:true
```

When querying for a value that's a negative number, enclose the value in double quotation marks ("). For example, this query expression finds objects with the retention setting -2:

```
retention:"-2"
```

The special criterion *: * finds all objects in all namespaces searchable by the user.

Most of the properties for advanced queries correspond to those for structured queries, but the property names differ, and in some cases, the values are expressed differently. For a list of advanced query properties, see [“Properties for advanced queries with the metadata query engine”](#) on page 82. For information on the property you use to query for objects based on the content of ACLs, see [“aclGrant property”](#) on page 93. For information on the property you use to query for objects based on the content of custom metadata, see [“customMetadataContent property”](#) on page 90.

Boolean operators

You can precede a criterion or an individual property value with one of these Boolean operators:

- Plus sign (+) — Objects in the result set must contain the criterion or value following the plus sign.
- Minus sign (-) — Objects in the result set must not contain the criterion or value following the minus sign.

For example, this query expression finds objects that are not on hold:

```
-hold:true
```

Text-based property values

The **objectPath** and **customMetadataContent** properties and tokenized content properties match text in the object path or custom metadata.

Text-based property values are text strings consisting of one or more UTF-8 characters. The string is interpreted as one or more search terms, where each search term is a sequence of either alphabetic or numeric characters. All other characters, except wildcards, are treated as term separators.

For example, the string *product123* contains two search terms — *product* and *123*. A query based on this string finds objects for which the specified property contains at least one of *product* and *123*.

Search terms match only complete alphabetic or numeric strings in paths or custom metadata. For example, the text strings *AnnualReport, 2012*, and *AnnualReport_2012* match the object named *AnnualReport_2012.pdf*. A query expression with a text string such as *Annual* or *201* does not match this object.

Similarly, to query for objects with a path or custom metadata that contains the word *product*, you need to use the complete word *product* as the text string. A query expression with a text string such as *prod* does not match objects with a path or custom metadata containing *product*.

Common words such as *a* and *is* are indexed and are valid search terms. For example, a query containing the text string *A3534* matches all objects with paths and custom metadata that contain the word *a*.

Search terms are not case sensitive. Therefore, the strings *AnnualReport*, *Annualreport*, and *annualreport* are equivalent.

Common words such as *a* and *is* are valid search terms. For example, a query containing the text string *A3534* matches all objects with paths and custom metadata that contain the word *a*. To prevent such a match, use a phrase as described below.

To specify a negative number as a criterion, enclose the value in double quotation marks, for example, "-3121".

To specify a phrase as a criterion, put the text string in double quotation marks. A phrase matches paths and custom metadata that contain each of the alphabetic or numeric search terms within the quotation marks in the specified order, but any special characters or white space between the individual strings is ignored. For example, the phrase "*product 123*" matches custom metadata that contains any of these strings:

```
product 123
product123
product_123
```

Multiple values for a single property

A criterion can specify multiple values for a single property. To specify multiple values, use this format:

```
property:([+|-]value [[+|-]value]...)
```

In this format, the parentheses are required.

For example, this query expression finds objects in either the HlthReg-107 or HlthReg-224 retention class:

```
retentionClass:(HlthReg-107 HlthReg-224)
```

This query expression finds objects with custom metadata that contains the string *finance* but not the string *foreign*.

```
customMetadataContent:(+finance -foreign)
```

When you specify multiple values for a single property, you can precede each value with a Boolean operator. For example, this query expression finds objects whose paths contain *sales* but not *2012*:

```
objectPath:(+sales -2012)
```

When you specify multiple values for a single property, you can combine values that are preceded by Boolean operators with values that do not have Boolean operators. In this case, objects that match the property values that are not preceded by Boolean operators may or may not appear in the result set, but objects that match the terms without Boolean operators are sorted higher in the query results than objects that don't match those terms.

For example, this query expression finds objects that have custom metadata that contains both the terms *quarterly report* and *accounting department* or only the term *quarterly report*:

```
customMetadataContent:(+"quarterly report" "accounting department")
```

Objects that contain both terms are sorted higher in the query results.

Value ranges

You can query based on ranges of values for properties with numeric, string, or date data types. These properties are **accessTime**, **accessTimeString**, **changeTimeString**, **dpl**, **hash**, **hashScheme**, **ingestTime**, **ingestTimeString**, **retention**, **retentionClass**, **retentionString**, **size**, **updateTime**, **updateTimeString**, and **utf8Name**. You can also query based on ranges for content properties with numeric, string or date data types.

Criteria that query for a range of values for a single property can have either of these formats:

- For a range that includes the start and end values:

```
property:[start-value TO end-value]
```

In this format, the square brackets are required.

For example, this query expression finds objects that were ingested from 0800 through 0900 UTC on March 1, 2012, inclusive:

```
ingestTimeString:[2012-03-01T08:00:00-0000 TO 2012-03-01T09:00:00-0000]
```

- For a range that does not include the start or end values:

```
property:{start-value TO end-value}
```

In this format, the curly braces are required.

For example, this query expression finds objects that have names that occur alphabetically between *Brown_Lee.xls* and *Green_Chris.xls*, exclusive of those values:

```
utf8Name:{Brown_Lee.xls TO Green_Chris.xls}
```



Note: utf8Name property values are case sensitive and are ordered according to the positions of characters in the UTF-8 character table.

You can mix square brackets and curly braces in an expression. For example, this query expression finds objects that were ingested from 0800 to 0900 UTC on March 1, 2012, including objects that were ingested at 0800 but excluding objects that were ingested at 0900:

```
ingestTimeString:[2012-03-01T08:00:00-0000 TO 2012-03-01T09:00:00-0000}
```

When querying for a range of property values, you can precede the whole criterion with a Boolean operator but you cannot precede an individual value with a Boolean operator. For example, the query expression on the first line below is valid; the criterion on the second line is not:

Valid: +retentionString:[2013-07-01T00:00:00 TO 2013-07-31T00:00:00]

Invalid: retentionString:[+2013-07-01T00:00:00 TO 2013-07-31T00:00:00]

When querying for a range of values, you can replace a value with an asterisk (*) to specify an unlimited range. For example, this query expression finds objects with a size equal to or greater than two thousand bytes:

```
size:[2000 TO *]
```

This query expression finds objects with change times before 9:00 AM, March 1, 2012 in the local time zone of the HCP system:

```
changeTimeString:[* TO 2012-03-01T09:00:00]
```

Wildcard characters

You can use the question mark (?) and asterisk (*) wildcard characters when specifying values for these object properties:

- **customMetadataContent**
- **hash**
- **hashScheme**
- **retentionClass**
- **objectPath**
- **utf8Name**
- Content properties

For example, this criterion finds objects assigned to any retention class starting with HlthReg, such as HlthReg-107 or HlthReg-224:

```
retentionClass:HlthReg*
```

For more information about specifying wildcards in property values, see [“Wildcards with the metadata query engine”](#) on page 19.

Query expression considerations

The metadata query engine interprets query expressions as follows:

- If the query expression consists of a single criterion without a Boolean operator, objects in the result set must meet the criterion. For example, this query expression finds objects with custom metadata that contains the string *accounting*:

