

# globus rsl

## 7.2

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# Contents

<b>1</b>	<b>Main Page</b>	<b>1</b>
<b>2</b>	<b>Module Index</b>	<b>2</b>
2.1	Modules . . . . .	2
<b>3</b>	<b>Module Documentation</b>	<b>2</b>
3.1	RSL Predicates . . . . .	2
3.1.1	Detailed Description . . . . .	2
3.1.2	Function Documentation . . . . .	2
3.2	RSL Constructors . . . . .	7
3.2.1	Function Documentation . . . . .	7
3.3	RSL Memory Management . . . . .	9
3.3.1	Function Documentation . . . . .	10
3.4	RSL Accessor Functions . . . . .	12
3.4.1	Function Documentation . . . . .	13
3.5	List Functions . . . . .	17
3.5.1	Function Documentation . . . . .	18
3.6	RSL Value Accessors . . . . .	18
3.6.1	Function Documentation . . . . .	18
3.7	RSL Display . . . . .	20
3.7.1	Function Documentation . . . . .	20
3.8	RSL Parsing . . . . .	22
3.8.1	Function Documentation . . . . .	22

## 1 Main Page

The Globus RSL library is provides the following functionality:

- [RSL Predicates](#)
- [RSL Constructors](#)
- [RSL Memory Management](#)
- [RSL Accessor Functions](#)
- [RSL Value Accessors](#)
- [RSL Display](#)
- [RSL Parsing](#)
- [List Functions](#)

## 2 Module Index

### 2.1 Modules

Here is a list of all modules:

<b>RSL Predicates</b>	<b><a href="#">2</a></b>
<b>RSL Constructors</b>	<b><a href="#">7</a></b>
<b>RSL Memory Management</b>	<b><a href="#">9</a></b>
<b>RSL Accessor Functions</b>	<b><a href="#">12</a></b>
<b>List Functions</b>	<b><a href="#">17</a></b>
<b>RSL Value Accessors</b>	<b><a href="#">18</a></b>
<b>RSL Display</b>	<b><a href="#">20</a></b>
<b>RSL Parsing</b>	<b><a href="#">22</a></b>

## 3 Module Documentation

### 3.1 RSL Predicates

The functions in this group return boolean values indicating whether an RSL syntax tree is of a particular type.

#### Functions

- int [globus\\_rsl\\_is\\_relation](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_boolean](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_relation\\_eq](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_relation\\_lessthan](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_relation\\_attribute\\_equal](#) (globus\_rsl\_t \*ast, char \*attribute)
- int [globus\\_rsl\\_is\\_boolean\\_and](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_boolean\\_or](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_is\\_boolean\\_multi](#) (globus\_rsl\_t \*ast)
- int [globus\\_rsl\\_value\\_is\\_literal](#) (globus\_rsl\_value\_t \*ast)
- int [globus\\_rsl\\_value\\_is\\_sequence](#) (globus\_rsl\_value\_t \*ast)
- int [globus\\_rsl\\_value\\_is\\_variable](#) (globus\_rsl\_value\_t \*ast)
- int [globus\\_rsl\\_value\\_is\\_concatenation](#) (globus\_rsl\_value\_t \*ast)

#### 3.1.1 Detailed Description

The functions in this group return boolean values indicating whether an RSL syntax tree is of a particular type.

#### 3.1.2 Function Documentation

##### 3.1.2.1 int [globus\\_rsl\\_is\\_relation](#) (globus\_rsl\_t \*ast)

RSL relation test.

The [\*globus\\_rsl\\_is\\_relation\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a relation. The RSL syntax supports the following relation operations:

= Equal

!= Not Equal

> Greater Than

>= Greater Than or Equal

< Less Than

<= Less Than or Equal

<= Less Than or Equal

Some examples of RSL relations are

```
"queue" = "debug"
"queue" != "slow"
"min_memory" > "1000"
"max_wall_time" >= "60"
"count" < "10"
"host_count" <= "5"
```

GRAM only supports equality relations.

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_relation\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a relation; otherwise, it returns GLOBUS\_FALSE.

#### 3.1.2.2 int globus\_rsl\_is\_boolean (globus\_rsl\_t \* *ast*)

RSL boolean test.

The [\*globus\\_rsl\\_is\\_boolean\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a boolean composition of other RSL parse trees. The syntactically understood boolean compositions are "&" (conjunction), "|" (disjunction), and "+" (multi-request). Some bexamples of RSL booleans are

```
& ( "queue" = "debug" ) ( "max_time" = "10000" )
| ( "count" = "1" ) ( "count" = "10" )
+ ( & ( "executable" = "1.exe" ) ) ( & ( "executable" = "2.exe" ) )
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_boolean\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a boolean composition; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.3 int globus\_rsl\_is\_relation\_eq (globus\_rsl\_t \* *ast*)

RSL equality operation test.

The [\*globus\\_rsl\\_is\\_relation\\_eq\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is an equality relation. An example of an equality relation is

```
"queue" = "debug"
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_relation\\_eq\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is an equality relation; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.4 int globus\_rsl\_is\_relation\_lessthan (globus\_rsl\_t \* *ast*)

RSL less than operation test.

The [\*globus\\_rsl\\_is\\_relation\\_lessthan\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a less-than relation. An example of a less-than relation is

```
"count" = "10"
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_relation\\_lessthan\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a less-than relation; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.5 int globus\_rsl\_is\_relation\_attribute\_equal (globus\_rsl\_t \* *ast*, char \* *attribute*)

RSL attribute name test.

The [\*globus\\_rsl\\_is\\_relation\\_attribute\\_equal\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a relation with the attribute name which matches the string pointed to by the *attribute* parameter. This attribute name comparison is case-insensitive.

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

*attribute* Name of the attribute to test

#### Returns:

The [\*globus\\_rsl\\_is\\_relation\\_attribute\\_equal\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a relation and its attribute name matches the *attribute* parameter; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.6 int globus\_rsl\_is\_boolean\_and (globus\_rsl\_t \* ast)

RSL boolean and test.

The [\*globus\\_rsl\\_is\\_boolean\\_and\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a boolean "and" composition of RSL trees. An example of a boolean and relation is

```
& ( "queue" = "debug" ) ( "executable" = "a.out" )
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_boolean\\_and\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a boolean and of RSL parse trees; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.7 int globus\_rsl\_is\_boolean\_or (globus\_rsl\_t \* ast)

RSL boolean or test.

