

IBM® Netezza® Analytics  
Release 3.3.5.0

*Java Analytic Executables API  
Reference*



Note: Before using this information and the product that it supports, read the information in "[Notices and Trademarks](#)" on page 83.

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# Preface

This guide provides an API reference for Java AE programmers.

## Audience for This Guide

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The *Java Analytic Executables API Reference* is written for programmers who intend to create Analytic Executables for IBM Netezza Analytics using the Java language. This guide does not provide a tutorial on AE concepts. More information about AEs can be found in the *User-Defined Analytic Process Developer's Guide*.

## Purpose of This Guide

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This guide describes the Java AE API, which is a language adapter provided as part of IBM Netezza Analytics. The Java AE API provides programmatic access to the AE interface for Java programmers.

## Conventions

---

*Note on Terminology:* The terms User-Defined Analytic Process (UDAP) and Analytic Executable (AE) are synonymous.

The following conventions apply:

- ▶ *Italics* for emphasis on terms and user-defined values, such as user input.
- ▶ Upper case for SQL commands, for example, INSERT or DELETE.
- ▶ Bold for command line input, for example, **nzsystem stop**.
- ▶ Bold to denote parameter names, argument names, or other named references.
- ▶ Angle brackets ( < > ) to indicate a placeholder (variable) that should be replaced with actual text, for example, **nzmat <- nz.matrix("<matrix\_name>")**.
- ▶ A single backslash ("\") at the end of a line of code to denote a line continuation. Omit the backslash when using the code at the command line, in a SQL command, or in a file.
- ▶ When referencing a sequence of menu and submenu selections, the ">" character denotes the different menu options, for example *Menu Name > Submenu Name > Selection*.

## If You Need Help

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If you are having trouble using the IBM Netezza appliance, IBM Netezza Analytics or any of its components:

1. Retry the action, carefully following the instructions in the documentation.
2. Go to the IBM Support Portal at <http://www.ibm.com/support>. Log in using your IBM ID and password. You can search the Support Portal for solutions. To submit a support request, click the 'Service Requests & PMRs' tab.
3. If you have an active service contract maintenance agreement with IBM, you can contact customer support teams via telephone. For individual countries, please visit the Technical Support section of the IBM Directory of worldwide contacts

## Comments on the Documentation

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We welcome any questions, comments, or suggestions that you have for the IBM Netezza documentation. Please send us an e-mail message at [netezza-doc@wwpdl.vnet.ibm.com](mailto:netezza-doc@wwpdl.vnet.ibm.com) and include the following information:

- ▶ The name and version of the manual that you are using
- ▶ Any comments that you have about the manual
- ▶ Your name, address, and phone number

We appreciate your comments.

# CHAPTER 1

## Module Documentation

### Record and Data Type Support

---

All the data APIs work with records that are collections of data fields.

#### Classes

- ▶ class `NzaeDataTypes`  
This class contains constant int values corresponding to the Netezza database column data types.
- ▶ interface `NzaeFieldInfo`  
This class contains information for a specific field (column) including NZ data type, Java SQL data type, and default Java lanaguage data types.
- ▶ class `NzaeInterval`  
This class is for the Interval data type.
- ▶ interface `NzaeRecord`  
A record corresponds to an input or output database row.
- ▶ class `NzaeTimeTz`  
This class is for the TimeTz data type.

#### Detailed Description

All the data APIs work with records that are collections of data fields.

### Support APIs

---

This API family provides support functions for date and time conversions, numeric conversions, and getting runtime environment information.

## Classes

- ▶ class NzaeException  
Unchecked Exception used throughout the Java AE API.
- ▶ class NzaeUtil  
This class contains static utility methods that are not dependent on the main NzaeFactory interface.

## Modules

- ▶ Runtime and Environment Information.  
Runtime, Environment, and Shared Library Information.

## Detailed Description

This API family provides support functions for date and time conversions, numeric conversions, and getting runtime environment information.

## Runtime and Environment Information.

Runtime, Environment, and Shared Library Information.

### Classes

- ▶ interface NzaeEnvironment  
This is the Java AE Environment API interface.
- ▶ interface NzaeLibrary  
This is the Java AE Library API interface.
- ▶ class NzaeRuntime  
Constant runtime information.

### Detailed Description

Runtime, Environment, and Shared Library Information.

## Data Connection APIs.

---

This API family is used to process data after a data connection has been opened.

## Classes

- ▶ interface NzaeBase  
The base interface for data connection APIs.
- ▶ interface NzaeMessageHandler  
This class handles Nzae messages.
- ▶ class NzaeMetadata  
This class contains metadata about the AE, including input and output column attributes.

## Modules

- ▶ Function  
Function AEs are called from Scalar or Table SQL Functions.
- ▶ Aggregate  
Aggregate AEs are called from Aggregate SQL Functions.
- ▶ Shaper and Sizer  
Shapers are optionally called for Table Function AEs.

## Detailed Description

This API family is used to process data after a data connection has been opened.

- ▶ See Also
  - ▲ Initialization APIs.

## Function

Function AEs are called from Scalar or Table SQL Functions.

### Classes

- ▶ interface Nzae  
This is the main Java AE Function API interface.

### Detailed Description

Function AEs are called from Scalar or Table SQL Functions.

## Aggregate

Aggregate AEs are called from Aggregate SQL Functions.

### Classes

- ▶ interface NzaeAgg  
This is the main Java AE Aggregation API interface.
- ▶ interface NzaeAggMessageHandler  
This class handles NzaeAggregation messages.

### Detailed Description

Aggregate AEs are called from Aggregate SQL Functions.

## Shaper and Sizer

Shapers are optionally called for Table Function AEs.

### Classes

- ▶ interface NzaeShaper  
This is the main Java AE Shaper API interface.
- ▶ interface NzaeShaperMessageHandler

This class handles NzaeShaper messages.

### Detailed Description

Shapers are optionally called for Table Function AEs.

Sizers are optionally called for Scalar Function AEs.

## Initialization APIs.

---

This API family is used to get an open data connection.

### Classes

- ▶ class NzaeAggInitialization  
Not implemented.
- ▶ class NzaeApi  
This class is the result of an AE connection request.
- ▶ class NzaeApiGenerator  
This class helps manage local and remote connections.
- ▶ interface NzaeFactory  
Used to create all objects and provide all information that is dependent on the underlying C implementation of AE.
- ▶ class NzaeInitialization  
Not implemented.
- ▶ class NzaeShaperInitialization  
Not implemented.

### Modules

- ▶ Remote Initialization.  
Initialization functions related to Remote AEs.

### Detailed Description

This API family is used to get an open data connection.

To get a data connection using system defaults use class NzaeApiGenerator .

NzaeApiGenerator supports both a "standard input / output" data flow paradigm and a call back paradigm. Aggregation is always call back.

For a greater range of options use class NzaeFactory and the Remote Initialization classes described below.

### Remote Initialization.

Initialization functions related to Remote AEs.

### Classes

- ▶ interface NzaeConnectionPoint  
Netezza Analytic Executables.
- ▶ interface NzaeRemoteProtocol  
Netezza Analytic Executables.
- ▶ interface NzaeRemoteProtocolCallback  
Netezza Analytic Executables.

### Detailed Description

Initialization functions related to Remote AEs.

1) Create a connection point. 2) Listen using that connection point. 3) Accept a Data Connection Instance.





# CHAPTER 2

## Class Documentation

### Nzae Interface Reference

---

This is the main Java AE Function API interface.

Inherits NzaeBase

#### Public Member Functions

- ▶ `void close()`  
Closes the AE and releases its resources.
- ▶ `NzaeRecord createOutputRecord()`  
Creates a new NzaeRecord object compatible for output.
- ▶ `void done()`  
Indicates the AE is finishing successfully and does not get any more rows or output any more results.
- ▶ `int getApiType()`  
Returns the API Constant for this interface.
- ▶ `NzaeDataTypes getDataTypes()`  
Gets the NZ Data Type constants.
- ▶ `NzaeEnvironment getEnvironment()`  
Gets environment information for the AE.
- ▶ `boolean getInterpretCharAsBinary(int index)`  
Gets the TRUE / FALSE state of the interpretation mode of a char or varchar column as a byte array.
- ▶ `NzaeLibrary getLibrary()`  
Gets the library information for the AE.
- ▶ `NzaeMessageHandler getMessageHandler()`

Returns the message handler class object.

- ▶ `NzaeMetadata getMetadata()`  
Gets metadata about the AE, including the input and output columns.
- ▶ `NzaeRuntime getRuntime()`  
Gets runtime information the AE, including information about the Netezza system.
- ▶ `void log(int logLevel, String message)`  
Logs the specified message at the specified log level.
- ▶ `NzaeRecord next()`  
Gets the next input row.
- ▶ `boolean nextPartition()`  
Gets the next partition.
- ▶ `void outputResult(NzaeRecord rec)`  
Outputs the record.
- ▶ `void ping()`  
Indicates that the AE is still active and not hanging.
- ▶ `void run(NzaeMessageHandler messageHandler)`  
Begins higher level function message processing.
- ▶ `void setInterpretCharAsBinary(int index, boolean arg)`  
Interprets a char or varchar column as a byte array.
- ▶ `int size()`  
Gets the field size.
- ▶ `void userError(String message)`  
Indicates the AE has encountered an error condition.

## Static Public Attributes

- ▶ `LOG_DEBUG`  
Log level debug.
- ▶ `LOG_TRACE`  
Log level trace.

## Detailed Description

This is the main Java AE Function API interface.

A reference to this interface can be obtained from static methods in the `NzaeFactory` class.

- ▶ See Also
  - ▲ `NzaeFactory`

## Public Member Function Documentation

- ▶ `void close()`

Closes the AE and releases its resources.

► **NzaeRecord createOutputRecord()**

Creates a new NzaeRecord object compatible for output.

▲ Returns

**NzaeRecord**

An instance of NzaeRecord with NULL fields.

An object is compatible if it has the correct number of fields of the correct database type in the correct order.

► **void done()**

Indicates the AE is finishing successfully and does not get any more rows or output any more results.

► **int getApiType()**

Returns the API Constant for this interface.

▲ Returns

The values defined in NzaeApi .

► **NzaeDataTypes getDataTypes()**

Gets the NZ Data Type constants.

▲ Returns

**NzaeDataTypes**

The instance of NzaeDataTypes .

