



CDMI Extension: Immediate Query

Version 1.1a

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Working Draft

Revision History

Date	Version	By	Comments
08-28-2014	1.1a	Marie McMinn, Cloud TWG Editor	New version of Immediate Query extension created for the CDMI 1.1.0 revision of the standard. Derived from the 1.0d draft.

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CDMI Extension: Immediate Query

Overview

CDMI provides a query mechanism based around the concept of persistence. A query queue is created, metadata is specified that defines the query operation, the query is performed asynchronously, and results are populated in the queue and then read by the client as separate operations.

This architecture, while providing significant value, is complex for clients that do not need to persist the results of a query. Specifically, a client must: a) asynchronously poll the query queue to determine when results are present and when the query has completed, and b) delete the queue when results are no longer needed.

To provide a simpler interface for simple queries where a small number of results are expected and persistence is not required, the TWG has proposed the following approach to allow query queues to optionally not be persistent, with the results being returned immediately as the response to the initial query queue creation.

In addition, functionality that permits results to be returned immediately has been added to creating asynchronous query queues.

Changes to CDMI 1.1.0:

1) Modify existing "cdmi_query" entry in Table 100 - System-Wide Capabilities

Capability Name	Type	Description
cdmi_query	JSON String	If present and "true", this capability indicates that the cloud storage system supports persistent query queues.

2) Insert below "cdmi_query" in Table 100 - System-Wide Capabilities

Capability Name	Type	Description
cdmi_query_immediate	JSON String	If present and "true", this capability indicates that the cloud storage system supports immediate query support.

3) Replace the first paragraph of 22.1 Overview with:

A cloud storage system may optionally implement metadata and/or full-text query functionality. The implementation of query is indicated by the presence of the cloud storage system-wide capabilities for query and requires support for CDMI™ queues when persisting query results.

4) Replace the third paragraph of 22.1 Overview with:

When a client wishes to perform queries, it shall first determine if the system is capable of providing query functionality by checking to see if the `cdmi_query` or `cdmi_query_immediate` capabilities are present in the root container capabilities. If these capabilities are not present and queues are supported, creating a query queue shall be successful, but no query results shall be enqueued into the query queue.

5) Modify existing "cdmi_queue_type" in Table 126 - Required Metadata for a Query Queue

Metadata Name	Type	Description	Requirement
cdmi_queue_type	JSON String	<p>The queue type indicates how the cloud storage system shall manage the queue object. The defined values are:</p> <ul style="list-style-type: none"> • <code>cdmi_query_queue</code> – Perform an asynchronous query, which may return none, some, or all results in the request response body. A new queue object shall be created. • <code>cdmi_query_immediate</code> – Perform a synchronous query, returning all matching results in the request response body. The query queue object may not be accessible and shall be automatically deleted when the query completes. 	Optional

6) Insert new clause 22.2 Immediate Queries

If "cdmi_query_immediate" is specified in `cdmi_queue_type`, all query results shall be immediately returned in the response body as shown in the following example.

EXAMPLE 4:

```
PUT /MyContainer/myQuery HTTP/1.1
Host: cloud.example.com
Accept: application/cdmi-queue
Content-Type: application/cdmi-queue
X-CDMI-Specification-Version: 1.1
```

```
{
  "metadata" : {
    "cdmi_queue_type" : "cdmi_query_immediate",
    "cdmi_scope_specification" : [
      {
        "domainURI" : "==" /cdmi_domains/MyDomain/",
        "parentURI" : "starts /sandbox",
        "metadata" : {
          "cdmi_size" : "#> 100000"
        }
      }
    ],
    "cdmi_results_specification" : {
      "objectID" : "",
      "metadata" : {
        "cdmi_size" : ""
      }
    }
  }
}
```

The following shows the response.

```
HTTP/1.1 201 Created
Content-Type: application/cdmi-queue
X-CDMI-Specification-Version: 1.1
Location: http://cloud.example.com/MyContainer/myQuery
```

```

{
  "objectType" : "application/cdmqueue",
  "objectID" : "00007E7F00104BE66AB53A9572F9F51E",
  "objectName" : "myQuery",
  "parentURI" : "/MyContainer/",
  "parentID" : "0000706D0010B84FAD185C425D8B537E",
  "domainURI" : "/cdmi_domains/MyDomain/",
  "capabilitiesURI" : "/cdmi_capabilities/queue/",
  "completionStatus" : "Complete",
  "metadata" : {
    "cdmi_queue_type" : "cdmi_query_immediate",
    "cdmi_scope_specification" : [
      {
        "domainURI" : "=/cdmi_domains/MyDomain/",
        "parentURI" : "starts /sandbox",
        "metadata" : {
          "cdmi_size" : "#> 100000"
        }
      }
    ],
    "cdmi_results_specification" : {
      "objectID" : "",
      "metadata" : {
        "cdmi_size" : ""
      }
    }
  },
  "queueValues" : "0-0",
  "mimetype" : [
    "application/json"
  ],
  "valuerange" : [
    "0-111"
  ],
  "valuetransferencoding" : [
    "base64"
  ],
  "value":
  "ew0KCQkJIm9iamVjdE1E1iA6IClwMDAwN0U3RjAwMTBFQjkwOTJCMj1GNkNENkFENjgyNCIsDQoJJCQkibWV0YWRhdGEiIDogew0KCQkJSjZG1pX3NpemUiIDogIjEwODI2MyINCgkJCX0NCgkJfQ0K"
}

```

Where the value of the above base64 encoded value is:

```

{
  "objectID" : "00007E7F0010EB9092B29F6CD6AD6824",
  "metadata" : {
    "cdmi_size" : "108263"
  }
}

```