```
customMetadataContent:accounting
```

The expression above is equivalent to this expression that uses the plus sign (+):

```
+customMetadataContent:accounting
```

- If a query expression consists of multiple criteria without Boolean operators, objects in the result set must meet at least one of the criteria. For example, this query expression finds objects that have a retention setting of Deletion Allowed or are on hold or will be shredded on deletion:

```
retention:0 hold:true shred:true
```

- The greater the number of criteria an object meets, the higher the object is in the default sort order. For example, with this query expression, objects that match all three criteria are sorted higher than those that match only two, and those that match only two are sorted higher than those that match only one:

```
retention:0 hold:true shred:true
```

- If a plus sign precedes some search criteria but not others, the criteria that are not preceded by a plus sign have no effect on which objects are returned. For example, this query expression finds objects that have a `utf8Name` property with the value `Q1_2012.ppt`, regardless of whether they are in the finance namespace owned by the europe tenant:

```
+utf8Name:"Q1_2012.ppt" namespace:"finance.europe"
```

Objects that match the namespace criterion are sorted higher in the result set than those that do not match it.

- If a minus sign precedes some search criteria but not others and no criteria have plus signs, the query expression finds objects that do not match the criteria preceded by the minus signs and do match at least one of the criteria without a Boolean operator. For example, this query expression finds objects that are not in the finance namespace owned by the europe tenant and can be deleted.

```
-(namespace:"finance.europe") retention:0
```

This query finds objects that are not in the finance namespace owned by the tenant europe and either can be deleted or can be indexed (or both):

```
-namespace:"finance.europe" retention:0 index:1
```

- If a Boolean operator precedes an opening parenthesis, that operator applies to the entire set of criteria inside the parentheses, not the individual criteria. For example, this query expression finds objects that are on hold or have a retention setting of Deletion Prohibited:

```
+(hold:true retention:-1)
```

- These characters have special meaning when specified in query expressions:

```
? * + - ( ) [ ] { } " :
```

To specify one of these characters without special meaning in a query expression, precede the character with a backslash (\). To specify a backslash in a query expression, precede the backslash with another backslash.

Criteria for advanced queries with the HDDS search facility

This section describes the criteria you use to construct advanced queries while the HDDS search facility is active. For more information on the query language used with this search facility, see the applicable HDDS documentation.

Basic criteria

The basic formats for criteria for advanced queries with the HDDS search facility are:

```
property:value
```

```
[property:](int32|float|double|datetime|string|phrase|starts-with|ends-with)(value[, option]...)
```

```
property:(and|or|not|andnot|any|range|rank|near|onear)(value[, value]...)[[, option]...]
```

You can also precede any of these formats with the **not** operator followed by the rest of the criterion in parentheses.

To search for object content, omit the *property*: entry.

One of the options you can specify is **mode**. For object content searches this can be **any**, **all**, or **phrase**, for example, mode="all".

Here are some examples of basic criteria:

- This advanced query returns objects for which the POSIX user ID of the owner is 54:

```
uid:54
```

- This advanced query returns all email objects:

```
contenttype:string("message/rfc822")
```

- This advanced query returns all objects that are equal to or larger than 25,000 bytes:

```
size:range(25000, max, from="GE")
```

- This advanced query returns objects that are not email from `rsilver@example.com` or `pcornflower@example.com`:

```
not(emailfrom:or(rsilver@example.com, pcornflower@example.com))
```

- This advanced query returns objects with content that includes the exact phrase "account value":

```
string("account value" mode="phrase")
```

Most of the properties for advanced queries correspond to those for structured searches, but the property names differ, and in some cases, the values are expressed differently. For a list of advanced query properties, see [“Properties for advanced queries with the metadata query engine”](#) on page 82 and [“Properties for advanced queries with the HDDS search facility”](#) on page 97.

Complex criteria

For complex criteria, you can use these formats:

```
criterion [(and|or|andnot|any|rank|near|onear) criterion]...
```

```
criterion [(and|or|andnot|any|rank|near|onear)(criterion)]...
```

In these formats, *criterion* is any basic or complex criterion.

As with basic criteria, you can precede these formats with the **not** operator followed by the rest of the complex criterion in parentheses.

Here are some examples of complex criteria:

- This advanced query returns only email objects that are not from `rsilver@example.com` or `pcornflower@example.com`:

```
contenttype:string("message/rfc822") and  
not(emailfrom:(rsilver@example.com or pcornflower@example.com))
```

- This advanced query returns objects that expire before February 1, 2015, and for which either the UID is less than or equal to 56 or the UID is greater than 56 and the GID is not less than 30:

```
expirationtime:range(1970-01-01T00:00:10, 2015-02-01T00:00:00) and  
or(uid:range(min, 56, to="LE"),  
andnot(uid:range(56, max), gid:range(min,30, to="LT")))
```

Properties for advanced queries

The properties you can use for advanced queries differ depending on the active search facility.

Properties for advanced queries with the metadata query engine

The table below presents the properties you can use in advanced queries while the metadata query engine is active. For each property, the table shows the case-sensitive property name, the data type, a description, an example, and the equivalent structured search property, if any. For information on specifying datetime values, see ["Typing a date"](#) on page 65.



Note: You cannot use **\$now** for datetime values in advanced queries.

Property	Data type	Description	Example	Structured query equivalent
<code>accessTime</code>	Long	The value of the POSIX atime attribute for the object, in seconds since January 1, 1970 at 00:00:00 UTC.	<code>accessTime:[1312156800 TO 1312243200]</code>	Access Time

(Continued)

Property	Data type	Description	Example	Structured query equivalent
accessTimeString¹	Datetime	<p>The value of the POSIX atime attribute for the object, in ISO 8601 format:</p> <p><i>YYYY-MM-DDThh:mm:ssZ</i></p> <p><i>z</i> represents the offset from UTC, in this format:</p> <p><i>(+ -)hhmm</i></p> <p>For example, 2011-11-16T14:27:20-0500 represents the 20th second into 2:27 PM, November 16, 2011, EST.</p>	<pre>accessTimeString: [2011-08-01T00:00:00-0400 TO 2011-08-02T00:00:00-0400]</pre>	N/A
acl²	Boolean	<p>An indication of whether the object has an ACL. Valid values are:</p> <ul style="list-style-type: none"> true — The object has an ACL. false — The object does not have an ACL. <p>This value is always false for objects in the default namespace.</p>	<pre>acl:true</pre>	ACL
aclGrant²	String	<p>ACL content.</p> <p>For information on the values you can specify for this property and examples of advanced queries that specify this property, see “aclGrant property” on page 93.</p>	<pre>aclGrant:"Ww,USER, europe,silver"</pre>	Grant
changeTimeMilliseconds	String	<p>The time at which the object last changed. For delete, dispose, prune, and purge records, this is the time when the operation was performed on the object.</p> <p>The value is the time in milliseconds since January 1, 1970, at 00:00:00 UTC, followed by a period and a two-digit suffix. The suffix ensures that the change times for versions of an object are unique.</p> <p>This property corresponds to the POSIX ctime attribute for the object.</p>	<pre>changeTimeMilliseconds: [1311206400.00 TO 1311292800.00]</pre>	Change Time

(Continued)

Property	Data type	Description	Example	Structured query equivalent
changeTimeString¹	Datetime	The time at which the object last changed in ISO 8601 format: <i>YYYY-MM-DDThh:mm:ssZ</i> For more information on this format, see the description of the accessTimeString property. This property corresponds to the POSIX ctime attribute for the object.	changeTimeString: [2011-07-21T00:00:00-0400 TO 2011-07-22T00:00:00-0400]	N/A
customMetadata²	Boolean	An indication of whether the object has custom metadata. Valid values are: <ul style="list-style-type: none"> true — The object has custom metadata. false — The object does not have custom metadata. 	customMetadata:true	Custom Metadata
customMetadataAnnotation	String	One or more comma-delimited annotation names. Annotation names are case-sensitive.	customMetadataAnnotation: EasternRegion	Custom Metadata Annotation
customMetadataContent³	String	Custom metadata content. For information on the values you can specify for this property and examples of advanced queries that use this property, see " customMetadataContent property " below.	customMetadataContent: city.Bath.city	Custom Metadata Content
dpl	Integer	The DPL for the object.	dpl:2	N/A

(Continued)

Property	Data type	Description	Example	Structured query equivalent
hash ³	String	<p>The cryptographic hash algorithm used to compute the hash value of the object, followed by a space and the hash value of the object.</p> <p>The values you specify for both hash algorithms and values are case sensitive. You need to use uppercase letters when specifying these values.</p> <p>If you do not specify wildcard characters in the value for this property, you need to enclose the entire value for this property in double quotation marks.</p> <p>When using wildcard characters with this object property, instead of a space, separate the hash algorithm and the hash value with a wildcard character. In this case, do not enclose the value for this property in double quotation marks.</p>	hash:"SHA-256 9B6D8A603659B447..."	Hash
hashScheme ³	String	<p>The cryptographic hash algorithm the namespace uses.</p> <p>The value you specify for this property is case sensitive. Do not enclose this value in quotation marks.</p>	hashScheme:SHA-256	N/A
hold ²	Boolean	<p>An indication of whether the object is currently on hold. Valid values are:</p> <ul style="list-style-type: none"> true — The object is on hold. false — The object is not on hold. 	hold:false	Retention Hold
index ²	Boolean	<p>An indication of which parts of the object are indexed. Valid values are:</p> <ul style="list-style-type: none"> true — All metadata, including any custom metadata and ACL, is indexed. false — Only system metadata and ACLs are indexed. 	index:true	N/A
ingestTime	Long	The time at which HCP stored the object, in seconds since January 1, 1970, at 00:00:00 UTC.	ingestTime:[1309478400 TO 1312156800]	Ingest Time

(Continued)

Property	Data type	Description	Example	Structured query equivalent
ingestTimeString¹	Datetime	The time at which HCP stored the object, in ISO 8601 format: <i>YYYY-MM-DDThh:mm:ssZ</i> For more information on this format, see the description of the accessTimeString property.	ingestTimeString: [2011-07-01T00:00:00-0400 TO 2011-07-02T00:00:00-0400]	N/A
namespace²	String	The name of the namespace that contains the object, in this format: <i>namespace-name.tenant-name</i> The values you specify for this property are not case sensitive.	namespace:finance.europe	Namespace
objectPath³	String	The path to the object following <i>rest</i> , <i>data</i> , or <i>fcfs_data</i> . The values you specify for this property are not case sensitive and do not need to begin with a forward slash.	objectPath:"/Corporate Employees/45_JaneDoe.xls"	Object Path

(Continued)

Property	Data type	Description	Example	Structured query equivalent
owner ²	String	<p>For objects in HCP namespaces, the user that owns the object. Valid values are:</p> <ul style="list-style-type: none"> • For objects that have an owner: <ul style="list-style-type: none"> USER,<i>location</i>,<i>username</i> • For objects with no owner: <ul style="list-style-type: none"> GROUP,<i>location</i>,all_users • For objects that existed before the HCP system was upgraded from a pre-5.0 release and that have not subsequently had their owner changed: <ul style="list-style-type: none"> nobody <p>In these values:</p> <ul style="list-style-type: none"> • <i>location</i> is the location in which the user account for the object owner is defined. This can be: <ul style="list-style-type: none"> - The name of an HCP tenant - The internal ID of an HCP tenant - An Active Directory domain preceded by an at sign (@) <p>Internal IDs of HCP tenants are not returned in query results.</p> <p>For objects with no owner, <i>location</i> is the name of the tenant that owns the namespace in which the object is stored.</p>	owner:"USER,europe,pdgrey"	Owner

(Continued)

Property	Data type	Description	Example	Structured query equivalent
owner² (continued)	String	<ul style="list-style-type: none"> <i>username</i> is the name of the user that owns the object. This can be: <ul style="list-style-type: none"> The username of a user account that's defined in HCP. The username of an Active Directory user account. This can be either the user principal name or the Security Accounts Manager (SAM) account name for the user account. <p>This object property is not returned for objects in the default namespace.</p> <p>If you are accessing the Search Console with a tenant-level user account that's defined in HCP, you can specify this advanced query to find objects owned by that user account:</p> <pre>owner:USER</pre> <p>These considerations apply when you specify the owner property:</p> <ul style="list-style-type: none"> The entire value must be enclosed in double quotation marks (""). The asterisk (*) wildcard is not supported. The <i>location</i> values you specify are not case sensitive. The <i>username</i> values you specify, except for all_users, are not case sensitive. USER, GROUP, and nobody are case sensitive. 		Owner
replication Collision	Boolean	<p>An indication of whether the object is flagged as a replication collision. Valid values are:</p> <ul style="list-style-type: none"> true — The object is flagged as a replication collision. false — The object is not flagged as a replication collision. 	replicationCollision:true	Replication Collision

(Continued)

Property	Data type	Description	Example	Structured query equivalent
retention	Long	The end of the retention period for the object, in seconds since January 1, 1970, at 00:00:00 UTC. This value can also be: <ul style="list-style-type: none"> • 0 — Deletion Allowed • -1 — Deletion Prohibited • -2 — Initial Unspecified 	retention:[1421107200 TO 1421193600]	Retention
retention Class³	String	The name of the retention class assigned to the object. The values you specify for this property are case sensitive.	retentionClass:HLthReg-107	Retention Class
retention String¹	String	The end of the retention period for this object in ISO 8601 format: <i>YYYY-MM-DDThh:mm:ssZ</i> For more information on this format, see the description of the accessTimeString property. This value can also be one of these special values: <ul style="list-style-type: none"> • Deletion Allowed • Deletion Prohibited • Initial Unspecified These special values are case sensitive.	retentionString: "Initial Unspecified"	N/A
shred²	Boolean	An indication of whether the object will be shredded after it is deleted. Valid values are: <ul style="list-style-type: none"> • true — The object will be shredded. • false — The object will not be shredded. 	shred:true	Shredding
size	Long	Object size, in bytes. This is the exact size of the object content. For example, to search for a two KB object, you need to specify 2048, not 2000.	size:[2000 TO 3000]	Size
updateTime	Long	The value of the POSIX mtime attribute for the object, in seconds since January 1, 1970, at 00:00:00: UTC.	updateTime:[1309478400 TO 1312156800]	N/A

(Continued)

Property	Data type	Description	Example	Structured query equivalent
updateTimeString¹	Datetime	The value of the POSIX mtime attribute for the object, in ISO 8601 format: <i>YYYY-MM-DDThh:mm:ssZ</i> For more information on this format, see the description of the accessTimeString property.	updateTimeString: [2011-07-01T00:00:00-0400 TO 2011-08-01T00:00:00-0400]	N/A
utf8Name³	String	The UTF-8-encoded name of the object. The values you specify for this property are case sensitive.	utf8Name:23_John_Doe.xls	Object Name
version	Unsigned long	The version ID of the object. All objects, including those in the default namespace, have version IDs. When you specify the version ID of an old version, HCP returns information about the current version of the object.	version:83920048912257	N/A
<i>Content property name⁴</i>	<i>The content property data type</i>	A content property defined for the tenant.	+(sales:[3000000.00 TO *])	Content property name

1. HCP maintains the time for this property as a value that includes milliseconds, but the property format uses seconds. As a result, specifying a single datetime value for this property in a query does not return all expected results. Instead, do one of these:

- Specify a range of values for the property.
- Specify the corresponding property with the type long. For example, instead of specifying **ingestTimeString:2012-04-01T00:00:00**, specify **ingestTime:1333238400**.

2. You cannot specify a range of values for this property.

3. You can use the asterisk (*) and question mark (?) wildcard characters when specifying values for this property.

4. For information on content properties see ["Content properties"](#) on page 96.

customMetadataContent property

To search for objects based on the full-text content of custom metadata, you specify the **customMetadataContent** property in an advanced query. Criteria that use this property find objects only in namespaces that have full-text indexing of custom metadata enabled.

When custom metadata is indexed for full-text searching, the XML is treated as text, not as a structured content. Similarly, the **customMetadataContent** property value is treated as text. Therefore, the rules described in ["Text-based property values"](#) on page 74 apply to the property value.



Tip: If you frequently search for values of a particular element or attribute, use a content property that corresponds to that element or attribute. Content property searches are more efficient than **customMetadataContent** searches. If the content property you want does not exist, ask your tenant administrator to create it.

To use the **customMetadataContent** property to query for any element name, attribute name, element value, or attribute value that matches a text string, use an advanced query with this format:

```
customMetadataContent: text-string
```

If the text string consists of more than a single string of alphabetic or numeric characters, you need to enclose the entire value in double quotation marks (").

To query for a combination of elements and attribute names and values, use an advanced query with either of these formats:

```
customMetadataContent: "element-name.  
attribute-name.attribute-value...element-value.element-name"
```

```
<![CDATA[customMetadataContent: "<element-name  
attribute-name=attribute-value...>element-value</element-name>"]]>
```

The two formats are equivalent. The first format is simpler. The second format uses well-formed XML.

When using the second format, enclose both the property and text string in the square brackets that mark the CDATA content, and enclose the text string in double quotation marks ("). The outer square brackets ([]) are also required, as are the outside angle brackets and exclamation mark.

To search for the value of a specific element, specify every attribute and attribute value for the element, not just the element name and value.

To search for the value of a specific attribute, regardless of which element it applies to, use this format:

```
customMetadataContent: "attribute-name.attribute-value"
```

You can use the asterisk (*) and question mark (?) wildcard characters when specifying **customMetadataContent** property values that are not in quotation marks. For information on specifying these wildcards, see [“Wildcards with the metadata query engine”](#) on page 19.

Here is some sample custom metadata XML that you might want to search:

```
<?xml version="1.0" ?>
<weather>
  <location>Boston</location>
  <date>20121130</date>
  <duration unit="secs">180</duration>
  <temp>
    <temp_high unit="deg_F">51</temp_high>
    <temp_low unit="deg_F">39</temp_low>
  </temp>
  <velocity>
    <velocity_high unit="mph">17</velocity_high>
    <velocity_low unit="mph">14</velocity_low>
  </velocity>
  <conditions>partly cloudy</conditions>
</weather>
```

Here are some examples of advanced queries that use the **customMetadataContent** property to search the XML above:

- This advanced query finds objects that have custom metadata with an element name, element value, attribute name, or attribute value that contains *Boston*:

```
customMetadataContent:Boston
```

- This advanced query finds objects that have custom metadata that contains the **location** element with a value of *Boston*:

```
customMetadataContent:"location.Boston.location"
```

- This advanced query finds objects that have custom metadata that contains the **velocity_high** element with a value of *17* and the **unit** attribute with a value of *mph*:

```
customMetadataContent:"velocity_high.unit.mph.17.velocity_high"
```

- This advanced query finds objects that have custom metadata that contains the **conditions** element with a value of *partly cloudy*:

```
customMetadataContent:"conditions.partly cloudy.conditions"
```


- This advanced query finds objects that have custom metadata that contains the **date** element with a value of *20121130*:

```
<![CDATA[customMetadataContent:"<date>20121130</date>"]]>
```

- This advanced query finds objects that have custom metadata that contains the **temp_high** element with a value of *31* and the **unit** attribute with a value of *deg_F*:

```
<![CDATA[customMetadataContent:"<temp_high unit=deg_F>31
</temp_high>"]]>
```

aclGrant property

To query for objects based on the content of ACLs, you specify the **aclGrant** property in an advanced query. Valid values for this property have these formats:

```
"permissions"
```

```
"permissions,USER[,location,username]"
```

```
"permissions,GROUP,location,(ad-group-name|all_users|authenticated)"
```

In these formats:

- *permissions* is one or more of these with no space between them:
 - **R** — Read_ACL
 - **r** — Read
 - **W** — Write_ACL
 - **w** — Write
 - **d** — Delete

If you specify only *permissions* as the **aclGrant** property value, the advanced query finds objects with ACLs that grant the specified permissions to any user or group. For information on specifying permissions, see ["Specifying permissions"](#) below.

- **USER** is required when querying for objects with ACLs that grant permissions to a specified user.

If you are accessing the Metadata Query Engine Console with a tenant-level user account that's defined in HCP, you can find objects that have ACLs that grant the specified permissions to that user account by specifying only a permissions value and **USER**.

- **GROUP** is required when querying for objects with ACLs that grant permissions to a specific group of users.
- *location* is the location in which the specified user or group is defined. Valid values are either:
 - The name of an HCP tenant
 - The name of an AD domain preceded by an at sign (@)

If the value for the **aclGrant** property includes **all_users** or **authenticated**, *location* must be the name of an HCP tenant.

- *username* is the name of a user to which the matching ACLs grant the specified permissions. Valid values are:
 - The username for a user account that's defined in HCP.
 - The username for an AD user account. This can be either the user principal name or the Security Accounts Manager (SAM) account name for the AD user account.
- *ad-group-name* is the name of an AD group to which the matching ACLs grant the specified permissions.
- **all_users** represents all users.
- **authenticated** represents all authenticated users.

Specifying permissions

The permissions in an **aclGrant** property value must be specified in this order

R, r, W, w, d

For example, to find objects that have ACLs that grant write and write_ACL permissions, and only those permissions, to the user rsilver who is defined in the europe tenant, specify this advanced query:

```
aclGrant:"Ww,USER,europe,rsilver"
```

You can replace one or more permissions with the asterisk (*) wildcard character. When you do so, you still need to specify permissions in the correct order.

When you specify both an asterisk and one or more permission values, the Console returns objects with ACLs that grant only the permissions you explicitly specify or that grant the permissions you explicitly specify and any permissions represented by the asterisk. For example, this advanced query returns objects with ACLs that grant read, read_ACL, write, and write_ACL permissions and may also grant delete permission:

```
aclGrant:"RrWw*"
```

A single asterisk represents all the missing permissions in the location where it appears. For example, in this advanced query, the wildcard character represents any combination of write, write_ACL, and delete permissions:

```
aclGrant:"r*"
```

In this advanced query, the wildcard character represents any combination of read and write_ACL permissions:

```
aclGrant:"R*w"
```

In this advanced query, the wildcard character represents only read_ACL permission:

```
aclGrant:"*r"
```

You can specify multiple asterisks in an advanced query. For example, this advanced query returns objects with ACLs that grant read permission and any combination of other permissions to the AD group named managers that is defined in the corp.widgetco.com domain:

```
aclGrant:"*r*,GROUP,@corp.widgetco.com,managers"
```

By replacing all permission values with a single asterisk, you query for objects that have ACLs that grant any combination of permissions. For example, if you are accessing the Console with a tenant-level user account, this advanced query finds objects with ACLs that grant any combination of permissions to that user account:

```
aclGrant:"*,USER"
```

aclGrant considerations

These considerations apply when you specify the **aclGrant** property in an advanced query:

- The entire value for this property must be enclosed in double quotation marks ("").
- The locations and usernames you specify are not case sensitive.
- The group names you specify, except **all_users** and **authenticated**, are not case sensitive.
- The permission values you specify and the values **USER** and **GROUP** are case sensitive.

Content properties

When you search using a content property, the operators you can use depend on the data type of the property. Content properties can have these types:

- Boolean
- Datetime
- Float
- Integer
- Text
- Tokenized

Searches using text content properties find an element or attribute only if it exactly matches the search string.

Tokenized content properties are indexed for full-text search. Therefore, you can search for any of several words, words that occur in any order, or a specific phrase.

To learn the valid operations on a content property, select the property on the Structured Query page and the middle dropdown list will show the operations you can use. For a list of operations for each data type, see [“Content classes”](#) on page 56.

Properties for advanced queries with the HDDS search facility

The table below presents the properties you can use in advanced queries while the HDDS search facility is active. For each property, the table shows the case-sensitive property name, the data type, a description, an example, and the equivalent structured search property, if any. Values for properties with a data type of string follow the rules for search terms in simple searches. For information on these rules, see [“Search terms”](#) on page 16. For information on specifying datetime values, see [“Typing a date”](#) on page 65.



Note: You cannot use **\$now** for datetime values in advanced queries.

Advanced search property	Data type	Description	Example	Structured search equivalent
accesstime	Datetime	The POSIX access time (atime) attribute for the object. Users and applications can change this metadata.	accesstime:range (2011-11-12T05:00:00Z, max, from="GE")	Access Time
archivedtime	Datetime	The date and time the object was created in the namespace (that is, when the data was added to the namespace).	archivedtime:range:(min, 2011-11-01T05:00:00Z, to="LT")	Ingest Time
attachment	String	The name of a file attached to the email.	attachment:"Sales Quotas 2012"	Email Attachment Name
author	String	The value of the Author metadata property that occurs in many Microsoft® Office and Adobe PDF documents.	author:"lgreen"	Author
body	Composite	The data content, name, title, and email subject of the object. This property is the equivalent of a simple search. ¹	content:"medic*"	Object Content
category	String	The value of the Category metadata property that occurs in many Microsoft Office and Adobe PDF documents.	category:"Sales Minutes"	Category
changetime	Datetime	The POSIX change time (ctime) attribute for the object. This is the last time the object metadata changed.	changetime:range (2011-11-01T04:00:00Z, max, from="GE")	Change Time
charset	String	The character set or encoding used in the document. Use unknown for documents for which HCP cannot determine the character set.	charset:string("utf-8")	Character Set

(Continued)

Advanced search property	Data type	Description	Example	Structured search equivalent
contenttype	String	The object MIME type. ²	contenttype:string ("application/zip")	Object Type
dataindexed	Int32	<p>An indication of whether the object content and/or custom metadata is indexed and whether the object name is valid UTF-8 encoding. Valid values are the sum of any combination of these:</p> <ul style="list-style-type: none"> 0 Object name is percent encoded, if necessary. 1 Content is indexed. 2 Content is not indexed because HCP could not determine the MIME type. 3 HDDS: Content is not indexed because it exceeds ten MB. HCP: Content is not indexed because it exceeds 50 MB. 10 Custom metadata is indexed. 20 Custom metadata is not indexed due to invalid XML. 30 HDDS: Content is not indexed because it exceeds ten MB. HCP: Content is not indexed because it exceeds 50 MB. 90 Object has no custom metadata. 100 Object name is valid UTF-8 encoding. 	dataindexed:range(100,190, from="GE",to="LT")	N/A
emailbcc	String	The email address of one blind-copied email recipient.	emailbcc:or ("pcornflower@example.com")	Email BCC
emailcc	String	The email address of one copied email recipient.	emailcc:rsilver@example.com	Email CC
emaildate	Datetime	The date the email was sent.	emaildate:range (2011-11-14T04:00:00Z, 2011-11-15T04:00:00Z, from="GE", to="LT")	Email Sent Date
emailfrom	String	The email address of an email sender.	emailfrom:"lgreen@example.com"	Email From
emailmessageid	String	The ID of the email in the namespace.	emailmessageid:"73495 B59-04A3-59FC-573D- 8380897A78BB@example. com-mbox.eml"	Email Message ID
emailsubject	String	The text in the email subject line.	emailsubject:"Weekly Sales Department Meeting, Minutes -- 2/2/12"	Email Subject

(Continued)

Advanced search property	Data type	Description	Example	Structured search equivalent
emailto	String	The email address of one email recipient.	emailto:rsilver@example.com	Email To
expiration time	Datetime	<p>The retention setting for the object. Valid values are:</p> <ul style="list-style-type: none"> For objects that can never be deleted: <code>1970-01-01T00:00:03Z</code> For objects that can be deleted at any time: <code>range(current-datetime, max)</code> For objects that expire at a specific date and time: <code>range(datetime, datetime, from="GE", to="LE")</code> <p>In this criterion, the two variables specify the same date and time.</p> <ul style="list-style-type: none"> For objects that expire on a specific date: <code>range(dateT00:00:00Z, date-plus-one T00:00:00Z, from="GE", to="LT")</code> <p>In this criterion, the second date is one day later than the first.</p> <ul style="list-style-type: none"> For objects that do not yet have a retention setting: <code>1970-01-01T00:00:02Z</code> For objects that have expired: <code>range(1970-01-01T00:00:10Z, current-datetime)</code> <p>Any of these values can return objects for which the retention setting is a retention class. This happens for objects that had a retention setting before being assigned to a class.</p>	expirationtime:range (2015-01-13T00:00:00Z, 2015-01-14T00:00:00Z, from="GE", to="LT")	Retention
filename	String	All or part of a path and object name, starting after <code>fcfs_data</code> , <code>data</code> , or <code>rest</code> .	filename:"french/news_f/ pres03_f/mou_16feb03_f.doc"	Object Path

(Continued)

Advanced search property	Data type	Description	Example	Structured search equivalent
format	String	The format of the object content. This is typically the name of the application used to create the content. ³	format:"Adobe Photoshop"	Content Format
gid	Int32	The POSIX group ID of the owning group for the object.	gid:24	GID
hash	String	The cryptographic hash value of the object.	hash:"9B6D8A603659B447DA4..."	Hash
hold	Int32	An indication of whether the object is currently on hold. Valid values are: <ul style="list-style-type: none"> 1 — The object is on hold. 0 — The object is not on hold. 	hold:"1"	Retention Hold
language	String	The language in which the document is written. Valid values are the two-character ISO 639-1 language codes.	language:en	Language
modtime	Datetime	The POSIX modify time (mtime) attribute for the object. Users and applications can change this metadata.	modtime:not(range (2011-11-04T04:00:00Z, 2011-11-10T04:00:00Z, from="GE", to="LE"))	Modification Time
permissions	Int32	The decimal equivalent of the octal value of the POSIX permissions for the object. ⁴	permissions:420 This is equal to octal 644.	Permissions
retention class	String	The retention class specified as the retention setting for the object.	retentionclass:"HlthReg-107a"	Retention Class
shred	Int32	An indication of whether the object will be shredded when it's deleted. Valid values are: <ul style="list-style-type: none"> 1 — The object will be shredded. 0 — The object will not be shredded. 	shred:"0"	Shredding
size	Float	The object size, in bytes. This is the exact size of the object content. For example, to search for a two KB object, you need to specify 2048, not 2000.	size:range(min, 5000, to="LT")	Size
subject	String	The value of the Subject metadata property that occurs in many Microsoft Office and Adobe PDF documents.	subject:quotas	Subject
title	String	The value of the Title metadata property that occurs in many Microsoft Office and Adobe PDF documents.	title:"Monthly Sales Statistics -- February 2012"	Title
uid	Int32	The POSIX user ID of the object owner.	uid:72	UID

(Continued)

Advanced search property	Data type	Description	Example	Structured search equivalent
1. For information on simple searches, see Chapter 2, "Working with simple searches," on page 15. 2. For information on the MIME types that HDDS recognizes for search operations, see the applicable HDDS documentation. 3. For information on the document formats that HDDS recognizes for search operations, see the applicable HDDS documentation. 4. For information on octal values for permissions, see "Octal permission values" on page 34.				

Performing an advanced search

To perform an advanced search:

1. In the Search Console, click on the **Advanced Search** tab.



Note: While the metadata query engine is active, the **Advanced Search** tab is called the **Advanced Query** tab and the Search button is called the **Query** button.

2. In the entry field on the **Advanced Search** page, type the query for your search.
3. Click on the **Search** button.

While you're working on a query specification, you can click on the **Reset** button to return to the most recently submitted query.

Working with saved queries

The HCP Search Console lets you save the queries you create so you can run them again at any time. Saving a query saves the criteria only, not the search results. Each time you run a saved query, you get a new set of returned objects.

You can publish a feed for a saved query. The feed makes regularly updated query results available to users of the web site where it's published.

This chapter provides instructions for saving queries and then viewing, running, editing, deleting, and publishing feeds for them.