► **NzaeEnvironment getEnvironment()**

Gets environment information for the AE.

▲ Returns

**NzaeEnvironment**

The instance of NzaeEnvironment .

► **boolean getInterpretCharAsBinary(int index)**

Gets the TRUE / FALSE state of the interpretation mode of a char or varchar column as a byte array.

▲ Parameters

► **index**

The column index, which is 0 based.

▲ Returns

TRUE = byte array; FALSE = string.

The default value is FALSE.

- ▶ **NzaeLibrary getLibrary()**  
Gets the library information for the AE.
  - ▲ Returns  
**NzaeLibrary**  
The instance of NzaeLibrary .
  
- ▶ **NzaeMessageHandler getMessageHandler()**  
Returns the message handler class object.
  - ▲ Returns  
**NzaeMessageHandler**  
The instance of NzaeFunctionMessageHandler.
  
- ▶ **NzaeMetadata getMetadata()**  
Gets metadata about the AE, including the input and output columns.
  - ▲ Returns  
**NzaeMetadata**  
The instance of NzaeMetadata .
  
- ▶ **NzaeRuntime getRuntime()**  
Gets runtime information the AE, including information about the Netezza system.
  - ▲ Returns  
**NzaeRuntime**  
The instance of NzaeRuntime .
  
- ▶ **void log(int logLevel, String message)**  
Logs the specified message at the specified log level.
  - ▲ Parameters
    - ▶ **logLevel**  
The log level constant.
    - ▶ **message**  
The message to log.
  
- ▶ **NzaeRecord next()**  
Gets the next input row.
  - ▲ Returns  
**NzaeRecord**  
An instance of NzaeRecord or NULL when there is no more data.

► **boolean nextPartition()**

Gets the next partition.

▲ Returns

TRUE if there is another partition; otherwise FALSE.

► **void outputResult(NzaeRecord rec)**

Outputs the record.

▲ Parameters

► **NzaeRecord rec**

An output compatible instance of NzaeRecord .

► **void ping()**

Indicates that the AE is still active and not hanging.

► **void run(NzaeMessageHandler messageHandler)**

Begins higher level function message processing.

▲ Parameters

► **NzaeMessageHandler messageHandler**

The message handler.

Processes one row of input and produces one row of output. Used for all scalar functions and some table functions. Scalar functions use a single field in the result.

This is an alternative to writing a custom for loop using next and outputResult.

► **void setInterpretCharAsBinary(int index, boolean arg)**

Interprets a char or varchar column as a byte array.

▲ Parameters

► **index**

The column index, which is 0 based.

► **arg**

TRUE = byte array; FALSE = string.

The default value is FALSE.

► **int size()**

Gets the field size.

▲ Returns

The field size.

► **void userError(String message)**

Indicates the AE has encountered an error condition.

▲ Parameters

▶ **message**

The message to send back to the Netezza system.

Implies NzaeDone.

## Static Member Data Documentation

- ▶ final int LOG\_DEBUG= 2  
Log level debug.

- ▶ final int LOG\_TRACE= 1  
Log level trace.

## NzaeAgg Interface Reference

---

This is the main Java AE Aggregation API interface.

Inherits NzaeBase

### Public Member Functions

- ▶ void close()  
Close the AE and release resources.
- ▶ int getApiType()  
Returns the API Constant for this interface.
- ▶ NzaeDataTypes getDataTypes()  
Gets the NZ Data Type constants.
- ▶ NzaeEnvironment getEnvironment()  
Gets environment information the AE.
- ▶ boolean getInputInterpretCharAsBinary(int index)  
Get the TRUE / FALSE state of the interpretation mode of a char or varchar column as a byte array.
- ▶ NzaeLibrary getLibrary()  
Gets library information for the AE.
- ▶ NzaeAggMessageHandler getMessageHandler()  
Returns the message handler class object.
- ▶ NzaeRuntime getRuntime()  
Gets runtime information for the AE, including information about the Netezza system.

- ▶ **boolean getStateInterpretCharAsBinary(int index)**
- ▶ **void log(int logLevel, String message)**  
Logs the specified message at the specified log level.
- ▶ **void ping()**  
Indicates that the AE is still active and not hanging.
- ▶ **void runAggregation(NzaeAggMessageHandler messageHandler)**  
Begin the Aggregation Message Processing.
- ▶ **void setInputInterpretCharAsBinary(int index, boolean arg)**  
Interprets a char or varchar column as a byte array.
- ▶ **void setStateInterpretCharAsBinary(int index, boolean arg)**
- ▶ **int type()**  
Returns the Aggregate type.
- ▶ **void userError(String message)**  
Indicates this AE has encountered an error condition.

## Static Public Attributes

- ▶ **ANALYTIC**  
Aggregate type analytic.
- ▶ **GROUPED**  
Aggregate type grouped.
- ▶ **LOG\_DEBUG**  
Log level debug.
- ▶ **LOG\_TRACE**  
Log level trace.
- ▶ **UNKNOWN**  
Aggregate type unknown.

## Detailed Description

This is the main Java AE Aggregation API interface.

A reference to this interface can be obtained from static methods in the NzaeFactory class.

- ▶ See Also
  - ▲ NzaeFactory

## Public Member Function Documentation

- ▶ **void close()**  
Close the AE and release resources.
- ▶ **int getApiType()**  
Returns the API Constant for this interface.
  - ▲ Returns

The values defined in NzaeApi .

► **NzaeDataTypes getDataTypes()**

Gets the NZ Data Type constants.

- ▲ Returns  
**NzaeDataTypes**

The instance of NzaeDataTypes .

► **NzaeEnvironment getEnvironment()**

Gets environment information the AE.

- ▲ Returns  
**NzaeEnvironment**

The instance of NzaeEnvironment .

► **boolean getInputInterpretCharAsBinary(int index)**

Get the TRUE / FALSE state of the interpretation mode of a char or varchar column as a byte array.

- ▲ Parameters
  - **index**  
The column index, which is 0 based.
  - **TRUE**  
= byte array; FALSE = string.

The default value is FALSE.

► **NzaeLibrary getLibrary()**

Gets library information for the AE.

- ▲ Returns  
**NzaeLibrary**

The instance of NzaeLibrary .

► **NzaeAggMessageHandler getMessageHandler()**

Returns the message handler class object.

- ▲ Returns  
**NzaeAggMessageHandler**

The Message Handler.

► **NzaeRuntime getRuntime()**



Gets runtime information for the AE, including information about the Netezza system.

- ▲ Returns  
**NzaeRuntime**  
The instance of NzaeRuntime .

- ▶ **boolean getStateInterpretCharAsBinary(int index)**
- ▶ **void log(int logLevel, String message)**  
Logs the specified message at the specified log level.
  - ▲ Parameters
    - ▶ **logLevel**  
The log level constant.
    - ▶ **message**  
The message to log.
- ▶ **void ping()**  
Indicates that the AE is still active and not hanging.
- ▶ **void runAggregation(NzaeAggMessageHandler messageHandler)**  
Begin the Aggregation Message Processing.
  - ▲ Parameters
    - ▶ **NzaeAggMessageHandler messageHandler**  
Message Handler.
- ▶ **void setInputInterpretCharAsBinary(int index, boolean arg)**  
Interprets a char or varchar column as a byte array.
  - ▲ Parameters
    - ▶ **index**  
The column index, which is 0 based.
    - ▶ **arg**  
TRUE = byte array; FALSE = string.

The default value is FALSE.
- ▶ **void setStateInterpretCharAsBinary(int index, boolean arg)**
- ▶ **int type()**  
Returns the Aggregate type.
  - ▲ Returns  
The Aggregate type.

- ▶ **void userError(String message)**  
Indicates this AE has encountered an error condition.
    - ▲ Parameters
      - ▶ **message**  
The message to send back to the Netezza system.
- Implies NzaeDone.

## Static Member Data Documentation

- ▶ **final int ANALYTIC= 2**  
Aggregate type analytic.
- ▶ **final int GROUPED= 1**  
Aggregate type grouped.
- ▶ **final int LOG\_DEBUG= 2**  
Log level debug.
- ▶ **final int LOG\_TRACE= 1**  
Log level trace.
- ▶ **final int UNKNOWN= 0**  
Aggregate type unknown.

## NzaeAggInitialization Class Reference

---

Not implemented.

### Detailed Description

Not implemented.

This class is a placeholder for future parameters for AE Aggregation initialization.

- ▶ See Also
  - ▲ NzaeFactory

## NzaeAggMessageHandler Interface Reference

---

This class handles NzaeAggregation messages.

### Public Member Functions

- ▶ **void accumulate(NzaeAgg api, NzaeRecord input, NzaeRecord state)**  
Modifies the state depending on input.
- ▶ **void finalResult(NzaeAgg api, NzaeRecord inputState, NzaeRecord result)**  
Sets the final result, depending on the input state.
- ▶ **void initializeState(NzaeAgg api, NzaeRecord state)**  
The initialize state.
- ▶ **void merge(NzaeAgg api, NzaeRecord inputState, NzaeRecord state)**  
Merges the input state into state.

### Detailed Description

This class handles NzaeAggregation messages.

- ▶ See Also
  - ▲ runAggregation

### Public Member Function Documentation

- ▶ **void accumulate(NzaeAgg api, NzaeRecord input, NzaeRecord state)**  
Modifies the state depending on input.
  - ▲ Parameters
    - ▶ **NzaeAgg api**  
The Aggregate instance.
    - ▶ **NzaeRecord input**  
The input record.
    - ▶ **NzaeRecord state**  
The state record.
- ▶ **void finalResult(NzaeAgg api, NzaeRecord inputState, NzaeRecord result)**  
Sets the final result, depending on the input state.
  - ▲ Parameters
    - ▶ **NzaeAgg api**  
The Aggregate instance.
    - ▶ **NzaeRecord inputState**  
The input state record.
    - ▶ **NzaeRecord result**  
The output result record.

The final result record may contain only a single field.

- ▶ **void initializeState(NzaeAgg api, NzaeRecord state)**  
The initialize state.
  - ▲ Parameters
    - ▶ **NzaeAgg api**  
The Aggregate instance.
    - ▶ **NzaeRecord state**  
The state record.
- ▶ **void merge(NzaeAgg api, NzaeRecord inputState, NzaeRecord state)**  
Merges the input state into state.
  - ▲ Parameters
    - ▶ **NzaeAgg api**  
The Aggregate instance.
    - ▶ **NzaeRecord inputState**  
The input state record.
    - ▶ **NzaeRecord state**  
Output state record.

