

# Package ‘DSMolgenisArmadillo’

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**Type** Package

**Version** 4.0.1

**Title** 'DataSHIELD' Client for 'MOLGENIS Armadillo'

**Description** 'DataSHIELD' is an infrastructure and series of R packages that enables the remote and 'non-disclosive' analysis of sensitive research data. This package is the 'DataSHIELD' interface implementation to analyze data shared on a 'MOLGENIS Armadillo' server. 'MOLGENIS Armadillo' is a light-weight 'DataSHIELD' server using a file store and an 'RServe' server.

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**License** LGPL (>= 2.1)

**URL** <https://github.com/molgenis/molgenis-r-datashield/>,  
<https://molgenis.github.io/molgenis-r-datashield/>

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armadillo

*Create an Armadillo DataSHIELD Service driver*

---

### Description

Convenience function for creating a [ArmadilloDriver](#) object.

### Usage

armadillo()

---

armadillo.get\_credentials  
*Get credentials information*

---

## Description

Get credentials information

## Usage

```
armadillo.get_credentials(server)
```

## Arguments

server            the URL of the Armadillo server

## Details

This function fetched various details from the auth server, including refresh, id and access tokens. NOTE: in order to get refresh token, refresh tokens should be turned on for this armadillo instance on the auth server. When access tokens are fetched using this method, it enables the automatic refreshing of tokens when they time out. This works by checking whether the current token(s) have expired, and if so attempting to refresh them and write the refreshed token to the connection and credentials objects in the global environment. For this to work correctly, ensure that there only exists one DataSHIELD connections object in the global environment, and that for each datasource there is only object containing their credentials.

## Value

The credentials

## Examples

```
## Not run:
example_url <- "https://armadillo.example.org"
credentials <- armadillo.get_credentials(example_url)

builder <- newDSLoginBuilder()
builder$append(
  url = example_url,
  server = "example_server",
  token = credentials@access_token,
  driver = "ArmadilloDriver")
logindata <- builder$build()

conns <- datashield.login(logins = logindata, assign = FALSE)

## End(Not run)
```

---

dsAggregate, ArmadilloConnection-method  
*Aggregate data*

---

### Description

Aggregate some data from the DataSHIELD R session using a valid R expression. The aggregation expression must satisfy the data repository's DataSHIELD configuration.

### Usage

```
## S4 method for signature 'ArmadilloConnection'
dsAggregate(conn, expr, async = TRUE)
```

### Arguments

conn	<a href="#">ArmadilloConnection-class</a> object.
expr	Expression to evaluate.
async	Whether the result of the call should be retrieved asynchronously. When TRUE (default) the calls are parallelized over the connections, when the connection supports that feature, with an extra overhead of requests.

---

dsAssignExpr, ArmadilloConnection-method  
*Assign the result of an expression*

---

### Description

Assign a result of the execution of an expression in the DataSHIELD R session.

### Usage

```
## S4 method for signature 'ArmadilloConnection'
dsAssignExpr(conn, symbol, expr, async = TRUE)
```

### Arguments

conn	<a href="#">ArmadilloConnection-class</a> object.
symbol	Name of the R symbol.
expr	A R expression with allowed assign functions calls.
async	Whether the result of the call should be retrieved asynchronously. When TRUE (default) the calls are parallelized over the connections, when the connection supports that feature, with an extra overhead of requests.

### Value

A [ArmadilloResult-class](#) object.

---

dsAssignResource, ArmadilloConnection-method  
*Assign a resource*

---

### Description

Assign a resource in the DataSHIELD R session.

### Usage

```
## S4 method for signature 'ArmadilloConnection'  
dsAssignResource(conn, symbol, resource, async = TRUE)
```

### Arguments

conn	An object that inherits from <a href="#">DSConnection-class</a> .
symbol	Name of the R symbol.
resource	Fully qualified name of a resource reference in the data repository.
async	Whether the result of the call should be retrieved asynchronously.

### Value

A [ArmadilloResult-class](#) object.