The [\*globus\\_rsl\\_is\\_boolean\\_or\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a boolean "or" composition of RSL trees. An example of a boolean or relation is

```
| ( "count" = "2" ) ( "count" = "4" )
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_boolean\\_or\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a boolean and of RSL parse trees; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.8 int globus\_rsl\_is\_boolean\_multi (globus\_rsl\_t \* ast)

RSL boolean multi test.

The [\*globus\\_rsl\\_is\\_boolean\\_multi\(\)\*](#) function tests whether the the RSL pointed to by the *ast* parameter is a boolean "multi-request" composition of RSL trees. An example of a boolean multi-request relation is

```
+ ( & ( "executable" = "exe.1" ) ( "count" = "2" ) )  
  ( & ( "executable" = "exe.2" ) ( "count" = "2" ) )
```

#### Parameters:

*ast* Pointer to an RSL parse tree structure.

#### Returns:

The [\*globus\\_rsl\\_is\\_boolean\\_multi\(\)\*](#) function returns GLOBUS\_TRUE if the RSL parse tree pointed to by *ast* is a boolean multi-request of RSL parse trees; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.9 int globus\_rsl\_value\_is\_literal (globus\_rsl\_value\_t \* *ast*)

RSL literal string test.

The [\*globus\\_rsl\\_value\\_is\\_literal\(\)\*](#) function tests whether the the RSL value pointed to by the *ast* parameter is a literal string value. An example of a literal string is

```
"count"
```

#### Parameters:

*ast* Pointer to an RSL value structure.

#### Returns:

The [\*globus\\_rsl\\_value\\_is\\_literal\(\)\*](#) function returns GLOBUS\_TRUE if the RSL value pointed to by *ast* is a literal string value; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.10 int globus\_rsl\_value\_is\_sequence (globus\_rsl\_value\_t \* *ast*)

RSL value sequence test.

The [\*globus\\_rsl\\_value\\_is\\_sequence\(\)\*](#) function tests whether the the RSL value pointed to by the *ast* parameter is a sequence of RSL values. An example of a sequence of values is

```
"1" "2" "3"
```

#### Parameters:

*ast* Pointer to an RSL value structure.

#### Returns:

The [\*globus\\_rsl\\_value\\_is\\_sequence\(\)\*](#) function returns GLOBUS\_TRUE if the RSL value pointed to by *ast* is a value sequence; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.11 int globus\_rsl\_value\_is\_variable (globus\_rsl\_value\_t \* *ast*)

RSL value variable test.

The [\*globus\\_rsl\\_value\\_is\\_variable\(\)\*](#) function tests whether the the RSL value pointed to by the *ast* parameter is a variable reference. RSL values. An example of a variable reference is

```
$( "GLOBUSRUN_GASS_URL" )
```

#### Parameters:

*ast* Pointer to an RSL value structure.

#### Returns:

The [\*globus\\_rsl\\_value\\_is\\_variable\(\)\*](#) function returns GLOBUS\_TRUE if the RSL value pointed to by *ast* is a value sequence; otherwise, it returns GLOBUS\_FALSE.

### 3.1.2.12 int globus\_rsl\_value\_is\_concatenation (globus\_rsl\_value\_t \* ast)

RSL value concatenation test.

The [\*globus\\_rsl\\_value\\_is\\_concatenation\(\)\*](#) function tests whether the RSL value pointed to by the *ast* parameter is a concatenation of RSL values. An example of an RSL value concatenation is