## NzaeApi Class Reference

---

This class is the result of an AE connection request.

### Public Member Functions

- ▶ **void close()**  
Closes api API objects.

### Public Attributes

- ▶ **aeAggregate**  
Aggregate.
- ▶ **aeFunction**  
Function.
- ▶ **aeShaper**  
Shaper.
- ▶ **apiType**  
Type of API in object.

## Static Public Attributes

- ▶ **AGGREGATION**  
Aggregate API type.
- ▶ **ANY**  
Any API type.
- ▶ **FUNCTION**  
Function API type.
- ▶ **SHAPER**  
Shaper API type.
- ▶ **UNKNOWN**  
Unknown API type.

## Detailed Description

This class is the result of an AE connection request.

## Public Member Function Documentation

- ▶ **void close()**  
Closes api API objects.

## Member Data Documentation

- ▶ **NzaeAgg aeAggregate**  
Aggregate.
- ▶ **Nzae aeFunction**  
Function.
- ▶ **NzaeShaper aeShaper**  
Shaper.
- ▶ **int apiType**  
Type of API in object.

## Static Member Data Documentation

- ▶ **final int AGGREGATION= 2**  
Aggregate API type.

- ▶ final int ANY= 4  
Any API type.
- ▶ final int FUNCTION= 1  
Function API type.
- ▶ final int SHAPER= 3  
Shaper API type.
- ▶ final int UNKNOWN= 0  
Unknown API type.

## NzaeApiGenerator Class Reference

---

This class helps manage local and remote connections.

### Public Member Functions

- ▶ void close()  
Closes the API object if it is owned, has a connection point, and has a remote protocol.
- ▶ NzaeApi getApi(int type)  
Gets API.
- ▶ NzaeRemoteProtocolCallback getCallbackHandler()  
Gets the Remote Protocol Callback.
- ▶ boolean isLocal()  
Return true if this is a local AE process.
- ▶ boolean isRemote()  
Determines if the process is a remote AE.
- ▶ boolean ownsAPI()  
Determines if the helper owns the API.
- ▶ void setCallbackHandler(NzaeRemoteProtocolCallback handler)  
Sets the Remote Protocol Callback.
- ▶ void setDataSliceId(int dataSliceId)  
Sets the Connection Point dataslice ID.
- ▶ void setName(String name)  
Sets the Connection Point Name.
- ▶ void setOwnsAPI(boolean owns)  
Specifies if the object should manage the API.

- ▶ **void setSessionId(int sessionId)**  
Sets the Connection Point session ID.
- ▶ **void setTransactionId(long transactionId)**  
Set the Connection transaction ID.

## Detailed Description

This class helps manage local and remote connections.

## Public Member Function Documentation

- ▶ **void close()**  
Closes the API object if it is owned, has a connection point, and has a remote protocol.
- ▶ **NzaeApi getApi(int type)**  
Gets API.
  - ▲ Parameters
    - ▶ **type**  
The specified API type or ANY.
  - ▲ Returns  
**NzaeApi**  
API is NULL in parent; in fork mode if remote.
  - ▲ Exceptions
    - ▶ **NzaeException**  
Returns an API in either local or remote modes. Returns one of the specified type, or throws an exception. The API may be owned by the helper or the caller, depending on the setting for ownsAPI.
  - ▲ See Also
    - ▶ ownsAPI
- ▶ **NzaeRemoteProtocolCallback getCallbackHandler()**  
Gets the Remote Protocol Callback.
  - ▲ Returns  
**NzaeRemoteProtocolCallback**  
The callback.
- ▶ **boolean isLocal()**  
Return true if this is a local AE process.
  - ▲ Returns  
true if local AE
- ▶ **boolean isRemote()**

Determines if the process is a remote AE.

- ▲ Returns  
TRUE if the process is a remote AE.

► **boolean ownsAPI()**

Determines if the helper owns the API.

- ▲ Returns  
TRUE if the helper owns the API

► **void setCallbackHandler(NzaeRemoteProtocolCallback handler)**

Sets the Remote Protocol Callback.

- ▲ Parameters
  - **NzaeRemoteProtocolCallback handler**  
The remote protocol handler.

► **void setDataSliceId(int dataSliceId)**

Sets the Connection Point dataslice ID.

- ▲ Parameters
  - **dataSliceId**  
The Connection Point dataslice ID.

Does not override the remote values from the launcher available in NzaeConnectionPoint .

► **void setName(String name)**

Sets the Connection Point Name.

- ▲ Parameters
  - **name**  
The Connection Point name.

Does not override the remote values from the launcher available in NzaeConnectionPoint .

► **void setOwnsAPI(boolean owns)**

Specifies if the object should manage the API.

- ▲ Parameters
  - **owns**  
TRUE if the helper owns the API.

If TRUE, closes the API when a new API is accepted or the helper is closed.

► **void setSessionId(int sessionId)**

Sets the Connection Point session ID.



- ▲ Parameters

- ▶ **sessionId**

- The Connection Point session ID.

Does not override the remote values from the launcher available in NzaeConnectionPoint .

- ▶ **void setTransactionId(long transactionId)**

Set the Connection transaction ID.

- ▲ Parameters

- ▶ **transactionId**

- The Connection Point transaction ID.

Does not override the remote values from the launcher available in NzaeConnectionPoint .

## NzaeBase Interface Reference

---

The base interface for data connection APIs.

### Public Member Functions

- ▶ void close()  
Closes the AE and releases its resources.
- ▶ int getApiType()  
Returns the API Constant for this interface.
- ▶ NzaeEnvironment getEnvironment()  
Gets the environment information for the AE.
- ▶ NzaeLibrary getLibrary()  
Gets the library information for the AE.
- ▶ ArrayList<String> getParameters()  
Gets the SQL parameters used to invoke this AE.
- ▶ NzaeRuntime getRuntime()  
Gets runtime information for the AE, including information about the Netezza system.
- ▶ void log(int logLevel, String message)  
Logs the specified message at the specified log level.
- ▶ void userError(String message)  
Indicates this AE has encountered an error condition.

### Detailed Description

The base interface for data connection APIs.

### Public Member Function Documentation

- ▶ **void close()**  
Closes the AE and releases its resources.
- ▶ **int getApiType()**  
Returns the API Constant for this interface.
  - ▲ Returns  
The values defined in NzaeApi .
- ▶ **NzaeEnvironment getEnvironment()**  
Gets the environment information for the AE.
  - ▲ Returns  
**NzaeEnvironment**  
The instance of NzaeEnvironment .
- ▶ **NzaeLibrary getLibrary()**  
Gets the library information for the AE.
  - ▲ Returns  
**NzaeLibrary**  
The instance of NzaeLibrary .
- ▶ **ArrayList<String> getParameters()**  
Gets the SQL parameters used to invoke this AE.  
@ list of parameter strings.
- ▶ **NzaeRuntime getRuntime()**  
Gets runtime information for the AE, including information about the Netezza system.
  - ▲ Returns  
**NzaeRuntime**  
The instance of NzaeRuntime .
- ▶ **void log(int logLevel, String message)**  
Logs the specified message at the specified log level.
  - ▲ Parameters
    - ▶ **logLevel**  
The log level constant.
    - ▶ **message**  
The message to log.

- ▶ **void userError(String message)**  
Indicates this AE has encountered an error condition.
    - ▲ Parameters
      - ▶ **message**  
The message to send back to the Netezza system.
- Implies NzaeDone.

## NzaeCallbackResult Class Reference

---

### Public Attributes

- ▶ **data**  
The returned data.
- ▶ **returnCode**  
The return code.

### Member Data Documentation

- ▶ **byte [] data**  
The returned data.
- ▶ **int returnCode**  
A value of 0 is normal

## NzaeConnectionPoint Interface Reference

---

Netezza Analytic Executables.

### Public Member Functions

- ▶ **String buildFileTypename()**  
Gets the Connection Point file name.
- ▶ **void close()**  
Frees up the Connection Point.
- ▶ **int getDataSliceId()**  
Gets the Connection Point dataslice ID.
- ▶ **String getName()**  
Gets the Connection Point name.
- ▶ **int getRemoteDataSliceId()**

Gets the Remote Dataslice ID used in the launcher.

- ▶ **String getRemoteName()**  
Gets the Remote Name used in the launcher.
- ▶ **int getRemoteSessionId()**  
Gets the Remote Session ID used in the launcher.
- ▶ **long getRemoteTransactionId()**  
Gets the Remote Transaction ID used in the launcher.
- ▶ **int getSessionId()**  
Gets the Connection Point session ID.
- ▶ **long getTransactionId()**  
Gets the Connection Point Transaction ID.
- ▶ **void setDataSliceId(int dataSliceId)**  
Sets the Connection Point dataslice ID.
- ▶ **void setName(String name)**  
Sets the Connection Point name.
- ▶ **void setSessionId(int sessionId)**  
Sets the Connection Point session ID.
- ▶ **void setTransactionId(long transactionId)**  
Sets the Connection Point Transaction ID.

## Detailed Description

Netezza Analytic Executables.

Connection Point This interface is used to build a fully qualified connection name based on the supplied properties.

## Public Member Function Documentation

- ▶ **String buildFileName()**  
Gets the Connection Point file name.
  - ▲ Returns  
The file name.
- ▶ **void close()**  
Frees up the Connection Point.
- ▶ **int getDataSliceId()**  
Gets the Connection Point dataslice ID.
  - ▲ Returns

The dataslice ID.

- ▶ **String getName()**  
Gets the Connection Point name.
  - ▲ Returns  
The name.
- ▶ **int getRemoteDataSliceId()**  
Gets the Remote Dataslice ID used in the launcher.
  - ▲ Returns  
The remote dataslice ID or -1 if not set.
- ▶ **String getRemoteName()**  
Gets the Remote Name used in the launcher.
  - ▲ Returns  
The remote name or an empty string if not set.
- ▶ **int getRemoteSessionId()**  
Gets the Remote Session ID used in the launcher.
  - ▲ Returns  
The remote session ID or -1 if not set.
- ▶ **long getRemoteTransactionId()**  
Gets the Remote Transaction ID used in the launcher.
  - ▲ Returns  
The remote transaction ID or -1 if not set.
- ▶ **int getSessionId()**  
Gets the Connection Point session ID.
  - ▲ Returns  
The session ID.
- ▶ **long getTransactionId()**  
Gets the Connection Point Transaction ID.
  - ▲ Returns  
The transaction ID
- ▶ **void setDataSliceId(int dataSliceId)**  
Sets the Connection Point dataslice ID.

