Package 'dataone'

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Title R Interface to the DataONE REST API

Description Provides read and write access to data and metadata from the DataONE network <https://www.dataone.org> of data repositories. Each DataONE repository implements a consistent repository application programming interface. Users call methods in R to access these remote repository functions, such as methods to query the metadata catalog, get access to metadata for particular data packages, and read the data objects from the data repository. Users can also insert and update data objects on repositories that support these methods.

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BugReports https://github.com/DataONEorg/rdataone/issues

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`AbstractTableDescriber-class`

Base Class for Specific Metadata Parsers

Description

Classes that inherit from this class provide the format-specific ways to provide read.csv with parsing instructions.

Details

This class defines the generic methods metadata parser classes need to implement to allow proper parsing of tabular data objects. Subclasses should: 1. provide method implementations for all generics 2. register the class to the tableDescriber.registry for the formats they claim to parse. 3. provide a 'constructor' method that accepts a D1Object as the first argument - the D1Object will be the metadata object to be parsed

For example, the EMLParser registers itself as a handler for eml v2.0.0 - v2.1.1 with the following.

```
if (!exists("tableDescriber.registry")) tableDescriber.registry <- list() tableDescriber.registry[[
"eml://ecoinformatics.org/eml-2.0.0" ]] <- "EMLParser" tableDescriber.registry[[ "eml://ecoinformatics
]] <- "EMLParser" tableDescriber.registry[[ "eml://ecoinformatics.org/eml-2.1.0" ]]
<- "EMLParser" tableDescriber.registry[[ "eml://ecoinformatics.org/eml-2.1.1" ]] <-
"EMLParser"
```

Note that the key in the list is the DataONE formatIdentifier that can be found at "https://cn.dataone.org/cn/v2/formats".

Subclass implementers should conform their methods to the behavior defined in the generic.

Author(s)

rnahf

---

addData,DataPackage,D1Object-method

Add a D1Object containing a data object to a DataPackage

Description

The D1Object do is added to the data package x.

Usage

```
## S4 method for signature 'DataPackage,D1Object'
addData(x, do, mo = as.character(NA))
```

Arguments

x	The "DataPackage" to which the data object should be added.
do	A D1Object to add to the DataPackage
mo	A D1Object (containing metadata describing "do") to associate with the data object.

Details

If the optional mo parameter is specified, then it is assumed that this DataObject is a metadata object that describes the data object that is being added. The DataObject specified in the mo parameter will also be added to the DataPackage, if it has not already been added. Then the addData function will add a relationship to the resource map that indicates that the metadata object describes the science object, using CiTO, the Citation Typing Ontology, documents and isDocumentedBy relationships.

Examples

```
## Not run:
library(dataone)
library(datapack)
library(uuid)
dp <- new("DataPackage")
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
# Create metadata object that describes science data
newId <- sprintf("urn:uuid:%s", UUIDgenerate())
csvfile <- system.file("extdata/sample.csv", package="dataone")
sciObj <- new("DataObject", id=newId, format="text/csv",filename=csvfile)
dp <- addData(dp, do = sciObj)

## End(Not run)
```

`archive` *Archive an object on a Member Node or Coordinating Node, which hides it from casual searches.*

Description

This method provides the ability to archive a data or metadata object on the Member Node provided in the `'mnode'` parameter. Archiving removes the object from DataONE search functions, thereby making it more difficult to find without completely removing the object. Archive is intended for objects that should not be used by current researchers, but for which there is a desire to maintain a historical record, such as when journal articles might cite the object. Users can still obtain the contents of archived objects if they have the identifier, but will not discover it through searches.

Usage

```
archive(x, ...)

## S4 method for signature 'D1Node'
archive(x, pid)
```

Arguments

`x`	The MNode or CNode instance on which the object will be created
`...`	(Not yet used)
`pid`	The identifier of the object to be created

Details

This operation requires an X.509 certificate to be present in the default location of the file system. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE. See `CertificateManager` for details. For DataONE Version 2.0, an authentication token can also be used for authentication. Also, administrator privilege is required to run archive() on a DataONE Coordinating Node.

Value

The pid that was archived if successful, otherwise NULL

See Also

D1Node class description.

Examples

```
## Not run:
library(dataone)
library(uuid)
library(digest)
library(datapack)
# First create a new object
cn <- CNode("STAGING")
mn <- getMNode(cn, "urn:node:mnStageUCSB2")
testdf <- data.frame(x=1:10,y=11:20)
csvfile <- paste(tempfile(), ".csv", sep="")
write.csv(testdf, csvfile, row.names=FALSE)
\dontrun{
newid <- generateIdentifier(mn, "UUID")
}
# Create an identifier manually
newid <- paste("urn:uuid:", UUIDgenerate(), sep="")
format <- "text/csv"
size <- file.info(csvfile)$size
sha256 <- digest(csvfile, algo="sha256", serialize=FALSE, file=TRUE)
sysmeta <- new("SystemMetadata", identifier=newid, formatId=format, size=size, checksum=sha256)
sysmeta <- addAccessRule(sysmeta, "public", "read")
# Create (upload) the object to DataONE (requires authentication)
\dontrun{
create(mn, newid, csvfile, sysmeta)
# Now for demonstration purposes, archive the object
# Archive the object (requires authentication)
archivedId <- archive(mn, newid)
}

## End(Not run)
```

---

asDataFrame *return the D1Object data as a data.frame.*

Description

This method uses the provided metadata reference object for instructions on how to parse the data table (which parameters to set) 'reference' is the metadata D1Object that gives instruction on how to read the data into the dataFrame

Usage

```
asDataFrame(x, reference, ...)

## S4 method for signature 'D1Object,D1Object'
asDataFrame(x, reference, ...)

## S4 method for signature 'D1Object,AbstractTableDescriber'
asDataFrame(x, reference, ...)
```

Arguments

x	A D1Object
reference	A reference to a D1Object
...	(Additional parameters)

AuthenticationManager *Create an AuthenticationManager object*

Description

Construct an instance of AuthenticationManager to provide mechanisms to load, verify, and display DataONE authentication information.

Usage

```
AuthenticationManager(...)

## S4 method for signature 'ANY'
AuthenticationManager()
```

Arguments

...	(Not yet used)

Value

the AuthenticationManager object

`AuthenticationManager-class` *Manage DataONE authentication.*

Description

AuthenticationManager provides mechanisms to validate DataONE authentication, when either a DataONE authentication token or X.509 Certificate is used.

Details

Understanding how your identity is managed is important for working with DataONE, especially to avoid unexpected results. For example, depending your authorization status, searches may return only public records, or the full set of public and private records. Object and package retrievals might fail if some or all of the objects being retrieved are private. Creating or updating objects on DataONE nodes and reserving identifiers might fail if your authorization credentials are missing or expired.

DataONE version 1.0 identifies you using CILogon-provided x509 certificates. DataONE has partnered with CILogon to provide a widely-accessible certificate issuing mechanism that allows DataONE users to use existing trusted institutional and public accounts.

DataONE version 2.0 provides an addition authentication mechanism known as authentication tokens. For information about tokens and instructions for generating a token for use with the dataone R package, view the overview document by entering the command: `'vignette("dataone-overview")'`. DataONE authentication tokens can be obtained by signing in to your DataONE account at https://search.dataone.org.

CILogon recognizes many identity providers, including many universities as well as Google, so most times users new to DataONE can get certificates using one of their existing accounts. For more information about the CILogon service, see `https://cilogon.org/?skin=DataONE` .

Slots

`obscured` Value of type `"character"` Is authentication disabled (obscured)?

Methods

- `AuthenticationManager`: Create an AuthenticationManager object.
- `isAuthValid`: Verify authentication for a member node.
- `getToken`: Get the value of the DataONE Authentication Token, if one exists.
- `getCert`: Get the DataONE X.509 Certificate location.
- `getAuthMethod`: Get the current valid authentication mechanism.
- `getAuthSubject`: Get the authentication subject.
- `getAuthExpires`: Get the expiration date of the current authentication method.
- `isAuthExpired`: Check if the currently valid authentication method has reached the expiration time.
- `obscureAuth`: Temporarily disable DataONE authentication.

- restoreAuth: Restore authentication (after being disabled with obscureAuth).
- showAuth: Display all authentication information.
- getTokenInfo: Display all authentication token information.
- getCertInfo: Display all X.509 certificate information.

See Also

dataone package description.

---

auth_delete *DELETE a resource with authenticated credentials.*

Description

DELETE data at a URL using an HTTP DELETE request using authentication credentials provided in a client certificate. Authenticated access depends on the suggested openssl package. If the openssl package is not installed, then the request fails.

Usage

```
auth_delete(url, encode = "multipart", body = as.list(NA), node)
```

Arguments

url	The URL to be accessed via authenticated DELETE
encode	the type of encoding to use for the DELETE body, defaults to 'multipart'
body	a list of data to be included in the body of the DELETE request
node	The D1Node object that the request will be made to.

Value

the HTTP response from the request

auth_get *GET a resource with authenticated credentials if available.*

Description

Retrieve the data at a URL using an HTTP GET request using authentication credentials provided in a client certificate. Authenticated access depends on the suggested openssl package. If the openssl package is not installed, then the request falls back to an unauthenticated request, which may fail due to insufficient permissions. Configuration options for httr/RCurl can be passed using the normal config() mechanisms to generate a config option. Use httr_options() to see a complete list of available options.

Usage

```
auth_get(url, nconfig = config(), node, path = NULL)
```

Arguments

url	The URL to be accessed via authenticated GET.
nconfig	HTTP configuration options as used by curl, defaults to empty list
node	The D1Node object that the request will be made to.
path	Path to a file to write object to

Value

the response object from the method

auth_head *Send a http HEAD request for a resource with authenticated credentials if available.*

Description

Retrieve http header information for a URL using an HTTP HEAD request using authentication credentials provided in a client certificate or token. Authenticated access depends on the suggested openssl package. If the openssl package is not installed, then the request falls back to an unauthenticated request, which may fail due to insufficient permissions. Configuration options for httr/RCurl can be passed using the normal config() mechanisms to generate a config option. Use httr_options() to see a complete list of available options. Note: The HEAD method is identical to GET except that the server MUST NOT return a message-body in the response.

Usage

```
auth_head(url, nconfig = config(), node)
```

Arguments

url	The URL to be accessed via authenticated HEAD.
nconfig	HTTP configuration options as used by curl, defaults to empty list
node	The D1Node object that the request will be made to.

Value

the response object from the method

---

auth_post *POST a resource with authenticated credentials.*

Description

POST data to a URL using an HTTP POST request using authentication credentials provided in a client certificate. Authenticated access depends on the suggested openssl package. If the openssl package is not installed, then the request fails.

Usage

```
auth_post(url, encode = "multipart", body = NULL, node)
```

Arguments

url	The URL to be accessed via authenticated POST
encode	the type of encoding to use for the POST body, defaults to 'multipart'
body	a list of data to be included in the body of the POST request
node	The D1Node object that the request will be made to.

Value

the HTTP response from the request

auth_put *PUT a resource with authenticated credentials.*

Description

PUT data to a URL using an HTTP PUT request using authentication credentials provided in a client certificate. Authenticated access depends on the suggested openssl package. If the openssl package is not installed, then the request fails.

Usage

```
auth_put(url, encode = "multipart", body = NULL, node)
```

Arguments

url	The URL to be accessed via authenticated PUT
encode	the type of encoding to use for the PUT body, defaults to 'multipart'
body	a list of data to be included in the body of the PUT request
node	The D1Node object that the request will be made to.

Value

the HTTP response from the request

auth_put_post_delete *POST, PUT, or DELETE a resource with authenticated credentials.*

Description

POST, PUT, or DELETE data to a URL using an HTTP request using authentication credentials provided in a client authentication, either via authentication token or certificate. If the user does not have a valid token or certificate, request fails.

Usage

```
auth_put_post_delete(method, url, encode = "multipart", body = NULL, node)
```

Arguments

method	a string indicating which HTTP method to use (post, put, or delete)
url	The URL to be accessed via authenticated PUT
encode	the type of encoding to use for the PUT body, defaults to 'multipart'
body	a list of data to be included in the body of the PUT request
node	The D1Node object that the request will be made to.

Value

the response object from the method

`canRead,D1Object-method` *Test whether the provided subject can read an object.*

Description

Using the AccessPolicy, tests whether the subject has read permission for the object. This method is meant work prior to submission to a repository, and will show the permissions that would be enforced by the repository on submission. Currently it only uses the AccessPolicy to determine who can read (and not the rightsHolder field, which always can read an object). If an object has been granted read access by the special "public" subject, then all subjects have read access.