```
$ ( "GLOBUSRUN_GASS_URL" ) # "/input"
```

#### Parameters:

*ast* Pointer to an RSL value structure.

#### Returns:

The [\*globus\\_rsl\\_value\\_is\\_concatenation\(\)\*](#) function returns GLOBUS\_TRUE if the RSL value pointed to by *ast* is a value concatenation; otherwise, it returns GLOBUS\_FALSE.

## 3.2 RSL Constructors

### Functions

- globus\_rsl\_t \* [\*globus\\_rsl\\_make\\_boolean\*](#) (int operator, globus\_list\_t \*children)
- globus\_rsl\_t \* [\*globus\\_rsl\\_make\\_relation\*](#) (int operator, char \*attributename, globus\_rsl\_value\_t \*value\_sequence)
- globus\_rsl\_value\_t \* [\*globus\\_rsl\\_value\\_make\\_literal\*](#) (char \*string)
- globus\_rsl\_value\_t \* [\*globus\\_rsl\\_value\\_make\\_sequence\*](#) (globus\_list\_t \*value\_list)
- globus\_rsl\_value\_t \* [\*globus\\_rsl\\_value\\_make\\_variable\*](#) (globus\_rsl\_value\_t \*sequence)
- globus\_rsl\_value\_t \* [\*globus\\_rsl\\_value\\_make\\_concatenation\*](#) (globus\_rsl\_value\_t \*left\_value, globus\_rsl\_value\_t \*right\_value)

### 3.2.1 Function Documentation

#### 3.2.1.1 globus\_rsl\_t\* globus\_rsl\_make\_boolean (int operator, globus\_list\_t \* children)

RSL boolean constructor.

The [\*globus\\_rsl\\_make\\_boolean\(\)\*](#) function creates a boolean composition of the RSL nodes in the list pointed to by *children*. The new RSL node which is returned contains a reference to the list, not a copy.

#### Parameters:

***operator*** The boolean RSL operator to use to join the RSL parse tree list pointed to by the *children* parameter. This value must be one of GLOBUS\_RSL\_AND, GLOBUS\_RSL\_OR, GLOBUS\_RSL\_MULTIREQ in order to create a valid RSL tree.

***children*** Pointer to a list of RSL syntax trees to combine with the boolean operation described by the *operator* parameter.

#### Returns:

The [\*globus\\_rsl\\_make\\_boolean\(\)\*](#) function returns a new RSL parse tree node that contains a shallow reference to the list of values pointed to by the *children* parameter joined by the operator value in the *operator* parameter. If an error occurs, [\*globus\\_rsl\\_make\\_boolean\(\)\*](#) returns NULL.



### 3.2.1.2 globus\_rsl\_t\* globus\_rsl\_make\_relation (int *operator*, char \* *attributename*, globus\_rsl\_value\_t \* *value\_sequence*)

RSL relation constructor.

The [\*globus\\_rsl\\_make\\_relation\(\)\*](#) function creates a relation between the attribute named by the *attributename* parameter and the values pointed to by the *value\_sequence* list. The new RSL relation node which is returned contains a reference to the *attributename* and *value\_sequence* parameters, not a copy.

#### Parameters:

***operator*** The RSL operator to use to relate the RSL attribute name pointed to by the *attributename* parameter and the values pointed to by the *value\_sequence* parameter. This value must be one of GLOBUS\_RSL\_EQ, GLOBUS\_RSL\_NEQ, GLOBUS\_RSL\_GT, GLOBUS\_RSL\_GTEQ, GLOBUS\_RSL\_LT, or GLOBUS\_RSL\_LTEQ in order to create a valid RSL node.

***attributename*** Pointer to a string naming the attribute of the new RSL relation.

***value\_sequence*** Pointer to a sequence of RSL values to use in the new RSL relation.

#### Returns:

The [\*globus\\_rsl\\_make\\_relation\(\)\*](#) function returns a new RSL parse tree node that contains a shallow reference to the attribute name pointed to by the *attributename* parameter and the RSL value sequence pointed to by the *value\_sequence* parameter. If an error occurs, [\*globus\\_rsl\\_make\\_relation\(\)\*](#) returns NULL.

### 3.2.1.3 globus\_rsl\_value\_t\* globus\_rsl\_value\_make\_literal (char \* *string*)

RSL literal constructor.

The [\*globus\\_rsl\\_value\\_make\\_literal\(\)\*](#) function creates a string literal RSL value node containing the value pointed to by the *string* parameter. The new RSL value node which is returned contains a reference to the *string* parameter, not a copy.

#### Parameters:

***string*** The literal string to be used in the new value.

#### Returns:

The [\*globus\\_rsl\\_value\\_make\\_literal\(\)\*](#) function returns a new RSL value node that contains a shallow reference to the string pointed to by the *string* parameter. If an error occurs, [\*globus\\_rsl\\_value\\_make\\_literal\(\)\*](#) returns NULL.

### 3.2.1.4 globus\_rsl\_value\_t\* globus\_rsl\_value\_make\_sequence (globus\_list\_t \* *value\_list*)

RSL value sequence constructor.

The [\*globus\\_rsl\\_value\\_make\\_sequence\(\)\*](#) function creates a value sequence RSL node referring to the values pointed to by the *value\_list* parameter. The new node returned by this function contains a reference to the *value\_list* parameter, not a copy.

#### Parameters:

***value\_list*** A pointer to a list of globus\_rsl\_value\_t pointers.

#### Returns:

The [\*globus\\_rsl\\_value\\_make\\_sequence\(\)\*](#) function returns a new RSL value node that contains a shallow reference to the list pointed to by the *value\_list* parameter. If an error occurs, [\*globus\\_rsl\\_value\\_make\\_sequence\(\)\*](#) returns NULL.

### 3.2.1.5 globus\_rsl\_value\_t\* globus\_rsl\_value\_make\_variable (globus\_rsl\_value\_t \* *sequence*)

RSL variable reference constructor.

The [\*globus\\_rsl\\_value\\_make\\_variable\(\)\*](#) function creates a variable reference RSL node referring to the variable name contained in the value pointed to by *sequence* parameter. The new node returned by this function contains a reference to the *sequence* parameter, not a copy.

#### Parameters:

*sequence* A pointer to a RSL value sequence.

#### Returns:

The [\*globus\\_rsl\\_value\\_make\\_variable\(\)\*](#) function returns a new RSL value node that contains a shallow reference to the value sequence pointed to by the *sequence* parameter. If an error occurs, [\*globus\\_rsl\\_value\\_make\\_variable\(\)\*](#) returns NULL.

### 3.2.1.6 globus\_rsl\_value\_t\* globus\_rsl\_value\_make\_concatenation (globus\_rsl\_value\_t \* *left\_value*, globus\_rsl\_value\_t \* *right\_value*)

RSL concatenation constructor.

The [\*globus\\_rsl\\_value\\_make\\_concatenation\(\)\*](#) function creates a concatenation of the values pointed to by the *left\_value* and *right\_value* parameters. The new node returned by this function contains a reference to these parameters' values, not a copy.

#### Parameters:

*left\_value* A pointer to a RSL value to act as the left side of the concatenation. This must be a string literal or variable reference.

*right\_value* A pointer to a RSL value to act as the right side of the concatenation. This must be a string literal or variable reference.

#### Returns:

The [\*globus\\_rsl\\_value\\_make\\_concatenation\(\)\*](#) function returns a new RSL value node that contains a shallow reference to the values pointed to by the *left\_value* and *right\_value* parameters. If an error occurs, [\*globus\\_rsl\\_value\\_make\\_concatenation\(\)\*](#) returns NULL.

## 3.3 RSL Memory Management

### Functions

- globus\_rsl\_t \* [\*globus\\_rsl\\_copy\\_recursive\*](#) (globus\_rsl\_t \*ast\_node)