- ▲ Parameters

- ▶ **dataSliceId**

- The dataslice ID.

Controls whether the connection point uses the dataslice ID.

- ▶ **void setName(String name)**

Sets the Connection Point name.

- ▲ Parameters

- ▶ **name**

- The connection point name.

A name must always be set.

- ▶ **void setSessionId(int sessionId)**

Sets the Connection Point session ID.

- ▲ Parameters

- ▶ **sessionId**

- The session ID.

Controls whether the connection point uses the session ID.

- ▶ **void setTransactionId(long transactionId)**

Sets the Connection Point Transaction ID.

- ▲ Parameters

- ▶ **transactionId**

- The transaction ID.

Controls whether the connection point uses the transaction ID.

## NzaeDataTypes Class Reference

---

This class contains constant int values corresponding to the Netezza database column data types.

### Static Public Attributes

- ▶ **NZUDSUDX\_BOOL**

Boolean data type.

- ▶ **NZUDSUDX\_DATE**

Date data type.

- ▶ **NZUDSUDX\_DOUBLE**

Double data type.

- ▶ NZUDSUDX\_FIXED  
Fixed string data type.
- ▶ NZUDSUDX\_FLOAT  
Float data type.
- ▶ NZUDSUDX\_GEOMETRY  
Geometry data type.
- ▶ NZUDSUDX\_INT16  
Int16 data type.
- ▶ NZUDSUDX\_INT32  
Int32 data type.
- ▶ NZUDSUDX\_INT64  
Int64 data type.
- ▶ NZUDSUDX\_INT8  
Int8 data type.
- ▶ NZUDSUDX\_INTERVAL  
Interval data type.
- ▶ NZUDSUDX\_MAX\_TYPE  
Max data type.
- ▶ NZUDSUDX\_NATIONAL\_FIXED  
National fixed string data type.
- ▶ NZUDSUDX\_NATIONAL\_VARIABLE  
National variable data type.
- ▶ NZUDSUDX\_NUMERIC128  
Numeric128 data type.
- ▶ NZUDSUDX\_NUMERIC32  
Numeric32 data type.
- ▶ NZUDSUDX\_NUMERIC64  
Numeric64 data type.
- ▶ NZUDSUDX\_TIME  
Time data type.
- ▶ NZUDSUDX\_TIMESTAMP  
Timestamp data type.
- ▶ NZUDSUDX\_TIMETZ  
Timetz data type.
- ▶ NZUDSUDX\_UNKNOWN  
Unknown data type.
- ▶ NZUDSUDX\_VARBINARY  
VarBinary data type.
- ▶ NZUDSUDX\_VARIABLE  
Variable string data type.

## Static Public Member Functions

- ▶ static String javaTypeToString(int t)  
Returns a String representation of a Java data type from java.sql.Types.
- ▶ static String nzTypeToString(int t)  
Returns a String representation of an NZ data type.

## Detailed Description

This class contains constant int values corresponding to the Netezza database column data types. These values are identical to data type values used in the Netezza UDX API.

- ▶ See Also
  - ▲ `getDataTypes`
  - ▲ `getDataTypes`

## Static Member Data Documentation

- ▶ final int NZUDSUDX\_BOOL= 4  
Boolean data type.
- ▶ final int NZUDSUDX\_DATE= 5  
Date data type.
- ▶ final int NZUDSUDX\_DOUBLE= 12  
Double data type.
- ▶ final int NZUDSUDX\_FIXED= 0  
Fixed string data type.
- ▶ final int NZUDSUDX\_FLOAT= 11  
Float data type.
- ▶ final int NZUDSUDX\_GEOMETRY= 19  
Geometry data type.
- ▶ final int NZUDSUDX\_INT16= 15  
Int16 data type.
- ▶ final int NZUDSUDX\_INT32= 16



Int32 data type.

- ▶ final int NZUDSUDX\_INT64= 17  
Int64 data type.
- ▶ final int NZUDSUDX\_INT8= 14  
Int8 data type.
- ▶ final int NZUDSUDX\_INTERVAL= 13  
Interval data type.
- ▶ final int NZUDSUDX\_MAX\_TYPE= 21  
Max data type.
- ▶ final int NZUDSUDX\_NATIONAL\_FIXED= 2  
National fixed string data type.
- ▶ final int NZUDSUDX\_NATIONAL\_VARIABLE= 3  
National variable data type.
- ▶ final int NZUDSUDX\_NUMERIC128= 10  
Numeric128 data type.
- ▶ final int NZUDSUDX\_NUMERIC32= 8  
Numeric32 data type.
- ▶ final int NZUDSUDX\_NUMERIC64= 9  
Numeric64 data type.
- ▶ final int NZUDSUDX\_TIME= 6  
Time data type.
- ▶ final int NZUDSUDX\_TIMESTAMP= 18  
Timestamp data type.
- ▶ final int NZUDSUDX\_TIMETZ= 7  
Timetz data type.

- ▶ `final int NZUDSUDX_UNKNOWN= -1`  
Unknown data type.
- ▶ `final int NZUDSUDX_VARBINARY= 20`  
VarBinary data type.
- ▶ `final int NZUDSUDX_VARIABLE= 1`  
Variable string data type.

## Static Public Member Function Documentation

- ▶ **`static String javaTypeToString(int t)`**  
Returns a String representation of a Java data type from `java.sql.Types`.
  - ▲ Parameters
    - ▶ `t`  
The `java.sql.Types` type number.
  - ▲ Returns  
The string representation of the java type.
- ▶ **`static String nzTypeToString(int t)`**  
Returns a String representation of an NZ data type.
  - ▲ Parameters
    - ▶ `t`  
The type number.
  - ▲ Returns  
The string representation of the type.

## NzaeEnvironment Interface Reference

---

This is the Java AE Environment API interface.

### Public Member Functions

- ▶ `String getFirstKey()`  
Gets the first key.
- ▶ `String getNextKey()`  
Gets the next key.
- ▶ `String getValue(String name)`  
Gets the value for the key.

- ▶ **boolean hasKey(String name)**  
Determines whether the key exists in the environment.
- ▶ **int size()**  
Gets the size.

## Detailed Description

This is the Java AE Environment API interface.

A reference to this interface can be obtained from the shaper, aggregate or function objects

## Public Member Function Documentation

- ▶ **String getFirstKey()**  
Gets the first key.
  - ▲ Returns  
The key or NULL if none.
- ▶ **String getNextKey()**  
Gets the next key.
  - ▲ Returns  
The key or NULL if none.
- ▶ **String getValue(String name)**  
Gets the value for the key.
  - ▲ Parameters
    - ▶ **name**  
The environment name.
  - ▲ Returns  
The value.
- ▶ **boolean hasKey(String name)**  
Determines whether the key exists in the environment.
  - ▲ Parameters
    - ▶ **name**  
The environment name.
  - ▲ Returns  
TRUE if defined.
- ▶ **int size()**  
Gets the size.
  - ▲ Returns

The size.

## NzaeException Class Reference

---

Unchecked Exception used throughout the Java AE API.

### Public Member Functions

- ▶ `NzaeException()`
- ▶ `NzaeException(Throwable cause)`
- ▶ `NzaeException(String message, Throwable cause)`
- ▶ `NzaeException(String message)`

### Detailed Description

Unchecked Exception used throughout the Java AE API.

### Public Member Function Documentation

- ▶ **`NzaeException()`**
- ▶ **`NzaeException(Throwable cause)`**
- ▶ **`NzaeException(String message, Throwable cause)`**
- ▶ **`NzaeException(String message)`**

## NzaeFactory Interface Reference

---

Used to create all objects and provide all information that is dependent on the underlying C implementation of AE.

### Public Member Functions

- ▶ `NzaeRemoteProtocol createListener(NzaeConnectionPoint connectionPoint)`  
Creates a new listener for remote AE connections.
- ▶ `NzaeAgg getLocalAggregationApi(NzaeAggInitialization arg)`  
Creates and returns the local instance of Aggregation `NzaeAgg` .
- ▶ `NzaeApi getLocalApi()`  
Returns the local API determined by how the AE was launched.
- ▶ `Nzae getLocalFunctionApi(NzaeInitialization arg)`

Creates and returns the local instance of Function Nzae .

- ▶ **NzaeShaper getLocalShaperApi(NzaeShaperInitialization arg)**  
Creates and returns the local instance of Shaper NzaeShaper .
- ▶ **int getParentProcessId()**  
Returns, the parent ID of this process, which is useful for debugging.
- ▶ **int getProcessId()**  
Returns the process ID, which is useful for debugging.
- ▶ **boolean isLocal()**  
Determines is the process is a local AE.
- ▶ **boolean isRemote()**  
Returns true if this is a remote AE process.
- ▶ **NzaeConnectionPoint newConnectionPoint()**  
Returns a new instance of a connection point.

## Detailed Description

Used to create all objects and provide all information that is dependent on the underlying C implementation of AE.

## Public Member Function Documentation

- ▶ **NzaeRemoteProtocol createListener(NzaeConnectionPoint connectionPoint)**  
Creates a new listener for remote AE connections.

- ▲ Parameters

- ▶ **NzaeConnectionPoint connectionPoint**  
The Connection Point.

- ▲ Returns

**NzaeRemoteProtocol**  
The Remote Protocol listener.

Since one listener per unique connection name may be created, an AE may have multiple listeners.

- ▶ **NzaeAgg getLocalAggregationApi(NzaeAggInitialization arg)**  
Creates and returns the local instance of Aggregation NzaeAgg .

- ▲ Parameters

- ▶ **NzaeAggInitialization arg**  
The Aggregate initialization argument.

- ▲ Returns

**NzaeAgg**  
The AE Aggregate object.

- ▶ **NzaeApi getLocalApi()**

Returns the local API determined by how the AE was launched.

- ▲ Returns  
**NzaeApi**

The API object.

(UDF,UDTF = function, or UDA = Aggregation, or function shaper and sizer.) This method is only valid for local AEs.