Usage

```
## S4 method for signature 'D1Object'
canRead(x, subject)
```

Arguments

`x`	D1Object
`subject`	: the subject name of the person/system to check for read permissions

Details

The subject name used in both the AccessPolicy and in the `'subject'` argument to this method is a string value, but is generally formatted as an X.509 name formatted according to RFC 2253.

Value

logical TRUE if the subject has read permission, or FALSE otherwise

---

`CertificateManager` *Create a CertificateManager object*

Description

Construct an instance of CertficateManager to provide mechanisms to obtain, load, verify, and display X509 certificates. If the `'location'` field is provided, then that location is interpreted as the fully qualified path to a certificate on the local filesystem, and the default locations will not be searched. If `'location'` is missing, then the default Globus Grid Security Infrastructure (GSI) location is searched, which is `'/tmp/x509up_u${UID}'` on Unix or `'${tmpdir}/x509up_u${UID}'` on Windows or `'${tmpdir}/x509up_u${user.name}'` if `'${UID}'` is not defined.

Usage

```
CertificateManager(...)

## S4 method for signature 'ANY'
CertificateManager()
```

Arguments

...	(Not yet used)

Value

the CertificateManager object

CertificateManager-class

CertficateManager provides mechanisms to obtain, load, verify, and display X509 certificates.

Description

CertficateManager provides management functions for X.509 certificates that are used to authenticate connections to DataONE nodes over SSL. The X.509 certificates are issued by a recognized Certificate Authority, typically CILogon, and include fields that provide information about the authenticated party, including the distinguished name of the subject, the dates of validity of the certificate, and other information needed for authorization decisions. Certificate validity is determined by examining the validity of the certificate signatures for each certificate in a chain leading to a trusted root certificate. Within DataONE, the current trusted root certificate authorities are CILogon and DataONE itself.

Details

Understanding how your identity is managed is important for working with DataONE, especially to avoid unexpected results. For example, depending your authorization status, searches may or may return only public records, or the full set of public and private records. Object and package retrievals might fail if some or all of the objects being retrieved are private. Creating or updating objects on DataONE nodes and reserving identifiers reservations might fail if your authorization certificate is missing or expired.

DataONE identifies you using CILogon-provided x509 certificates. DataONE has partnered with CILogon to provide a widely-accessible certificate issuing mechanism that allows DataONE users to use existing trusted institutional and public accounts.

CILogon recognizes many identity providers, including many universities as well as Google, so most times users new to DataONE can get certificates using one of their existing accounts. For more information about the CILogon service, see "https://cilogon.org/?skin=DataONE" .

X509 Certificates differ from typical username-password login schemes in that certificates can be used by more than one application, which is very useful when using more than one DataONE-enabled application. The certificates CILogon issues for DataONE are so-called "short-lived" certificates that currently expire 18 hours from the time of issuing. Typically you will want to download a fresh certificate the first time you interact with DataONE each day.

Slots

`location` value of type `"character"`, containing a path to a custom certificate location

`obscuredpath` value of type `"character"`, containing the path used to temporarily obscure a certificate

Methods

- `CertificateManager`: Create a CertificateManager object.
- `getCertLocation`: Get the file path on disk of the client certificate file.
- `showClientSubject`: Get DataONE Identity as Stored in the CILogon Certificate.
- `isCertExpired`: Determine if an X.509 certificate has expired.
- `getCertExpires`: Show the date and time when an X.509 certificate expires.
- `downloadCert`: Open the CILogon Certificate download page in the default browser.
- `obscureCert`: Obscure the CILogon Client Certificate.
- `restoreCert`: Restore the CILogon client certificate by renaming it to its original location

Author(s)

Matthew Jones, Rob Nahf

See Also

`dataone` package description.

Examples

```
## Not run:
cm <- suppressWarnings(CertificateManager())
cert <- getCertLocation(cm)
subject <- showClientSubject(cm)
expires <- getCertExpires(cm)
isExpired <- isCertExpired(cm)
cm <- obscureCert(cm)
cm <- restoreCert(cm)

## End(Not run)
```

CNode *Create a CNode object.*

Description

Create a CNode object.

Usage

```
CNode(x, ...)

## S4 method for signature 'ANY'
CNode()

## S4 method for signature 'character'
CNode(x)
```

Arguments

x	The label for the DataONE environment to be using ('PROD','STAGING', 'STAGING2,'SANDBOX', 'SANDBOX2','DEV', 'DEV2')
...	(not yet used)

Details

For an explanation of DataONE Coordinating Nodes, see the section *"DataONE Environments"* in the overview vignette by entering the R command: `vignette("dataone-overview")`.

Value

the CNode object representing the DataONE environment

See Also

CNode class description.

Examples

```
## Not run:
cn <- CNode("PROD")

## End(Not run)
```

CNode-class *Provides R API to DataONE Coordinating Node services.*

Description

The CNode class provides methods that interact with a DataONE Coordinating Node.

Slots

`endpoint` A character vector containing URL service endpoint for the Coordinating Node

`services` A data.frame containing the supported service tiers for a CN

`serviceUrls` A data.frame contains URL endpoints for certain services

Methods

- `CNode`: Construct a CNode object.
- `listFormats`: List all object formats registered in DataONE.
- `getFormat`: Get information for a single DataONE object format
- `getChecksum`: Get the checksum for the data object associated with the specified pid.
- `listNodes`: Get the list of nodes associated with a CN.
- `reserveIdentifier`: Reserve a identifier that is unique in the DataONE network.
- `hasReservation`: Checks to determine if the supplied subject is the owner of the reservation of id.
- `setObsoletedBy`: Set a pid as being obsoleted by another pid
- `getObject`: Get the bytes associated with an object on this Coordinating Node.
- `getSystemMetadata`: Get the bytes associated with an object on this Coordinating Node.
- `describeObject`: Get a list of coordinating nodes holding a given pid.
- `resolve`: Get a list of coordinating nodes holding a given pid.
- `getMNode`: Get a reference to a node based on its identifier.
- `echoCredentials`: Echo the credentials used to make the call.
- `isAuthorized`: Check if an action is authorized for the specified identifier.

See Also

`dataone` package description.

convert.csv *Convert a DataFrame to Standard CSV.*

Description

Convert a DataFrame to Standard CSV.

Usage

```
convert.csv(x, ...)

## S4 method for signature 'D1Client'
convert.csv(x, df, ...)
```

Arguments

x	A D1Client object
...	additional params passed to write.csv
df	the dataFrame

Value

the dataframe serialized as a .csv

See Also

D1Client class description.

Examples

```
## Not run:
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
testdf <- data.frame(x=1:10,y=11:20)
sdf <- convert.csv(d1c, testdf)

## End(Not run)
```

createD1Object *Create the Object in the DataONE System*

Description

Create the Object in the DataONE System

Usage

```
createD1Object(x, d1Object, ...)

## S4 method for signature 'D1Client,D1Object'
createD1Object(x, d1Object)
```

Arguments

x	: D1Client
d1Object	A D1Object instance to upload to DataONE
...	(not yet used)

Value

TRUE if the object was successfully uploaded, FALSE if not.

Examples

```
## Not run:
library(dataone)
library(uuid)
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
data <- readLines(system.file("extdata/strix-pacific-northwest.xml", package="dataone"))
dataRaw <- charToRaw(paste(data, collapse="\n"))
newid <- sprintf("urn:node:%s", UUIDgenerate())
d1o <- new("D1Object", id=newid, data=dataRaw, format="text/plain")
d1o <- setPublicAccess(d1o)
# Upload the object to DataONE (requires authentication)
uploaded <- createD1Object(d1c, d1o)

## End(Not run)
```

createDataPackage *Create a DataPackage on a DataONE Member Node*

Description

Upload all members of a DataPackage to DataONE.

Usage

```
createDataPackage(x, dataPackage, ...)

## S4 method for signature 'D1Client,DataPackage'
createDataPackage(x, dataPackage, ...)
```

Arguments

x	A D1Client instance.
dataPackage	The DataPackage instance to be submitted to DataONE for creation.
...	Additional arguments

Value

The identifier of the uploaded package.

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
testdf <- data.frame(x=1:10,y=11:20)
csvfile <- tempfile(pattern = "file", tmpdir = tempdir(), fileext = ".csv")
write.csv(testdf, csvfile, row.names=FALSE)
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
dp <- new("DataPackage")
emlFile <- system.file("extdata/strix-pacific-northwest.xml", package="dataone")
emlChar <- readLines(emlFile)
emlRaw <- charToRaw(paste(emlChar, collapse="\n"))
emlId <- sprintf("urn:uuid:%s", UUIDgenerate())
metadataObj <- new("D1Object", id=emlId, format="eml://ecoinformatics.org/eml-2.1.1", data=emlRaw,
  mnNodeId=getMNodeId(d1c))
sdf <- read.csv(csvfile)
stf <- charToRaw(convert.csv(d1c, sdf))
sciId <- sprintf("urn:uuid:%s", UUIDgenerate())
sciObj <- new("D1Object", id=sciId, format="text/csv", data=stf, mnNodeId=getMNodeId(d1c))
dp <- addMember(dp, do=sciObj, mo=metadataObj)
```

```
expect_true(is.element(sciObj@dataObject@sysmeta@identifier, getIdentifiers(dp)))
resourceMapId <- createDataPackage(d1c, dp, replicate=TRUE, public=TRUE)

## End(Not run)
```

`createObject` *Create an object on a Member Node.*

Description

This method provides the ability to upload a data or metadata object to the Member Node provided in the `'mnode'` parameter.

Usage

```
createObject(x, ...)

## S4 method for signature 'MNode'
createObject(x, pid, file = as.character(NA), sysmeta, dataobj = NULL, ...)
```

Arguments

`x`	The MNode instance on which the object will be created
`...`	(Not yet used.)
`pid`	The identifier of the object to be created
`file`	the absolute file location of the object to be uploaded
`sysmeta`	a SystemMetadata instance describing properties of the object
`dataobj`	a `raw` object to use for the upload, instead of the contents of the `file` argument.

Details

In the version 2.0 library and higher, this operation can utilize an 'dataone_token' option to provide credentials for write operations in DataONE. The authentication token is obtained from DataONE (see your profile on https://search.dataone.org). See the `vignette("dataone-overview")` for details. Alternatively, the version 1.0 approach of using an X.509 certificate in a default location of the file system can also be used. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE. See `vignette("dataone-overview")` for details.

Value

a `character` containing the identifier that was created.

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MNStorage.create

Examples

```
## Not run:
# Create an object in the DataONE "STAGING" environment
library(dataone)
library(uuid)
library(digest)
library(datapack)
cn <- CNode("STAGING")
mn <- getMNode(cn, "urn:node:mnStageUCSB2")
# Have Dataone create an identifier for you (requires authentication)
\dontrun{
newid <- generateIdentifier(mn, "UUID")
}
# Create an identifier manually
newid <- paste("urn:uuid:", UUIDgenerate(), sep="")
testdf <- data.frame(x=1:10,y=11:20)
csvfile <- paste(tempfile(), ".csv", sep="")
write.csv(testdf, csvfile, row.names=FALSE)
format <- "text/csv"
size <- file.info(csvfile)$size
sha256 <- digest(csvfile, algo="sha256", serialize=FALSE, file=TRUE)
sysmeta <- new("SystemMetadata", identifier=newid, formatId=format, size=size, checksum=sha256)
sysmeta <- addAccessRule(sysmeta, "public", "read")
# Upload the data to DataONE (requires authentication)
\dontrun{
createObject(mn, newid, csvfile, sysmeta)
}

## End(Not run)
```

`D1Client` *The DataONE client class used to download, update and search for data in the DataONE network.*

Description

The DataONE client class used to download, update and search for data in the DataONE network.

Usage

```
D1Client(x, y, ...)

