Package ‘ndexr’

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Type Package
Title NDEx R client library
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Description This package offers an interface to NDEx servers, e.g. the public server at http://ndexbio.org/. It can retrieve and save networks via the API. Networks are offered as RCX object and as igraph representation.
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R topics documented:

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The ndexr package offers an interface to NDEx servers, e.g. the public server at http://ndexbio.org/. It can retrieve and save networks via the API. Networks are offered as RCX objects.

### Details

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### Examples

```r
## Not run:
require(ndexr)
## login to the NDEx server
ndexcon <- ndex_connect("username", "password")

## search the networks for "EGFR"
networks <- ndex_find_networks(ndexcon, "EGFR")
head(networks, 3)
```
## UUID of the first search result
networkId <- networks[1,'externalId']
networkId

## get summary of the network
ndex_network_get_summary(ndexcon, networkId)

## get the entire network as RCX object
rcx <- ndex_get_network(ndexcon, networkId)

## show the content (aspects) of the network
rcx$metaData

## visualize the network with RCX
RCX::visualize(rcx)

## upload network as a new network to the NDEx server
networkId <- ndex_create_network(ndexcon, rcx)

## do some other fancy stuff with the network, then
## update the network on the server
networkId <- ndex_update_network(ndexcon, rcx)

## realize, you did bad things to the poor network, so better
## delete it on the server
ndex_delete_network(ndexcon, networkId)

## End(Not run)

---

**listToRCode**

*Translates a nested list (as provided by a yaml file) into R code defining the lists*

**Description**

Translates a nested list (as provided by a yaml file) into R code defining the lists

**Usage**

```r
listToRCode(obj, indent = " " , indentShift = ")
```

**Arguments**

- `obj`: list; Nested list to be translated. The allowed list elements are: list, character, numeric, logical
- `indent`: character (optional) (default: `'[4 whitespaces]`); Character(s) used for the indentation. Default: `<tab>`
- `indentShift`: character (optional) (default: `''`); Shifts the block to the right by putting the characters before each line (mostly used in internal recursion)
Value

character; R code for generating the nested list

Note

only for package maintenance!

Examples

test = list(bla='some text', blubb=list(a='more text', version='2.0'), justANumber=123456)
#$bla
#$[1] "some text"
#$blubb
#$blubb$a
#$[1] "more text"
#$blubb$version
#$[1] "2.0"
#$justANumber
#$[1] 123456
#
#listToRCode(test)
#$[1] "list(n\n   bla="some text",
   blubb=list(n\n    a="more text",
    version="2.0")
   justANumber=123456)
   
   #
   #listToRCode(test)
   #$bla [1] "some text"
   #$blubb [1] [1] "more text"
   #$blubb$version [1] "2.0"
   #$justANumber [1] 123456

ndex_config

NDEx server api configuration

Description

This nested list contains the url and methods for accessing the NDEx server via its REST full api. It contains specifications for NDEx server api version 1.3 and 2.0. The default api is specified by 'defaultVersion'. If possible, the version 2.0 should be used. Own configurations must contain a 'version' entry!

Usage

ndex_config

Format

An object of class list of length 4.

Value

Nested list resembling the NDEx server REST API structure

Examples
	names(ndex_config$Version_2.0)
ndex_conf_header  

Default header for the ndex_api_config.r file

Description

Default header for the ndex_api_config.r file

Usage

ndex_conf_header

Format

An object of class character of length 1.

Value

character containing the header

Note

only for package maintenance!

Examples

NULL

ndex_connect  

Connect to NDEx REST API

Description

This function creates an NDExConnection which stores options and authentication details. It is a parameter required for most of the other ndexr functions. If username and password are missing an anonymous connection is created, which already offers most of the retrieval functionality.

Usage

ndex_connect(
    username,
    password,
    host = ndexConf$connection$host,
    apiPath = ndexConf$connection$api,
    ndexConf = ndex_config,
    verbose = FALSE
)
ndex_create_group

Arguments

username character (optional); username
password character (optional); password
host character (default: ndexConf$connection$host); Host address of NDEx server;
By default the url set in ndexConf$defaults$connection$host is used. ("http://www.ndexbio.org")
apiPath character (default: ndexConf$connection$api); URL path of the REST api; By
default the url set in ndexConf$defaults$connection$api is used. ("/v2" for
NDEx version 2.0, "/rest" for NDEx version 1.3)
ndexConf config object (nested list, default: ndex_config); Configuration of NDEx REST
server; Set in ndex_config (set in ndex_api_config.r or ndex_api_config.yml): It
contains specifications for NDEx server api version 1.3 and 2.0. The default api
is specified by 'defaultVersion'
verbose logical (optional); whether to print out extended feedback

Value

returns object of class NDExConnection which stores options, authentication and api configuration
if successfull, NULL otherwise

See Also

ndex_config

Examples

## log in anonymously
ndexcon = ndex_connect()

## same as above with extended feedback
ndexcon = ndex_connect(verbose=TRUE)

## Not run:
## log in with credentials
ndexcon = ndex_connect('user','password')

## running some NDEx server locally
ndexcon = ndex_connect(host='localhost:8765')

## manually change the api and connection configuration
ndexcon = ndex_connect(ndexConf=ndex_config$Version_2.0)

## End(Not run)

ndex_create_group Create Group

Description

Create a group owned by the authenticated user based on the supplied group JSON object.
**ndex_create_group**

**Usage**

\[
\text{ndex\_create\_group(ndexcon, groupName, image, website, description, properties)}
\]

**Arguments**

- **ndexcon**: object of class NDExConnection link\texttt{ndex\_connect}
- **groupName**: character; name of the new group
- **image**: character (optional); URL of the account owner's image
- **website**: character (optional); URL of the account owner's web site
- **description**: character (optional); Short description of this user
- **properties**: list (optional); additional properties for the group

**Value**

url (including the UUID) of the newly created group

**REST query**

POST: ndex\_config\$api\$group\$create

**Note**

Requires an authorized user! (ndex\_connect with credentials)

Compatible to NDEx server version 2.0

**Examples**

```r
## Establish a server connection with credentials
# ndexcon = ndex\_connect('MyAccountName', 'MyPassword')
# groupURL = ndex\_create\_group(ndexcon, 'SomeGroupName')
# groupURL = ndex\_create\_group(ndexcon, 'SomeGroupName',
#     image='http://bit.ly/1M3NoQZ',
#     website='www.gidf.com',
#     description='A very special group..')
NULL
```

**ndex_create_network**

Create a Network at a server from RCX data

**Description**

This method creates a new network on the NDEx server from the given RCX object

**Usage**

\[
\text{ndex\_create\_network(ndexcon, rcx)}
\]
**ndex_create_user**

**Arguments**
- ndexcon: object of class NDExConnection
- rcx: RCX-object

**Details**

Note: In future 'ndexr' uses the RCX-object from the corresponding package to handle the networks!