► **Nzae getLocalFunctionApi(NzaeInitialization arg)**

Creates and returns the local instance of Function Nzae .

- ▲ Parameters
  - **NzaeInitialization arg**  
The function initialization argument.

- ▲ Returns  
**Nzae**

The AE function object.

► **NzaeShaper getLocalShaperApi(NzaeShaperInitialization arg)**

Creates and returns the local instance of Shaper NzaeShaper .

- ▲ Parameters
  - **NzaeShaperInitialization arg**  
The Shaper initialization argument.

- ▲ Returns  
**NzaeShaper**

The AE Shaper object.

► **int getParentProcessId()**

Returns, the parent ID of this process, which is useful for debugging.

- ▲ Returns  
The Parent process ID.

► **int getProcessId()**

Returns the process ID, which is useful for debugging.

- ▲ Returns  
The Process ID.

► **boolean isLocal()**

Determines is the process is a local AE.

- ▲ Returns  
TRUE if this is a local AE Process.
- ▶ **boolean isRemote()**  
Returns true if this is a remote AE process.
  - ▲ Returns  
True if this is a remote AE Process
- ▶ **NzaeConnectionPoint newConnectionPoint()**  
Returns a new instance of a connection point.
  - ▲ Returns  
**NzaeConnectionPoint**  
The Connection Point.

## NzaeFieldInfo Interface Reference

---

This class contains information for a specific field (column) including NZ data type, Java SQL data type, and default Java lanaguage data types.

### Public Member Functions

- ▶ **int getJavaType()**  
Return the Java data type of this field (column).
- ▶ **int getNzType()**  
Return the NZ data type of this field (column).
- ▶ **boolean isBoolean()**  
Default representation is a Boolean.
- ▶ **boolean isByte()**  
Default representation is a Byte.
- ▶ **boolean isDate()**  
Default representation is a java.sql.Date.
- ▶ **boolean isDouble()**  
Default representation is a Double.
- ▶ **boolean isFloat()**  
Default representation is a Float.
- ▶ **boolean isInt()**  
Default representation is an Int.
- ▶ **boolean isLong()**  
Default representation is a Long.
- ▶ **boolean isNumber()**

Default representation is an instance of Number.

- ▶ **boolean isNumberDecimalType()**  
Default representation is an instance of Number, BigDecimal.
- ▶ **boolean isNumberFloatingPointType()**  
Default representation is an instance of Number, floating point (Double or Float).
- ▶ **boolean isNumberPrimitiveType()**  
Default representation is an instance of Number, primitive type.
- ▶ **boolean isShort()**  
Default representation is a Short.
- ▶ **boolean isString()**  
Default representation is a String.
- ▶ **boolean isTime()**  
Default representation is a java.sql.Time.
- ▶ **boolean isTimestamp()**  
Default representation is a java.sql.Timestamp.

## Detailed Description

This class contains information for a specific field (column) including NZ data type, Java SQL data type, and default Java language data types.

- ▶ See Also
  - ▲ getFieldInfo

## Public Member Function Documentation

- ▶ **int getJavaType()**  
Return the Java data type of this field (column).
  - ▲ Returns  
Java type
  - ▲ See Also
    - ▶ java.sql.Types
- ▶ **int getNzType()**  
Return the NZ data type of this field (column).
  - ▲ Returns  
NZ type
  - ▲ See Also
    - ▶ NzaeDataTypes
- ▶ **boolean isBoolean()**



Default representation is a Boolean.

- ▲ Returns  
True if default representation is a Boolean

► **boolean isByte()**

Default representation is a Byte.

- ▲ Returns  
True if default representation is a Byte

► **boolean isDate()**

Default representation is a java.sql.Date.

- ▲ Returns  
True if default representation is a java.sql.Date

► **boolean isDouble()**

Default representation is a Double.

- ▲ Returns  
True if default representation is a Double

► **boolean isFloat()**

Default representation is a Float.

- ▲ Returns  
True if default representation is a Float

► **boolean isInt()**

Default representation is an Int.

- ▲ Returns  
True if default representation is an Int

► **boolean isLong()**

Default representation is a Long.

- ▲ Returns  
True if default representation is a Long

► **boolean isNumber()**

Default representation is an instance of Number.

- ▲ Returns  
True if default representation is an instance of Number

- ▶ **boolean isNumberDecimalType()**  
Default representation is an instance of Number, BigDecimal.
  - ▲ Returns  
True if default representation is an instance of Number or BigDecimal
- ▶ **boolean isNumberFloatingPointType()**  
Default representation is an instance of Number, floating point (Double or Float).
  - ▲ Returns  
True if default representation is an instance of Number or floating point
- ▶ **boolean isNumberPrimitiveType()**  
Default representation is an instance of Number, primitive type.
  - ▲ Returns  
True if default representation is an instance of Number or primitive type
- ▶ **boolean isShort()**  
Default representation is a Short.
  - ▲ Returns  
True if default representation is a Short
- ▶ **boolean isString()**  
Default representation is a String.
  - ▲ Returns  
True if default representation is a String
- ▶ **boolean isTime()**  
Default representation is a java.sql.Time.
  - ▲ Returns  
True if default representation is a java.sql.Time
- ▶ **boolean isTimestamp()**  
Default representation is a java.sql.Timestamp.
  - ▲ Returns  
True if default representation is a java.sql.Timestamp

## NzaelInitialization Class Reference

---

Not implemented.

## Detailed Description

Not implemented.

This class is a placeholder for future parameters for AE initialization.

- ▶ See Also
  - ▲ NzaeFactory

## NzaeInterval Class Reference

---

This class is for the Interval data type.

### Public Member Functions

- ▶ **int compareTo(Object o)**  
Compares two NzaeInterval objects.
- ▶ **String toString()**  
Returns the string representation.

### Public Attributes

- ▶ **month**  
The month portion of the interval.
- ▶ **time**  
The time portion of the interval.

## Detailed Description

This class is for the Interval data type.

### Public Member Function Documentation

- ▶ **int compareTo(Object o)**  
Compares two NzaeInterval objects.
  - ▲ Parameters
    - ▶ **o**  
The object to be compared to.
  - ▲ Returns  
A negative integer if the object is less than the specified object, 0 is the objects are equal, or a positive integer is the object is greater than the specified object.

Returns an integer describing whether the object is less than, equal to, or greater than the specified object.

- ▶ **String toString()**  
Returns the string representation.
  - ▲ Returns  
The string representation.

## Member Data Documentation

- ▶ long month  
Represents months and years.
- ▶ long time  
In microseconds. Represents everything but months and years.

## NzaeLibrary Interface Reference

---

This is the Java AE Library API interface.

### Public Member Functions

- ▶ NzaeLibraryInfo getLibraryInfo(String name, boolean caseSensitive, int type)  
Gets the specified library information.
- ▶ NzaeLibraryInfo getLocalLibraryInfo(int idx)  
Gets the Local library information at the specified index.
- ▶ NzaeLibraryInfo getParentLibraryInfo(int idx)  
Gets the Parent Library information at the specified index.
- ▶ int sizeLocalEntries()  
Gets the number of local entries.
- ▶ int sizeParentEntries()  
Gets the number of parent entries.

### Static Public Attributes

- ▶ SEARCH\_BOTH  
Searches both the parent and local contexts.
- ▶ SEARCH\_LOCAL  
Searches the local context only.
- ▶ SEARCH\_PARENT  
Searches the parent context only.

## Detailed Description

This is the Java AE Library API interface.

A reference to this interface can be obtained from the shaper, aggregate or function objects.

## Public Member Function Documentation

### ► **NzaeLibraryInfo getLibraryInfo(String name, boolean caseSensitive, int type)**

Gets the specified library information.

#### ▲ Parameters

##### ► **name**

The name of the library.

##### ► **caseSensitive**

If FALSE, performs a case-insensitive search

##### ► **type**

Searches the Local context, the Parent context or Both.

#### ▲ Returns

##### **NzaeLibraryInfo**

The Library Information or NULL.

In remote mode there is a parent and local context that may be different. The Parent context refers to the libraries used by the AE launcher of the remote AE service process. The Local context refers to the shared libraries specified for the current remote AE instance that is connection to the remote AE service.

### ► **NzaeLibraryInfo getLocalLibraryInfo(int idx)**

Gets the Local library information at the specified index.

#### ▲ Parameters

##### ► **idx**

The index to look up.

#### ▲ Returns

##### **NzaeLibraryInfo**

The Library Information or NULL.

### ► **NzaeLibraryInfo getParentLibraryInfo(int idx)**

Gets the Parent Library information at the specified index.

#### ▲ Parameters

##### ► **idx**

The index to look up.

#### ▲ Returns

##### **NzaeLibraryInfo**

The Library Information or NULL.

- ▶ **int sizeLocalEntries()**  
Gets the number of local entries.
  - ▲ Returns  
The number of local entries.The Local Entries are those associated with the AE.
  
- ▶ **int sizeParentEntries()**  
Gets the number of parent entries.
  - ▲ Returns  
The number of local entries.The Parent Entries are those associated with the parent process in the case of a remote AE.

## Static Member Data Documentation

- ▶ **final int SEARCH\_BOTH= 0**  
Searches both the parent and local contexts.
  
- ▶ **final int SEARCH\_LOCAL= 1**  
Searches the local context only.
  
- ▶ **final int SEARCH\_PARENT= 2**  
Searches the parent context only.

## NzaeLibraryInfo Class Reference

---

Provides AE Library Information.

### Public Attributes

- ▶ **autoLoad**  
The library is autoloading.
  
- ▶ **libraryFullPath**  
The library path.
  
- ▶ **libraryName**  
The library name.

## Detailed Description

Provides AE Library Information.

## Member Data Documentation

- ▶ **boolean autoLoad**  
The library is autoloaded.
- ▶ **String libraryFullPath**  
The library path.
- ▶ **String libraryName**  
The library name.

## NzaeMessageHandler Interface Reference

---

This class handles Nzae messages.

## Public Member Functions

- ▶ **void evaluate(Nzae api, NzaeRecord input, NzaeRecord result)**  
Processes one row of input and produces one row of output.

## Detailed Description

This class handles Nzae messages.

- ▶ **See Also**
  - ▲ **run**

## Public Member Function Documentation

- ▶ **void evaluate(Nzae api, NzaeRecord input, NzaeRecord result)**  
Processes one row of input and produces one row of output.
  - ▲ **Parameters**
    - ▶ **Nzae api**  
The function object.
    - ▶ **NzaeRecord input**  
The input record.
    - ▶ **NzaeRecord result**  
The result record.