## S4 method for signature 'ANY,ANY'
D1Client()

## S4 method for signature 'character,ANY'
D1Client(x, y, ...)

## S4 method for signature 'character,character'
```

```
D1Client(x, y)

## S4 method for signature 'CNode,MNode'
D1Client(x, y, ...)

## S4 method for signature 'character,MNode'
D1Client(x, y, ...)
```

Arguments

x	The label for the DataONE environment to be using ('PROD','STAGING','SANDBOX','DEV'). This parameter can alternatively be a CNode instance, with the 'y' parameter specified as an MNode instance.
y	The node Id of the application's 'home' node. Should be already registered to the corresponding 'env'. This parameter can alternatively be an MNode instance, with the 'x' parameter specified as a CNode instance.
...	(not yet used)

Value

the D1Client object representing the DataONE environment

See Also

D1Client class description.

Examples

```
## Not run:
cli <- D1Client("PROD", "urn:node:KNB")
cn <- CNode('STAGING2')
mn <- getMNode(cn,'urn:node:mnTestKNB')
cli <- D1Client(cn,mn)

## End(Not run)
```

D1Client-class *The D1Client class contains methods that perform high level DataONE tasks*

Description

The methods in the D1Client class call the low level DataONE API to perform involved tasks such as uploading all the packages in a DataPackage (i.e uploadDataPackage)

Slots

- cn The Coordinating Node associated with the D1Client object
- mn The Member Node associated with this D1Client object

Methods

- D1Client: Construct a D1Client object.
- convert.csv: Convert a DataFrame to Standard CSV.
- createDataPackage: Create a DataPackage on a DataONE Member Node.
- encodeUrlPath: Encode the Input for a URL Path Segment.
- encodeUrlQuery: Encode the Input for a URL Query Segment.
- getDataObject: Download a single data object from a DataONE Federation member node.
- getDataPackage: Download a collection of data object from the DataONE Federation member node as a DataPackage.
- getEndpoint: Return the URL endpoint for the DataONE Coordinating Node.
- getMetadataMember: Get the DataObject containing package metadata.
- getMNodeId: Get the member node identifier associated with this D1Client object.
- listMemberNodes: List DataONE Member Nodes.
- reserveIdentifier: Reserve a unique identifier in the DataONE Network.
- uploadDataObject: Upload a DataObject to a DataONE member node.
- uploadDataPackage: Upload a DataPackage to a DataONE member node.

See Also

dataone package description.

---

d1IdentifierSearch *Query the DataONE Solr endpoint of the Coordinating Node.*

Description

The DataONE CN Solr query engine is searched using the provided query string.

Usage

```
d1IdentifierSearch(x, ...)

## S4 method for signature 'D1Client'
d1IdentifierSearch(x, solrQuery)
```

Arguments

x	D1Client: representing the DataONE environment being queried
...	Additional parameters
solrQuery	character: a query string

Value

a vector of identifiers found

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
client <- new("D1Client")
result <- d1IdentifierSearch(client,solrQuery="species population diversity")

## End(Not run)
```

D1Node *Create a D1Node object.*

Description

Create a D1Node object.

Usage

```
D1Node(xml, ...)

## S4 method for signature 'XMLInternalElementNode'
D1Node(xml)
```

Arguments

xml	An XML object that describes the node to be initialized (see listNodes).
...	(not yet used)

Value

the Node object representing the DataONE environment

D1Node-class *A base class for CNode and MNode.*

Description

D1Node is a base class for CNode and MNode classes and contains class slots and methods that are common between these two child classes.

Slots

`identifier` A character string containing a URN that uniquely identifiers the node

`name` A character string containing a plain text name for the node

`description` A character string describing the node

`baseURL` A character string of the registered baseURL for the node, which does not include the version string

`subject` A character string containing the Distinguished Name of this node, used for authentication

`contactSubject` The Distinguished Name of contact person for this node

`replicate` A logical flag indicating whether the node accepts replicas

`type` The node type, either 'mn' or 'cn'

`state` A character string that indicates whether or not the node is accessible, either 'up' or 'down'

`services` A data.frame containing the service tiers supported by this node.

`serviceUrls` A data.frame that contains DataONE service Urls

`APIversion` A character string indicating version of the DataONE API for this node, e.g. "v2"

`env` A character string, either 'prod' if this node is in the production environment, otherwise 'test'

Methods

- `D1Node-initialize{initialize}`: Initialize a D1Node
- `D1Node`: Create a MNode object representing a DataONE Member Node repository.
- `archive`: Change the state of an object so that it is hidden from searches.
- `describeObject`: Get header information for a given pid.
- `getChecksum`: Get the checksum for the data object associated with the specified pid.
- `getObject`: Get the bytes associated with an object on a node.
- `getQueryEngineDescription`: Query a node for the list of query engines available on the node.
- `getSystemMetadata`: Get the metadata describing system properties associated with an object on the Node.
- `listObjects`: Retrieve the list of objects that match the search parameters.
- `listQueryEngines`: Query a node for the list of query engines available on the node.
- `ping`: Test if a node is online and accepting DataONE requests.
- `encodeSolr`: Encode the input for Solr Queries.
- `query`: Search DataONE for data and metadata objects.
- `isAuthorized`: Check if an action is authorized for the specified identifier.

D1Object *Create a D1Object instance.*

Description

Create a D1Object instance.

Usage

```
D1Object(...)
```

Arguments

...	(additional arguments)

Value

the D1Object instance

See Also

D1Object class description.

D1Object-class *D1Object (Defunct) is a representation of a DataObject.*

Description

D1Object has been defunct in favor of datapack::DataObject, which provides a wrapper for data and associated SystemMetadata.

Slots

`dataObject` A backing instance of a DataObject, to which all methods and state are proxied

Methods

- D1Object-initialize: Initialize a D1Object
- getData: Get the data content of a specified D1Object.
- getIdentifier: Get the identifier of the D1Object.
- getFormatId: Get the formatId of the D1Object
- setPublicAccess: Add a Rule to the AccessPolicy to make the object publicly readable.
- canRead: Test whether the provided subject can read an object.
- asDataFrame: Return the D1Object as a data.frame.

See Also

dataone package description.

---

d1SolrQuery *A method to query the DataONE solr endpoint of the Coordinating Node.*

Description

It expects any lucene reserved characters to already be escaped with backslash. If solrQuery is a list, it is expected to have field names as attributes and search values as the values in the list.

Usage

```
d1SolrQuery(x, solrQuery)

## S4 method for signature 'D1Client,list'
d1SolrQuery(x, solrQuery)

## S4 method for signature 'D1Client,character'
d1SolrQuery(x, solrQuery)
```

Arguments

x	the D1Client (environment) being queried
solrQuery	list or character: a fully encoded query string

Value

the solr response (XML)

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")
queryParams <- list(q="id:doi*", rows="5",
    fq="(abstract:chlorophyll AND dateUploaded:[2000-01-01T00:00:00Z TO NOW])",
    fl="title,id,abstract,size,dateUploaded,attributeName")
result <- d1SolrQuery(d1c, queryParams)

## End(Not run)
```

`d1_errors` *This function parses a DataONE service response message for errors, and extracts and prints error information.*

Description

This function parses a DataONE service response message for errors, and extracts and prints error information.

Usage

```
d1_errors(x)
```

Arguments

`x`	The DataONE service response

`data.characterEncoding` *CharacterEncoding*

Description

The character encoding used, for example "UTF-8"

Usage

```
data.characterEncoding(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.characterEncoding(x, index)
```

Arguments

`x`	the TableDescriber
`index`	index of the table within the document
`...`	Additional parameters

Value

the encoding used when serializing the data

Author(s)

rnahf

data.formatFamily *Data Format*

Description

Get the table format family.

Usage

```
data.formatFamily(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.formatFamily(x, index)
```

Arguments

x	the TableDescriber
index	index of the table within the document
...	Additional parameters

Value

the format of the data object being described

Author(s)

rnahf

data.tableAttributeNames *returns the attribute names*

Description

THe attribute names are defined in the metadata document for the specified data table

Usage

```
data.tableAttributeNames(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableAttributeNames(x, index)
```

Arguments

x	- the TableDescriber instance
index	- the index of the table to get results for
...	(not yet used)

Value

the attribute (column) names of the data

Author(s)

rnahf

`data.tableAttributeOrientation`

The Attribute (Header) Orientation

Description

Which way to the attribute headers run? Most data has a header row where the attribute names go across "columns", in row in which case, the return value for this method should be "columns."

Usage

```
data.tableAttributeOrientation(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableAttributeOrientation(x, index)
```

Arguments

x	- the TableDescriber
index	- the index of the table within the document
...	Additional parameters

Value

legal values are "columns" | "rows"

Note

this is the opposite question from how records are organized!!

Author(s)

rnahf

`data.tableAttributeStorageTypes`
returns the attributes' data storage types

Description

The attributes' data storage types are defined in the metadata document for the specified data table

Usage

```
data.tableAttributeStorageTypes(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableAttributeStorageTypes(x, index)
```

Arguments

`x`	- the TableDescriber instance
`index`	- the index of the table to get results for
`...`	(not yet used)

Value

the data storage types of the attributes

Author(s)

rnahf

`data.tableAttributeTypes`
returns the attributes' data types

Description

The attributes' data types are defined in the metadata document for the specified data table

Usage

```
data.tableAttributeTypes(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableAttributeTypes(x, index)
```

Arguments

x	- the TableDescriber instance
index	- the index of the table to get results for
...	(not yet used)

Value

the data types of the attributes

Author(s)

rnahf

`data.tableFieldDelimiter` *Field Delimiter*

Description

Get the table field delimiter.

Usage

```
data.tableFieldDelimiter(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableFieldDelimiter(x, index)
```

Arguments

x	the TableDescriber
index	index of the table within the document
...	Additional parameters

Value

the field delimiter(s) of the data object being described

Author(s)

rnahf

data.tableMissingValueCodes *returns missing value codes*

Description

the missing value codes are defined in the metadata document for the specified data table

Usage

```
data.tableMissingValueCodes(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableMissingValueCodes(x, index)
```

Arguments

x	- the TableDescriber instance
index	- the index of the table to get results for
...	(not yet used)

Value

vector of missing value codes

Author(s)

rnahf

data.tableQuoteCharacter *Quote Character*

Description

Get the table quote character.

Usage

```
data.tableQuoteCharacter(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableQuoteCharacter(x, index)
```

Arguments

x	the TableDescriber
index	index of the table within the document
...	Additional parameters

Value

the quote characters(s) for the data object being described

Author(s)

rnahf

---

data.tableSkipLinesHeader

Number of lines to skip before reading data

Description

The specified number of lines are skipped.

Usage

```
data.tableSkipLinesHeader(x, index, ...)

## S4 method for signature 'EMLParser,numeric'
data.tableSkipLinesHeader(x, index)
```

Arguments

x	- the TableDescriber
index	- the index of the table within the document
...	Additional parameters

Value

the number of lines to skip

Author(s)

rnahf

See Also

help(read.table)

dataone *Search, download and upload data to the DataONE network.*

Description

The R package *dataone* provides read/write access to data and metadata from the DataONE network of Member Node data repositories. Member Nodes in DataONE are independent data repositories that have adopted the DataONE services for interoperability, making each of the repositories accessible to client tools such as the DataONE R Client using a standard interface. The DataONE R Client can be used to access data files and to write new data and metadata files to nodes in the DataONE network.

Classes

- `AuthenticationManager`: AuthenticationManager provides methods to validate DataONE authentication.
- `CNode`: A CNode represents a DataONE Coordinating Node and can be used to access its services.
- `D1Client`: The D1Client class contains methods that perform high level dataone tasks.
- `D1Node`: A base class for CNode and MNode.
- `MNode`: MNode provides functions interacting with the a DataONE Member Node repository.

Author(s)

Matthew B. Jones (NCEAS) and Peter Slaughter (NCEAS)

See Also

A description of the *dataone* R package is available with the command: `'vignette("dataone-overview")'`.

describeObject *Efficiently get systemmetadata for an object.*

Description

This method provides a lighter weight mechanism than getSystemMetadata() for a client to determine basic properties of the referenced object. This operation requires read privileges for the object specified by `'pid'`, as is granted with a DataONE authentication token or X.509 certificate.

Usage

```
describeObject(x, ...)

## S4 method for signature 'D1Node'
describeObject(x, pid)
```

Arguments

x	The MNode or CNode instance to send request to.
...	(Not yet used)
pid	Identifier for the object in question. May be either a PID or a SID. Transmitted as part of the URL path and must be escaped accordingly.

Value

A list of header elements

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MNRead.describe

Examples

```
## Not run:
library(dataone)
mn_uri <- "https://knb.ecoinformatics.org/knb/d1/mn/v1"
mn <- MNode(mn_uri)
pid <- "knb.473.1"
describeObject(mn, pid)
describeObject(mn, "adfadf") # warning message when wrong pid

## End(Not run)
```

---

documented.d1Identifiers

Get DataONE identifiers

Description

Get the DataONE identifier associated with each table

Usage

```
documented.d1Identifiers(x, ...)