- globus\_rsl\_value\_t \* [\*globus\\_rsl\\_value\\_copy\\_recursive\*](#) (globus\_rsl\_value\_t \*globus\_rsl\_value\_ptr)
- int [\*globus\\_rsl\\_value\\_free\*](#) (globus\_rsl\_value\_t \*val)
- int [\*globus\\_rsl\\_free\*](#) (globus\_rsl\_t \*ast\_node)
- int [\*globus\\_rsl\\_value\\_free\\_recursive\*](#) (globus\_rsl\_value\_t \*globus\_rsl\_value\_ptr)
- int [\*globus\\_rsl\\_free\\_recursive\*](#) (globus\_rsl\_t \*ast\_node)
- int [\*globus\\_rsl\\_value\\_list\\_literal\\_replace\*](#) (globus\_list\_t \*value\_list, char \*string\_value)
- int [\*globus\\_rsl\\_value\\_eval\*](#) (globus\_rsl\_value\_t \*ast\_node, globus\_symboltable\_t \*symbol\_table, char \*\*string\_value, int rsl\_substitution\_flag)
- int [\*globus\\_rsl\\_eval\*](#) (globus\_rsl\_t \*ast\_node, globus\_symboltable\_t \*symbol\_table)

### 3.3.1 Function Documentation

#### 3.3.1.1 `globus_rsl_t* globus_rsl_copy_recursive (globus_rsl_t * ast_node)`

Create a deep copy of an RSL syntax tree.

The `globus_rsl_copy_recursive()` function performs a deep copy of the RSL syntax tree pointed to by the *ast\_node* parameter. All RSL nodes, value nodes, variable names, attributes, and literals will be copied to the return value.

##### Parameters:

*ast\_node* An RSL syntax tree to copy.

##### Returns:

The `globus_rsl_copy_recursive()` function returns a copy of its input parameter that that can be used after the *ast\_node* and its values have been freed. If an error occurs, `globus_rsl_copy_recursive()` returns NULL.

#### 3.3.1.2 `globus_rsl_value_t* globus_rsl_value_copy_recursive (globus_rsl_value_t * globus_rsl_value_ptr)`

Create a deep copy of an RSL value.

The `globus_rsl_value_copy_recursive()` function performs a deep copy of the RSL value pointed to by the *globus\_rsl\_value\_ptr* parameter. All variable names, attributes, literals, and value lists will be copied to the return value.

##### Parameters:

*globus\_rsl\_value\_ptr* A pointer to an RSL value to copy.

##### Returns:

The `globus_rsl_value_copy_recursive()` function returns a copy of its input parameter that that can be used after the *globus\_rsl\_value\_ptr* and its values have been freed. If an error occurs, `globus_rsl_value_copy_recursive()` returns NULL.

#### 3.3.1.3 `int globus_rsl_value_free (globus_rsl_value_t * val)`

Free an RSL value node.

The `globus_rsl_value_free()` function frees the RSL value pointed to by the *val* parameter. This only frees the RSL value node itself, and not any sequence or string values associated with that node.

##### Parameters:

*val* The RSL value node to free.

##### Returns:

The `globus_rsl_value_free()` function always returns GLOBUS\_SUCCESS.

#### 3.3.1.4 `int globus_rsl_free (globus_rsl_t * ast_node)`

Free an RSL syntax tree node.

The `globus_rsl_free()` function frees the RSL syntax tree node pointed to by the *ast\_node* parameter. This only frees the RSL syntax tree node itself, and not any boolean operands, relation names, or values associated with the node.

**Parameters:**

*ast\_node* The RSL syntax tree node to free.

**Returns:**

The *globus\_rsl\_value\_free()* function always returns GLOBUS\_SUCCESS.

**3.3.1.5 int globus\_rsl\_value\_free\_recursive (globus\_rsl\_value\_t \* globus\_rsl\_value\_ptr)**

Free an RSL value and all its child nodes.

The *globus\_rsl\_free\_recursive()* function frees the RSL value node pointed to by the *globus\_rsl\_value\_ptr*, including all literal strings, variable names, and value sequences. Any pointers to these are no longer valid after *globus\_rsl\_value\_free\_recursive()* returns.

**Parameters:**

*globus\_rsl\_value\_ptr* An RSL value node to free.

**Returns:**

The *globus\_rsl\_value\_free\_recursive()* function always returns GLOBUS\_SUCCESS.

**3.3.1.6 int globus\_rsl\_free\_recursive (globus\_rsl\_t \* ast\_node)**

Free an RSL syntax tree and all its child nodes.

The *globus\_rsl\_free\_recursive()* function frees the RSL syntax tree pointed to by the *ast\_node* parameter, including all boolean operands, attribute names, and values. Any pointers to these are no longer valid after *globus\_rsl\_free\_recursive()* returns.

**Parameters:**

*ast\_node* An RSL parse tree to free.

**Returns:**

The *globus\_rsl\_value\_free\_recursive()* function always returns GLOBUS\_SUCCESS.

**3.3.1.7 int globus\_rsl\_value\_list\_literal\_replace (globus\_list\_t \* value\_list, char \* string\_value)**

Replace the first value in a value list with a literal.

The *globus\_rsl\_value\_list\_literal\_replace()* function replaces the first value in the list pointed to by the *value\_list* parameter with a new value node that is a literal string node pointing to the value of the *string\_value* parameter, freeing the old value.

**Parameters:**

*value\_list* The RSL value list to modify by replacing its first element.

*string\_value* The new string value to use as a literal first element of the list pointed to by the *value\_list* parameter.

**Returns:**

Upon success, *globus\_rsl\_value\_list\_literal\_replace()* returns GLOBUS\_SUCCESS, frees the current first value of *value\_list* and replaces it with a new literal string node pointing to the value of the *string\_value* parameter. If an error occurs, *globus\_rsl\_value\_list\_literal\_replace()* returns 1.

### 3.3.1.8 `int globus_rsl_value_eval (globus_rsl_value_t * ast_node, globus_symboltable_t * symbol_table, char ** string_value, int rsl_substitution_flag)`

Evaluate RSL substitutions in an RSL value node.

The `globus_rsl_value_eval()` function modifies the value pointed to by its `ast_node` parameter by replacing all RSL substitution variable reference nodes with the literal values those variables evaluate to based on the current scope of the symbol table pointed to by the `symbol_table` parameter. It also combines string concatenations into literal string values. Any nodes which are replaced by this function are freed using `globus_rsl_value_free_recursive()`.

#### Parameters:

**`ast_node`** A pointer to the RSL value node to evaluate.

**`symbol_table`** A symbol table containing current definitions of the RSL substitutions which can occur in this evaluation scope.

**`string_value`** An output parameter which is set to point to the value of the string returned by evaluating the value node pointed to by `ast_node` if it evaluates to a literal value. list pointed to by the `value_list` parameter.

**`rsl_substitution_flag`** A flag indicating whether the node pointed to by the `ast_node` parameter defines RSL substitution variables.

#### Returns:

Upon success, `globus_rsl_value_eval()` returns `GLOBUS_SUCCESS`, and replaces any RSL substitution values in the node pointed to by the `ast_node` parameter. If the node evaluates to a single literal, the `string_value` parameter is modified to point to the value of that literal. If an error occurs, `globus_rsl_value_eval()` returns a non-zero value.

### 3.3.1.9 `int globus_rsl_eval (globus_rsl_t * ast_node, globus_symboltable_t * symbol_table)`

Evaluate an RSL syntax tree.