Used for scalar functions and some table functions. Scalar functions use only a single field in the result.

## NzaeMetadata Class Reference

---

This class contains metadata about the AE, including input and output column attributes.

### Public Member Functions

- ▶ `int getCorrelationType()`  
Determines the correlation type used to invoke the UDTF.
- ▶ `int getInputColumnCount()`  
Gets the number of input columns.
- ▶ `int getInputNzType(int index)`  
Gets the input data type from `NzaeDataTypes`.
- ▶ `int getInputScale(int index)`  
The scale of the input column.
- ▶ `int getInputSize(int index)`  
Gets the size of the input column.
- ▶ `int getOutputColumnCount()`  
Gets the number of output columns.
- ▶ `int getOutputNzType(int index)`  
Gets the output data types from `NzaeDataTypes`.
- ▶ `int getOutputSize(int index)`  
Gets the size of the output column.
- ▶ `boolean hasFinal()`  
Determines if the UDTF is invoked with `TABLE WITH FINAL`.
- ▶ `boolean hasOrder()`  
Determines if the UDTF is invoked with `ORDER BY` in `OVER`.
- ▶ `boolean hasOver()`  
Determines if the UDTF is invoked with `OVER`.
- ▶ `boolean hasPartition()`  
Determines if the UDTF is invoked with `PARTITION BY` in `OVER`.
- ▶ `boolean inputIsConstant(int index)`  
Specifies if the value of the specified column is constant for all rows.
- ▶ `boolean isOneOutputRowRestriction()`  
Determines if the function is UDTF or UDF.
- ▶ `int outputScale(int index)`  
Gets the scale of the output column.



## Static Public Attributes

- ▶ **NZAE\_INNER\_CORRELATION**  
Inner correlation table function correlation type.
- ▶ **NZAE\_LEFT\_CORRELATION**  
Left correlation table function correlation type.
- ▶ **NZAE\_UNCORRELATED**  
Uncorrelated table function correlation type.
- ▶ **NZAE\_UNKNOWN\_CORRELATION\_TYPE**  
Unknown table function correlation type.

## Detailed Description

This class contains metadata about the AE, including input and output column attributes.

Column indexes are zero-based.

- ▶ See Also
  - ▲ `getMetadata`
  - ▲ `NzaeDataTypes`

## Public Member Function Documentation

- ▶ **int getCorrelationType()**  
Determines the correlation type used to invoke the UDTF.
  - ▲ Returns  
The correlation type.
- ▶ **int getInputColumnCount()**  
Gets the number of input columns.
  - ▲ Returns  
The number of input columns.
- ▶ **int getInputNzType(int index)**  
Gets the input data type from `NzaeDataTypes` .
  - ▲ Parameters
    - ▶ **index**  
The input index.
  - ▲ Returns  
The input data type.
- ▶ **int getInputScale(int index)**  
The scale of the input column.
  - ▲ Parameters

- ▶ **index**  
The input index.
- ▲ Returns  
The scale of the input column.
- ▶ **int getInputSize(int index)**  
Gets the size of the input column.
  - ▲ Parameters
    - ▶ **index**  
The input index.
  - ▲ Returns  
The length for string type, the precision for numeric type.  
Length for string type, precision for numeric type.
- ▶ **int getOutputColumnCount()**  
Gets the number of output columns.
  - ▲ Returns  
The number of output columns.
- ▶ **int getOutputNzType(int index)**  
Gets the output data types from NzaeDataTypes .
  - ▲ Parameters
    - ▶ **index**  
The output index.
  - ▲ Returns  
The output data type.
- ▶ **int getOutputSize(int index)**  
Gets the size of the output column.
  - ▲ Parameters
    - ▶ **index**  
The output index.
  - ▲ Returns  
The length for string type, the precision for numeric type.  
Length for string type, precision for numeric type.
- ▶ **boolean hasFinal()**  
Determines if the UDTF is invoked with TABLE WITH FINAL.

- ▲ Returns  
TRUE if the table function is invoked using TABLE WITH FINAL.
- **boolean hasOrder()**  
 Determines if the UDTF is invoked with ORDER BY in OVER.
  - ▲ Returns  
TRUE if the table function is invoked using ORDER BY.
- **boolean hasOver()**  
 Determines if the UDTF is invoked with OVER.
  - ▲ Returns  
TRUE if the table function is invoked using OVER.
- **boolean hasPartition()**  
 Determines if the UDTF is invoked with PARTITION BY in OVER.
  - ▲ Returns  
TRUE if the table function is invoked using PARTITION BY.
- **boolean inputIsConstant(int index)**  
 Specifies if the value of the specified column is constant for all rows.
  - ▲ Parameters
    - **index**  
The input index.
  - ▲ Returns  
TRUE if the value of the column is constant for all rows.
 If method returns TRUE then the value of this column is constant for all rows.
- **boolean isOneOutputRowRestriction()**  
 Determines if the function is UDTF or UDF.
  - ▲ Returns  
TRUE if the function is scalar; FALSE if the function is table.
 Returns true if the function can only return one output row per input row.
- **int outputScale(int index)**  
 Gets the scale of the output column.
  - ▲ Parameters
    - **index**  
The output index.
  - ▲ Returns

The scale of the output column.

## Static Member Data Documentation

- ▶ `final int NZAE_INNER_CORRELATION= 2`  
Inner correlation table function correlation type.
- ▶ `final int NZAE_LEFT_CORRELATION= 3`  
Left correlation table function correlation type.
- ▶ `final int NZAE_UNCORRELATED= 1`  
Uncorrelated table function correlation type.
- ▶ `final int NZAE_UNKNOWN_CORRELATION_TYPE= 0`  
Unknown table function correlation type.

## NzaeRecord Interface Reference

---

A record corresponds to an input or output database row.

### Public Member Functions

- ▶ `boolean compatibleWithOutput()`  
Determines if the record can be used as an output result.
- ▶ `NzaeRecord duplicate()`  
Creates a deep copy duplicate.
- ▶ `Object getField(int index)`  
Returns the field value as an Object.
- ▶ `byte [] getFieldAsBinary(int index)`  
Returns the field value cast to a byte [], that is a byte array.
- ▶ `Boolean getFieldAsBoolean(int index)`  
Returns the field value cast to a Boolean.
- ▶ `java.sql.Date getFieldAsDate(int index)`  
Returns the field value cast to a java.sql.Date.
- ▶ `BigDecimal getFieldAsDecimal(int index)`  
Returns the field value cast to a BigDecimal.
- ▶ `NzaeInterval getFieldAsInterval(int index)`  
Returns the field value cast to a NzaeInterval .

- ▶ **Number getFieldAsNumber(int index)**  
Returns the field value cast to a Number.
- ▶ **String getFieldAsString(int index)**  
Returns the field value cast to a String.
- ▶ **java.sql.Time getFieldAsTime(int index)**  
Returns the field value cast to a java.sql.Time.
- ▶ **java.sql.Timestamp getFieldAsTimestamp(int index)**  
Returns the field value cast to a java.sql.Timestamp.
- ▶ **NzaeTimeTz getFieldAsTimeTz(int index)**  
Returns the field value cast to a NzaeTimeTz .
- ▶ **NzaeFieldInfo getFieldInfo(int index)**  
Returns instance of NzaeFieldInfo interface.
- ▶ **boolean isReadOnly()**  
Determines if the record is read-only.
- ▶ **void setField(int index, Object value)**  
Sets the field value as an Object.
- ▶ **void setFields(NzaeRecord rec)**  
Sets all the fields from a record consisting of the same number and type of fields.
- ▶ **int size()**  
Gets the number of fields.
- ▶ **String toString()**  
The string representation of the record.

## Detailed Description

A record corresponds to an input or output database row.

Each record consists of one or more fields, which correspond to columns. Fields are addressed by an int index which is zero-based. GetFieldX methods may return null. Objects applied to get and set methods must match or be convertible to or from the data type of the field (column).

- ▶ See Also
  - ▲ next
  - ▲ createOutputRecord
  - ▲ NzaeAggMessageHandler

## Public Member Function Documentation

- ▶ **boolean compatibleWithOutput()**  
Determines if the record can be used as an output result.
  - ▲ Returns  
TRUE if it can be used as an output result.
 Can be an output for a function, or a state or final result record for an aggregate.

► **NzaeRecord duplicate()**

Creates a deep copy duplicate.

▲ Returns

**NzaeRecord**

The duplicate record.

The duplicate cannot be read-only.

► **Object getField(int index)**

Returns the field value as an Object.

▲ Parameters

► **index**

The field index.

▲ Returns

The field as an Object.

► **byte [] getFieldAsBinary(int index)**

Returns the field value cast to a byte [], that is a byte array.

▲ Parameters

► **index**

The field index.

▲ Returns

The field as an byte array.

The field must have already been set to use a binary interpretation using Nzae setInterpretCharAsBinary or NzaeAgg setInputInterpretCharAsBinary / setStateInterpretCharAsBinary.

▲ See Also

- setInterpretCharAsBinary
- setInputInterpretCharAsBinary
- setStateInterpretCharAsBinary

► **Boolean getFieldAsBoolean(int index)**

Returns the field value cast to a Boolean.

▲ Parameters

► **index**

The field index.

▲ Returns

The field as a Boolean.

► **java.sql.Date getFieldAsDate(int index)**

Returns the field value cast to a java.sql.Date.

- ▲ Parameters
    - ▶ **index**  
The field index.
  - ▲ Returns  
The field as a java.sql.Date.
  
- ▶ **BigDecimal getFieldAsDecimal(int index)**  
Returns the field value cast to a BigDecimal.
  - ▲ Parameters
    - ▶ **index**  
The field index.
  - ▲ Returns  
The field as a BigDecimal.
  
- ▶ **NzaeInterval getFieldAsInterval(int index)**  
Returns the field value cast to a NzaeInterval .
  - ▲ Parameters
    - ▶ **index**  
The field index.
  - ▲ Returns  
**NzaeInterval**  
The field as an NzaeInterval .
  
- ▶ **Number getFieldAsNumber(int index)**  
Returns the field value cast to a Number.
  - ▲ Parameters
    - ▶ **index**  
The field index.
  - ▲ Returns  
The field as a Number.
  