## S4 method for signature 'EMLParser'
documented.d1Identifiers(x)
```

Arguments

x	the TableDescriber
...	Additional parameters

Value

vector of dataONE identifiers

Author(s)

rnahf

`documented.entityNames` *Get the entity names associated with each table*

Description

The entity names associated with each table are returned.

Usage

```
documented.entityNames(x, ...)

## S4 method for signature 'EMLParser'
documented.entityNames(x)
```

Arguments

x	the TableDescriber
...	Additional parameters

Value

vector of entity names

Author(s)

rnahf

documented.sizes *Get the sizes of the described data tables.*

Description

Get the table size.

Usage

```
documented.sizes(x, ...)

## S4 method for signature 'EMLParser'
documented.sizes(x)
```

Arguments

x	the TableDescriber
...	Additional parameters

Value

vector of data table sizes (in bytes)

Author(s)

rnahf

downloadCert *Open the CILogon Certificate download page in the default browser.*

Description

A convenience method to take you to the CILogon download page: "https://cilogon.org/?skin=DataONE. Logging into CILogon will allow you to download your X.509 certificate to your local computer. Typically, the certificate is saved in the default Globus location for certificates (getCertLocation) and once it is there, the 'dataone' package will use the certificate for all authenticated operations. Deleting the certificate file is the equivalent of logging out.

Usage

```
downloadCert(x, ...)

## S4 method for signature 'CertificateManager'
downloadCert(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

`downloadObject` *Download an object from the DataONE Federation to Disk.*

Description

A convenience method to download an object to disk.

Usage

```
downloadObject(x, identifier, ...)

## S4 method for signature 'D1Client'
downloadObject(x, identifier, path = getwd(), check = as.logical(TRUE))
```

Arguments

x	A D1Client object.
identifier	The identifier of the object to get.
...	(Not yet used.)
path	(optional) Path to a directory to write object to. The name of the file will be determined from the SystemMetada of the object (see details for more information). The function will fail if a file with the same name already exists in the directory.
check	(optional) A logical value, if TRUE check if this object has been obsoleted by another object in DataONE.

Details

This method performs multiple underlying calls to the DataONE repository network. CN.resolve() is called to locate the object on one or more repositories, and then each of these is accessed until success at downloading the associated SystemMetadata for the object. The SystemMetadata is used to assign a name to the file that is output to disk. If a fileName is specified in the SystemMetadata, then the file output to disk will be named according to the SystemMetadata fileName. If there is not a specified SystemMetadata fileName, the identifier will be used as the file name output to disk. If the identifier is used as the file name, a file name extension will be determined using the SystemMetadata formatID along with information from CNCore.listFormats(). If the SystemMetadata formatID is "application/octet-stream" no extension will be written.

Value

A path where the ouput file is written to.

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")
pid <- "solson.5.1"
path <- downloadObject(d1c, pid)

## End(Not run)
```

`echoCredentials` *Echo the credentials used to make the call.*

Description

This method can be used to verify the client certificate is valid and contains the expected information.

Usage

```
echoCredentials(x, ...)

## S4 method for signature 'CNode'
echoCredentials(x)
```

Arguments

`x`	The coordinating node to send the request to.
`...`	(Not yet used)

Details

The authentication credentials contained in the X.509 certificate or authentication token are send with the request.

Value

A list containing authentication info.

Examples

```
## Not run:
cn <- CNode("STAGING")
creds <- echoCredentials(cn)
print(creds$person$subject)

## End(Not run)
```

EMLParser *Construct an EML parser object.*

Description

Construct an EML parser object.

Usage

```
EMLParser(d1Object, ...)

## S4 method for signature 'D1Object'
EMLParser(d1Object)
```

Arguments

d1Object	The D1Object to obtain data from.
...	Additional parameters

EMLParser-class *Handler for Parsing Table Format Details from Metadata*

Description

#' Implements methods to provide parsing instructions for asDataFrame.

Details

#' handles eml formats 2.0.0 through 2.1.1

Slots

d1Object the metadata object

xmlDocRoot the xml representation of the metadata

Author(s)

rnahf

encodeSolr *Encode the input for Solr Queries*

Description

Treating all special characters and spaces as literals, backslash escape special characters, and double-quote if necessary.

Usage

```
encodeSolr(x, ...)

## S4 method for signature 'character'
encodeSolr(x, ...)
```

Arguments

x	: a string to encode
...	(not yet used.)

Value

the encoded form of the input

Examples

```
encodeSolr("this & that")
```

encodeUrlPath *Encode the Input for a URL Path Segment.*

Description

Encodes the characters of the input so they are not interpreted as reserved characters in url strings. Will also encode non-ASCII unicode characters.

Usage

```
encodeUrlPath(x, ...)

## S4 method for signature 'D1Client'
encodeUrlPath(x, pathSegment, ...)
```

Arguments

x	A D1Client object
...	(Not yet used.)
pathSegment	: a string to encode

Value

the encoded form of the input

See Also

D1Client class description.

Examples

```
## Not run:
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
fullyEncodedPath <- paste0("cn/v1/object/",
    encodeUrlPath(d1c, "doi:10.6085/AA/YBHX00_XXXITBDXMMR01_20040720.50.5"))

## End(Not run)
```

---

encodeUrlQuery *Encode the Input for a URL Query Segment.*

Description

Encodes the characters of the input so they are not interpreted as reserved characters in url strings. Will also encode non-ASCII unicode characters.

Usage

```
encodeUrlQuery(x, ...)

## S4 method for signature 'D1Client'
encodeUrlQuery(x, querySegment, ...)
```

Arguments

x	A D1Client object.
...	(Not yet used.)
querySegment	: a string to encode

Value

the encoded form of the input

See Also

D1Client class description.

Examples

```
## Not run:
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
fullyEncodedQuery <- paste0("q=id:",
   encodeUrlQuery(d1c, encodeSolr("doi:10.6085/AA/YBHX00_XXXITBDXMMR01_20040720.50.5")))

## End(Not run)
```

---

evaluateAuth *Evaluate DataONE authentication.*

Description

A valid DataONE authentication method is looked for and all authentication information is retrieved from it.

Usage

```
evaluateAuth(.Object, ...)

## S4 method for signature 'AuthenticationManager'
evaluateAuth(.Object, node)
```

Arguments

.Object	an Authentication Object.
...	additional parameters
node	A D1Node object.

Details

If the node specified in the 'node' parameter is a DataONE v2 node or higher, then an authentication token is checked if one exists. If it is readable and not expired, then information for the token is returned. If a valid token does not exist, then the X.509 certificate is checked, if it exists. If it is valid then information is returned for the certificate.

Value

A table containing authentication information.

`generateIdentifier` *Get a unique identifier that is generated by the Member Node repository and guaranteed to be unique.*

Description

Creating objects requires use of a unique persistent identifier (pid) when calling the create function. Member Nodes may optionally provide the generateIdentifier service to issue such identifiers, ensuring that they are unique. Each identifier conforms to an identifier scheme, which determines the syntax and rules for how the identifier that is generated is formatted. All Member Nodes that implement this method must support the UUID scheme, but may also support other schemes such as DOI and others.

Usage

```
generateIdentifier(x, ...)

## S4 method for signature 'MNode'
generateIdentifier(x, scheme = "UUID", fragment = NULL)
```

Arguments

`x`	The MNode instance on which the object will be created
`...`	(Not yet used.)
`scheme`	The identifier scheme to be used, such as DOI, UUID, etc.
`fragment`	An optional fragment to be prepended to the identifier for schemes that support it (not all do).

Details

In the version 2.0 library and higher, this operation can utilize an 'dataone_token' option to provide credentials for write operations in DataONE. The authentication token is obtained from DataONE (see your profile on https://search.dataone.org). See the `vignette("dataone-overview")` for details. Alternatively, the version 1.0 approach of using an X.509 certificate in a default location of the file system can also be used. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE. See `vignette("dataone-overview")` for details.

Value

the character string of the generated unique identifier

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MNStorage.generateIdentifier

Examples

```
## Not run:
library(dataone)
cn <- CNode("STAGING")
mn <- getMNode(cn, "urn:node:mnStageUCSB2")
newid <- generateIdentifier(mn, "UUID")

## End(Not run)
```

`getAuthExpires` *Get the expiration date of the current authentication method.*

Description

The expiration date of the current authentication method, either authentication token or X.509 certificate, is returned as a Greenwich Mean Time (GMT) value.

Usage

```
getAuthExpires(.Object, node)

## S4 method for signature 'AuthenticationManager'
getAuthExpires(.Object, node)
```

Arguments

`.Object`	An AuthenticationManager instance
`node`	A D1Node instance

Value

The expiration date for the current authentication mechanism being used.

`getAuthMethod` *Get the current valid authentication mechanism.*

Description

Get the current valid authentication mechanism.

Usage

```
getAuthMethod(.Object, ...)

## S4 method for signature 'AuthenticationManager'
getAuthMethod(.Object, node)
```

Arguments

.Object	An AuthenticationManager instance
...	(Not yet used)
node	A D1Node instance to determine the authentication method for.

Details

The current authentication method being used, either an authentication token or an X.509 certificate. The 'node' argument is used to determine the authentication mechanism that is appropriate for the specified 'node'. For example, authentication tokens are supported on DataONE nodes that use the DataONE V2.0 API or higher, so if the node uses the V1 API, then only an X.509 certificate can be used.

Value

The current authentication mechanism as a character string, either "token" or "cert".

---

getAuthSubject *Get the authentication subject.*

Description

Get the authentication subject.

Usage

```
getAuthSubject(.Object, ...)

## S4 method for signature 'AuthenticationManager'
getAuthSubject(.Object, node)
```

Arguments

.Object	an AuthenticationManager instance
...	(Not yet used)
node	A D1Node instance

Details

The authenticated user, aka 'subject' is retrieved from the authentication mechanism currently being used, either an authentication token or an X.509 certificate. The 'node' argument is used to determine the authentication mechanism that is appropriate for the specified 'node'. For example, authentication tokens are supported on DataONE nodes that use the DataONE V2.0 API or higher, so if the node uses the V1 API, then only an X.509 certificate can be used.

Value

the DataONE Subject that is your client's identity

`getCapabilities` *Get the node capabilities description, and store the information in the MNode.*

Description

Access the DataONE getCapabilities() service for the Member Node, which returns an XML description of the repository and the services it offers.

Usage

```
getCapabilities(x, ...)

## S4 method for signature 'MNode'
getCapabilities(x)
```

Arguments

`x`	The node identifier with which this node is registered in DataONE
`...`	(Not yet used.)

Value

an XMLInternalDocument object representing the DataONE environment

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MN_core.getCapabilities

Examples

```
## Not run:
library(dataone)
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
xml <- getCapabilities(mn)

## End(Not run)
```

getCert — *Get the DataONE X.509 Certificate location.*

Description

Get the DataONE X.509 Certificate location.

Usage

```
getCert(.Object, ...)

## S4 method for signature 'AuthenticationManager'
getCert(.Object)
```

Arguments

.Object	an AuthenticationManager instance
...	(Not yet used)

Value

The filename of the current DataONE X.509 Certificate if it is available.

getCertExpires — *Show the date and time when an X.509 certificate expires.*

Description

Each X.509 has a range of certificate validity times. This method returns the X.509 'notAfter' field formatted as a 'POSIXct' date value.

Usage

```
getCertExpires(x, ...)

## S4 method for signature 'CertificateManager'
getCertExpires(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

Value

POSIXct value

getCertInfo *Get X.509 Certificate information*

Description

The DataONE X.509 certificate is read, if it is present and the information contained in the certificate is returned as a data.frame.

Usage

```
getCertInfo(.Object)

## S4 method for signature 'AuthenticationManager'
getCertInfo(.Object)
```

Arguments

.Object	an Authentication Object.

Value

A data.frame containing information about the X.509 certificate.

getCertLocation *Get the file path on disk of the client certificate file.*

Description

Find the location of the client certificate, which is typically in a default location on disk, unless the 'location' slot has been set with a custom location for the certificate.

Usage

```
getCertLocation(x, ...)

## S4 method for signature 'CertificateManager'
getCertLocation(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

Details

The default Globus Grid Security Infrastructure (GSI) location is '/tmp/x509up_u${UID}' on Unix or '${tmpdir}/x509up_u${UID}' on Windows or '${tmpdir}/x509up_u${user.name}' if '${UID}' is not defined.

Value

character the path to the certificate

`getChecksum` *Get the checksum for the data object associated with the specified pid.*

Description

A checksum is calculated for an object when it is uploaded to DataONE and is submitted with the object's system metadata. The 'getChecksum' method retrieves the checksum from the specified coordinating node

Usage

```
getChecksum(x, ...)