**Value**

UUID of the newly created network

**REST query**

POST (multipart/form-data): ndex_config$api$network$create$url
data: CXNetworkStream = data

**Note**

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 1.3 and 2.0

**Examples**

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find a network and get its UUID
# networks = ndex_find_networks(ndexcon, "p53", "nci-pid")
# networkId = networks[1,"externalId"]
## Get the network data
# rcx = ndex_get_network(ndexcon, networkId)
## Do some changes to rcx..
## and create a new network
# networkId = ndex_create_network(ndexcon, rcx)
NULL
```

---

**ndex_create_user**     Create a user

**Description**

Create a new user based on a JSON object specifying username, password, and emailAddress. Username and emailAddress must be unique in the database. If email verification is turned on on the server, this call returns code 220 (Accepted), the location field in the header has the URL to check the status of the newly created user account. If email verification is turned on off on the server, this function returns 201 (Created). The URL for getting the newly created user is in the response body and the Location header.
Usage

```r
ndex_create_user(
    ndexcon,
    userName,
    password,
    emailAddress,
    isIndividual = TRUE,
    displayName,
    firstName,
    lastName,
    image,
    website,
    description,
    verbose = FALSE
)
```

Arguments

- `ndexcon` object of class NDExConnection linkndex_connect
- `userName` character; name of the new user
- `password` character; password for the new user
- `emailAddress` character (optional); email address (used for verification if enabled)
- `isIndividual` boolean (default: TRUE); True if this account is for an individual user. False means this account is for an organization or a project etc.
- `displayName` character (optional); Display name of this account, only applied to non-individual accounts.
- `firstName` character (optional); Account owner’s first name, only applies to individual accounts.
- `lastName` character (optional); Account owner’s last name, only applies to individual accounts.
- `image` character (optional); URL of the account owner’s image.
- `website` character (optional); URL of the account owner’s web site
- `description` character (optional); Short description of this user.
- `verbose` logical (optional); whether to print out extended feedback

Value

UUID of the newly created user if email verification is turned off, else an empty string ("")

REST query

GET: ndex_config$api$user$create

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0
Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Create a new user
# userId = ndex_create_user(ndexcon, 'SomeUserName', 'SecretPassword', 'SomeUserName@ndex.org')
## [1] "uuuuuuuu-ssss-eeee-rrrr-123456789abc"
# userId = ndex_create_user(ndexcon, 'ASpecialProject', 'SecretPassword',
#                         'ASpecialProject@ndex.org', isIndividual=TRUE,
#                         displayName='Area51', firstName='John', lastName='Doe',
#                         website='www.gidf.com', description='Nothing to see here..')
NULL
```

ndex_delete_group  Delete Group

Description

Delete the group specified by groupId

Usage

`ndex_delete_group(ndexcon, groupId)`

Arguments

- `ndexcon`: object of class NDExConnection
- `groupId`: character; unique ID (UUID) of the group

Value

NULL if successful, else an error is thrown

REST query

DELETE: ndex_config$api$group$delete

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0
Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## Find the user's groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
# groupId = groups[1,"externalId"]
#ndex_delete_group(ndexcon,groupId)
NULL
```

ndex_delete_network Delete a network

Description

Delete a network

Usage

ndex_delete_network(ndexcon, networkId)

Arguments

- **ndexcon**: object of class NDExConnection linkndex_connect
- **networkId**: unique ID of the network

Value

NULL on success; Error else

REST query

DELETE: ndex_config$api$network$delete

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 1.3 and 2.0
ndex_delete_user

Examples

```r
## Establish a server connections with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find a network and get its UUID
# networks = ndex_find_networks(ndexcon,"p53", "nci-pid")
# networkId = networks[1,"externalId"]
## Delete the network
# ndex_delete_network(ndexcon, networkId)
NULL
```

ndex_delete_user   Delete User

Description

Deletes the authenticated user, removing any other objects in the database that depend on the user

Usage

`ndex_delete_user(ndexcon, userId)`

Arguments

- `ndexcon` object of class NDExConnection link `ndex_connect`
- `userId` character; unique ID (UUID) of the user

Value

NULL if successfull, else an error is thrown

REST query

GET: ndex_config$api$user$delete

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Delete user
# ndex_delete_user(ndexcon, userId)
NULL
```
ndex_find_groups

Search groups in NDEx

Description

Returns a SearchResult object which contains an array of Group objects

Usage

ndex_find_groups(ndexcon, searchString = "", start, size)

Arguments

ndexcon object of class NDExConnection link ndex_connect
searchString string by which to search
start integer (optional); specifies that the result is the nth page of the requested data. The default value is 0
size integer (optional); specifies the number of data items in each page. The default value is 100

Value

Data frame with group information; NULL if no groups are found.

REST query

GET: ndex_config$api$search$user

Note

Compatible to NDEx server version 1.3 and 2.0
Search strings may be structured

Examples

```# Establish a server connection
ndexcon = ndex_connect()
# Find a group
groups = ndex_find_groups(ndexcon,"Ideker Lab")
names(groups)
# [1] "properties" "groupName" "image" "website" "description"
# [6] "externalId" "isDeleted" "modificationTime" "creationTime"```
**ndex_find_networks**  
*Search networks in NDEx (by description)*

**Description**

This function searches the public networks on an NDEx server for networks containing the supplied search string. This search can be limited to certain accounts as well as in length.

**Usage**

```r
ndex_find_networks(ndexcon, searchString = "", accountName, start, size)
```

**Arguments**

- `ndexcon`: object of class NDExConnection link `ndex_connect`
- `searchString`: string by which to search
- `accountName`: string (optional); constrain search to networks administered by this account
- `start`: integer (optional); specifies that the result is the nth page of the requested data. The default value is 0
- `size`: integer (optional); specifies the number of data items in each page. The default value is 100

**Value**

Data frame with network information: ID, name, whether it is public, edge and node count; source and format of network. NULL if no networks are found.

**REST query**

GET: `ndex_config$api$search$network$search`

**Note**

Compatible to NDEx server version 1.3 and 2.0

Search strings may be structured

**Examples**

```r
ndexcon = ndex_connect()
networks = ndex_find_networks(ndexcon, "p53")
```
**ndx_find_users**  
*Search user in NDEx*

**Description**

Returns a SearchResult object which contains an array of User objects

**Usage**

```r
ndx_find_users(ndexcon, searchString = "", start, size)
```

**Arguments**

- **ndxcon**: object of class NDExConnection link`ndx_connect`
- **searchString**: string by which to search
- **start**: integer (optional); specifies that the result is the nth page of the requested data. The default value is 0
- **size**: integer (optional); specifies the number of data items in each page. The default value is 100

**Value**

Data frame with user information; NULL if no user are found.

**REST query**

GET: `ndx_config$api$search$user`

**Note**

Compatible to NDEx server version 1.3 and 2.0

Search strings may be structured

**Examples**