Saving a query

You can save all three types of queries: simple, structured, and advanced. Queries you save while one search facility is active are not available while another facility is active.

To save a query:

1. On the **Simple Search**, **Structured Search**, or **Advanced Search** page, specify the query criteria.
2. Click on the **Search** button.
3. Optionally, select filters to apply to the query results. The filters you apply to the search results are saved along with the query.

For information on filters, see ["Filtering search results"](#) on page 36.

4. In the **save as** field, type a name for the query. Query names must be from one through 500 characters long and cannot contain single quotation marks ('), double quotation marks ("), or backslashes (\).

Certain strings that are used internally by HCP are reserved and cannot be used as names as saved queries.

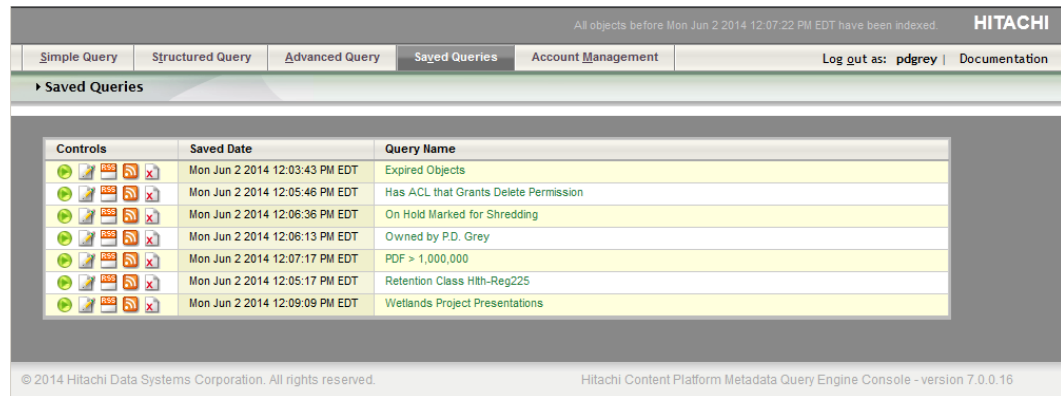






























Note: If a query doesn't return any objects, a field labeled **Save this query as** appears below the search criteria on the **Search Results** page.

5. Click on the **Save** button.

Viewing saved queries


When you save a query, the Search Console lists it on the **Saved Queries** page. From this page, you can run, edit, or delete the query, as well as publish it as a feed.



Controls	Saved Date	Query Name
   	Mon Jun 2 2014 12:03:43 PM EDT	Expired Objects
   	Mon Jun 2 2014 12:05:46 PM EDT	Has ACL that Grants Delete Permission
   	Mon Jun 2 2014 12:06:36 PM EDT	On Hold Marked for Shredding
   	Mon Jun 2 2014 12:06:13 PM EDT	Owned by P.D. Grey
   	Mon Jun 2 2014 12:07:17 PM EDT	PDF > 1,000,000
   	Mon Jun 2 2014 12:05:17 PM EDT	Retention Class Hlth-Reg225
   	Mon Jun 2 2014 12:09:09 PM EDT	Wetlands Project Presentations

Running a saved query

To run a saved query:

1. Click on the **Saved Queries** tab.
2. On the **Saved Queries** page, click on the run control () for the query you want to run.


The **Search Results** page for a saved query shows the name of the query.



Note: When you run a saved query, the **save as** field on the **Search Results** page shows the name of that query. If you edit the query and then click on the **Save** button without changing the query name, the modified query overwrites the previous version.

Editing a saved query

To edit a saved query:

1. Click on the **Saved Queries** tab.
2. On the **Saved Queries** page, click on the edit control () for the query you want to edit.

The Console displays the page on which the query was created. For example, if you created a query for a simple search, the Console displays the **Simple Search** page.

3. Change the query criteria as needed.
4. Click the Query button to run the updated query





Note: When you deselect a filter, the query runs automatically. For information on filters, see [“Filtering search results”](#) on page 36.

5. To display the **save as** field, click on the **Search** button.
6. In the **save as** field, type a name for the edited query.
7. Click on the **Save** button.

Publishing a feed for a saved query

You can publish both RSS and Atom feeds for saved queries. To publish a feed:


1. Click on the **Saved Queries** tab.
2. On the **Saved Queries** page, click on the RSS () or Atom () control for the query for which you want to create the feed.

The window displays a browser-specific page for publishing a feed.

3. Use the browser-specific procedure to publish the feed for the query.

Deleting a saved query

To delete a saved query:

1. Click on the **Saved Queries** tab.
2. On the **Saved Queries** page, click on the delete control () for the query you want to delete.
3. In response to the confirming message, click on the **OK** button.

Usage considerations

This chapter contains considerations that apply to searching namespaces.

Limitation on content indexing

HDDS indexes the metadata but not the content of objects larger than ten MB or compressed objects that expand to more than ten MB.

Searching for object names without UTF-8 encoding

When searching namespaces, HDDS and HCP rely on UTF-8 encoding conventions to find objects by name. If the name of an object is not UTF-8 encoded, searches for the object by name may return unexpected results.

Searching for emails based on sent date

While the HDDS search facility is active, a structured search for the **Email Sent Date** property or an advanced search for the `emaildate` property does not return email objects that have a sent date later than the year 2038.

Search failures due to insufficient memory

While the metadata query engine is active, a query may fail if the metadata query engine does not have enough memory to return the results.

To work around this issue, specify more precise query criteria to return fewer results.

Differences in information returned by the search facilities

Identical queries can return different results depending on the active search facility. For more information on search results while the HDDS search facility is active, see the applicable HDDS documentation.



Browser configuration for single sign-on with Active Directory

If a tenant is configured to support AD authentication, AD users can access the Search Console with single sign-on. However, for single sign-on to work, the web browser used to access the Console must be configured to support single sign-on.

This appendix contains instructions for configuring Windows Internet Explorer[®] and Mozilla[®] Firefox[®] to support single sign-on.

Configuring Windows Internet Explorer for single sign-on

To configure Windows Internet Explorer for single sign-on with Active Directory:

1. Open Internet Explorer.
2. On the **Tools** menu, click on **Internet Options**.
3. In the **Internet Options** window, click on the **Security** tab.
4. On the **Security** page, select **Local intranet**.
5. Click on the **Sites** button.
6. In the **Local intranet** window, ensure that all the options are selected.
7. Click on the **Advanced** button.
8. In the **Add this website to the zone** field, do either of these:
 - To enable single sign-on with HTTP, type:
`http://*.hcp-name.domain-name`

For example:
`http://*.hcp.example.com`
 - To enable single sign-on with HTTPS, type:
`https://*.hcp-name.domain-name`

For example:
`https://*.hcp.example.com`
9. Click on the **Add** button.
10. Click on the **Close** button.
11. In the **Local intranet** window, click on the **OK** button.
12. In the **Internet Options** window, click on the **Advanced** tab.

13. In the **Settings** list, under **Security**, select **Enable Integrated Windows Authentication**.
14. Click on the **OK** button.
15. Close Internet Explorer.

Configuring Mozilla Firefox for single sign-on

To configure Mozilla Firefox for single sign-on with Active Directory:

1. Open Firefox.
2. In the address field in the Firefox window, enter:

`about:config`
3. In response to the warning message, click on the **I'll be careful, I promise!** button.
4. In the **Preference Name** list, double-click on **network.negotiate-auth.delegation-uris**.
5. In the **Enter string value** window, type:

`http://*.hcp-name.domain-name,https://*.hcp-name.domain-name`

For example:

`http://*.hcp.example.com,https://*.hcp.example.com`
6. Click on the **OK** button.
7. In the **Preference Name** list, double-click on **network.negotiate-auth.trusted-uris**.
8. In the **Enter string value** window, type:

`http://*.hcp-name.domain-name,https://*.hcp-name.domain-name`
9. Click on the **OK** button.
10. Close Firefox.



Glossary

A

access control entry (ACE)

In an access control list, a grant of permissions to perform various operations on an object. Each access control entry grants permissions to a specific user or group of users.

access control list (ACL)

Optional metadata consisting of a set of grants of permissions to perform various operations on an object. Permissions can be granted to individual users or to groups of users.

ACLs are provided by users or applications and are specified as either XML or JSON.

ACE

See [access control entry \(ACE\)](#).

ACL

See [access control list \(ACL\)](#).

Active Directory (AD)

A Microsoft product that, among other features, provides user authentication services.

active search facility

The search facility selected for use with the HCP Search Console. This can be the metadata query engine or the HDDS search facility.

AD

See [Active Directory \(AD\)](#).

advanced search

A type of search available in the HCP Search Console. An advanced search lets you specify multiple text- and or metadata-based criteria and also combine those criteria by using parentheses and boolean and other operators.

annotation

A discrete unit of custom metadata. Annotations are typically specified in XML format.

anonymous access

A method of access to a namespace wherein the user or application gains access without presenting any credentials. *See also* [authenticated access](#).

atime

In POSIX file systems, metadata that specifies the date and time a file was last accessed. In HCP, POSIX metadata that initially specifies the date and time at which an object was ingested. HCP does not automatically change the **atime** value when the object is accessed.

Users and applications can change this metadata, thereby causing it to no longer reflect the actual storage time. Additionally, HCP can be configured to synchronize **atime** values with retention settings.

authenticated access

A method of access to a namespace wherein the user or application presents credentials to gain access. *See also* [anonymous access](#).

C

compliance mode

The retention mode in which objects under retention cannot be deleted through any mechanism. This is the more restrictive retention mode.

content class

A content class is a named construct that is used to characterize objects in one or more namespaces. Content classes use object metadata to impose structure on the unstructured namespace content. They do this through content properties.

content property

A content property is a named construct used to extract an element or attribute value from custom metadata that's well-formed XML. Content properties use XPath expressions to identify the metadata of interest.

cryptographic hash value

A system-generated metadata value calculated by a cryptographic hash algorithm from object data. This value is used to verify that the content of an object has not changed.