## S4 method for signature 'CNode'
getChecksum(x, pid, ...)

## S4 method for signature 'MNode'
getChecksum(x, pid, checksumAlgorithm = "SHA-256")
```

Arguments

x	The CNode instance from which the checksum will be retrieved
...	(Not yet used)
pid	The identifier of the object
checksumAlgorithm	The algorithm used to calculate the checksum. Default="SHA-256"

Value

character the checksum value, with the checksum algorithm as the attribute "algorithm"

See Also

D1Node-class{D1Node} class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
pid <- "doi:10.5063/F1QN64NZ"
chksum <- getChecksum(mn, pid)

## End(Not run)
## Not run:
pid <- "doi:10.5063/F1QN64NZ"
cn <- CNode()
pid <- "doi:10.5063/F1QN64NZ"
chksum <- getChecksum(cn, pid)

## End(Not run)
```

`getCN` *Get the coordinating node associated with this D1Client object.*

Description

Get the coordinating node associated with this D1Client object.

Usage

```
getCN(x)

## S4 method for signature 'D1Client'
getCN(x)
```

Arguments

`x`	A D1Client object.

Note

The method getCN has been deprecated.

See Also

`D1Client` class description.

Examples

```
## Not run:
cli <- D1Client("STAGING2", "urn:node:mnTestKNB")
testCN <- getCN(cli)

## End(Not run)
```

`getD1Object` *Download a data object from the DataONE Federation.*

Description

An object is download from the DataONE network for the identifier that is provided.

Usage

```
getD1Object(x, identifier, ...)

## S4 method for signature 'D1Client'
getD1Object(x, identifier)
```

Arguments

`x`	A D1Client instance
`identifier`	The identifier of the object to download from DataONE
`...`	(not yet used)

Value

A datapack:DataObject

See Also

`D1Client` class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")
pid <- "solson.5.1"
dataObj <- getD1Object(d1c, pid)
data <- getData(dataObj)

## End(Not run)
```

`getData,D1Object-method` *Get the data content of a D1Object.*

Description

Get the data content of a D1Object.

Usage

```
## S4 method for signature 'D1Object'
getData(x)
```

Arguments

`x`	D1Object the data structure from where to get the data

`getDataObject` *Download a file (and it's associated system metadata) from the DataONE Federation as a DataObject.*

Description

A convenience method to download a data object and its associated SystemMetadata, wrapped in a DataObject class.

Usage

```
getDataObject(x, identifier, ...)

## S4 method for signature 'D1Client'
getDataObject(
  x,
  identifier,
  lazyLoad = FALSE,
  limit = "1MB",
  quiet = TRUE,
  checksumAlgorithm = as.character(NA)
)
```

Arguments

x	A D1Client object.
identifier	The identifier of the object to get.
...	(not yet used)
lazyLoad	A logical value. If TRUE, then only package member system metadata is downloaded and not data.
limit	A character value specifying maximum package member size to download. Specified with "KB", "MB" or "TB" for example: "100KB", "10MB", "20GB", "1TB". The default is "1MB". Only takes effect if 'lazyLoad=FALSE'.
quiet	A 'logical'. If TRUE (the default) then informational messages will not be printed.
checksumAlgorithm	A character value specifying the algorithm to use to re-calculate (after download) the system metadata checksum for the object's data bytes for example: "SHA-256". The default is "NA", which specifies that this re-calculation will not be performed.

Details

This method performs multiple underlying calls to the DataONE repository network. CN.resolve() is called to locate the object on one or more repositories, and then each of these is accessed until the associated SystemMetadata and data bytes are successfully downloaded. This data is then used to construct the returned DataObject. This function replaces the previous getD1Object() method in the version 1 dataone library.

The lazyLoad parameter controls whether the data byes for a DataONE item are downloaded (the system metadata is always downloaded). When lazyLoad=FALSE,the limit parameter can be used to specify the maximum size of a data file that will be downloaded. If lazyLoad is TRUE, then limit is ignored. The lazyLoad and limit can be used together in the following ways:

'lazyLoad'	'limit'	result	comments
TRUE	Any value	Data bytes are not downloaded	The 'limit' parameter is ignored
FALSE	Not specified	Data bytes are download if less than 1MB	The default 'limit' of 1MB is used
FALSE	10MB	Data bytes are downloaded if less than 10MB	The specified 'limit' values is used

Note that DataONE system metadata is always downloaded and populated into the resulting DataObject, regardless of the 'lazyLoad' and 'limit' values specified in the call to 'getDataObject()'.

Value

A DataObject or NULL if the object was not found in DataONE

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")
pid <- "solson.5.1"
obj <- getDataObject(d1c, pid)
data <- getData(obj)

## End(Not run)
```

`getDataPackage` *Download data from the DataONE Federation as a DataPackage.*

Description

This is convenience method that will download all the members in a DataONE data package and insert them into a DataPackage, including associated SystemMetadata for each package member.

Usage

```
getDataPackage(x, identifier, ...)

## S4 method for signature 'D1Client'
getDataPackage(
  x,
  identifier,
  lazyLoad = FALSE,
  limit = "1MB",
  quiet = TRUE,
  checksumAlgorithm = as.character(NA)
)
```

Arguments

`x`	A D1Client object.
`identifier`	The identifier of a package, package metadata or other package member
`...`	(not yet used)
`lazyLoad`	A `logical` value. If TRUE, then only package member system metadata is downloaded and not data. The default is `FALSE`.
`limit`	A `character` value specifying maximum package member size to download. Specified with "KB", "MB" or "TB" for example: "100KB", "10MB", "20GB", "1TB". The default is "1MB". Only takes effect if 'lazyLoad=FALSE'.
`quiet`	A `'logical'`. If TRUE (the default) then informational messages will not be printed.

checksumAlgorithm
: A character value specifying the algorithm to use to re-calculate (after download) the system metadata checksum for the object's data bytes for example: "SHA-256". The default is "NA", which specifies that this re-calculation will not be performed.

Details

A 'data package' that resides on a DataONE member node is defined as a collection of digital objects that are described by a metadata document.

The lazyLoad parameter controls whether the data bytes for a DataONE package member are downloaded (the system metadata is always downloaded). When lazyLoad=FALSE, the limit parameter can be used to specify the maximum size of a data file that will be downloaded. If lazyLoad is TRUE, then limit is ignored. The lazyLoad and limit parameters can be used together in the following ways:

'lazyLoad'	'limit'	result	comments
TRUE	Any value	Data bytes are not downloaded	The 'limit' parameter is ignored
FALSE	Not specified	Data bytes are download if less than 1MB	The default 'limit' of 1MB is used
FALSE	10MB	Data bytes are downloaded if less than 10MB	The specified 'limit' values is used

Value

A DataPackage or NULL if the package was not found in DataONE

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")
pid <- "solson.5.1"
pkg <- getDataPackage(d1c, pid)

## End(Not run)
```

---

getEndpoint *Return the URL endpoint for the DataONE Coordinating Node.*

Description

A D1Client object is associated with a DataONE Coordinating Node. This CN is either the production CN (from the "PROD" environment, the default), or a CN from one of the development environments ("STAGING", "SANDBOX", "DEV"). The base URL for the CN is returned.

Usage

```
getEndpoint(x, ...)

## S4 method for signature 'D1Client'
getEndpoint(x)
```

Arguments

x	A D1Client object
...	(Not yet used.)

Value

A character vector containing the URL of the Coordinating Node

See Also

D1Client class description.

Examples

```
## Not run:
cli <- D1Client("STAGING2", "urn:node:mnTestKNB")
cnUrl <- getEndpoint(cli)

## End(Not run)
```

---

getErrorDescription *Extract an error message from an http response.*

Description

Http requests can fail for a variety of reasons, so getErrorDescription first tries to determine what type of response was sent.

Usage

```
getErrorDescription(response)
```

Arguments

response	The httr response object to extract the error description from.

Details

The return types handled by this function are: o An incorrect url is sent to DataONE and an error is returned by the web server, not a specified DataONE service url. In this case, a generic error message may be returned, e.g. status=404, URL not found o A DataONE service was called, and returned an error message. In this case the DataONE response is parsed in an attempt to retrieve a meaningful error message.

`getFormat` *Get information for a single DataONE object format*

Description

Get information for a single DataONE object format

Usage

```
getFormat(x, ...)

## S4 method for signature 'CNode'
getFormat(x, formatId)
```

Arguments

`x`	A CNode object instance
`...`	(Not yet used)
`formatId`	The formatId to retrieve.

Value

A dataframe of all object formats registered in the DataONE Object Format Vocabulary.

See Also

`CNode` class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode()
fmt <- getFormat(cn, "eml://ecoinformatics.org/eml-2.1.0")
cat(sprintf("format name: %s\n", fmt$name))
cat(sprintf("format type: %s\n", fmt$type))
cat(sprintf("format Id: %s\n", fmt$id))

## End(Not run)
```

`getFormatId,D1Object-method`
Get the FormatId of the D1Object

Description

Get the FormatId of the D1Object

Usage

```
## S4 method for signature 'D1Object'
getFormatId(x)
```

Arguments

x	D1Object

Value

the formatId

`getIdentifier,D1Object-method`
Get the Identifier of the D1Object

Description

Get the Identifier of the D1Object

Usage

```
## S4 method for signature 'D1Object'
getIdentifier(x)
```

Arguments

x	D1Object

Value

the identifier

getMetadataMember *Get the DataObject containing package metadata*

Description

Each DataObject in the DataPackage is inspected to see if it matches one of the formats supported by DataONE for metadata. If a package member's format matches one of the supported formats, the identifier for that member is returned.

Usage

```
getMetadataMember(x, dp, ...)

## S4 method for signature 'D1Client,DataPackage'
getMetadataMember(x, dp, as = "character", ...)
```

Arguments

x	A D1Client object
dp	A DataPackage object
...	(Additional arguments, Not yet used.)
as	A value of type "character" that specifies the return value. Possible values are "character" (the default) or "DataPackage".

Details

This method calls the DataONE CN 'format' service to obtain the current format list.

Value

The identifier of the metadata object

getMN *Get a member node client based on its node identifier.*

Description

Get a member node client based on its node identifier.

Usage

```
getMN(x, nodeid, ...)

## S4 method for signature 'D1Client,ANY'
getMN(x, nodeid, ...)

## S4 method for signature 'D1Client,character'
getMN(x, nodeid)
```

Arguments

x	A D1Client object.
nodeid	The identifier of the node to retrieve.
...	(Not yet used)

Note

This method has been superceded by getMNodeId

See Also

D1Client class description.

Examples

```
## Not run:
cli <- D1Client("STAGING2", "urn:node:mnTestKNB")
testMN <- getMN(cli)

## End(Not run)
```

---

getMNode *Get a reference to a node based on its identifier*

Description

Get a reference to a node based on its identifier

Usage

```
getMNode(x, ...)

## S4 method for signature 'CNode'
getMNode(x, nodeid)
```

Arguments

x	The coordinating node to query for its registered Member Nodes
...	(Not yet used)
nodeid	The standard identifier string for this node

Details

For an explanation of DataONE Coordinating Nodes and Member Node identifiers, see the section *"DataONE Environments"* in the overview vignette by entering the R command: `vignette("dataone-overview")`.

Value

the Member Node as an MNode reference, or NULL if not found

See Also

CNode class description.

Examples

```
## Not run:
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")

## End(Not run)
```

---

getMNodeId *Get the member node identifier associated with this D1Client object..*

Description

One Member Node can be associated with the client as the default to which data and metadata are written.

Usage

```
getMNodeId(x)

## S4 method for signature 'D1Client'
getMNodeId(x)
```

Arguments

x	A D1Client object.

Value

The Member Node identifier as a character vector

See Also

D1Client class description.

Examples

```
## Not run:
cli <- D1Client("STAGING2", "urn:node:mnTestKNB")
mn <- getMNodeId(cli)

## End(Not run)
```

`getObject` *Get the bytes associated with an object on this Node.*

Description

Get the bytes associated with an object on this Node.

Usage

```
getObject(x, ...)

## S4 method for signature 'CNode'
getObject(x, pid)

## S4 method for signature 'MNode'
getObject(x, pid, check = as.logical(FALSE))
```

Arguments

x	The Node instance from which the pid will be downloaded
...	(Not yet used).
pid	The identifier of the object to be downloaded
check	A logical value, if TRUE check if this object has been obsoleted by another object in DataONE.

