Cloud Data Management Interface Extension: Fixity Data System Metadata

Version 1.0c

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Working Draft

Revision History

Date	Version	By	Comments
2012-02-07	1.0a	David Slik, NetApp, Inc.	Initial Creation
2012-02-10	1.0b	Marie McMinn	Minor edits.
2012-02-15	1.0c	David Slik	Updated name of Storage System Metadata, minor text edits.

Fixity Data System Metadata CDMI Extension

Overview

CDMI clients may need to specify how frequently a cloud storage system verifies the integrity (known as "fixity" in the archival space) of stored objects. Clients also may need to determine when the last time the fixity of an object was verified to determine if an object is at risk and to determine policy decisions.

This extension defines two new metadata items: a data system metadata item that allows a client to request when fixity is verified and two storage system metadata items that indicates the last time when fixity was verified

This extension only defines the interface and does not define how fixity verification is performed by the system. It is anticipated that vendors may have proprietary internal mechanisms for verifying fixity or they may rely on the cdmi_hash or a digital signature of the object. Further extensions to allow a client to discover and request specific methods of fixity verification are anticipated but not included in this extension.

Modifications to the current CDMI spec:

1) Insert into Clause "12.1.2 Storage System Metadata Capabilities", Table "Table 103 - Capabilities for Storage System Metadata"

Capability	Type	Definition
cdmi_fixity_state	JSON String	If present and "true", this capability indicates that the cloud storage system supports fixity system metadata that indicates the authenticity of the object according to the last fixity check performed.
cdmi_fixity_lastcheck	JSON String	If present and "true", this capability indicates that the cloud storage system supports fixity system metadata that indicates the last time that the fixity of an object was verified by the system.

2) Insert into Clause "12.1.3 Data System Metadata Capabilities", Table "Table 104 - Capabilities for Data System Metadata"

Capability Name	Type	Definition
cdmi_fixity_maxage	JSON String	If present and "true", this capability indicates that the cloud storage system shall support performing fixity verification when the time since the last fixity verification exceeds a requested duration.

3) Insert into Clause "16.3 Support for Storage System Metadata", Table "Table 117 - Storage System Metadata"

Metadata Name	Type	Description	Requirement
cdmi_fixity_state	JSON String	If "true", indicates that the last fixity check passed. If "false", indicates that the last fixity check failed. This metadata field shall be present when the "cdmi_fixity_maxage" data system metadata for the object or a parent object indicates that that fixity should be verified.	Optional
cdmi_fixity_lastcheck	JSON String	The time when the last fixity check was performed against the object in ISO-8601 point-in-time format, as described in 5.14. This metadata field shall be present when the "cdmi_fixity_maxage" data system metadata for the object or a parent object indicates that that fixity should be verified.	Optional

4) Insert into Clause "16.4 Support for Data System Metadata", Table "Table 118 - Data System Metadata"

Metadata Name	Type	Description	Requirement
cdmi_fixity_maxage	JSON String	Contains the largest acceptable duration in time between fixity verifications, specified in seconds. This metadata is used to indicate the desired fixity verification frequency.	Optional

5) Insert into Clause "16.5 Support for Provided Data System Metadata", Table "Table 119 - Provided Values of Data Systems Metadata Items"

Metadata Name	Type	Description	Requirement
cdmi_fixity_maxage_provided	JSON String	Contains the time, in seconds, since the last fixity verification, as indicated in the cdmi_fixity_lastcheck storage system metadata, to when the next fixity verification is scheduled to be performed	Optional