```r
## Establish a server connection
ndxcon = ndx_connect()
## Find a user
users = ndx_find_users(ndexcon,"ndextutorials")
names(users)
## [1] "properties" "displayName" "isIndividual" "userName" "password"
## [6] "isVerified" "firstName" "lastName" "diskQuota" "diskUsed"
##[11] "emailAddress" "image" "website" "description" "externalId"
##[16] "isDeleted" "modificationTime" "creationTime"
```
ndex_find_user_byId  Get User By UUID

Description
Get User By UUID

Usage
ndex_find_user_byId(ndexcon, userId)

Arguments
ndexcon          object of class NDExConnection linkndex_connect
userId            character; unique ID (UUID) of the user

Value
list of properties describing the user (externalId, emailAddress, website, etc.). Throws error (404) if user isn’t found!

REST query
GET: ndex_config$api$user$get$byId

Note
Compatible to NDEx server version 2.0

Examples
## Establish a server connection
ndexcon = ndex_connect()
## Find user by name
user = ndex_find_user_byName(ndexcon, 'ndextutorials')
## Find user by Id
user = ndex_find_user_byId(ndexcon, user$externalId)
### ndex_find_user_byName  Get User By Name

**Description**
Get User By Name

**Usage**
```
ndex_find_user_byName(ndexcon, name)
```

**Arguments**
- `ndexcon`: object of class NDExConnection linkndex_connect
- `name`: name of the user

**Value**
list of properties describing the user (externalId, emailAddress, website, etc.). Throws error (404) if user isn’t found!

**REST query**
```
GET: ndex_config$api$user$get$byName
```

**Note**
Compatible to NDEx server version 2.0

**Examples**
```python
## Establish a server connection
ndexcon = ndex_connect()
## Find user by name
user = ndex_find_user_byName(ndexcon, 'ndextutorials')
```

---

### ndex_get_group  Get a Group

**Description**
Get a Group

**Usage**
```
ndex_get_group(ndexcon, groupId)
```
**ndx_get_network**

### Arguments

- `ndxcon`: object of class NDExConnection
- `networkId`: unique ID of the network

### Value

- list of properties describing the group (externalId, emailAddress, website, etc.). Throws error (404) if group isn’t found!

### REST query

GET: ndex_config$api$group$get

### Note

Compatible to NDEx server version 2.0

### Examples

```r
## Establish a server connection
ndxcon = ndex_connect()
## Find a group
groups = ndex_find_groups(ndxcon,"Ideker Lab")
groupId = groups[1,"externalId"]
## Get group information
group = ndex_get_group(ndxcon, groupId)
```

### Description

Returns the specified network as RCX-object.

### Usage

`ndx_get_network(ndxcon, networkId)`

### Arguments

- `ndxcon`: object of class NDExConnection
- `networkId`: unique ID of the network
Details

Note: In future `ndexr` uses the **RCX-object** from the corresponding package to handle the networks!

This is performed as a monolithic operation, so it is typically advisable for applications to first use the `getNetworkSummary` method to check the node and edge counts for a network before retrieving the network. Uses `getEdges` (this procedure will return complete network with all elements) Nodes use primary ID of the base term ('represents' element) Edges use primary ID of the base term ('predicate', or 'p' element) Mapping table for the nodes is retrieved ('alias' and 'related' terms) to facilitate conversions/data mapping

Value

**RCX-object** object

REST query

GET: ndex_config$api$network$get

Note

Compatible to NDEx server version 1.3 and 2.0

Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a network and get its UUID
networks = ndex_find_networks(ndexcon,"p53", "nci-pid")
networkId = networks[1,"externalId"]
## Get the network data
rcx = ndex_get_network(ndexcon, networkId)
```

### ndex_group_delete_membership

*Remove a Group Member*

Description

Removes the member from the group

Usage

`ndex_group_delete_membership(ndexcon, groupId, userId)`

Arguments

- **ndexcon**: object of class NDExConnection link `ndex_connect`
- **groupId**: character; unique ID (UUID) of the group
- **userId**: character; unique ID (UUID) of the user
ndex_group_list_networks

Value
Empty string (""") on success, else error

REST query
DELETE: ndex_config$api$user$membership$delete

Note
Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 2.0

Examples
### Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
### Find user and get own id
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
### Find own groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
# groupId = groups[1,"externalId"]
### Find an other user of the group and get the id
# users = ndex_group_list_users(ndexcon, groupId)
### Choose one user
# userId = users[1,"externalId"]
### Remove user from the group
# ndex_group_delete_membership(ndexcon, groupId, userId)
NULL

ndex_group_list_networks
Get Network Permissions of a Group

Description
Get Network Permissions of a Group

Usage
ndex_group_list_networks(
    ndexcon,
    groupId,
    permission = NULL,
    start = NULL,
    size = NULL
)
## ndex_group_list_users

**Get Members of a Group**

### Description

Get Members of a Group

### Usage

```r
ndex_group_list_users(ndexcon, groupId, type = NULL, start = NULL, size = NULL)
```
Arguments

- **ndexcon**: object of class NDExConnection
- **groupId**: character; unique ID (UUID) of the group
- **type**: character (optional); constrains the type of the returned membership. If not set (or NULL), all permission types will be returned.
- **start**: integer (optional); specifies that the result is the nth page of the requested data.
- **size**: integer (optional); specifies the number of data items in each page.

Value

List of permissions of that group or empty object

REST query

GET: ndex_config$api$group$membership$get

Note

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection
ndexcon <- ndex_connect()
## Find a group
groups <- ndex_find_groups(ndexcon, "Ideker Lab")
groupId <- groups[1, "externalId"]
## Find other users of the group
# users <- ndex_group_list_users(ndexcon, groupId)
# users <- ndex_group_list_users(ndexcon, groupId, type='ADMIN', start=0, size=10)
```

---

### ndex_group_network_get_permission

*Get Group Permission for a Specific Network*

**Description**

Get Group Permission for a Specific Network

**Usage**

```r
ndex_group_network_get_permission(ndexcon, groupId, networkId)
```

**Arguments**

- **ndexcon**: object of class NDExConnection
- **groupId**: character; unique ID (UUID) of the group
- **networkId**: character; unique ID (UUID) of the network
Value

Network permissions of that group or empty object

REST query

GET: ndex_config$api$group$network$get

Note

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a group
groups = ndex_find_groups(ndexcon,"Ideker Lab")
groupId = groups[1,"externalId"]
## List networks of the group
networks = ndex_group_list_networks(ndexcon, groupId)
networkId = names(networks)[1]
## Get group's permission to the network
#group = ndex_group_network_get_permission(ndexcon, groupId, networkId)
```

---

ndex_group_set_membership

*Add or Update a Group Member*

Description

Updates the membership corresponding to the GroupMembership type specified in the URL parameter.

Usage

`ndex_group_set_membership(ndexcon, groupId, userId, type = "MEMBER")`

Arguments

- `ndexcon`: object of class NDExConnection. See `ndex_connect`
- `groupId`: character; unique ID (UUID) of the group
- `userId`: character; unique ID (UUID) of the user
- `type`: character (optional)("GROUPADMIN","MEMBER")(default: "MEMBER"); Type of group membership

Value

Empty string (""") on success, else error
REST query

PUT: ndex_config$api$user$membership$update

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get own id
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## Find own groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
# groupId = groups[1,"externalId"]
## Find an other user and get the id
# user = ndex_find_user_byName(ndexcon, 'SomeOtherAccountName')
# userId = user$externalId
## Add other user to the group
# ndex_group_set_membership(ndexcon, groupId, userId)
## Update other user's group permission
# ndex_group_set_membership(ndexcon, groupId, userId, type='MEMBER')  ## same as before
## Make other user to group admin (lose own admin permission)
# ndex_group_set_membership(ndexcon, groupId, userId, type='GROUPADMIN')
NULL
```

ndex_helper_encodeParams

*Adds Parameters to an url*

Description

Encodes a given parameter within the url accordingly to the parameter configuration for the api.

Usage