Details

This operation acts as the 'public' anonymous user unless an X.509 certificate is present in the default location of the file system, in which case the access will be authenticated.

Value

the bytes of the object

See Also

D1Node-class{D1Node} class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
pid <- "solson.5.1"
obj <- getObject(mn, pid)
df <- read.csv(text=rawToChar(obj))

## End(Not run)
```

`getPackage` *Download a data package from a member node.*

Description

Given a valid identifier, download a file containing all of the package members of the corresponding DataONE data package.

Usage

```
getPackage(x, ...)

## S4 method for signature 'MNode'
getPackage(
  x,
  identifier,
  format = "application/bagit-097",
  dirPath = NULL,
  unzip = FALSE
)
```

Arguments

`x`	A MNode instance representing a DataONE Member Node repository.
`...`	(not yet used)
`identifier`	The identifier of the package to retrieve. The identifier can be for the resource map, metadata file, data file, or any other package member.
`format`	The format to send the package in.
`dirPath`	The directory path to save the package to.
`unzip`	(logical) If the dirPath is specified, the package can also be unzipped automatically (unzip=TRUE).

Details

The default data package file format is a Bagit file (https://tools.ietf.org/html/draft-kunze-bagit-09). The downloaded package file is compressed using the ZIP format and will be located in an R session temporary file. Other packaging formats can be requested if they have been implemented by the requested member node.

Value

The location of the package file downloaded from the member node.

See Also

MNode class description.

Examples

```
## Not run:
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
packageFileName <- getPackage(mn, id="resourceMap_Blandy.76.2")

## End(Not run)
```

---

getQueryEngineDescription

Query a node for the list of query engines available on the node

---

Description

Query a node for the list of query engines available on the node

Usage

```
getQueryEngineDescription(x, ...)

## S4 method for signature 'D1Node'
getQueryEngineDescription(x, queryEngineName)
```

Arguments

x	The CNode or MNode to query
...	(Additional arguments - not yet used.)
queryEngineName	The query engine name to get a description for.

Value

list The query engine description

Examples

```
## Not run:
library(dataone)
cn <- CNode("PROD")
engineDesc <- getQueryEngineDescription(cn, "solr")
cat(sprintf("Query engine version: %s\n", engineDesc$queryEngineVersion))
cat(sprintf("Query engine name: %s\n", engineDesc$name))
engineDesc <- getQueryEngineDescription(cn, "solr")
head(engineDesc$queryFields, n=3L)

## End(Not run)
```

`getSystemMetadata` *Get the metadata describing system properties associated with an object on this Node.*

Description

The SystemMetadata includes information about the identity, type, access control, and other system level details about the object.

The SystemMetadata includes information about the identity, type, access control, and other system level details about the object.

Usage

```
getSystemMetadata(x, ...)

## S4 method for signature 'CNode'
getSystemMetadata(x, pid)

## S4 method for signature 'MNode'
getSystemMetadata(x, pid)
```

Arguments

`x`	The Node instance from which the SystemMetadata will be downloaded
`...`	(Not yet used.)
`pid`	The identifier of the object

Details

This operation acts as the 'public' anonymous user unless an X.509 certificate is present in the default location of the file system, in which case the access will be authenticated.

This operation acts as the 'public' anonymous user unless an X.509 certificate is present in the default location of the file system, in which case the access will be authenticated.

Value

SystemMetadata for the object

SystemMetadata for the object

See Also

CNode class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
pid <- "doi:10.5063/F1QN64NZ"
sysmeta <- getSystemMetadata(mn, pid)

## End(Not run)
## Not run:
library(dataone)
cn <- CNode()
pid <- "aceasdata.3.2"
sysmeta <- getSystemMetadata(cn, pid)

## End(Not run)
```

---

getToken *Get the value of the DataONE Authentication Token, if one exists.*

Description

Get the value of the DataONE Authentication Token, if one exists.

Usage

```
getToken(.Object, ...)

## S4 method for signature 'AuthenticationManager'
getToken(.Object, node = as.character(NA))
```

Arguments

.Object	an AuthenticationManager instance
...	additional parameters
node	either a CNode or MNode object to get the appropriate token for.

Details

A token value is retrieved based on the DataONE environment that the specified node is located in, either the production environment or a test environment.

Value

The current authentication token.

`getTokenInfo` *Get authentication token information*

Description

The DataONE authentication token is read, if it has been set, and the information it contains is returned as a data.frame.

Usage

```
getTokenInfo(.Object)

## S4 method for signature 'AuthenticationManager'
getTokenInfo(.Object)
```

Arguments

`.Object`	an Authentication Object.

Value

A data.frame containing information about the authentication token.

`get_user_agent` *User agent string*

Description

Get a string representation of the user agent to be sent to the server along with other request details.

Usage

```
get_user_agent()
```

hasReservation *Checks to determine if the supplied subject is the owner of the reservation of id.*

Description

The hasReservation method checks the reservation of an identifier that has previously been reserved with the `reserveIdentifier` method. The identifier must have been reserved by the specified DataONE user identity (`subject`).

Usage

```
hasReservation(x, ...)

## S4 method for signature 'CNode'
hasReservation(x, pid, subject = as.character(NA))
```

Arguments

`x`	A CNode instance.
`...`	Additional parameters.
`pid`	The identifier that is being checked for existing as a reserved identifier or is in use as an identifier for an existing object
`subject`	The subject of the principal (user) that made the reservation.

Details

To determine the DataONE identity that is currently being used for DataONE authentication, use the `echoCredentials` method.

Value

A logical value where TRUE means a reservation exists for the specified pid by the subject.

See Also

CNode class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode("STAGING")
creds <- echoCredentials(cn)
subject <- creds$person$subject
# Previously reserved pid (using reserveIdentifeir()), e.g. DOI or uuid
pid <- "urn:node:e27bb4f3-96bb-4af4-8902-f5914def077c"
```

```
hasRes <- hasReservation(cn, pid, subject=subject)

## End(Not run)
```

`initialize,D1Client-method`
Initialize a D1Client object

Description

Initialize a D1Client object

Usage

```
## S4 method for signature 'D1Client'
initialize(
  .Object,
  cn = NA,
  mn = NA,
  env = as.character(NA),
  mNodeid = as.character(NA)
)
```

Arguments

`.Object`	A D1client object.
`cn`	The Member Node object to associate this D1Client with.
`mn`	The Member Node object to associate this D1Client with.
`env`	The DataONE environment to initialize this D1Client with, e.g. "PROD", "STAGING", "SANDBOX", "DEV"
`mNodeid`	The node identifier of the Member Node to associate with this D1Client.

See Also

`dataone` class description.

Examples

```
## Not run:
library(dataone)
d1c <- D1Client("PROD", "urn:node:KNB")

## End(Not run)
```

`initialize,D1Node-method`
Initialize a D1Node

Description

Initialize a D1Node

Usage

```
## S4 method for signature 'D1Node'
initialize(.Object)
```

Arguments

`.Object`	the D1Node object

`initialize,D1Object-method`
Initialize a D1Object

Description

Initialize a D1Object

Usage

```
## S4 method for signature 'D1Object'
initialize(.Object, id, data, format, mnNodeId = as.character(NA))
```

Arguments

`.Object`	A D1Object instance.
`id`	The identifier for the object
`data`	An R object (data or metadata) that this D1Object contains.
`format`	The Object format.
`mnNodeId`	The DataONE node identifier associated with this object, i.e. "urn:node:KNB"

See Also

`D1Object` class description.

`isAuthExpired` *Check if the currently valid authentication method has reached the expiration time.*

Description

Check if the currently valid authentication method has reached the expiration time.

Usage

```
isAuthExpired(.Object, ...)

## S4 method for signature 'AuthenticationManager'
isAuthExpired(.Object, node)
```

Arguments

`.Object`	An AuthenticationManager instance
`...`	(Not yet used)
`node`	A D1Node instance

Value

A logical value: TRUE if authentication has expired, FALSE if not.

`isAuthorized` *Check if an action is authorized for the specified identifier*

Description

Test if the user identified by the provided token has authorization for operation on the specified object.

Usage

```
isAuthorized(x, ...)

## S4 method for signature 'D1Node'
isAuthorized(x, id, action)
```

Arguments

`x`	The node to send the request to. This is either a `"CNode"` or `"MNode"` instance.
`...`	(Not yet used)
`id`	The DataONE identifier (pid or sid) to check access for.
`action`	The DataONE action to check, possible values: "read", "write", "changePermission"

Details

The identifier parameter may be either a DataONE persistent identifier (pid) or series identifier (sid).

Value

a logical, TRUE if the action is authorized, false if not.

See Also

CNode class description.

Examples

```
## Not run:
# Send an authorization check to the D1 production CN.
cn <- CNode("PROD")
pid <- "doi:10.6073/pasta/7fcb8fea57843fae65f63094472f502d"
canRead <- isAuthorized(cn, pid, "read")
canWrite <- isAuthorized(cn, pid, "write")
canChange <- isAuthorized(cn, pid, "changePermission")

# Now send a check to a member node.
mn <- getMNode(cn, "urn:node:KNB")
pid <- "doi:10.6085/AA/pisco_recruitment.149.1"
canRead <- isAuthorized(mn, pid, "read")
canWrite <- isAuthorized(mn, pid, "write")
canChange <- isAuthorized(mn, pid, "changePermission")

## End(Not run)
```

---

isAuthValid *Verify authentication for a member node.*

Description

The currently used DataONE client authentication method (either tokens or X.509 certificates) is checked and verified for the specified node (either CN or MN). If an authentication token is available via the R options facility, it will be used i.e. available via getOption("dataone_token"). However, authentication tokens can only be used for DataONE v2 or higher nodes. X.509 certificates can be used with DataONE v1 or higher nodes. See the *"dataone"* vignette *"dataone-overview"* for more information on authentication.

Usage

```
isAuthValid(.Object, ...)

## S4 method for signature 'AuthenticationManager'
isAuthValid(.Object, node)
```

Arguments

.Object	An AuthenticationManager instance
...	additional parameters
node	The node object (MNode or CNode) that authentication is being checked for.

Value

A logical value: TRUE if authentication is valid, false if not.

---

isCertExpired *Determine if an X.509 certificate has expired.*

Description

Returns 'TRUE' if the certificate associated with a CertificateManager instance is expired. A certificate is expired if any of the following conditions hold: 1) the current time is before or after the certificate validity dates, 2) the certificate is not valid according to a trusted Certificate Authority, or 3) no certificate can be found.

Usage

```
isCertExpired(x, ...)

## S4 method for signature 'CertificateManager'
isCertExpired(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

Value

TRUE if the certificate is expired

listFormats *List all object formats registered in DataONE.*

Description

The listFormats method queries a DataONE Coordinating Node for a list of all entries in the Object Format Vocabulary.

Usage

```
listFormats(x, ...)

## S4 method for signature 'CNode'
listFormats(x)
```

Arguments

x	a valid CNode object
...	(Not yet used)

Value

Returns a dataframe of all object formats registered in the DataONE Object Format Vocabulary.

See Also

CNode class description.

Examples

```
## Not run:
library(dataone)
cn <- CNode()
formats <- listFormats(cn)

## End(Not run)
```

listMemberNodes *List DataONE Member Nodes.*

Description

A D1Client object is associated with a DataONE Coordinating Node. The listMemberNodes method lists all member nodes associated with a CN.

Usage

```
listMemberNodes(x)

## S4 method for signature 'D1Client'
listMemberNodes(x)
```

Arguments

x	A D1Client object.

See Also

D1Client class description.

Examples

```
## Not run:
d1c <- D1Client("PROD")
nodelist <- listMemberNodes(d1c)

## End(Not run)
```

---

listNodes *Get the list of nodes associated with a CN*

Description

Get the list of nodes associated with a CN

Usage

```
listNodes(x, ...)

## S4 method for signature 'CNode'
listNodes(x, url = as.character(NA), ...)
```

Arguments

x	The coordinating node to query for its registered Member Nodes
...	(Not yet used)
url	Optional - the url of the CN.

Value

the list of nodes in the DataONE CN environment

See Also

CNode class description.