The `globus_rsl_eval()` function modifies the RSL parse tree pointed to by its `ast_node` parameter by replacing all RSL substitution variable reference nodes with the literal values those variables evaluate to based on the current scope of the symbol table pointed to by the `symbol_table` parameter. It also combines string concatenations into literal string values. Any nodes which are replaced by this function are freed using `globus_rsl_value_free_recursive()`.

#### Parameters:

**`ast_node`** A pointer to the RSL syntax tree to evaluate.

**`symbol_table`** A symbol table containing current definitions of the RSL substitutions which can occur in this evaluation scope.

#### Returns:

Upon success, `globus_rsl_eval()` returns `GLOBUS_SUCCESS`, and replaces all RSL substitution values and concatenations in `ast_node` or its child nodes with the evaluated forms described above. If an error occurs, `globus_rsl_eval()` returns a non-zero value.

## 3.4 RSL Accessor Functions

### Functions

- `int globus_rsl_boolean_get_operator (globus_rsl_t *ast_node)`
- `globus_list_t * globus_rsl_boolean_get_operand_list (globus_rsl_t *ast_node)`

- `globus_list_t ** globus_rsl_boolean_get_operand_list_ref (globus_rsl_t *boolean_node)`
- `char * globus_rsl_relation_get_attribute (globus_rsl_t *ast_node)`
- `int globus_rsl_relation_get_operator (globus_rsl_t *ast_node)`
- `globus_rsl_value_t * globus_rsl_relation_get_value_sequence (globus_rsl_t *ast_node)`
- `globus_rsl_value_t * globus_rsl_relation_get_single_value (globus_rsl_t *ast_node)`
- `char * globus_rsl_value_literal_get_string (globus_rsl_value_t *literal_node)`
- `globus_list_t * globus_rsl_value_sequence_get_value_list (globus_rsl_value_t *sequence_node)`
- `globus_rsl_value_t * globus_rsl_value_variable_get_sequence (globus_rsl_value_t *variable_node)`
- `char * globus_rsl_value_variable_get_name (globus_rsl_value_t *variable_node)`
- `char * globus_rsl_value_variable_get_default (globus_rsl_value_t *variable_node)`
- `int globus_rsl_value_variable_get_size (globus_rsl_value_t *variable_node)`
- `globus_rsl_value_t * globus_rsl_value_concatenation_get_left (globus_rsl_value_t *concatenation_node)`
- `globus_rsl_value_t * globus_rsl_value_concatenation_get_right (globus_rsl_value_t *concatenation_node)`
- `globus_list_t ** globus_rsl_value_sequence_get_list_ref (globus_rsl_value_t *sequence_node)`

### 3.4.1 Function Documentation

#### 3.4.1.1 `int globus_rsl_boolean_get_operator (globus_rsl_t * ast_node)`

Get the RSL operator used in a boolean RSL composition.

The [`globus\_rsl\_boolean\_get\_operator\(\)`](#) function returns the operator that is used by the boolean RSL composition.

##### Parameters:

*ast\_node* The RSL syntax tree to inspect.

##### Returns:

Upon success, [`globus\_rsl\_boolean\_get\_operator\(\)`](#) returns one of GLOBUS\_RSL\_AND, GLOBUS\_RSL\_OR, GLOBUS\_RSL\_MULTIREQ. If an error occurs, [`globus\_rsl\_boolean\_get\_operator\(\)`](#) returns -1.

#### 3.4.1.2 `globus_list_t* globus_rsl_boolean_get_operand_list (globus_rsl_t * ast_node)`

Get the RSL operand list from a boolean RSL composition.

The [`globus\_rsl\_boolean\_get\_operand\_list\(\)`](#) function returns the list of RSL syntax tree nodes that is joined by a boolean composition.

##### Parameters:

*ast\_node* The RSL syntax tree to inspect.

##### Returns:

Upon success, [`globus\_rsl\_boolean\_get\_operand\_list\(\)`](#) returns a pointer to a list of RSL syntax tree nodes that are the operand of a boolean composition operation. If an error occurs, [`globus\_rsl\_boolean\_get\_operand\_list\(\)`](#) returns NULL.

#### 3.4.1.3 `globus_list_t** globus_rsl_boolean_get_operand_list_ref (globus_rsl_t * boolean_node)`

Get a reference to the RSL operand list from a boolean RSL composition.

The [`globus\_rsl\_boolean\_get\_operand\_list\_ref\(\)`](#) function returns a pointer to the list of RSL syntax tree nodes that is joined by a boolean composition. If this list is modified, then the value of boolean syntax tree is modified.

**Parameters:**

*boolean\_node* The RSL syntax tree to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_boolean\\_get\\_operand\\_list\\_ref\(\)\*](#) returns a pointer to the list pointer in the RSL syntax tree data structure. This list can be modified to change the operands of the boolean operation. If an error occurs, [\*globus\\_rsl\\_boolean\\_get\\_operand\\_list\\_ref\(\)\*](#) returns NULL.

**3.4.1.4 char\* globus\_rsl\_relation\_get\_attribute (globus\_rsl\_t \* ast\_node)**

Get an RSL relation attribute name.

The [\*globus\\_rsl\\_relation\\_get\\_attribute\(\)\*](#) function returns a pointer to the name of the attribute in an RSL relation. This return value is a shallow reference to the attribute name.

**Parameters:**

*ast\_node* The RSL relation node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_relation\\_get\\_attribute\(\)\*](#) returns a pointer to the name of the attribute of the relation. If an error occurs, [\*globus\\_rsl\\_relation\\_get\\_attribute\(\)\*](#) returns NULL.

**3.4.1.5 int globus\_rsl\_relation\_get\_operator (globus\_rsl\_t \* ast\_node)**

Get an RSL relation operator.

The [\*globus\\_rsl\\_relation\\_get\\_operator\(\)\*](#) function returns the operation type represented by the RSL relation node pointed to by the *ast\_node* parameter.

**Parameters:**

*ast\_node* The RSL relation node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_relation\\_get\\_operator\(\)\*](#) returns one of GLOBUS\_RSL\_EQ, GLOBUS\_RSL\_NEQ, GLOBUS\_RSL\_GT, GLOBUS\_RSL\_GTEQ, GLOBUS\_RSL\_LT, or GLOBUS\_RSL\_LTEQ. If an error occurs, [\*globus\\_rsl\\_relation\\_get\\_operator\(\)\*](#) returns -1.

**3.4.1.6 globus\_rsl\_value\_t\* globus\_rsl\_relation\_get\_value\_sequence (globus\_rsl\_t \* ast\_node)**

Get the value of an RSL relation.

The [\*globus\\_rsl\\_relation\\_get\\_value\\_sequence\(\)\*](#) function returns the value of an RSL relation node pointed to by the *ast\_node* parameter.

**Parameters:**

*ast\_node* The RSL relation node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_relation\\_get\\_value\\_sequence\(\)\*](#) returns the value sequence pointer in the RSL relation pointed to by the *ast\_node* parameter. If an error occurs, [\*globus\\_rsl\\_relation\\_get\\_value\\_sequence\(\)\*](#) returns NULL.

#### 3.4.1.7 `globus_rsl_value_t* globus_rsl_relation_get_single_value (globus_rsl_t * ast_node)`

Get the single value of an RSL relation.

The [`globus\_rsl\_relation\_get\_single\_value\(\)`](#) function returns the value of an RSL relation node pointed to by the *ast\_node* parameter if the value is a sequence of one value.

##### Parameters:

*ast\_node* The RSL relation node to inspect.

##### Returns:

Upon success, [`globus\_rsl\_relation\_get\_single\_value\(\)`](#) returns the value pointer at the head of the RSL relation pointed to by the *ast\_node* parameter. If the value sequence has more than one value or the *ast\_node* points to an RSL syntax tree that is not a relation, [`globus\_rsl\_relation\_get\_value\_sequence\(\)`](#) returns NULL.

#### 3.4.1.8 `char* globus_rsl_value_literal_get_string (globus_rsl_value_t * literal_node)`

Get the string value of an RSL literal.