```r
ndex_helper_encodeParams(url, params, ...)
```

Arguments

- `url` character
- `params` (nested) list; "params" section of a api function definition in the api configuration
  (See ndex_config)
- `...` parameters defined by name used in the config
Details

The single parameter definitions are given as list by the "params" parameter. Each parameter is defined by a method, and, if applicable, a tag, a default value and/or an optional flag. There are three keywords defining the method: replace, append or parameter.

replace: The String defined by "tag" can be found within the url and will be replaced by the given value of the parameter. E.g. the tag "#NETWORKID#" in the url "/network/#NETWORKID#/provenance" is replaced by a value (e.g. "aaaaaaaa-bbbb-cccc-dddd-eeeeeeeeee") given as network id, which leads to the url "/network/aaaaaaaa-bbbb-cccc-dddd-eeeeeeeeee/provenance".

append: The given value of the parameter is appended to an url. Therefore the order of the parameters in the params definition is used. E.g. the url "/network/search" and the given values for "start" = 0 and "size" = 100 generates the following url: "/network/search/0/100"

parameter: Encodes the given parameters as url parameter using the specified tag as parameter descriptor. E.g. a parameter with the tag "username" and the value "SomeName" is encoded in the url "/user" as follows: "/user?username=SomeName"

It is also possible to set parameter as optional (except for replace), or define default values. Values are assigned to the parameters using the parameter name in the ... parameter.

Value

URL with encoded parameters as character

Note

This function is internal.

Examples

```R
## replace
url = "http://en.wikipedia.org/#NETWORKID#/index.php"
params = list( network=list( tag="#NETWORKID", method="replace"))
values = c(network='aaaa-bb-cc-dddd', bla='This is not used!')
ndexr:::ndx_helper_encodeParams(url, params=params, values)

params = list( network=list( tag="#NETWORKID", method="replace", default="xxxx-xx-xx-xxxxxx"))
values = c(bla='This is not used!')
ndexr:::ndx_helper_encodeParams(url, params=params, values)

## parameter
url = "http://en.wikipedia.org/w/index.php"
params = list( network=list( tag="network", method="parameter"))
values = c(network='aaaa-bb-cc-dddd', bla='This is not used!')
ndexr:::ndx_helper_encodeParams(url, params=params, values)

values = c(bla='This is not used!')
params = list( network=list( tag="network", method="parameter", optional=TRUE))
ndexr:::ndx_helper_encodeParams(url, params=params, values)```
## ndex_helper_getApi

Get the Api configuration for a function

**Description**

This function extracts the function definition from the ndex configuration within a ndex-connection object. It follows the given path down the list.

**Usage**

`ndex_helper_getApi(ndexcon, apiPath)`

**Arguments**

- `ndexcon` object of class `NDExConnection` `ndex_connect`
- `apiPath` character; path to follow in the nested list

**Value**

configuration of the function
Note

This function is internal.

Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Get the function definition for ndex_network_get_summary
## ndex_config[[ndex_config$defaultVersion]]$api$network$summary$get
ndexr:::ndex_helper_getApi(ndexcon, 'network$summary$get')
```

---

`ndex_helper_httpResponseHandler`

*Handles the http server response*

**Description**

This function handles the response from a server. If some response code different from success (200) is returned, the execution stops and the reason is shown.

**Usage**

`ndex_helper_httpResponseHandler(response, description, verbose = FALSE)`

**Arguments**

- `response`: object of class response (httr)
- `description`: character; description of the action performed
- `verbose`: logical; whether to print out extended feedback

**Value**

returns the given response, if it doesn’t contain any HTTP error

**Note**

This function is internal.

**Examples**

```r
ndexr:::ndex_helper_httpResponseHandler(httr::GET('http://www.ndexbio.org'),
                                          'Tried to connect to NDEx server', TRUE)
```
ndex_network_aspect_get_metadata

Get the Metadata Associated with a Network UUID

Description

This function retrieves the metadata associated with the supplied network UUID.

Usage

ndex_network_aspect_get_metadata(ndexcon, networkId, aspect)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ndexcon</td>
<td>object of class NDExConnection linkndex_connect</td>
</tr>
<tr>
<td>networkId</td>
<td>character; unique ID (UUID) of the network</td>
</tr>
<tr>
<td>aspect</td>
<td>character; aspect name</td>
</tr>
</tbody>
</table>

Value

metadata for an aspect as list: consistencyGroup, elementCount, lastUpdate, data, name, properties, version and idCounter

REST query

GET: ndex_config$api$network$aspect$getMetaDataByName

Note

Compatible to NDEx server version 2.0
Server error (version 2.0) since March 13th 2017

Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a network and get its UUID
networks = ndex_find_networks(ndexcon,"p53","nci-pid")
networkId = networks[1,"externalId"]
## Get the meta-data of an aspect of a network
ndex_network_aspect_get_metadata(ndexcon, networkId, 'nodeAttributes')
```
Delete Network Permission

Description
Removes any permission for the network for the user or group specified.

Usage
ndex_network_delete_permission(ndexcon, networkId, user = NULL, group = NULL)

Arguments
- ndexcon: object of class NDExConnection linkndex_connect
- networkId: unique ID of the network
- user: character (optional); uuid of the user. Only either user or group may be set!
- group: character (optional); uuid of the group. Only either user or group may be set!

Value
1 integer on success, 0 if user/group already has no permissions on the network.

REST query
GET: ndex_config$api$network$permission$delete

Note
Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 1.3 and 2.0
In version 1.3 the function only works for user permissions!

Examples
```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find one of your networks and get its UUID
# networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
# networkId = networks[1,"externalId"]
## Get the UUID for a user and group
# someUserUuid = "uuuuuuuu-ssss-eeee-rrrr-111111111111"
# someGroupUuid = "ggggggg-rrrr-oooo-uuuu-pppppppppppp"
## Delete the permissions
#ndex_network_delete_permission(ndexcon, networkId, user=someUserUuid)
# => returns 1
#ndex_network_delete_permission(ndexcon, networkId, user=someUserUuid)
```
# => returns 0, because user already lost permission on network
#ndex_network_delete_permission(ndexcon, networkId, group=someGroupUuid)
NULL

ndex_network_get_aspect

Get a Network Aspect As CX

Description
This function retrieves the provided aspect as CX. The result is the same as accessing an aspect of a RCX object.

Usage
ndex_network_get_aspect(ndexcon, networkId, aspect, size)

Arguments
ndexcon object of class NDExConnection linkndex_connect
networkId character; unique ID of the network
aspect character; name of the aspect
size integer; specifies the number of elements returned

Details
Note: In future ‘ndexr‘ uses the RCX-object from the corresponding package to handle the networks!