- ▶ **String getFieldAsString(int index)**  
Returns the field value cast to a String.
  - ▲ Parameters
    - ▶ **index**  
The field index.
  - ▲ Returns  
The field as a String.
  
- ▶ **java.sql.Time getFieldAsTime(int index)**

Returns the field value cast to a `java.sql.Time`.

- ▲ Parameters

- ▶ **index**

- The field index.

- ▲ Returns

- The field as a `java.sql.Time`.

- ▶ **`java.sql.Timestamp getFieldAsTimestamp(int index)`**

Returns the field value cast to a `java.sql.Timestamp`.

- ▲ Parameters

- ▶ **index**

- The field index.

- ▲ Returns

- The field as a `java.sql.Timestamp`.

- ▶ **`NzaeTimeTz getFieldAsTimeTz(int index)`**

Returns the field value cast to a `NzaeTimeTz`.

- ▲ Parameters

- ▶ **index**

- The field index.

- ▲ Returns

- `NzaeTimeTz`**

- The field as an `NzaeTimeTz`.

- ▶ **`NzaeFieldInfo getFieldInfo(int index)`**

Returns instance of `NzaeFieldInfo` interface.

- ▲ Parameters

- ▶ **index**

- The field index.

- ▲ Returns

- `NzaeFieldInfo`**

- The `FieldInfo` object.

- ▶ **`boolean isReadOnly()`**

Determines if the record is read-only.

- ▲ Returns

- `TRUE` if the record is read-only.



- ▶ **void setField(int index, Object value)**  
Sets the field value as an Object.
  - ▲ Parameters
    - ▶ **index**  
The field index.
    - ▶ **value**  
The field value.

NULL is a valid value.
- ▶ **void setFields(NzaeRecord rec)**  
Sets all the fields from a record consisting of the same number and type of fields.
  - ▲ Parameters
    - ▶ **NzaeRecord rec**  
Record.
- ▶ **int size()**  
Gets the number of fields.
  - ▲ Returns  
The number of fields.
- ▶ **String toString()**  
The string representation of the record.
  - ▲ Returns  
The string representation.

## NzaeRemoteProtocol Interface Reference

---

Netezza Analytic Executables.

### Public Member Functions

- ▶ **NzaeApi acceptConnection()**  
Accepts a new connection.
- ▶ **NzaeApi acceptConnectionWithTimeout(int timeoutMilliseconds)**  
Accepts a new connection with timeout.
- ▶ **void close()**  
Closes the listener.
- ▶ **NzaeRemoteProtocolCallback getCallbackHandler()**  
Gets the Remote Protocol Callback.
- ▶ **void setCallbackHandler(NzaeRemoteProtocolCallback handler)**

Sets the Remote Protocol Callback.

## Detailed Description

Netezza Analytic Executables.

AE Remote Protocol. This class receives new AE connection requests.

## Public Member Function Documentation

- ▶ **NzaeApi acceptConnection()**  
Accepts a new connection.
  - ▲ Returns  
**NzaeApi**  
The new API.
  
- ▶ **NzaeApi acceptConnectionWithTimeout(int timeoutMilliseconds)**  
Accepts a new connection with timeout.
  - ▲ Parameters
    - ▶ **timeoutMilliseconds**  
The timeout.
  - ▲ Returns  
**NzaeApi**  
The new API.
  
- ▶ **void close()**  
Closes the listener.
  
- ▶ **NzaeRemoteProtocolCallback getCallbackHandler()**  
Gets the Remote Protocol Callback.
  - ▲ Returns  
**NzaeRemoteProtocolCallback**  
The callback.
  
- ▶ **void setCallbackHandler(NzaeRemoteProtocolCallback handler)**  
Sets the Remote Protocol Callback.
  - ▲ Parameters
    - ▶ **NzaeRemoteProtocolCallback handler**  
The remote protocol handler.

The handler is owned by NzaeRemoteProtocol .

## NzaeRemoteProtocolCallback Interface Reference

---

Netezza Analytic Executables.

### Public Member Functions

- ▶ **NzaeCallbackResult execute(int code, byte[] data)**  
The callback executor.

### Static Public Attributes

- ▶ **CALLBACK\_CONTROL**  
Control Data.
- ▶ **CALLBACK\_PING**  
Ping.
- ▶ **CALLBACK\_REQUEST**  
Request.
- ▶ **CALLBACK\_SIGNAL**  
Signal.
- ▶ **CALLBACK\_STATUS**  
Get Status.
- ▶ **CALLBACK\_STOP**  
Stop.

### Detailed Description

Netezza Analytic Executables.

AE Remote Protocol Callback. This class handles the remote protocol callback requests.

### Public Member Function Documentation

- ▶ **NzaeCallbackResult execute(int code, byte[] data)**  
The callback executor.
  - ▲ Parameters
    - ▶ **code**  
The callback type.
    - ▶ **data**  
The data.
  - ▲ Returns  
**NzaeCallbackResult**

The callback result.

This function can handle the following types: CALLBACK\_STATUS, CALLBACK\_STOP, CALLBACK\_CONTROL

If this method throws an exception, it causes the remote protocol accept method to error out; data is likely empty for Stop and Status.

The executor fills out the result structure with a returnCode equal to 0 for normal completion.

## Static Member Data Documentation

- ▶ final int CALLBACK\_CONTROL= 4  
Control Data.
- ▶ final int CALLBACK\_PING= 1  
Ping.
- ▶ final int CALLBACK\_REQUEST= 0  
Request.
- ▶ final int CALLBACK\_SIGNAL= 5  
Signal.
- ▶ final int CALLBACK\_STATUS= 2  
Get Status.
- ▶ final int CALLBACK\_STOP= 3  
Stop.

## NzaeRuntime Class Reference

---

Constant runtime information.

### Public Member Functions

- ▶ int getAdapterType()  
Get Adapter type.
- ▶ long getAeCallId()  
Get SQL Function Call ID.
- ▶ long getAeQueryId()

- Get Query ID.
- ▶ `int getDataSliceId()`  
Get Dataslice ID.
- ▶ `int getHardwareId()`  
Get hardware ID.
- ▶ `int getLocus()`  
Get Locus.
- ▶ `int getNumberDataSlices()`  
Get Number of data slices.
- ▶ `int getNumberSpus()`  
Get Number of SPUs.
- ▶ `int getSessionId()`  
Get Session ID.
- ▶ `long getSuggestedMemoryLimit()`  
Get Memory Limit.
- ▶ `long getTransactionId()`  
Get Transaction ID.
- ▶ `String getUsername()`  
Get User name.
- ▶ `boolean getUserQuery()`  
Is User Query.
- ▶ `String toString()`  
Return string representation.

## Static Public Attributes

- ▶ `NZAE_ADAPTER_OTHER`  
UDX Adapter type unknown.
- ▶ `NZAE_ADAPTER_UDA`  
UDX Adapter type UDA.
- ▶ `NZAE_ADAPTER_UDF`  
UDX Adapter type UDF.
- ▶ `NZAE_ADAPTER_UDTF`  
UDX Adapter type UDTF.
- ▶ `NZAE_LOCUS_DBOS`  
Executing in locus dbos (host).
- ▶ `NZAE_LOCUS_POSTGRES`  
Executing in locus postgres (host).
- ▶ `NZAE_LOCUS_SPU`  
Executing in locus SPU (s-blade).

## Detailed Description

Constant runtime information.

## Public Member Function Documentation

- ▶ **int getAdapterType()**  
Get Adapter type.
  - ▲ Returns  
Adapter type
  - ▲ See Also
    - ▶ NZAE\_ADAPTER\_UDTF
    - ▶ NZAE\_ADAPTER\_UDF
    - ▶ NZAE\_ADAPTER\_UDA
    - ▶ NZAE\_ADAPTER\_OTHER
- ▶ **long getAeCallId()**  
Get SQL Function Call ID.
  - ▲ Returns  
SQL Function Call ID.
- ▶ **long getAeQueryId()**  
Get Query ID.
  - ▲ Returns  
Query ID.
- ▶ **int getDataSliceId()**  
Get Dataslice ID.
  - ▲ Returns  
Dataslice ID.
- ▶ **int getHardwareId()**  
Get hardware ID.
  - ▲ Returns  
Hardware ID.
- ▶ **int getLocus()**  
Get Locus.
  - ▲ Returns

Locus of execution

- ▲ See Also
  - ▶ NZAE\_LOCUS\_POSTGRES
  - ▶ NZAE\_LOCUS\_DBOS
  - ▶ NZAE\_LOCUS\_SPU

▶ **int getNumberDataSlices()**

Get Number of data slices.

- ▲ Returns  
Number of data slices

▶ **int getNumberSpus()**

Get Number of SPUs.

- ▲ Returns  
Number of SPUs

▶ **int getSessionId()**

Get Session ID.

- ▲ Returns  
Session ID

▶ **long getSuggestedMemoryLimit()**

Get Memory Limit.

- ▲ Returns  
Memory Limit.

This is an advisory limit only.

▶ **long getTransactionId()**

Get Transaction ID.

- ▲ Returns  
Transaction ID.

▶ **String getUsername()**

Get User name.

- ▲ Returns  
User name

▶ **boolean getUserQuery()**

Is User Query.

- ▲ Returns  
True if a user query as opposed to a JIT state or other prep query
- ▶ **String toString()**  
Return string representation.
  - ▲ Returns  
String representation

## Static Member Data Documentation

- ▶ final int NZAE\_ADAPTER\_OTHER= 0  
UDX Adapter type unknown.
- ▶ final int NZAE\_ADAPTER\_UDA= 3  
UDX Adapter type UDA.
- ▶ final int NZAE\_ADAPTER\_UDF= 2  
UDX Adapter type UDF.
- ▶ final int NZAE\_ADAPTER\_UDTF= 1  
UDX Adapter type UDTF.
- ▶ final int NZAE\_LOCUS\_DBOS= 1  
Executing in locus dbos (host).
- ▶ final int NZAE\_LOCUS\_POSTGRES= 0  
Executing in locus postgres (host).
- ▶ final int NZAE\_LOCUS\_SPU= 2  
Executing in locus SPU (s-blade).

## NzaeShaper Interface Reference

---

This is the main Java AE Shaper API interface.