The [`globus\_rsl\_value\_literal\_get\_string\(\)`](#) function returns the string value of an RSL literal node pointed to by the *literal\_node* parameter.

##### Parameters:

*literal\_node* The RSL literal node to inspect.

##### Returns:

Upon success, [`globus\_rsl\_value\_literal\_get\_string\(\)`](#) returns a pointer to the string value of the literal pointed to by the *literal\_node* parameter. If the value is not a literal, [`globus\_rsl\_value\_literal\_get\_string\(\)`](#) returns NULL.

#### 3.4.1.9 `globus_list_t* globus_rsl_value_sequence_get_value_list (globus_rsl_value_t * sequence_node)`

Get the value list from an RSL value sequence.

The [`globus\_rsl\_value\_sequence\_get\_value\_list\(\)`](#) function returns the list of `globus_rsl_value_t` pointer values associated with the RSL value sequence pointed to by the *sequence\_node* parameter.

##### Parameters:

*sequence\_node* The RSL sequence node to inspect.

##### Returns:

Upon success, [`globus\_rsl\_value\_sequence\_get\_value\_list\(\)`](#) returns a pointer to the list of values pointed to by the *sequence\_node* parameter. If the value is not a sequence, [`globus\_rsl\_value\_literal\_get\_string\(\)`](#) returns NULL.

#### 3.4.1.10 `globus_rsl_value_t* globus_rsl_value_variable_get_sequence (globus_rsl_value_t * variable_node)`

Get the value sequence from an RSL variable reference.

The [`globus\_rsl\_value\_variable\_get\_sequence\(\)`](#) function returns the sequence value associated with the RSL variable reference pointed to by the *variable\_node* parameter.



**Parameters:**

*variable\_node* The RSL variable node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_value\\_variable\\_get\\_sequence\(\)\*](#) returns a pointer to the rsl value sequence pointed to by the *variable\_node* parameter. If the value is not a variable reference, [\*globus\\_rsl\\_value\\_variable\\_get\\_sequence\(\)\*](#) returns NULL.

**3.4.1.11 char\* globus\_rsl\_value\_variable\_get\_name (globus\_rsl\_value\_t \* *variable\_node*)**

Get the name of an RSL variable reference.

The [\*globus\\_rsl\\_value\\_variable\\_get\\_name\(\)\*](#) function returns a pointer to the name of the RSL variable name pointed to by the *variable\_node* parameter.

**Parameters:**

*variable\_node* The RSL variable node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_value\\_variable\\_get\\_name\(\)\*](#) returns a pointer to the string containing the name of the variable referenced by the *variable\_node* parameter. If the node is not a variable reference, [\*globus\\_rsl\\_value\\_variable\\_get\\_name\(\)\*](#) returns NULL.

**3.4.1.12 char\* globus\_rsl\_value\_variable\_get\_default (globus\_rsl\_value\_t \* *variable\_node*)**

Get the default value of an RSL variable reference.

The [\*globus\\_rsl\\_value\\_variable\\_get\\_default\(\)\*](#) function returns a pointer to the default value of the RSL variable pointed to by the *variable\_node* parameter to use if the variable's name is not bound in the current evaluation context.

**Parameters:**

*variable\_node* The RSL variable node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_value\\_variable\\_get\\_default\(\)\*](#) returns a pointer to the string containing the default value of the variable referenced by the *variable\_node* parameter. If the node is not a variable reference or no default value exists in the RSL node, [\*globus\\_rsl\\_value\\_variable\\_get\\_default\(\)\*](#) returns NULL.

**3.4.1.13 int globus\_rsl\_value\_variable\_get\_size (globus\_rsl\_value\_t \* *variable\_node*)**

Get the size of the value list within an RSL variable reference node.

The [\*globus\\_rsl\\_value\\_variable\\_get\\_size\(\)\*](#) function returns the number of nodes in the RSL variable reference node pointed to by the *variable\_node* parameter.

**Parameters:**

*variable\_node* The RSL variable node to inspect.

**Returns:**

Upon success, [\*globus\\_rsl\\_value\\_variable\\_get\\_size\(\)\*](#) returns the list of values within a RSL variable reference, or -1 if the node pointed to by *variable\_node* is not a variable reference. If the return value is 1, then the variable has no default value included in the reference.

#### 3.4.1.14 `globus_rsl_value_t*` `globus_rsl_value_concatenation_get_left` (`globus_rsl_value_t` \* `concatenation_node`)

Get the left side of a concatenation value.

The `globus_rsl_value_concatenation_get_left()` function returns the left side of an RSL value concatenation pointed to by the `concatenation_node` parameter.

##### Parameters:

`concatenation_node` The RSL concatenation node to inspect.

##### Returns:

Upon success, `globus_rsl_value_concatenation_get_left()` returns a pointer to the left value of the concatenation values pointed to by the `concatenation_node` parameter. If an error occurs, `globus_rsl_value_concatenation_get_left()` returns NULL.

#### 3.4.1.15 `globus_rsl_value_t*` `globus_rsl_value_concatenation_get_right` (`globus_rsl_value_t` \* `concatenation_node`)

Get the right side of a concatenation value.

The `globus_rsl_value_concatenation_get_right()` function returns the right side of an RSL value concatenation pointed to by the `concatenation_node` parameter.

##### Parameters:

`concatenation_node` The RSL concatenation node to inspect.

##### Returns:

Upon success, `globus_rsl_value_concatenation_get_right()` returns a pointer to the right value of the concatenation values pointed to by the `concatenation_node` parameter. If an error occurs, `globus_rsl_value_concatenation_get_right()` returns NULL.

#### 3.4.1.16 `globus_list_t*` `globus_rsl_value_sequence_get_list_ref` (`globus_rsl_value_t` \* `sequence_node`)

Get a reference to the list of values in a sequence.

The `globus_rsl_value_sequence_get_list_ref()` function returns a reference to the list of values in a value sequence. Any changes to the elements of this list will affect the `sequence_node` parameter.

##### Parameters:

`sequence_node` The RSL sequence node to inspect.

##### Returns:

Upon success, `globus_rsl_value_sequence_get_list_ref()` returns a pointer to the list of the `globus_rsl_value_t` pointer values contained in the `sequence_node` parameter. If an error occurs, `globus_rsl_value_sequence_get_list_ref()` returns NULL.

## 3.5 List Functions

### Functions

- `globus_list_t` \* `globus_list_copy_reverse` (`globus_list_t` \*orig)

### 3.5.1 Function Documentation

#### 3.5.1.1 `globus_list_t* globus_list_copy_reverse(globus_list_t * orig)`

Create a reverse-order copy of a list.

The `globus_list_copy_reverse()` function creates and returns a copy of its input parameter, with the order of the list elements reversed. This copy is a shallow copy of list nodes, so both the list pointed to by *orig* and the returned list point to the same list element data.

##### Parameters:

*orig* A pointer to the list to copy.

##### Returns:

Upon success, `globus_list_copy_reverse()` returns a new list containing the same elements as the list pointed to by *orig* in reverse order. If an error occurs, `globus_list_copy_reverse()` returns NULL.