Value
data.frame of the aspect data (the same as rcx[[aspectName]])

REST query
GET: ndex_config$api$network$aspect$getMetaDataByName

Note
Compatible to NDEx server version 1.3 and 2.0, but doesn’t work for version 1.3
### Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a network and get its UUID
networks = ndex_find_networks(ndexcon, "p53", "nci-pid")
networkId = networks[1,"externalId"]
## Get the aspect of a network
aspect = ndex_network_get_aspect(ndexcon, networkId, 'nodeAttributes')
# limit the returned elements of the aspect to the first 10 elements
aspect = ndex_network_get_aspect(ndexcon, networkId, 'nodeAttributes', 10)
```

---

#### ndex_network_get_metadata

*Get Network CX Metadata Collection*

**Description**

This function retrieves the (aspect) meta-data of the network identified by the supplied network UUID string.

**Usage**

```
ndex_network_get_metadata(ndexcon, networkId)
```

**Arguments**

- `ndexcon`: object of class NDExConnection linkndex_connect
- `networkId`: character; unique ID (UUID) of the network

**Details**

**Note:** In future ‘ndexr’ uses the **RCX-object** from the corresponding package to handle the networks! See also **Meta-data** for more information.

**Value**

metadata as list: consistencyGroup, elementCount, lastUpdate, name, properties, version and id-Counter

**REST query**

```
GET: ndex_config$api$network$aspect$getMetaData
```

**Note**

Compatible to NDEx server version 1.3 and 2.0, but doesn’t work for version 1.3
Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a network and get its UUID
networks = ndex_find_networks(ndexcon,"p53", "nci-pid")
networkId = networks[1,"externalId"]
## Get the network meta-data
ndex_network_get_metadata(ndexcon, networkId)
```

---

**ndex_network_get_permission**

*Get All Permissions on a Network*

Description

This function retrieves the user or group permissions for a network

Usage

```r
ndex_network_get_permission(ndexcon, networkId, type, permission, start, size)
```

Arguments

- `ndexcon`: object of class NDExConnection link `ndex_connect`
- `networkId`: unique ID of the network
- `type`: character ("user"|"group"); specifies whether user or group permissions should be returned
- `permission`: character (optional)("READ"|"WRITE"|"ADMIN"); constrains the type of the returned membership. If not set (or NULL), all permission types will be returned.
- `start`: integer (optional); specifies that the result is the nth page of the requested data.
- `size`: integer (optional); specifies the number of data items in each page.

Value

data.frame containing user or group UUIDs and the highest permission assigned to that user or group

REST query

GET: `ndex_config$api$network$permission$get`

Note

Compatible to NDEx server version 1.3 and 2.0
In version 1.3 the function only returns user permissions and differs in the returned data (more columns)!
Requires an authorized user! (ndex_connect with credentials)
Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find one of your networks and get its UUID
# networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
# networkId = networks[1,"externalId"]
## Get the permissions
# permissions = ndex_network_get_permission(ndexcon, networkId, 'user')
## Version 2.0:
## names(permissions)
## [1] "memberUUID" "permission"
## Version 1.3:
## names(permissions)
## [1] "membershipType" "memberUUID" "resourceUUID"
## [4] "memberAccountName" "permissions" "resourceName"
# permissions = ndex_network_get_permission(ndexcon, networkId, 'user', NULL)  # same as previous
# permissions = ndex_network_get_permission(ndexcon, networkId, 'user', 'READ', 0, 10)
# permissions = ndex_network_get_permission(ndexcon, networkId, 'group')
NULL
```

---

**ndex_network_get_provenance**

*Get Network Provenance*

### Description

This function retrieves the provenance of the network identified by the supplied network UUID string.

### Usage

```r
ndex_network_get_provenance(ndexcon, networkId)
```

### Arguments

- `ndexcon`: object of class NDExConnection linkndex_connect
- `networkId`: unique ID of the network

### Value

List of network metadata: ID, name, whether it is public, edge and node count; source and format of network

### REST query

GET: ndex_config$api$network$provenance$get
**ndex_network_get_summary**

Get NetworkSummary by Network UUID

**Description**

This function retrieves the summary of the network identified by the supplied network UUID string.

**Usage**

```python
ndex_network_get_summary(ndexcon, networkId)
```

**Arguments**

- `ndexcon`: object of class NDExConnection (link: ndex_connect)
- `networkId`: unique ID of the network

**Value**

List of network metadata: ID, name, whether it is public, edge and node count; source and format of network

**REST query**

GET: ndex_config$api$network$summary$get

**Note**

Compatible to NDEx server version 1.3 and 2.0
Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Find a network and get its UUID
networks = ndex_find_networks(ndexcon,"p53", "nci-pid")
networkId = networks[1,"externalId"]
## Get the network summary
summary = ndex_network_get_summary(ndexcon, networkId)
```

ndex_network_set_systemProperties

Set Network System Properties

Description

Network System properties are the properties that describe the network’s status in a particular NDEx server but that are not part of the corresponding CX network object.

Usage

```r
ndex_network_set_systemProperties(
ndexcon,
networkId,
readOnly = NULL,
visibility = NULL,
showcase = NULL
)
```

Arguments

- `ndexcon` object of class NDExConnection link `ndex_connect`
- `networkId` unique ID of the network
- `readOnly` boolean (optional); Sets the network to only readable. At least one of readOnly, visibility or showcase have to be set!
- `visibility` character (optional) ('PUBLIC'|'PRIVATE'); Sets the network to only readable. At least one of readOnly, visibility or showcase have to be set!
- `showcase` boolean (optional); Authenticated user can use this property to control whether this network will display in his or her home page. Caller will receive an error if the user does not have explicit permission to that network. At least one of readOnly, visibility or showcase have to be set!

Value

NULL on success; Error else
REST query

GET: ndex_config$api$network$systemproperties$set

Note

Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 1.3 and 2.0
In version 1.3 only the parameter readOnly is supported

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find one of your networks and get its UUID
# networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
# networkId = networks[1,"externalId"]
## Set network system properties
# ndex_network_set_systemProperties(ndexcon, networkId, readOnly=TRUE)
# ndex_network_set_systemProperties(ndexcon, networkId, visibility="PUBLIC")
# ndex_network_set_systemProperties(ndexcon, networkId, showcase=TRUE)
# ndex_network_set_systemProperties(ndexcon, networkId,
#   readOnly=FALSE, visibility="PRIVATE", showcase=FALSE)
NULL
```

ndex_network_update_aspect

Update an Aspect of a Network

Description

This function updates an aspect with the provided CX for the aspect.

Usage

```r
ndex_network_update_aspect(
  ndexcon, networkId, aspectName, aspectAsRCX, isJson = FALSE
)
```
ndex_network_update_permission

Arguments

- ndexcon: object of class NDExConnection
- networkId: unique ID of the network
- aspectName: name of the aspect
- aspectAsRCX: rcx data for the aspect (rcx[[aspectName]])
- isJson: logical if aspectAsRCX is already JSON

Value

- networkId: unique ID of the modified network

REST query

PUT: ndex_config$api$network$aspect$update

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find one of your networks and get its UUID
# networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
# networkId = networks[1,"externalId"]
## Get the network data
# aspect = ndex_network_get_aspect(ndexcon, networkId, 'nodeAttributes')
## Do some changes to the aspect..
# aspectModified = aspect[1:5,]
## and update the aspect
# ndex_network_update_aspect(ndexcon,pws[1,"externalId"], 'nodeAttributes', aspectModified)
NULL
```

ndex_network_update_permission

Update Network Permission

Description

Updates the permission of a user specified by userid or group specified by groupid for the network
Usage

```r
dex_network_update_permission(
  ndexcon,
  networkId,
  user = NULL,
  group = NULL,
  permission
)
```

Arguments

- `ndexcon`: object of class NDExConnection (link `ndex_connect`)
- `networkId`: unique ID of the network
- `user`: character (optional); uuid of the user. Only either user or group may be set!
- `group`: character (optional); uuid of the group. Only either user or group may be set!
- `permission`: character (optional) ("READ"|"WRITE"|"ADMIN"); type of permission to be given. If granted admin permission, the current admin loses the admin status.