Examples

```
## Not run:
cn <- CNode()
nodelist <- listNodes(cn)
nodeid <- nodelist[[2]]@identifier

## End(Not run)
```

`listObjects` *Retrieve the list of objects that match the search parameters*

Description

Retrieve the list of objects that match the search parameters

Usage

```
listObjects(x, ...)

## S4 method for signature 'D1Node'
listObjects(
  x,
  fromDate = as.character(NA),
  toDate = as.character(NA),
  formatId = as.character(NA),
  replicaStatus = as.logical(TRUE),
  start = as.integer(0),
  count = as.integer(1000)
)
```

Arguments

`x`	The Node instance from which the SystemMetadata will be downloaded
`...`	(Not yet used.)
`fromDate`	Entries with a modified date greater than `'fromDate'` will be returned. This value must be specified in ISO 8601 format, i.e. "YYYY-MM-DDTHH:MM:SS.mmm+00:00"
`toDate`	Entries with a modified date less than `'toDate'` will be returned. This value must be specified in ISO 8601 format, i.e. "YYYY-MM-DDTHH:MM:SS.mmm+00:00"
`formatId`	The format to match, for example "eml://ecoinformatics.org/eml-2.1.1"
`replicaStatus`	A logical value that determines if replica (object not on it's origin node) should be returned. Default is TRUE.
`start`	An integer that specifies the first element of the result set that will be returned
`count`	An integer that specifies how many results will be returned

Details

The list of objects that is returned is paged according to the 'start' and 'count' values, so that large result sets can be returned over multiple calls.

Value

list Objects that met the search criteria

list Objects that met the search criteria

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MN_read.listObjects

Examples

```
## Not run:
library(dataone)
cn <- CNode("STAGING")
fromDate <- "2013-01-01T01:01:01.000+00:00"
toDate <- "2015-12-31T01:01:01.000+00:00"
formatId <- "eml://ecoinformatics.org/eml-2.1.0"
start <- 0
count <- 5
objects <- listObjects(cn, fromDate=fromDate, toDate=toDate,
    formatId=formatId, start=start, count=count)
# Inspect id of first object
objects[1]$objectInfo$identifier

## End(Not run)
```

---

listQueryEngines *Query a node for the list of query engines available on the node*

Description

Query a node for the list of query engines available on the node

Usage

```
listQueryEngines(x, ...)

## S4 method for signature 'D1Node'
listQueryEngines(x)
```

Arguments

x	The CNode or MNode to list the query engines for.
...	(Not yet used.)

Value

list The list of query engines.

Examples

```
## Not run:
cn <- CNode("STAGING")
engines <- listQueryEngines(cn)

## End(Not run)
```

MNode *Create a MNode object representing a DataONE Member Node repository.*

Description

Construct an instance of MNode to provide mechanisms to access, create, and update data and metadata objects on the associated Member Node.

Usage

```
MNode(x)

## S4 method for signature 'character'
MNode(x)

## S4 method for signature 'D1Node'
MNode(x)
```

Arguments

x	a URI representing a base URL (i.e. https://knb.ecoinformatics.org/knb/d1/mn/v2); or a reference to a dataone::Node instance

Details

If the 'x' is a string, it is treated as a URI and an attempt to find an associated Member Node at that base URL is attempted. If 'x' is a Node reference, then it is cast to a MNode instance. This typically is used from the getMNode() function from the CNode class, which is the preferred way to retrieve an instance of an MNode.

Value

the MNode object-

See Also

MNode class description.

Examples

```
## Not run:
mn <- MNode("https://knb.ecoinformatics.org/knb/d1/mn/v2")

## End(Not run)
```

`MNode-class` *Provides R API to DataONE Member Node services.*

Description

MNode provides functions that interact with a DataONE Member Node (MN). A MN is a repository that provides access for reading and writing data and metadata using the DataONE MN service API. The MN API includes functions for retrieving data and metadata based on its unique persistent identifier (pid), as well as for creating, updating, and archiving these data and metadata objects.

Details

Methods that perform write operations (such as createObject and updateObject) on the MN generally require authentication. For MNs that have implemented the DataONE API version 2.0 and higher, these operations can utilize an authentication token to provide credentials for write operations in DataONE. The authentication token is obtained from DataONE (see your account profile on https://search.dataone.org). See the `vignette("dataone-overview")` for details. Alternatively, the version 1.0 approach of using an X.509 certificate in a default location of the file system can also be used. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE.

Slots

`endpoint` The url to access node services, which is the baseURL plus the version string

Methods

- `MNode`: Create a MNode object representing a DataONE Member Node repository.
- `createObject`: Create an object on a Member Node.
- `getObject`: Get the bytes associated with an object on the Member Node
- `getCapabilities`: Get the node capabilities description, and store the information in the MNode.
- `generateIdentifier`: Get a unique identifier that is generated by the Member Node repository and guaranteed to be unique.
- `getPackage`: Download a data package from a member node.
- `updateObject`: Update an object to a Member Node, by creating a new object that replaces an original.
- `updateSystemMetadata`: Update the system metadata associated with an object.

See Also

dataone package description.

Examples

```
## Not run:
library(dataone)
library(uuid)
library(digest)
cn <- CNode("STAGING")
mn <- getMNode(cn, "urn:node:mnStageUCSB2")
mnid <- mn@identifier
# Have Dataone create an identifier for you (requires authentication)
\dontrun{
newid <- generateIdentifier(mn, "UUID")
}
# Create an identifier manually
newid <- paste("urn:uuid:", UUIDgenerate(), sep="")
testdf <- data.frame(x=1:10,y=11:20)
csvfile <- paste(tempfile(), ".csv", sep="")
write.csv(testdf, csvfile, row.names=FALSE)
f <- "text/csv"
size <- file.info(csvfile)$size
sha256 <- digest(csvfile, algo="sha256", serialize=FALSE, file=TRUE)
sysmeta <- new("SystemMetadata", identifier=newid, formatId=f, size=size,
    checksum=sha256, originMemberNode=mnid, authoritativeMemberNode=mnid)
# Upload data to DataONE (requires authentication)
\dontrun{
response <- createObject(mn, newid, csvfile, sysmeta)
}

## End(Not run)
```

---

obscureAuth *Temporarily disable DataONE authentication.*

Description

Calling obscureAuth temporarily disables authentication so that

Usage

```
obscureAuth(.Object)

## S4 method for signature 'AuthenticationManager'
obscureAuth(.Object)
```

Arguments

.Object	An AuthenticationManager instance

Details

This method is intended to be used for authentication testing. `isAuthValid` will return FALSE. Authentication can be re-enabled by calling `restoreAuth`.

Value

The expiration date for the current authentication mechanism being used.

`obscureCert` *Obscure the CILogon Client Certificate*

Description

Obscures the x509 certificate that CILogon installs, effectively making future interactions with the DataONE services public/anonymous. This function simple renames an existing certificate file to a known location, allowing 'public' operations. Note, when the client certificate is obscured via the renaming, you will not be able to create objects in DataONE, or utilize any other methods that require authentication.

Usage

```
obscureCert(x, ...)

## S4 method for signature 'CertificateManager'
obscureCert(x)
```

Arguments

`x`	a CertificateManager instance
`...`	(Not yet used)

Value

the modified CertificateManager instance

See Also

`restoreCert` is this method's inverse operation

parseCapabilities *Construct a Node, using a passed in capabilities XML*

Description

Construct a Node, using a passed in capabilities XML

Usage

```
parseCapabilities(x, ...)

## S4 method for signature 'D1Node'
parseCapabilities(x, xml)
```

Arguments

x	The node to which capabilities should be applied.
...	(not yet used)
xml	The XML capabilities representing the node to be created

Value

The Node object with modified capabilities properties from the XML

parseSolrResult *Parse Solr output into an R list*

Description

Solr output that is specified with a writer type of XML '&wt="xml"'

Usage

```
parseSolrResult(doc, ...)

## S4 method for signature 'XMLInternalDocument'
parseSolrResult(doc, parse, ...)
```

Arguments

doc	The Solr result to parse, in XML format
...	(Not yet used.)
parse	A logical value, if TRUE the result is parsed to appropriate R types.

Value

resultList The Solr result as an R list

`ping` *Test if a node is online and accepting DataONE requests*

Description

Test if a node is online and accepting DataONE requests

Usage

```
ping(x, ...)

## S4 method for signature 'D1Node'
ping(x)
```

Arguments

`x`	The CNode or MNode to check
`...`	(Not yet used)

Value

logical A logical value set to TRUE if the node is up and FALSE if it is not

logical A logical value set to TRUE if the node is up and FALSE if it is not

Examples

```
## Not run:
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
isAlive <- ping(mn)

## End(Not run)
```

`query` *Search DataONE for data and metadata objects*

Description

The DataONE search index is searched for data that matches the specified query parameters.

Usage

```
query(x, ...)

## S4 method for signature 'D1Node'
query(
  x,
  solrQuery = as.character(NA),
  encode = TRUE,
  as = "list",
  parse = TRUE,
  searchTerms = as.character(NA),
  encodeReserved = FALSE,
  ...
)
```

Arguments

x	The CNode or MNode instance to send the query to.
...	(Not yet used.)
solrQuery	The query search terms, either as a string or as list with named members.
encode	A logical, if TRUE then the query is URL encoded. The default is TRUE.
as	The return type. Possible values: "json", "xml", "list" or "data.frame" with "list" as the default.
parse	A logical value. If TRUE, then the result is parsed and converted to appropriate R data types. If FALSE, character values are returned.
searchTerms	A list of name / value pairs (an alternative to solrQuery).
encodeReserved	A logical, if TRUE then reserved characters in the query are URL encoded (FALSE is default). See URLencode for details.

Details

The "query" method sends a query to a DataONE search index that uses the Apache Solr search engine https://solr.apache.org/. This same Solr search engine is the underlying mechanism used by the DataONE online search tool available at https://search.dataone.org/.

The "solrQuery" argument is used to specify search terms that data of interest must match. This parameter uses Solr query terms, so some familiarity with Solr is helpful, however, fairly simple queries can be effective. This argument can be created as either a single character string containing the Solr query, for example: solrQuery = "q=id:doi*&rows=2&wt=json", or as a list of key value pairs: solrQuery = list(q = "id:doi*", rows = "2", wt = "json"). These two queries produce the same result.

As an alternative to specifying the Solr query terms using the "solrquery" argument, the "searchTerms" argument can be specified, which does not require any Solr syntax. This parameter is a list with query field / value pairs, i.e. searchTerms=list(abstract=kelp, attribute=biomass). The query fields can be listed for a DataONE node using getQueryEngineDescription. Either "searchTerms" or "solrQuery" must be specified.

The "as" argument is used to specify the query result to be returned as: "json", xml", "list", "data.frame".

The "parsed" argument, if specified as TRUE, causes the query result to be converted to appropriate R data types. For example, if ar = "xml" and parsed = TRUE, then the query result is returned as an R XMLInternalDocument, or If 'parsed = FALSE' then a character variable with the XML string is returned. Specify as = "list" to have the result parsed to an R list, with each list element containing one Solr query result of the total result set.

Value

search results as a list, data.frame or XML document

Examples

```
## Not run:
library(dataone)
cn <- CNode("PROD")
queryParams <- list(q="id:doi*", rows="5",
    fq="(abstract:chlorophyll AND dateUploaded:[2000-01-01T00:00:00Z TO NOW])",
    fl="title,id,abstract,size,dateUploaded,attributeName")
# Return result as a list.
result <- query(cn, queryParams, as="list")

# Query and return the result as a data.frame of character values.
queryParams <- list(q="id:doi*", rows="3",
    fq="(abstract:chlorophyll AND dateUploaded:[2000-01-01T00:00:00Z TO NOW])",
    fl="title,id,abstract,size,dateUploaded,attributeName")
result <- query(cn, queryParams, as="data.frame", parse=FALSE)

# Return the result as JSON
queryParams <- "q=id:doi*&rows=2&wt=json"
result <- query(cn, queryParams, as="json")

# The following query shows how to embed quotes
cn <- CNode("SANDBOX2")
queryParamList <- list(q="(attribute:lake) and (attribute:\"Percent Nitrogen\")", rows="1000",
                       fl="title,id,abstract,size,dateUploaded,attributeName", wt="xml")
result <- query(cn, queryParamList, as="data.frame")

# The following query uses the searchTerms parameter
cn <- CNode()
mn <- getMNode(cn, "urn:node:KNB")
mySearchTerms <- list(abstract="kelp", attribute="biomass")
result <- query(mn, searchTerms=mySearchTerms, as="data.frame")

## End(Not run)
```

`reserveIdentifier` *Reserve a identifier that is unique in the DataONE network.*

Description

The reserveIdentifier method contains the DataONE CN and reserves the specified identifier that the user has provided. Once a an identifier has been reserved, it and can not be used by any other user.