## 3.6 RSL Value Accessors

### Functions

- int `globus_rsl_value_concatenation_set_left` (globus\_rsl\_value\_t \*concatenation\_node, globus\_rsl\_value\_t \*new\_left\_node)
- int `globus_rsl_value_concatenation_set_right` (globus\_rsl\_value\_t \*concatenation\_node, globus\_rsl\_value\_t \*new\_right\_node)
- int `globus_rsl_value_list_param_get` (globus\_list\_t \*ast\_node\_list, int required\_type, char \*\*\*value, int \*value\_ctr)
- globus\_list\_t \* `globus_rsl_param_get_values` (globus\_rsl\_t \*ast\_node, char \*param)
- int `globus_rsl_param_get` (globus\_rsl\_t \*ast\_node, int param\_type, char \*param, char \*\*\*values)

### 3.6.1 Function Documentation

#### 3.6.1.1 `int globus_rsl_value_concatenation_set_left(globus_rsl_value_t * concatenation_node, globus_rsl_value_t * new_left_node)`

Set the left-hand value of a concatenation.

The `globus_rsl_value_concatenation_set_left()` sets the left hand side of a concatenation pointed to by *concatenation\_node* to the value pointed to by *new\_left\_node*. If there was any previous value to the left hand side of the concatenation, it is discarded but not freed.

##### Parameters:

*concatenation\_node* A pointer to the RSL value concatenation node to modify.

*new\_left\_node* A pointer to the new left hand side of the concatenation.

##### Returns:

Upon success, `globus_rsl_value_concatenation_set_left()` returns `GLOBUS_SUCCESS` and modifies the value pointed to by the *concatenation\_node* parameter to use the value pointed to by the *new\_left\_node* parameter as its left hand side value. If an error occurs, `globus_rsl_value_concatenation_set_left()` returns -1.

### 3.6.1.2 `int globus_rsl_value_concatenation_set_right (globus_rsl_value_t * concatenation_node, globus_rsl_value_t * new_right_node)`

Set the right-hand value of a concatenation.

The `globus_rsl_value_concatenation_set_right()` sets the right-hand side of a concatenation pointed to by `concatenation_node` to the value pointed to by `new_right_node`. If there was any previous value to the right-hand side of the concatenation, it is discarded but not freed.

#### Parameters:

**`concatenation_node`** A pointer to the RSL value concatenation node to modify.

**`new_right_node`** A pointer to the new right hand side of the concatenation.

#### Returns:

Upon success, `globus_rsl_value_concatenation_set_right()` returns `GLOBUS_SUCCESS` and modifies the value pointed to by the `concatenation_node` parameter to use the value pointed to by the `new_right_node` parameter as its right hand side value. If an error occurs, `globus_rsl_value_concatenation_set_right()` returns -1.

### 3.6.1.3 `int globus_rsl_value_list_param_get (globus_list_t * ast_node_list, int required_type, char *** value, int * value_ctr)`

Get the values of an RSL value list.

The `globus_rsl_value_list_param_get()` function copies pointers to literal string values or string pairs associated with the list of `globus_rsl_value_t` pointers pointed to by the `ast_node_list` parameter to the output array pointed to by the `value` parameter. It modifies the value pointed to by the `value_ctr` parameter to be the number of strings copied into the array.

#### Parameters:

**`ast_node_list`** A pointer to a list of `globus_rsl_value_t` pointers whose values will be copied to the `value` parameter array.

**`required_type`** A flag indicating whether the list is expected to contain literal strings or string pairs. This value may be one of `GLOBUS_RSL_VALUE_LITERAL` or `GLOBUS_RSL_VALUE_SEQUENCE`.

**`value`** An output parameter pointing to an array of strings. This array must be at least as large as the number of elements in the list pointed to by `ast_node_list`.

**`value_ctr`** An output parameter pointing to an integer that will be incremented for each string copied into the `value` array.

#### Returns:

Upon success, the `globus_rsl_value_list_param_get()` function returns `GLOBUS_SUCCESS` and modifies the values pointed to by the `value` and `value_ctr` parameters as described above. If an error occurs, `globus_rsl_value_list_param_get()` returns a non-zero value.

### 3.6.1.4 `globus_list_t* globus_rsl_param_get_values (globus_rsl_t * ast_node, char * param)`

Get the list of values for an RSL attribute.

The `globus_rsl_param_get_values()` function searches the RSL parse tree pointed to by the `ast_node` parameter and returns the value list that is bound to the attribute named by the `param` parameter.

#### Parameters:

**`ast_node`** A pointer to an RSL syntax tree that will be searched. This may be a relation or boolean RSL string.

***param*** The name of the attribute to search for in the parse tree pointed to by the *ast\_node* parameter.

#### Returns:

Upon success, the *globus\_rsl\_param\_get\_values()* function returns a pointer to the list of values associated with the attribute named by *param* in the RSL parse tree pointed to by *ast\_node*. If an error occurs, *globus\_rsl\_param\_get\_values()* returns NULL.

### 3.6.1.5 int globus\_rsl\_param\_get (globus\_rsl\_t \*ast\_node, int param\_type, char \*param, char \*\*\* values)

Get the value strings for an RSL attribute.

The *globus\_rsl\_param\_get()* function searches the RSL parse tree pointed to by the *ast\_node* parameter and returns an array of pointers to the strings bound to the attribute named by the *param* parameter.

#### Parameters:

***ast\_node*** A pointer to an RSL syntax tree that will be searched. This may be a relation or boolean RSL string.

***param\_type*** A flag indicating what type of values are expected for the RSL attribute named by the *param* parameter. This flag value may be *GLOBUS\_RSL\_PARAM\_SINGLE\_LITERAL*, *GLOBUS\_RSL\_PARAM\_MULTI\_LITERAL*, or *GLOBUS\_RSL\_PARAM\_SEQUENCE*.

***param*** A string pointing to the name of the RSL attribute to search for.

***values*** An output parameter pointing to an array of strings that will be allocated and contain pointers to the RSL value strings if they match the format specified by the *param\_type* flag. The caller is responsible for freeing this array, but not the strings in the array.

#### Returns:

Upon success, the *globus\_rsl\_param\_get()* function returns *GLOBUS\_SUCCESS* and modifies the *values* parameter as described above. If an error occurs, *globus\_rsl\_param\_get()* returns a non-zero value.

## 3.7 RSL Display

### Functions

- int *globus\_rsl\_value\_print\_recursive* (globus\_rsl\_value\_t \*globus\_rsl\_value\_ptr)
- char \* *globus\_rsl\_get\_operator* (int my\_op)
- int *globus\_rsl\_print\_recursive* (globus\_rsl\_t \*ast\_node)
- char \* *globus\_rsl\_unparse* (globus\_rsl\_t \*rsl\_spec)
- char \* *globus\_rsl\_value\_unparse* (globus\_rsl\_value\_t \*rsl\_value)

### 3.7.1 Function Documentation

#### 3.7.1.1 int globus\_rsl\_value\_print\_recursive (globus\_rsl\_value\_t \*globus\_rsl\_value\_ptr)

Print the value of a *globus\_rsl\_value\_t* to standard output.

The *globus\_rsl\_value\_print\_recursive()* function prints a string representation of the RSL value node pointed to by the *globus\_rsl\_value\_ptr* parameter to standard output. This function is not reentrant.