Value

1 integer on success, 0 if user/group already has this permissions on the network

REST query

GET: `ndex_config$sapi$network$permission$update`

Note

Requires an authorized user! (link `ndex_connect with credentials`)

Compatible to NDex server version 1.3 and 2.0, but doesn’t work for version 1.3

In version 1.3 the function only works for user permissions!

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find one of your networks and get its UUID
# networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
# networkId = networks[1,"externalId"]
## Get the UUID for a user and group
# someUserUuid = "uuuuuuuu-ssss-eeee-rrrr-111111111111"
# someGroupUuid = "ggggggg-rrrr-oooo-uuuu-pppppppppppp"
## Change the permissions
# ndex_network_update_permission(ndexcon, networkId, user=someUserUuid, 'WRITE')
# ndex_network_update_permission(ndexcon, networkId, group=someGroupUuid, 'READ')
## Set a new admin (lose own admin status)
# ndex_network_update_permission(ndexcon, networkId, user=someUserUuid, 'ADMIN')
NULL
```
ndex_network_update_profile

Update Network Profile

Description

Updates the profile information of the network. Any profile attributes specified will be updated but attributes that are not specified will have no effect - omission of an attribute does not mean deletion of that attribute.

Usage

```r
ndex_network_update_profile(
    ndexcon,
    networkId,
    name = NULL,
    description = NULL,
    version = NULL
)
```

Arguments

- `ndexcon`: object of class NDExConnection link`ndex_connect`
- `networkId`: unique ID of the network
- `name`: character (optional); Changes the name the network. At least one of name, description or version have to be set!
- `description`: character (optional); Changes the description the network. At least one of name, description or version have to be set!
- `version`: character (optional); Changes the version the network. At least one of name, description or version have to be set!

Value

NULL on success; Error else

REST query

GET: ndex_config$api$network$profile$update

Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 1.3 and 2.0
Examples
    ## Establish a server connection with credentials
    # ndexcon = ndex_connect('MyAccountName', 'MyPassword')
    ## Find one of your networks and get its UUID
    # networks = ndex_find_networks(ndexcon, accountName='MyAccountName')
    # networkId = networks[1,"externalId"]
    ## Update network profile
    # ndex_network_update_profile(ndexcon, networkId, name="Some fancy name for the network")
    # ndex_network_update_profile(ndexcon, networkId, description="Description of the network")
    # ndex_network_update_profile(ndexcon, networkId, version="1.2.3.4")
    # ndex_network_update_profile(ndexcon, networkId, name="Special test network",
    #   description="Nothing to see here", version="1.3")
    NULL

ndex_rest_DELETE  Generic DELETE query to API.

Description
    Generic DELETE query to API.

Usage
    ndex_rest_DELETE(ndexcon, route, raw = FALSE)

Arguments
    ndexcon  object of class NDExConnection  ndex_connect
    route    Character (route to specific REST query)
    raw      Specifies if server response should be returned in raw, or if jsonlite::fromJSON
             is called first. Defaults to FALSE.

Details
    Simply execute HTTP DELETE on URL host/route and fetch whatever data REST server returns
    Making sure the route is well-formed is the job of calling function

Value
    JSON response from REST server, NULL if no valid JSON was received. if parameter raw is
    TRUE, the raw response is returned without a call to jsonlite::fromJSON.

Note
    This function is internal.

See Also
    ndex_rest_GET, ndex_rest_POST, ndex_rest_PUT and ndex_rest_DELETE
Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Not run:
ndex_rest_DELETE(ndexcon, "/networks/api")

## End(Not run)
```

### ndex_rest_GET

Generic GET query to API.

#### Description

Generic GET query to API.

#### Usage

```r
ndex_rest_GET(ndexcon, route, raw = FALSE)
```

#### Arguments

- `ndexcon` object of class NDExConnection `ndex_connect`
- `route` Character (route to specific REST query)
- `raw` Specifies if server response should be returned in raw, or if `jsonlite::fromJSON` is called first. Defaults to FALSE.

#### Details

Simply execute HTTP GET on URL host/route and fetch whatever data REST server returns. Making sure the route is well-formed is the job of calling function.

#### Value

JSON response from REST server, NULL if no valid JSON was received. If parameter raw is TRUE, the raw response is returned without a call to `jsonlite::fromJSON`.

#### Note

This function is internal.

#### See Also

`ndex_rest_GET`, `ndex_rest_POST`, `ndex_rest_PUT` and `ndex_rest_DELETE`
Examples

```r
## Establish a server connection
ndxcon = ndex_connect()
## Not run:
ndx_rest_GET(ndxcon, "/networks/api")
## End(Not run)
```

## ndex_rest_POST

Generic POST query to API

Description

Generic POST query to API

Usage

```r
ndx_rest_POST(ndxcon, route, data, multipart = FALSE, raw = FALSE)
```

Arguments

- `ndxcon`: object of class NDExConnection
- `route`: Character (route to specific REST query)
- `data`: Whatever data to be supplied with query. Should be valid JSON
- `multipart`: Whatever data to be supplied with query. Should be valid JSON
- `raw`: Specifies if server response should be returned in raw, or if jsonlite::fromJSON is called first. Defaults to FALSE.

Details

Simply execute HTTP POST on URL host/route and fetch whatever data REST server returns. Making sure the route is well-formed is the job of calling function. Making sure the data is well-formed is also the job of calling function.

Value

JSON response from REST server. NULL if no valid JSON was received. If parameter raw is TRUE, the raw response is returned without a call to jsonlite::fromJSON.

Note

This function is internal.

See Also

`ndx_rest_GET`, `ndx_rest_POST`, `ndx_rest_PUT` and `ndx_rest_DELETE`
Examples

```r
## Establish a server connection
ndxcon = ndex_connect()
## Not run:
ndx_rest_POST(ndxcon, "networks/api", data)
ndx_rest_POST(ndxcon, "networks/api", data, raw=TRUE)
ndx_rest_POST(ndxcon, "networks/api", list(some=data, other=data2), multipart=TRUE)
## End(Not run)
```

**ndx_rest_PUT**

Generic PUT query to API

### Description

Generic PUT query to API

### Usage

```r
ndx_rest_PUT(ndxcon, route, data = NULL, multipart = FALSE, raw = FALSE)
```

### Arguments

- **ndxcon**: object of class NDExConnection
- **route**: Character (route to specific REST query)
- **data**: Whatever data to be supplied with query. Should be valid JSON
- **multipart**: Whatever data to be supplied with query. Should be valid JSON
- **raw**: Specifies if server response should be returned in raw, or if jsonlite::fromJSON is called first. Defaults to FALSE.

### Details

Simply execute HTTP PUT on URL host/route and fetch whatever data REST server returns Making sure the route is well-formed is the job of calling function Making sure the data is well-formed is also the job of calling function

### Value

JSON response from REST server, NULL if no valid JSON was received. if parameter raw is TRUE, the raw response is returned without a call to jsonlite::fromJSON.

### Note

This function is internal.

