

# The GNU Enterprise Application Server

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Application Programmer's Interface  
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# 1 Data Types

In the API definition, we will make use of the following data type placeholders, which will have to be translated into appropriate data types for the various implemented RPC mechanisms:

**void** Data Type  
This is used as the result type for functions that actually don't return a result.

**boolean** Data Type  
This is a boolean data type that can only hold TRUE or FALSE values.

**integer** Data Type  
This is an integer data type which must be able to contain signed 32 bit values.  
This restriction limits the maximum list size to more than 2 billion objects.

**string** Data Type  
This is a data type that must be able to hold variable length strings without length limitations.

**stringlist** Data Type  
This is an one-dimensional array of elements of the type **string**. Implementation may restrict the number of elements to 32767.

**stringtable** Data Type  
This is a two-dimensional array of elements of the type **string**. Implementation may restrict the number of columns as well as the number of rows to 32767.

**session\_id** Data Type  
This is a 32 bit integer value identifying a session. There is no special meaning one could read from the value.

**list\_id** Data Type  
This is a 32 bit integer value identifying a list. There is no special meaning one could read from the value.

## 2 API Functions

All API functions can raise exceptions on failure. All functions are atomic, in the sense that in case of an exception the function has no effect at all. No error in a function call can cause a function to be "half-done".

The exact syntax of the API functions is dependant on the selected RPC interface and the language sitting on top of it. However, we are describing the functions in a C-like syntax here, using the data type placeholders we defined above.

### 2.1 Session Management

**session\_id open** (*auth\_parameters*) Function  
 Opens a connection to Appserver using the given parameters for authentication. The number and type of the parameters still have to be decided. The return value is a handle to the session that has to be passed to all subsequent function calls. An Exception is raised if the server cannot be contacted or authentication fails.

**void close** (*session\_id session*, *boolean commit*) Function  
 Closes the connection identified by *session*. If *commit* is TRUE, an uncommitted transaction of this session is implicitly committed; if *commit* is FALSE, it is implicitly rolled back. After this call, *session* will no longer be a valid session identifier. An Exception is raised if *session* is not a valid session identifier.

**void commit** (*session\_id session*) Function  
 Commits the current transaction of *session*, making all changes permanent. An Exception is raised if *session* is not a valid session identifier.

**void rollback** (*session\_id session*) Function  
 Discards all changes done in *session* since the last **commit** or **rollback**. An Exception is raised if *session* is not a valid session identifier.

### 2.2 Handling Lists Of Objects

These functions provide a means for getting data for a list of objects fulfilling certain conditions.

**list\_id request** (*session\_id session*, *string classname*, *string conditions*, *stringlist sortorder*, *stringlist properties*) Function  
 Requests a list of objects of class *classname* matching the *conditions*. Appserver prepares to send the values of the properties listed in *properties* on subsequent calls to **fetch**, where the order of the objects is determined by the properties listed in *sort\_order*. The properties in *sort\_order* may, but need not appear in *properties*. If *classname*, *conditions*, *sort\_order*, or *properties* contain not fully referenced identifiers for classes or properties, they are expanded using *context* as the current module context.  
 This function only returns a list identifier. No actual data is passed over the network when calling this function.  
 An Exception is raised if *session* is not a valid session identifier, the requested class does not exist, the current user has not access to the requested class, or any of the given *properties* does not exist.

**integer count** (*session\_id session, list\_id list*) Function  
 Returns the number of objects contained in *list*, where *list* is the return value of a previous call to **request**.  
 An Exception is raised if *session* is not a valid session identifier or *list* is not a valid list identifier.

**stringtable fetch** (*session\_id session, list\_id list, integer start, integer count, boolean close*) Function  
 Returns a 2-dimensional array of data with *count* rows, where column 0 always holds the object\_id of the object, and the remaining columns contain the values for the properties defined in the previous call to **request**. Negative values for *start* indicate position from the end of the list. Negative values for *count* are invalid. Count may not be greater than 32767.  
 If *close* is TRUE, then the list is "closed", all server-side memory allocated with the management of this list is freed and the id *list* may no longer be used in calls to **count** or **fetch**. However, object\_ids and other data already received remains valid.  
 An Exception is raised if *session* is not a valid session identifier or *list* is not a valid list identifier.

## 2.3 Handling Specific Objects

These functions provide a means for reading, writing and deleting an object or a set of objects, as well as for calling a procedure for an object or a set of objects. However, the object\_ids for the objects to operate upon have to be determined before these functions can be used, for example by using the list handling functions described above.