---

dsAssignTable, ArmadilloConnection-method  
*Assign a table*

---

### Description

Assign a R-data.frame in the DataSHIELD R session.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'
dsAssignTable(
  conn,
  symbol,
  table,
  variables = NULL,
  missings = FALSE,
  identifiers = NULL,
  id.name = NULL,
  async = TRUE
)
```

**Arguments**

conn	<a href="#">ArmadilloConnection-class</a> object.
symbol	Name of the R symbol.
table	Fully qualified name of the table.
variables	The variables to load.
missings	Not supported
identifiers	Not supported
id.name	Not supported
async	When set, do not wait for the result.

**Value**

A [ArmadilloResult-class](#) object.

---

dsConnect, ArmadilloDriver-method

*Connect to an Armadillo DataSHIELD service*

---

**Description**

Connect to an Armadillo DataSHIELD service, with provided credentials.

**Usage**

```
## S4 method for signature 'ArmadilloDriver'
dsConnect(
  drv,
  name,
  restore = NULL,
  username = "",
  password = "",
)
```

```

    token = "",
    url,
    profile = "default",
    opts = list(),
    ...
)

```

### Arguments

drv	<a href="#">ArmadilloDriver-class</a> class object.
name	Name of the connection, which must be unique among all the DataSHIELD connections.
restore	Workspace name to be restored in the newly created DataSHIELD R session.
username	The username to authenticate with.
password	The password to authenticate with.
token	The ID token to authenticate with.
url	URL of the server.
profile	the profile to select, default "default"
opts	Curl options as described by htrr (call htrr::htrr_options() for details). Can be provided by "Armadillo.opts" option.
...	Unused, needed for compatibility with generic.

### Value

A [ArmadilloConnection-class](#) object.

---

dsDisconnect, ArmadilloConnection-method

*Disconnect from an Armadillo DataSHIELD Service*

---

### Description

Disconnect from an Armadillo DataSHIELD Service and release all R resources. If a workspace ID is provided, the DataSHIELD R session will be saved before being destroyed.

### Usage

```

## S4 method for signature 'ArmadilloConnection'
dsDisconnect(conn, save = NULL)

```

### Arguments

conn	<a href="#">ArmadilloConnection-class</a> class object
save	Save the DataSHIELD R session with provided ID (must be a character string).

**See Also**[dsDisconnect](#)

---

*dsFetch, ArmadilloResult-method**Fetch the result*

---

**Description**

Fetch the DataSHIELD operation result.

**Usage**

```
## S4 method for signature 'ArmadilloResult'
dsFetch(res)
```

**Arguments**

`res` [ArmadilloResult-class](#) object.

**Value**

TRUE if table exists.

---

*dsGetInfo, ArmadilloConnection-method**Get connection info*

---

**Description**

Get information about a connection.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'
dsGetInfo(dsObj, ...)
```

**Arguments**

`dsObj` [ArmadilloConnection-class](#) class object  
`...` Unused, needed for compatibility with generic.

**Value**

The connection information. This should report the version of the data repository application (`repo.version`) and its name (`repo.name`), the database name (`dbname`), username (`username`), host (`host`), port (`port`), etc. It MAY also include any other arguments related to the connection (e.g., thread id, socket or TCP connection type). It MUST NOT include the password.

---

dsGetInfo, ArmadilloDriver-method  
*Get driver info*

---

**Description**

Get information about a driver.

**Usage**

```
## S4 method for signature 'ArmadilloDriver'  
dsGetInfo(dsObj, ...)
```

**Arguments**

dsObj            [ArmadilloDriver-class](#) class object  
...              Unused, needed for compatibility with generic.

**Value**

The connection information. This returns the version of the package (driver.version). There is no underlying client library.

---

dsGetInfo, ArmadilloResult-method  
*Get result info*

---

**Description**

Await completion and get the information about a command (if still available).

**Usage**

```
## S4 method for signature 'ArmadilloResult'  
dsGetInfo(dsObj, ...)
```

**Arguments**

dsObj            [ArmadilloResult-class](#) class object  
...              Unused, needed for compatibility with generic.

**Value**

The result information. This should include the R expression being executed (expression) and if the query is complete (`\{ "status" = "COMPLETED" \}`).

---

dsHasResource, ArmadilloConnection-method  
*Verify resource exists.*

---

**Description**

Verify resource exists.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsHasResource(conn, resource)
```

**Arguments**

conn            [ArmadilloConnection-class](#) class object.  
resource        The identifier of the resource

**Value**

TRUE if resource exists.

---

dsHasTable, ArmadilloConnection-method  
*Verify table exist and can be accessible for performing DataSHIELD operations.*

---

**Description**

Verify table exist and can be accessible for performing DataSHIELD operations.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsHasTable(conn, table)
```

**Arguments**

conn            [ArmadilloConnection-class](#) class object.  
table           The identifier of the table

**Value**

TRUE if table exists.

---

 dsIsAsync, ArmadilloConnection-method

*Armadillo DataShield Service asynchronous support*


---

### Description

List of DataSHIELD operations on which Armadillo DataSHIELD Service supports asynchronicity.