ctime

POSIX metadata that specifies the date and time of the last change to the metadata for an object.

custom metadata

User-supplied information about an HCP object. Custom metadata is specified as one or more annotations, where each annotation is a discrete unit of information about the object. Users and applications can use custom metadata to understand and repurpose object content.

custom metadata search

A search that returns objects based on the XML elements, attributes, and/or values in their custom metadata.

D**data protection level (DPL)**

The number of copies of the data for an object HCP must maintain in the repository. The DPL for an object is determined by the service plan that applies to the namespace containing the object.

default namespace

A namespace that supports only anonymous access through the HTTP protocol. An HCP system can have at most one default namespace. The default namespace is used mostly with applications that existed before release 3.0 of HCP.

default tenant

The tenant that manages the default namespace.

DNS

See [domain name system \(DNS\)](#).

domain

A group of computers and devices on a network that are administered as a unit.

domain name system (DNS)

A network service that resolves domain names into IP addresses for client access.

DPL

See [data protection level \(DPL\)](#).

E

enterprise mode

The retention mode in which these operations are allowed:

- Privileged delete
- Changing the retention class of an object to one with a shorter duration
- Reducing retention class duration
- Deleting retention classes

This is the less restrictive retention mode.

expired object

An object that is no longer under retention.

F

filter

A criterion used to refine the results of a search. Also, to apply a filter.

fixed-content data

A digital asset ingested into HCP and preserved in its original form as the core part of an object. Once stored, fixed-content data cannot be modified.

G

GID

POSIX group identifier.

H

hash value

See [cryptographic hash value](#).

HCP

See [Hitachi Content Platform \(HCP\)](#).

HCP namespace

A namespace that supports user authentication for data access through the HTTP, HS3, and CIFS protocols. HCP namespaces also support access control lists and versioning. An HCP system can have multiple HCP namespaces.

HDDS

See [Hitachi Data Discovery Suite \(HDDS\)](#).

HDDS search facility

One of the search facilities available for use with the HCP Search Console. This facility interacts with Hitachi Data Discovery Suite.

Hitachi Content Platform (HCP)

A distributed object-based storage system designed to support large, growing repositories of fixed-content data. HCP provides a single scalable environment that can be used for archiving, business continuity, content depots, disaster recovery, e-discovery, and other services. With its support for multitenancy, HCP securely segregates data among various constituents in a shared infrastructure. Clients can use a variety of industry-standard protocols and various HCP-specific interfaces to access and manipulate objects in an HCP repository.

Hitachi Data Discovery Suite (HDDS)

A Hitachi product that enables federated searches across multiple HCP systems and other supported systems.

hold

A condition that prevents an object from being deleted by any means and from having its metadata modified, regardless of its retention setting, until it is explicitly released.

HTTP

HyperText Transfer Protocol. The HCP Search Console uses HTTP to communicate with Console clients.

HTTPS

HTTP with SSL security. See [HTTP](#) and [SSL](#).

I

index

An index of the objects in namespaces that is used to support search operations. The metadata query engine builds this index from object metadata, including custom metadata and ACLs. The HDDS search facility index is built and maintained by HDDS.

M

metadata

System-generated and user-supplied information about an object. Metadata is stored as an integral part of the object it describes, thereby making the object self-describing.

metadata query API

A RESTful HTTP interface that lets you search HCP for objects that meet specified metadata-based or operation-based criteria. With this API, you can search not only for objects currently in the repository but also for information about objects that are no longer in the repository.

metadata query engine

One of the search facilities available for use with HCP. The metadata query engine works internally to perform searches and return results either through the metadata query API or to the HCP Metadata Query Engine Console (also known as the HCP Search Console).

Metadata Query Engine Console

The web application that provides interactive access to the HCP search functionality provided by the metadata query engine.

mtime

POSIX metadata that specifies the date and time of the last change to the object data. Because you cannot change the content of an object, **mtime** is, by default, the date and time at which the object was added to a namespace. Users and applications can change this metadata, thereby causing it to no longer reflect the actual storage time.

N**namespace**

A logical partition of the objects stored in an HCP system. A namespace consists of a grouping of objects such that the objects in one namespace are not visible in any other namespace. Namespaces are configured independently of each other and, therefore, can have different properties.

O**object**

An exact digital representation of data as it existed before it was ingested into HCP, together with the system and custom metadata that describes that data. Objects can also include ACLs that give users and groups permission to perform certain operations on the object.

An object is handled as a single unit by all transactions and internal processes, including shredding, indexing, versioning, and replication.

P**POSIX**

Portable Operating System Interface for UNIX. A set of standards that define an application programming interface (API) for software designed to run under heterogeneous operating systems.

privileged delete

A delete operation that works on an object regardless of whether the object is under retention, except if the object is on hold. This operation is available only to users and applications with explicit permission to perform it.

Privileged delete operations work only in namespaces in enterprise mode.

privileged purge

A purge operation that works on an object regardless of whether the object is under retention, except if the object is on hold. This operation is available only to users and applications with explicit permission to perform it.

Privileged purge operations work only in namespaces in enterprise mode.

purge

The operation that deletes all versions of an object.

Q

query

A request submitted to HCP to return metadata for objects that satisfy a specified set of criteria. Also, to submit such a request.

R

replication

The process of keeping selected HCP tenants and namespaces and selected default-namespace directories in two HCP systems in sync with each other.

repository

The aggregate of the namespaces defined for an HCP system.

retention class

A named retention setting. The value of a retention class can be a duration, Deletion Allowed, Deletion Prohibited, or Initial Unspecified.

retention hold

See [hold](#).

retention mode

A namespace property that affects which operations are allowed on objects under retention. A namespace can be in either of two retention modes: compliance or enterprise.

retention period

The period of time during which an object cannot be deleted (except by means of a privileged delete).

retention setting

The property that determines the retention period for an object.

S**search**

The process of submitting a query and receiving metadata about the objects that satisfy the query criteria.

Search Console

The web application that provides interactive access to HCP search functionality. When the Search Console uses the HCP metadata query engine for search functionality, it is called the Metadata Query Engine Console.

search facility

An interface between the HCP Search Console and the search functionality provided by the metadata query engine or HDDS. Only one search facility can be selected for use with the Search Console at any given time.

search results

A list of objects that HCP or HDDS returns in response to a query. Search results show metadata for the listed objects.

shred setting

The property that determines whether an object will be shredded or simply removed when it's deleted from HCP.

shredding

The process of deleting an object and overwriting the locations where all its copies were stored in such a way that none of its data or metadata can be reconstructed. Also called **secure deletion**.

simple search

A type of search available in the HCP Search Console. A simple search lets you specify only text-based search criteria.

single sign-on

In a Windows environment, the use of an already authenticated Active Directory user account to access the HCP Search Console without the need to explicitly log in.

SSL

Secure Sockets Layer. A key-based Internet protocol for transmitting documents through an encrypted link.

structured search

A type of search available in the HCP Search Console. A structured search lets you specify multiple text- and/or metadata-based criteria.

T

tenant

An administrative entity created for the purpose of owning and managing namespaces. Tenants typically correspond to customers or business units.

U

UID

POSIX user ID.

user account

A set of credentials that gives a user access to the HCP Search Console.

user authentication

The process of checking that the combination of a specified username and password is valid when a user tries to log into the HCP Search Console or to access a namespace.

V

versioning

An optional namespace feature that enables the creation and management of multiple versions of an object.

W

WORM

Write once, read many. A data storage property that protects the stored data from being modified or overwritten.

X

XML

Extensible Markup Language. A standard for describing data content using structural tags called elements.

XPath

A language used to formulate expressions that navigate through and select elements and attributes in XML documents.

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