### See Also

`ndx_rest_GET`, `ndx_rest_POST`, `ndx_rest_PUT` and `ndx_rest_DELETE`
Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## Not run:
ndex_rest_PUT(ndexcon, "/networks/api", data)
ndex_rest_PUT(ndexcon, "/networks/api", data, raw=TRUE)
ndex_rest_PUT(ndexcon, "/networks/api", list(some=data, other=data2), multipart=TRUE)
```

## End(Not run)

---

ndex_update_group Update Group

### Description

Updates the group based on the data.

### Usage

```r
ndex_update_group(
  ndexcon,
  groupId,
  groupName,
  image,
  website,
  description,
  properties
)
```

### Arguments

- **ndexcon**: object of class NDExConnection link `ndex_connect`
- **groupId**: character; unique ID (UUID) of the group
- **groupName**: character; name of the new group
- **image**: character (optional); URL of the account owner’s image.
- **website**: character (optional); URL of the account owner’s website
- **description**: character (optional); Short description of this user.
- **properties**: list (optional); additional properties for the group

### Value

Empty string ("" ) on success, else error

### REST query

PUT: ndex_config$api$user$update
Note

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## Find the user’s groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
# groupId = groups[1,"externalId"]
## Update the group
# ndex_update_group(ndexcon, groupId, description='A really nice group!')

ndex_update_network  Update an Entire Network as CX
```

Description

Note: In future ‘ndexr’ uses the RCX-object from the corresponding package to handle the networks!

Usage

```r
ndex_update_network(ndexcon, rcx, networkId)
```

Arguments

- `ndexcon`: object of class NDExConnection
- `rcx`: RCX-object
- `networkId`: (optional); unique ID of the network

Details

This method updates/replaces a existing network on the NDEx server with new content from the given RCX object. The UUID can either be specified manually or it will be extracted from the RCX object (i.e. from rcx$ndexStatus$externalId).

Value

UUID of the updated network
**ndex_update_user**

**Update User**

**Description**

Updates the authenticated user based on the data. Errors, if the user for ndexcon and uuid are different.

**Usage**

```r
ndex_update_user(
  ndexcon,
  userId,
  emailAddress,
  isIndividual,
  displayName,
  firstName,
  lastName,
  image,
  website,
  description,
  verbose = FALSE
)
```
**Arguments**

- `ndexcon` object of class NDExConnection link `ndex_connect`
- `userId` character; unique ID of the user
- `emailAddress` character (optional); email address (used for verification if enabled)
- `isIndividual` boolean (default: True); True if this account is for an individual user. False means this account is for an organization or a project etc.
- `displayName` character (optional); Display name of this account, only applied to non-individual accounts.
- `firstName` character (optional); Account owner’s first name, only applies to individual accounts.
- `lastName` character (optional); Account owner’s last name, only applies to individual accounts.
- `image` character (optional); URL of the account owner’s image.
- `website` character (optional); URL of the account owner’s web site
- `description` character (optional); Short description of this user.
- `verbose` logical (optional); whether to print out extended feedback

**Value**

Empty string ("") on success, else error

**REST query**

GET: `ndex_config$api$user$update`  

**Note**

Requires an authorized user! (`ndex_connect` with credentials)

Compatible to NDEx server version 2.0

**Examples**

```bash
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Update user
# ndex_update_user(ndexcon, userId, firstName = 'Homer Jay', lastName = 'Simpson')
# ndex_update_user(ndexcon, userId, displayName = 'Max Power',
# [image='https://upload.wikimedia.org/wikipedia/en/0/02/Homer_Simpson_2006.png',
# description='One of the most influential characters in the history of TV'])
NULL
```
ndex_user_change_password

Change Password

Description
Changes the authenticated user’s password to the new password

Usage
ndex_user_change_password(ndexcon, userId, password)

Arguments
- ndexcon: object of class NDExConnection
- userId: character; unique ID of the user
- password: character; New password

Value
Empty string on success, else error

REST query
GET: ndex_config$api$user$password$change

Note
Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 2.0

Examples
```r
# Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
# Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
# Change user password
# ndex_user_change_password(ndexcon, userId, 'SuperSaveNewPassword')
NULL
```
ndex_user_forgot_password

Forgot Password

Description

Causes a new password to be generated for the given user account and then emailed to the user’s emailAddress

Usage

ndex_user_forgot_password(ndexcon, userId)

Arguments

ndexcon object of class NDExConnection linkndex_connect
userId character; unique ID of the user

Value

Empty string on success, else error

REST query

GET: ndex_config$api$user$password$mail Wrapper for ndex_user_mail_password()

Note

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection
# ndexcon = ndex_connect()
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Request new password via email
# ndex_user_forgot_password(ndexcon, userId)
NULL
```
Description
This is a convenience function designed to support "My Account" pages in NDEx applications. It returns a list of NetworkSummary objects to display.

Usage
ndx_user_get_networksummary(ndexcon, userId)

Arguments
ndxcon object of class NDExConnection link ndex_connect
userId character; unique ID (UUID) of the user

Value
data.frame of networks (name, description, externalId, uri, etc.) on the account page of the specified user

REST query
GET: ndex_config$api$user$networksummary

Note
Requires an authorized user! (ndx_connect with credentials)
Compatible to NDEx server version 2.0

Examples
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## get user by name to get UUID
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## get all network permissions of the user
# networkSummary = ndex_user_get_networksummary(con, user$externalId)
# names(networkSummary)
# [1] "ownerUUID" "isReadOnly" "subnetworkIds" "errorMessage" "isValid"
# [6] "warnings" "isShowcase" "visibility" "edgeCount" "nodeCount"
# [11] "uri" "version" "owner" "name" "properties"
# [16] "description" "externalId" "isDeleted" "modificationTime" "creationTime"
NULL
ndex_user_get_showcase

Get User's Showcase Networks

Description

This is a convenience function to support "user pages" in NDEx applications. This function returns a list of network summary objects that the user who is specified by userid chose to display in his or her home page. For authenticated users, this function returns the networks that the authenticated user can read, for anonymous users, this function returns only public networks.

Usage

ndex_user_get_showcase(ndexcon, userId)

Arguments

ndexcon object of class NDExConnection linkndex_connect
userId character; unique ID (UUID) of the user

Value

data.frame of networks (name, description, externalId, uri, etc.) in the showcase of the specified user

REST query

GET: ndex_config$sapi$user$showcase

Note

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection
ndexcon = ndex_connect()
## get user by name to get UUID
user = ndex_find_user_byName(ndexcon, 'ndextutorials')
userId = user$externalId
## get all network permissions of the user
showcase = ndex_user_get_showcase(ndexcon, userId)
names(showcase)
## [1] "ownerUUID"   "isReadOnly"   "subnetworkIds"   "errorMessage"   "isValid"
## [6] "warnings"   "isShowcase"   "visibility"   "edgeCount"   "nodeCount"
##[11] "uri"   "version"   "owner"   "name"   "properties"
##[16] "description"   "externalId"   "isDeleted"   "modificationTime"   "creationTime"
```
ndex_user_list_groups  Get User’s Group Memberships

Description
Query finds groups for which the current user has the specified membership type. If the "type" parameter is omitted, all membership types will be returned. Returns a map which maps a group UUID to the membership type the authenticated user has.

Usage
ndex_user_list_groups(ndexcon, userId, type = NULL, start = NULL, size = NULL)

Arguments
- ndexcon: object of class NDExConnection linkndex_connect
- userId: character; unique ID (UUID) of the user
- type: character (optional)("MEMBER" | "GROUPADMIN"); constrains the type of the returned membership. If not set (or NULL), all permission types will be returned.
- start: integer (optional); specifies that the result is the nth page of the requested data.
- size: integer (optional); specifies the number of data items in each page.