Usage

```
reserveIdentifier(x, ...)

## S4 method for signature 'CNode'
reserveIdentifier(x, id)

## S4 method for signature 'D1Client'
reserveIdentifier(x, id)
```

Arguments

`x`	The coordinating node to query for its registered Member Nodes
`...`	Additional parameters.
`id`	The identifier that is to be reserved.

Details

This method requires a DataONE authentication token or X.509 Certificate. The reservation is made for the DataONE user identity that created the current authentication token or X.509 certificate.

Value

The reserved pid if it was successfully reserved, otherwise NULL

See Also

CNode class description.

Examples

```
## Not run:
library(dataone)
library(uuid)
cn <- CNode("STAGING")
myId <- sprintf("urn:uuid:%s", UUIDgenerate())
newId <- reserveIdentifier(cn, myId)

## End(Not run)
```

resolve *Get a list of coordinating nodes holding a given pid.*

Description

Returns a list of nodes (MNs or CNs) known to hold copies of the object identified by id.

Usage

```
resolve(x, ...)

## S4 method for signature 'CNode'
resolve(x, pid)
```

Arguments

x	a valid CNode object
...	Additional arguments (not yet used).
pid	the id of the identified object

Value

A list of URLs that the object can be downloaded from, or NULL if the object is not found.

Examples

```
## Not run:
library(dataone)
cn <- CNode("STAGING")
id <- "doi:10.6073/pasta/9a27a1615e8e4c366ad09fefbfa2fced"
locations <- resolve(cn,id)

## End(Not run)
```

restoreAuth *Restore authentication (after being disabled with* obscureAuth*).*

Description

Restore authentication (after being disabled with obscureAuth).

Usage

```
restoreAuth(.Object)

## S4 method for signature 'AuthenticationManager'
restoreAuth(.Object)
```

Arguments

.Object	An AuthenticationManager instance

Value

The expiration date for the current authentication mechanism being used.

`restoreCert` *Restore the CILogon client certificate by renaming it to its original location*

Description

Restores the x509 certificate that CILogon installs, which allows future interactions with nodes to be authenticated with the certificate. This function simply renames an obscured certificate file to its original location, allowing authenticated operations.

Usage

```
restoreCert(x, ...)

## S4 method for signature 'CertificateManager'
restoreCert(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

Value

the modified CertificateManager instance

See Also

`obscureCert` is this method's inverse operation

setMNodeId — *Set the member node identifier to be associated with the D1Client object.*

Description

The member node identifier is the URN identifier used by DataONE to uniquely identifier a node, for example "urn:node:KNB" specifies the "Knowledge Network for Biodiversity" member node.

Usage

```
setMNodeId(x, id)

## S4 method for signature 'D1Client,character'
setMNodeId(x, id)
```

Arguments

x	A D1Client object.
id	A DataONE member node identifier.

Details

One Member Node can be associated with the client as the default to which data and metadata are written.

Author(s)

setMNodeId

See Also

D1Client class description.

setObsoletedBy — *Set a pid as being obsoleted by another pid*

Description

Updates the SystemMetadata 'obsoletedBy' property for an object, indicating that the object specified by pid has been obsoleted by the identifier in obsoletedByPid. CILogon https://cilogon.org/?skin=DataONE. See CertificateManager for details. In DataONE version 2.0, authentication tokens can also be used.

Usage

```
setObsoletedBy(x, pid, obsoletedByPid, ...)

## S4 method for signature 'CNode,character'
setObsoletedBy(x, pid, obsoletedByPid, serialVersion)
```

Arguments

x	The CNode instance on which the object will be created
pid	The identifier of the object to be obsoleted
obsoletedByPid	The identifier of the object that obsoletes the object identified by pid.
...	(Not yet used)
serialVersion	The serial version of the system metadata of the pid being obsoleted.

Value

TRUE if the pid was obsoleted, otherwise FALSE is returned

See Also

CNode class description.

---

setPublicAccess,D1Object-method

Make the object publicly readable.

Description

This method should be called prior to creating the object in DataONE. When called before creating the object, adds a rule to the access policy that makes this object publicly readable. If called after creation, it will only change the system metadata locally, and will not have any effect on remotely uploaded copies of the D1Object.

Usage

```
## S4 method for signature 'D1Object'
setPublicAccess(x)
```

Arguments

x	D1Object

Value

D1Object with modified access rules

See Also

DataObject class description.

---

showAuth *Display all authentication information*

Description

Display all authentication information

Usage

```
showAuth(.Object, ...)

## S4 method for signature 'AuthenticationManager'
showAuth(.Object, node)
```

Arguments

.Object	An AuthenticationManager instance
...	(Not yet used)
node	A D1Node instance

---

showClientSubject *Get DataONE Identity as Stored in the CILogon Certificate.*

Description

Returns Your Identity according to DataONE (and CILogon) as provided in the Subject field of the X.509 certificate. The value is a Distinguished Name, and can be used in all fields that require a user identity for access control authorization. If the certificate is missing on expired, then the subject 'public' is returned.

Usage

```
showClientSubject(x, ...)

## S4 method for signature 'CertificateManager'
showClientSubject(x)
```

Arguments

x	a CertificateManager instance
...	(Not yet used)

Value

the DataONE Subject that is your client's identity

`updateObject` *Update an object on a Member Node, by creating a new object that replaces an original.*

Description

This method provides the ability to update a data or metadata object to the Member Node provided in the `'x'` parameter. In DataONE, both the original object and the new object are maintained, each with its own persistent identifier, and the 'obsoletes' field in the SystemMetadata is used to reflect the fact that the new object replaces the old. Both objects remain accessible.

Usage

```
updateObject(x, ...)

## S4 method for signature 'MNode'
updateObject(x, pid, file = as.character(NA), newpid, sysmeta, dataobj = NULL)
```

Arguments

`x`	The MNode instance on which the object will be created
`...`	(Not yet used.)
`pid`	The identifier of the object to be updated
`file`	the absolute file location of the object to be uploaded
`newpid`	The identifier of the new object to be created
`sysmeta`	a SystemMetadata instance describing properties of the object
`dataobj`	a `raw` object to use for the upload, instead of the contents of the `file` argument.

Details

In the version 2.0 library and higher, this operation can utilize an 'dataone_token' option to provide credentials for write operations in DataONE. The authentication token is obtained from DataONE (see your profile on https://search.dataone.org). See the `vignette("dataone-overview")` for details. Alternatively, the version 1.0 approach of using an X.509 certificate in a default location of the file system can also be used. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE. See `vignette("dataone-overview")` for details.

Value

A `character` containing the identifier if successful.

Note

Please see the vignette *upload-data* for an example: `vignette("upload-data")`

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MNStorage.update

---

`updateSystemMetadata` *Update the system metadata associated with an object.*

Description

A modified SytemMetadata object can be sent to DataONE that contains updated information. This function allow updating of the system metadata without updating the object that it describes, so that mutable attributes such as accessPolicy can be updated easily.

Usage

```
updateSystemMetadata(x, ...)

## S4 method for signature 'MNode'
updateSystemMetadata(x, pid, sysmeta)
```

Arguments

`x`	The MNode instance from which the SystemMetadata will be downloaded
`...`	(Not yet used.)
`pid`	The identifier of the object
`sysmeta`	a SystemMetadata instance with updated information.

Details

In the version 2.0 library and higher, this operation can utilize an 'dataone_token' option to provide credentials for write operations in DataONE. The authentication token is obtained from DataONE (see your profile on https://search.dataone.org). See the `vignette("dataone-overview")` for details. Alternatively, the version 1.0 approach of using an X.509 certificate in a default location of the file system can also be used. This certificate provides authentication credentials from CILogon https://cilogon.org/?skin=DataONE. See `vignette("dataone-overview")` for details.

Value

A logical value, TRUE if the operation was successful, FALSE if there was an error.

Note

Please see the vignette *upload-data* for an example: `vignette("upload-data")`

See Also

https://purl.dataone.org/architecture/apis/MN_APIs.html#MNStorage.updateSystemMetadata

---

`uploadDataObject` *Upload a DataObject to a DataONE member node.*

Description

Upload a DataObject to a DataONE member node.

Usage

```
uploadDataObject(x, ...)

## S4 method for signature 'D1Client'
uploadDataObject(
  x,
  do,
  replicate = as.logical(FALSE),
  numberReplicas = NA,
  preferredNodes = NA,
  public = as.logical(FALSE),
  accessRules = NA,
  quiet = TRUE,
  ...
)
```

Arguments

`x`	A D1Client instance.
`...`	(Not yet used.)
`do`	The DataObject instance to be uploaded to DataONE.
`replicate`	A value of type `"logical"`, if TRUE then DataONE will replicate this object to other member nodes
`numberReplicas`	A value of type `"numeric"`, for number of supported replicas.
`preferredNodes`	A list of `"character"`, each of which is the node identifier for a node to which a replica should be sent.
`public`	A `"logical"` value - if TRUE then the uploaded object will be publicly readable.
`accessRules`	Access rules of `'data.frame'` that will be added to the access policy
`quiet`	A `'logical'`. If TRUE (the default) then informational messages will not be printed.

Value

id The id of the DataObject that was uploaded

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
library(datapack)
testdf <- data.frame(x=1:10,y=11:20)
csvfile <- tempfile(pattern = "file", tmpdir = tempdir(), fileext = ".csv")
write.csv(testdf, csvfile, row.names=FALSE)
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
do <- new("DataObject", format="text/csv", mnNodeId=getMNodeId(d1c), filename=csvfile)
# Upload a single DataObject to DataONE (requires authentication)
newId <- uploadDataObject(d1c, do, replicate=FALSE, preferredNodes=NA ,  public=TRUE)

## End(Not run)
```

---

uploadDataPackage *Upload a DataPackage to a DataONE member node.*

Description

Upload all DataObjects contained in the DataPackage by calling uploadDataObject on each of the members. Also a resourceMap object is created from the recorded relationships between DataObjects, and this is uploaded as well.

Usage

```
uploadDataPackage(x, ...)

## S4 method for signature 'D1Client'
uploadDataPackage(
  x,
  dp,
  replicate = NA,
  numberReplicas = NA,
  preferredNodes = NA,
  public = as.logical(FALSE),
  accessRules = NA,
  quiet = as.logical(TRUE),
  resolveURI = as.character(NA),
  packageId = as.character(NA),
  as = "character",
```

```
  ...
)
```

Arguments

x	A D1Client instance.
...	(Not yet used.)
dp	The DataPackage instance to be submitted to DataONE for creation.
replicate	A value of type "logical", if TRUE then DataONE will replicate this object to other member nodes
numberReplicas	A value of type "numeric", for number of supported replicas.
preferredNodes	A list of "character", each of which is the node identifier for a node to which a replica should be sent.
public	A 'logical', if TRUE then all objects in this package will be accessible by any user
accessRules	Access rules of 'data.frame' that will be added to the access policy of each object in the datapackage.
quiet	A 'logical'. If TRUE (the default) then informational messages will not be printed.
resolveURI	A URI to prepend to identifiers (i.e. for use when creating the ResourceMap). See serializePackage
packageId	A value of type "character" specifying a unique identifier to use for the uploaded package (resource map pid)
as	A value of type "character" that specifies the return value. Possible values are "character" (the default) or "DataPackage".

Details

The DataPackage describes the collection of data object and their associated metadata object, with the relationships and members serialized into a document stored under, and retrievable with, the packageId as it's own distinct object. Any objects in the data map that have a dateUploaded value are assumed to be pre-existing in the system, and skipped.

Value

id The identifier of the resource map for this data package

Note

Member objects are created serially, and most errors in creating one object will interrupt the create process for the whole, with the result that some members will be created, and the remainder not.

See Also

D1Client class description.

Examples

```
## Not run:
library(dataone)
library(datapack)
dp <- new("DataPackage")
sampleData <- system.file("extdata/sample.csv", package="dataone")
dataObj <- new("DataObject", format="text/csv", file=sampleData)
dataObj <- setPublicAccess(dataObj)
sampleEML <- system.file("extdata/strix-pacific-northwest.xml", package="dataone")
metadataObj <- new("DataObject", format="eml://ecoinformatics.org/eml-2.1.1", file=sampleEML)
metadataObj <- setPublicAccess(metadataObj)
dp <- addMember(dp, do = dataObj, mo = metadataObj)
d1c <- D1Client("STAGING", "urn:node:mnStageUCSB2")
# Upload all members of the DataPackage to DataONE (requires authentication)
packageId <- uploadDataPackage(d1c, dp, replicate=TRUE, public=TRUE, numberReplicas=2)

## End(Not run)
```

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