**stringtable load** (*session\_id session, string classname, stringlist object\_ids, stringlist properties*) Function  
 Returns a 2-dimensional array of data with a row for every entry in the *object\_ids* list and a column for every entry in *properties*. Unlike **fetch**, this function does *not* automatically return the object\_ids in column 0.  
 An Exception is raised if *session* is not a valid session identifier, the requested class does not exist, the current user has not access to the requested class, any of the given *object\_ids* does not exist, or any of the given *properties* does not exist.

**stringlist store** (*session\_id session, string classname, stringlist object\_ids, stringlist properties, stringtable values*) Function  
 Stores the data in *values* in the objects identified by *object\_ids*. Every row in *values* matches an entry in *object\_ids*, while every column matches an entry in *properties*. Empty object ids indicate that new objects with that data should be created. Validation is performed before the actual storing is done. If validation of a single object fails, none of the objects are stored, but an exception is raised. This function returns a list of all object ids of the stored objects. This is important for the caller to know under which object ids the new objects have been stored and can be accessed from now on. Note that after calling **store**, **commit** has to be called to make the changes persistent, while a call to **rollback** can undo the changes.  
 An Exception is raised if *session* is not a valid session identifier, the requested class does not exist, the current user has not access to the requested class, any of the given *object\_ids* does not exist, any of the given *properties* does not exist, or any of the *values* does not fit the corresponding property.

**void delete** (*session\_id session, string classname, stringlist object\_ids*) Function  
 Deletes the objects of class *classname* identified through *object\_ids*.

An Exception is raised if *session* is not a valid session identifier, the requested class does not exist, the current user has not access to the requested class, or any of the given *object\_ids* does not exist.

**stringlist call** (**session\_id** *session*, **string** *classname*, **stringlist** *object\_ids*, **string** *procedurename*, **stringlist** *parameters*) Function

Calls the procedure *procedurename* for every object identified through the *object\_ids* and passes the same *parameters* to every call. The number of entries in *parameters* must match the parameter count of the procedure. This function returns a list of strings that contains the results of the procedure calls for each object.

An Exception is raised if *session* is not a valid session identifier, the requested class does not exist, the current user has not access to the requested class, any of the given *object\_ids* does not exist, or the given procedure is not defined.

## 3 System Classes

The following classes are always defined and can be accessed to query and/or influence class definitions and (in future) other information about the state of the Application Server.

### 3.1 gnue\_module

**gnue\_name** string(35) Property of gnue\_module  
The name of the module.

**gnue\_comment** string(70) Property of gnue\_module  
Arbitrary text explaining the purpose of the module.

### 3.2 gnue\_class

**gnue\_module** gnue\_module Property of gnue\_class  
The module that originally defines the class.

**gnue\_name** string(35) Property of gnue\_class  
The name of the class without the module name. You can find out the module name by referencing the **gnue\_module** property.

**gnue\_comment** string(70) Property of gnue\_class  
Arbitrary text explaining the purpose of the class.

### 3.3 gnue\_property

**gnue\_class** gnue\_class Property of gnue\_property  
The class the property belongs to.

**gnue\_module** gnue\_module Property of gnue\_property  
The module that defines the property.

**gnue\_name** string(35) Property of gnue\_property  
The name of the property without the module name. You can find out the module name by referencing the **gnue\_module** property.

**gnue\_type** string(35) Property of gnue\_property  
The type of the property. This can be one of the predefined types "string", "number", "boolean" or "datetime", or the name of a class, in which case the property is a reference property to that class.

**gnue\_length** number(6) Property of gnue\_property  
The length of the property. Only relevant if **gnue\_type** is "string" or "number".

**gnue\_scale** number(4) Property of gnue\_property  
Only relevant if **gnue\_type** is "number", in which case it defines the number of fractional digits, while **gnue\_length** defines the total number of digits.

**gnue\_comment** string(70) Property of gnue\_property  
Arbitrary text explaining the purpose of the property.



### 3.4 gnue\_useraccess

Note: This class is only preliminary and will most probably disappear in future and be replaced by a more flexible access control system.

<b>gnue_username</b>	string(20)	Property of gnue_useraccess
<b>gnue_password</b>	string(20)	Property of gnue_useraccess
<b>gnue_classlist</b>	string(100)	Property of gnue_useraccess

A list of the fully qualified names of all classes the user should have access to, seperated by blanks.

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