Value
List of permissions of that user or empty object

REST query
GET: ndex_config$api$User$group$list

Note
Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 2.0

Examples
```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## Find the user's groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
## $ gggggg-rrrr-oooo-uuuu-pppppppppp
## [1] "MEMBER"
```
get_user_list_permissions

Get User's Network Permissions

Description

This function returns networks for which the authenticated user is assigned the specified permission. Userid is the UUID of the authenticated user. Returns a JSON map in which the keys are network UUIDs and values are the highest permission assigned to the authenticated user.

Usage

get_user_list_permissions(
  ndexcon,
  userId,
  type = NULL,
  directonly = FALSE,
  start = NULL,
  size = NULL
)

Arguments

ndexcon object of class NDExConnection linkndex_connect
userId character; unique ID (UUID) of the user
type character (optional)("READ","WRITE","ADMIN"); constrains the type of the returned permission. If not set (or NULL), all permission types will be returned.
directonly logical (default: FALSE); If directonly is set to true, permissions granted through groups are not included in the result
start integer (optional); specifies that the result is the nth page of the requested data.
size integer (optional); specifies the number of data items in each page.

Value

List of highest permissions of that user or empty object

REST query

GET: ndex_config$api$user$permission$list
ndex_user_mail_password

Note

Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 2.0

Examples

## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## get user by name to get UUID
# user = ndex_find_user_byName(ndexcon, 'MyAccountName')
# userId = user$externalId
## get all network permissions of the user
# networkPermissions = ndex_user_list_permissions(ndexcon, userId)
## $'nnneeett-wwwww-oooo-rrrr-kkkkkkk11111'
## [1] "ADMIN"
## $'nnneeett-wwwww-oooo-rrrr-kkkkkkk22222'
## [1] "WRITE"
## $'nnneeett-wwwww-oooo-rrrr-kkkkkkk33333'
## [1] "READ"
## networkIds = names(networkPermissions)
## [1] "nnneeett-wwwww-oooo-rrrr-kkkkkkk11111" "nnneeett-wwwww-oooo-rrrr-kkkkkkk22222"
## [3] "nnneeett-wwwww-oooo-rrrr-kkkkkkk33333"
## get all networks for which the user has Admin permissions
# networkPermissions = ndex_user_list_permissions(ndexcon, userId, type='ADMIN')
## $'nnneeett-wwwww-oooo-rrrr-kkkkkkk11111'
## [1] "ADMIN"
## get all networks for which the user has direct access
# networkPermissions = ndex_user_list_permissions(ndexcon, user$externalId, directonly=TRUE)
## $'nnneeett-wwwww-oooo-rrrr-kkkkkkk11111'
## [1] "ADMIN"
##

ndex_user_mail_password

Email New Password

Description

Causes a new password to be generated for the given user account and then emailed to the user's emailAddress

Usage

ndex_user_mail_password(ndexcon, userId)

Arguments

ndexcon object of class NDExConnection linkndex_connect
userId character; unique ID of the user
ndex_user_show_group

Value

Empty string on success, else error

REST query

GET: ndex_config$api$user$password$mail

Note

Compatible to NDEx server version 2.0

Examples

## Establish a server connection
# ndexcon = ndex_connect()
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Request new password via email
# ndex_user_mail_password(ndexcon, userId)
# NULL

ndex_user_show_group  Get User's Membership in Group

Description

Returns the permission that the user specified in the URL has on the given group. Returns an empty object if the authenticated user is not a member of this group.

Usage

ndex_user_show_group(ndexcon, userId, groupId)

Arguments

ndexcon  object of class NDExConnection link
userId  character; unique ID (UUID) of the user
groupId  character; unique ID (UUID) of the group

Value

List of permissions of that user or empty object

REST query

GET: ndex_config$api$user$group$get
**ndex_user_show_permission**

**Note**

Requires an authorized user! (ndex_connect with credentials)

Compatible to NDEx server version 2.0

**Examples**

```r
## Establish a server connection with credentials
# ndexcon = ndex_connect('MyAccountName', 'MyPassword')
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Find the user's groups and get one group id
# groups = ndex_user_list_groups(ndexcon, userId)
# groupId = groups[1,"externalId"]
## get user's permission in the group
# userPermissions = ndex_user_show_group(ndexcon, userId, groupId)
## $'uuuuuuu-ssss-eeee-rrrr-123456789abc$
## [1] "MEMBER"
```

---

**ndex_user_show_permission**

*Get User's Permission for Network*

**Description**

Get the type(s) of permission assigned to the authenticated user for the specified network. Returns a map which maps a network UUID to the highest permission assigned to the authenticated user.

**Usage**

```r
ndex_user_show_permission(ndexcon, userId, networkId, directonly = FALSE)
```

**Arguments**

- `ndexcon` object of class NDExConnection [ndex_connect]
- `userId` character; unique ID (UUID) of the user
- `networkId` character; unique ID (UUID) of the group
- `directonly` logical (default: FALSE): If directonly is set to true, permissions granted through groups are not included in the result

**Value**

List of permissions of that user ("READ"|"WRITE"|"ADMIN") or empty object

**REST query**

GET: ndex_config$api$user$permission$get
**ndex_verify_user**

**Note**
Requires an authorized user! (ndex_connect with credentials)
Compatible to NDEx server version 2.0

**See Also**

ndex_network_get_permission

**Examples**

```r
code
```

**Description**

Verify the given user with UUID and verification code, which is set by email

**Usage**

```r
ndex_verify_user(ndexcon, userId, code)
```  

**Arguments**

- `ndexcon`: object of class NDExConnection linkndex_connect
- `userId`: character; unique ID of the user
- `code`: character; Verification code sent by email

**Value**

string "User account XXX has been activated." when this user's account is successfully activated.

**REST query**

GET: ndex_config$api$User$verify
Note

Compatible to NDEx server version 2.0

Examples

```r
## Establish a server connection
# ndexcon = ndex_connect()
## Find user and get its id
# user = ndex_find_user_byName(ndexcon, 'SomeUserName')
# userId = user$externalId
## Verify user with verification code
# ndex_verify_user(ndexcon, userId, '0sqy11mRZ9')
## [1] "User account XXX has been activated."

NULL
```

print.NDExConnection  Print a NDExConnection object

Description

This function creates an NDExConnection which stores options and authentication details. It is a parameter required for most of the other ndexr functions. If username and password are missing an anonymous connection is created, which already offers most of the retrieval functionality.

Usage

```r
## S3 method for class 'NDExConnection'
print(x, ...)
```

Arguments

- `x` NDExConnection; stores options, authentication and api configuration
- `...` further arguments passed to or from other methods.

Value

Just prints the NDExConnection object

See Also

`ndex_connect` and `ndex_config`
Examples

```r
ndexcon = ndex_connect()  # log in anonymously
print(ndexcon)
ndexcon = ndex_connect(verb=TRUE)  # same as above with extended feedback
print(ndexcon)
## Not run:
## log in with credentials
ndexcon = ndex_connect('user', 'password')
print(ndexcon)
## running some NDEx server locally
ndexcon = ndex_connect(host='localhost:8765')
print(ndexcon)
## manually change the api and connection configuration
ndexcon = ndex_connect(ndexConf=ndex_config$Version_2.0)
print(ndexcon)

## End(Not run)
```
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