Inherits NzaeBase



## Public Member Functions

- ▶ `void addOutputColumn(int type, String columnName)`  
Adds an output column of a non-string or non-numeric type.
- ▶ `void addOutputColumnNumeric(int type, String columnName, int precision, int scale)`  
Adds an output column of a numeric type.
- ▶ `void addOutputColumnString(int type, String columnName, int size)`  
Adds an output column of a string type.
- ▶ `boolean catalogIsUpper()`  
Determines if the catalog is upper case.
- ▶ `void close()`  
Closes the AE and releases its resources.
- ▶ `int getApiType()`  
Returns the API Constant for this interface.
- ▶ `NzaeDataTypes getDataTypes()`  
Gets the NZ Data Type constants.
- ▶ `NzaeEnvironment getEnvironment()`  
Gets environment information for the AE.
- ▶ `NzaeLibrary getLibrary()`  
Gets library information for the AE.
- ▶ `NzaeShaperMessageHandler getMessageHandler()`  
Returns the message handler class object.
- ▶ `NzaeMetadata getMetadata()`  
Gets metadata information for the AE.
- ▶ `int getNumOutputColumns()`  
Gets the number of output columns.
- ▶ `NzaeShaperOutputColumnInfo getOutputColumnInfo(int idx)`  
Gets information about the output columns.
- ▶ `NzaeRuntime getRuntime()`  
Gets runtime information for the AE, including information about the Netezza system.
- ▶ `NzaeRecord inputRow()`  
Gets the input row.
- ▶ `void log(int logLevel, String message)`  
Log the specified message at the specified log level.
- ▶ `int outputType()`  
Gets the return type for a sizer (UDF).
- ▶ `void ping()`  
Indicates that the AE is still active and not hanging.
- ▶ `void run(NzaeShaperMessageHandler messageHandler)`  
Begins higher-level shaper processing.
- ▶ `int size()`

Gets the output field size.

- ▶ **void update()**  
Signals that the shaper is done.
- ▶ **void userError(String message)**  
Indicates the AE has encountered an error condition.

## Static Public Attributes

- ▶ **LOG\_DEBUG**  
Log level debug.
- ▶ **LOG\_TRACE**  
Log level trace.

## Detailed Description

This is the main Java AE Shaper API interface.

A reference to this interface can be obtained from static methods in the NzaeFactory class.

- ▶ See Also
  - ▲ NzaeFactory

## Public Member Function Documentation

- ▶ **void addOutputColumn(int type, String columnName)**  
Adds an output column of a non-string or non-numeric type.
  - ▲ Parameters
    - ▶ **type**  
The column type; cannot be string or numeric.
    - ▶ **columnName**  
The column name.
- ▶ **void addOutputColumnNumeric(int type, String columnName, int precision, int scale)**  
Adds an output column of a numeric type.
  - ▲ Parameters
    - ▶ **type**  
The column type; must be numeric.
    - ▶ **columnName**  
The column name.
    - ▶ **precision**  
The column precision.
    - ▶ **scale**  
The column scale.

▶ **void addOutputColumnString(int type, String columnName, int size)**

Adds an output column of a string type.

▲ Parameters

▶ **type**

The column type; must be string.

▶ **columnName**

The column name.

▶ **size**

The column size.

▶ **boolean catalogIsUpper()**

Determines if the catalog is upper case.

▲ Returns

TRUE if the catalog is upper case.

▶ **void close()**

Closes the AE and releases its resources.

▶ **int getApiType()**

Returns the API Constant for this interface.

▲ Returns

The values defined in NzaeApi .

▶ **NzaeDataTypes getDataTypes()**

Gets the NZ Data Type constants.

▲ Returns

**NzaeDataTypes**

The data types object.

▶ **NzaeEnvironment getEnvironment()**

Gets environment information for the AE.

▲ Returns

**NzaeEnvironment**

The instance of NzaeEnvironment .

▶ **NzaeLibrary getLibrary()**

Gets library information for the AE.

▲ Returns

## **NzaeLibrary**

The instance of NzaeLibrary .

- ▶ **NzaeShaperMessageHandler getMessageHandler()**  
Returns the message handler class object.
  - ▲ Returns  
**NzaeShaperMessageHandler**  
The instance of the Shaper handler.
  
- ▶ **NzaeMetadata getMetadata()**  
Gets metadata information for the AE.
  - ▲ Returns  
**NzaeMetadata**  
The instance of NzaeMetadata .
  
- ▶ **int getNumOutputColumns()**  
Gets the number of output columns.
  - ▲ Returns  
The number of columns.
  
- ▶ **NzaeShaperOutputColumnInfo getOutputColumnInfo(int idx)**  
Gets information about the output columns.
  - ▲ Parameters
    - ▶ **idx**  
The index of the column to get.
  - ▲ Returns  
**NzaeShaperOutputColumnInfo**  
The column information.
  
- ▶ **NzaeRuntime getRuntime()**  
Gets runtime information for the AE, including information about the Netezza system.
  - ▲ Returns  
**NzaeRuntime**  
The instance of NzaeRuntime .
  
- ▶ **NzaeRecord inputRow()**  
Gets the input row.

- ▲ Returns  
**NzaeRecord**  
An instance of NzaeRecord .
- ▶ **void log(int logLevel, String message)**  
Log the specified message at the specified log level.
  - ▲ Parameters
    - ▶ **logLevel**  
The log level constant.
    - ▶ **message**  
The message to log.
- ▶ **int outputType()**  
Gets the return type for a sizer (UDF).
  - ▲ Returns  
The return type.  
Must either be one of the string types or NUMERIC128
- ▶ **void ping()**  
Indicates that the AE is still active and not hanging.
- ▶ **void run(NzaeShaperMessageHandler messageHandler)**  
Begins higher-level shaper processing.
  - ▲ Parameters
    - ▶ **NzaeShaperMessageHandler messageHandler**  
The message handler.  
This is an alternative to writing custom shaper code.
- ▶ **int size()**  
Gets the output field size.
  - ▲ Returns  
The output field size.
- ▶ **void update()**  
Signals that the shaper is done.
- ▶ **void userError(String message)**  
Indicates the AE has encountered an error condition.
  - ▲ Parameters

- ▶ **message**

The message to send back to the Netezza system.

Implies NzaeDone.

## Static Member Data Documentation

- ▶ **final int LOG\_DEBUG= 2**

Log level debug.

- ▶ **final int LOG\_TRACE= 1**

Log level trace.

## NzaeShaperInitialization Class Reference

---

Not implemented.

### Detailed Description

Not implemented.

This class is a placeholder for future parameters for AE shaper initialization.

- ▶ See Also

- ▲ NzaeFactory

## NzaeShaperMessageHandler Interface Reference

---

This class handles NzaeShaper messages.

### Public Member Functions

- ▶ **void shaper(NzaeShaper api)**

Runs the shaper logic.

### Detailed Description

This class handles NzaeShaper messages.

- ▶ See Also

- ▲ run

### Public Member Function Documentation

- ▶ **void shaper(NzaeShaper api)**  
Runs the shaper logic.
  - ▲ Parameters
    - ▶ **NzaeShaper api**  
The Shaper object.

## NzaeShaperOutputColumnInfo Class Reference

---

Provides Shaper Output Information.

### Public Attributes

- ▶ columnName  
Column name.
- ▶ precision  
Column precision, if numeric.
- ▶ scale  
Column scale, if numeric.
- ▶ size  
Column size, if string .
- ▶ type  
Column type.

### Detailed Description

Provides Shaper Output Information.

### Member Data Documentation

- ▶ String columnName  
Column name.
- ▶ int precision  
Column precision, if numeric.
- ▶ int scale  
Column scale, if numeric.
- ▶ int size  
Column size, if string .

- ▶ **int type**  
Column type.

## NzaeTimeTz Class Reference

---

This class is for the TimeTz data type.

### Public Member Functions

- ▶ **int compareTo(Object o)**  
Compares two NzaeTimeTz objects.
- ▶ **String toString()**  
Returns the string representation.

### Public Attributes

- ▶ **offsetMinutes**  
The Time Zone portion of TimeTz.
- ▶ **time**  
The time portion of TimeTz.

### Detailed Description

This class is for the TimeTz data type.

### Public Member Function Documentation

- ▶ **int compareTo(Object o)**  
Compares two NzaeTimeTz objects.
  - ▲ **Parameters**
    - ▶ **o**  
The object to be compared to.
  - ▲ **Returns**  
A negative integer if the object is less than the specified object, 0 is the objects are equal, or a positive integer is the object is greater than the specified object.  
  
Returns an integer describing whether the object is less than, equal to, or greater than the specified object.
- ▶ **String toString()**  
Returns the string representation.
  - ▲ **Returns**



The string representation.

## Member Data Documentation

- ▶ `int offsetMinutes`  
The Offset is in minutes.
- ▶ `java.sql.Time time`  
The time portion of TimeTz.

## NzaeUtil Class Reference

---

This class contains static utility methods that are not dependent on the main NzaeFactory interface.

### Static Public Member Functions

- ▶ `static void logException(Throwable t)`  
Logs the exception to the process-specific AE log file or standard error.
- ▶ `static void logException(Throwable t, String appMessage)`  
Logs the exception to the process-specific AE log file or standard error.
- ▶ `static void logJavaSystemProperties()`  
Dumps the JVM System Properties to the process-specific AE log file or standard error.

### Detailed Description

This class contains static utility methods that are not dependent on the main NzaeFactory interface.

### Static Public Member Function Documentation

- ▶ **`static void logException(Throwable t)`**  
Logs the exception to the process-specific AE log file or standard error.
  - ▲ Parameters
    - ▶ **`t`**  
The throwable object to log.
- ▶ **`static void logException(Throwable t, String appMessage)`**  
Logs the exception to the process-specific AE log file or standard error.
  - ▲ Parameters
    - ▶ **`t`**  
The throwable object to log.
    - ▶ **`appMessage`**

An application-specific message for the log.

- ▶ **static void logJavaSystemProperties()**  
Dumps the JVM System Properties to the process-specific AE log file or standard error.

## Source Class Reference

---

Class used to instantiate a factory.

### Static Public Member Functions

- ▶ **static NzaeFactory getFactory()**  
Gets the Factory instance.

### Detailed Description

Class used to instantiate a factory.

### Static Public Member Function Documentation

- ▶ **static NzaeFactory getFactory()**  
Gets the Factory instance.
  - ▲ Returns  
**NzaeFactory**  
The Factory instance.

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