### Usage

```
## S4 method for signature 'ArmadilloConnection'
dsIsAsync(conn)
```

### Arguments

conn                    [ArmadilloConnection-class](#) class object

### Details

When a [DSResult-class](#) object is returned on aggregation or assignment operation, the raw result can be accessed asynchronously, allowing parallelization of DataSHIELD calls over multiple servers. The returned named list of logicals will specify if asynchronicity is supported for: aggregation operation ('aggregate'), table assignment operation ('assignTable'), resource assignment operation ('assignResource') and expression assignment operation ('assignExpr').

### Value

The named list of logicals detailing the asynchronicity support.

---

 dsIsCompleted, ArmadilloResult-method

*Get whether the operation is completed*


---

### Description

Get whether the result from a previous assignment or aggregation operation was completed, either with a successful status or a failed one. This call must not wait for the completion, immediate response is expected. Once the result is identified as being completed, the raw result the operation can be got directly.

### Usage

```
## S4 method for signature 'ArmadilloResult'
dsIsCompleted(res)
```

**Arguments**

res                    [ArmadilloResult-class](#) object.

**Value**

TRUE if operation is completed.

---

dsKeepAlive, ArmadilloConnection-method  
*Keep a connection alive*

---

**Description**

As the DataSHIELD sessions are working in parallel, this function helps at keeping idle connections alive while others are working. Any communication failure must be silently processed.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsKeepAlive(conn)
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object

**Value**

NULL, invisibly

---

dsListMethods, ArmadilloConnection-method  
*List methods*

---

**Description**

List methods defined in the DataSHIELD configuration.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListMethods(conn, type = "aggregate")
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object  
type                    Type of the method: "aggregate" (default) or "assign".

**Value**

A data.frame with columns: name, type ('aggregate' or 'assign'), class ('function' or 'script'), value, package, version.

---

dsListPackages, ArmadilloConnection-method  
*List packages*

---

**Description**

List packages with their versions defined in the DataSHIELD configuration.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListPackages(conn)
```

**Arguments**

conn [ArmadilloConnection-class](#) class object

**Value**

A data.frame with columns: name, version.

---

dsListResources, ArmadilloConnection-method  
*List Armadillo DataSHIELD Service resources*

---

**Description**

List Armadillo DataSHIELD Service resources that may be accessible for performing DataSHIELD operations.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListResources(conn)
```

**Arguments**

conn [ArmadilloConnection-class](#) class object

**Value**

The fully qualified names of the resources.

**See Also**

[dsListResources](#)

---

dsListSymbols, ArmadilloConnection-method

*List R symbols*

---

**Description**

List symbols living in the DataSHIELD R session.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListSymbols(conn)
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object

**Value**

A character vector.

---

dsListTables, ArmadilloConnection-method

*List Armadillo DataSHIELD Service tables*

---

**Description**

List Armadillo DataSHIELD Service tables that may be accessible for performing DataSHIELD operations.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListTables(conn)
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object

**Value**

The fully qualified names of the tables.

**See Also**

[dsListTables](#)

---

dsListWorkspaces, ArmadilloConnection-method  
*List workspaces*

---

**Description**

List workspaces saved in the data repository.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsListWorkspaces(conn)
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object

**Value**

A data.frame with columns: name, lastAccessDate, size, user.

---

dsRestoreWorkspace, ArmadilloConnection-method  
*Restore workspace*

---

**Description**

This method implementation for the ArmadilloConnection class sends an authenticated POST request to the Armadillo /load-workspace endpoint. It reloads a previously saved R session state (workspace) using the provided name as the identifier.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsRestoreWorkspace(conn, name)
```

**Arguments**

conn                    [ArmadilloConnection-class](#) class object  
name                    Name of the workspace.

---

dsRmSymbol,ArmadilloConnection-method  
*Remove an R symbol*

---

**Description**

Remove a symbol living in the DataSHIELD R session. After removal, the data identified by the symbol will not be accessible in the DataSHIELD R session on the server side.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsRmSymbol(conn, symbol)
```

**Arguments**

conn	<a href="#">ArmadilloConnection-class</a> class object
symbol	Name of the R symbol.

---

dsRmWorkspace,ArmadilloConnection-method  
*Remove a workspace*

---

**Description**

Remove a workspace on the data repository.

**Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsRmWorkspace(conn, name)
```

**Arguments**

conn	<a href="#">ArmadilloConnection-class</a> class object
name	Name of the workspace.

---

*dsSaveWorkspace, ArmadilloConnection-method*  
*Save workspace*

---

### **Description**

Save workspace on the data repository.

### **Usage**

```
## S4 method for signature 'ArmadilloConnection'  
dsSaveWorkspace(conn, name)
```

### **Arguments**

conn	<a href="#">ArmadilloConnection-class</a> class object
name	Name of the workspace.

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