#### Parameters:

***globus\_rsl\_value\_ptr*** A pointer to the RSL value to display.

#### Returns:

The *globus\_rsl\_value\_print\_recursive()* function always returns *GLOBUS\_SUCCESS*.

### 3.7.1.2 char\* globus\_rsl\_get\_operator (int *my\_op*)

Get the string representation of an RSL operator.

The *globus\_rsl\_get\_operator()* function returns a pointer to a static string that represents the RSL operator passed in via the *my\_op* parameter. If the operator is not value, then *globus\_rsl\_get\_operator()* returns a pointer to the string "??"

#### Parameters:

*my\_op* The RSL operator to return.

#### Returns:

The *globus\_rsl\_get\_operator()* function returns a pointer to the string representation of the *my\_op* parameter, or "???" if that value is not a value RSL operator.

### 3.7.1.3 int globus\_rsl\_print\_recursive (globus\_rsl\_t \* *ast\_node*)

Print the value of an RSL syntax tree to standard output.

The *globus\_rsl\_print\_recursive()* function prints a string representation of the RSL syntax tree pointed to by the *ast\_node* parameter to standard output. This function is not reentrant.

#### Parameters:

*ast\_node* A pointer to the RSL syntax tree to display.

#### Returns:

The *globus\_rsl\_print\_recursive()* function always returns *GLOBUS\_SUCCESS*.

### 3.7.1.4 char\* globus\_rsl\_unparse (globus\_rsl\_t \* *rsl\_spec*)

Convert an RSL parse tree to a string.

The *globus\_rsl\_unparse()* function returns a new string which can be parsed into the RSL syntax tree passed as the *rsl\_spec* parameter. The caller is responsible for freeing this string.

#### Parameters:

*rsl\_spec* A pointer to the RSL syntax tree to unparse.

#### Returns:

Upon success, the *globus\_rsl\_unparse()* function returns a new string which represents the RSL parse tree passed as the *rsl\_spec* parameter. If an error occurs, *globus\_rsl\_unparse()* returns NULL.

### 3.7.1.5 char\* globus\_rsl\_value\_unparse (globus\_rsl\_value\_t \* *rsl\_value*)

Convert an RSL value pointer to a string.

The *globus\_rsl\_value\_unparse()* function returns a new string which can be parsed into the value of an RSL relation that has the same syntactic meaning as the *rsl\_value* parameter. The caller is responsible for freeing this string.

#### Parameters:

*rsl\_value* A pointer to the RSL value node to unparse.

**Returns:**

Upon success, the [\*globus\\_rsl\\_value\\_unparse\(\)\*](#) function returns a new string which represents the RSL value ndoe passed as the *rsl\_value* parameter. If an error occurs, [\*globus\\_rsl\\_value\\_unparse\(\)\*](#) returns NULL.

## 3.8 RSL Parsing

**Functions**

- `globus_rsl_t * globus\_rsl\_parse (char *buf)`

### 3.8.1 Function Documentation

#### 3.8.1.1 `globus_rsl_t* globus\_rsl\_parse (char * buf)`

Parse an RSL string.

The [\*globus\\_rsl\\_parse\(\)\*](#) function parses the string pointed to by the *buf* parameter into an RSL syntax tree. The caller is responsible for freeing that tree by calling [\*globus\\_rsl\\_free\\_recursive\(\)\*](#).

**Parameters:**

*buf* A NULL-terminated string that contains an RSL relation or boolean composition.

**Returns:**

Upon success, the [\*globus\\_rsl\\_parse\(\)\*](#) function returns the parse tree generated by processing its input. If an error occurs, [\*globus\\_rsl\\_parse\(\)\*](#) returns NULL.

## Index

- globus\_list
  - globus\_list\_copy\_reverse, 17
- globus\_list\_copy\_reverse
  - globus\_list, 17
- globus\_rsl\_accessor
  - globus\_rsl\_boolean\_get\_operand\_list, 12
  - globus\_rsl\_boolean\_get\_operand\_list\_ref, 13
  - globus\_rsl\_boolean\_get\_operator, 12
  - globus\_rsl\_relation\_get\_attribute, 13
  - globus\_rsl\_relation\_get\_operator, 13
  - globus\_rsl\_relation\_get\_single\_value, 14
  - globus\_rsl\_relation\_get\_value\_sequence, 14
  - globus\_rsl\_value\_concatenation\_get\_left, 16
  - globus\_rsl\_value\_concatenation\_get\_right, 16
  - globus\_rsl\_value\_literal\_get\_string, 14
  - globus\_rsl\_value\_sequence\_get\_list\_ref, 17
  - globus\_rsl\_value\_sequence\_get\_value\_list, 14
  - globus\_rsl\_value\_variable\_get\_default, 15
  - globus\_rsl\_value\_variable\_get\_name, 15
  - globus\_rsl\_value\_variable\_get\_sequence, 15
  - globus\_rsl\_value\_variable\_get\_size, 16
- globus\_rsl\_boolean\_get\_operand\_list
  - globus\_rsl\_accessor, 12
- globus\_rsl\_boolean\_get\_operand\_list\_ref
  - globus\_rsl\_accessor, 13
- globus\_rsl\_boolean\_get\_operator
  - globus\_rsl\_accessor, 12
- globus\_rsl\_constructors
  - globus\_rsl\_make\_boolean, 6
  - globus\_rsl\_make\_relation, 7
  - globus\_rsl\_value\_make\_concatenation, 8
  - globus\_rsl\_value\_make\_literal, 7
  - globus\_rsl\_value\_make\_sequence, 7
  - globus\_rsl\_value\_make\_variable, 8
- globus\_rsl\_copy\_recursive
  - globus\_rsl\_memory, 9
- globus\_rsl\_eval
  - globus\_rsl\_memory, 11
- globus\_rsl\_free
  - globus\_rsl\_memory, 10
- globus\_rsl\_free\_recursive
  - globus\_rsl\_memory, 10
- globus\_rsl\_get\_operator
  - globus\_rsl\_print, 20
- globus\_rsl\_is\_boolean
  - globus\_rsl\_predicates, 2
- globus\_rsl\_is\_boolean\_and
  - globus\_rsl\_predicates, 4
- globus\_rsl\_is\_boolean\_multi
  - globus\_rsl\_predicates, 4
- globus\_rsl\_is\_boolean\_or
  - globus\_rsl\_predicates, 4
- globus\_rsl\_is\_relation
  - globus\_rsl\_predicates, 2
- globus\_rsl\_is\_relation\_attribute\_equal
  - globus\_rsl\_predicates, 3
- globus\_rsl\_is\_relation\_eq
  - globus\_rsl\_predicates, 3
- globus\_rsl\_is\_relation\_less\_than
  - globus\_rsl\_predicates, 3
- globus\_rsl\_make\_boolean
  - globus\_rsl\_constructors, 6
- globus\_rsl\_make\_relation
  - globus\_rsl\_constructors, 7
- globus\_rsl\_memory
  - globus\_rsl\_copy\_recursive, 9
  - globus\_rsl\_eval, 11
  - globus\_rsl\_free, 10
  - globus\_rsl\_free\_recursive, 10
  - globus\_rsl\_value\_copy\_recursive, 9
  - globus\_rsl\_value\_eval, 11
  - globus\_rsl\_value\_free, 9
  - globus\_rsl\_value\_free\_recursive, 10
  - globus\_rsl\_value\_list\_literal\_replace, 10
- globus\_rsl\_param
  - globus\_rsl\_param\_get, 19
  - globus\_rsl\_param\_get\_values, 19
  - globus\_rsl\_value\_concatenation\_set\_left, 18
  - globus\_rsl\_value\_concatenation\_set\_right, 18
  - globus\_rsl\_value\_list\_param\_get, 18
- globus\_rsl\_param\_get
  - globus\_rsl\_param, 19
- globus\_rsl\_param\_get\_values
  - globus\_rsl\_param, 19
- globus\_rsl\_parse
  - globus\_rsl\_parse, 21
  - globus\_rsl\_parse, 21
- globus\_rsl\_predicates
  - globus\_rsl\_is\_boolean, 2
  - globus\_rsl\_is\_boolean\_and, 4
  - globus\_rsl\_is\_boolean\_multi, 4
  - globus\_rsl\_is\_boolean\_or, 4
  - globus\_rsl\_is\_relation, 2
  - globus\_rsl\_is\_relation\_attribute\_equal, 3
  - globus\_rsl\_is\_relation\_eq, 3
  - globus\_rsl\_is\_relation\_less\_than, 3
  - globus\_rsl\_value\_is\_concatenation, 6
  - globus\_rsl\_value\_is\_literal, 5
  - globus\_rsl\_value\_is\_sequence, 5
  - globus\_rsl\_value\_is\_variable, 5
- globus\_rsl\_print
  - globus\_rsl\_get\_operator, 20
  - globus\_rsl\_print\_recursive, 20
  - globus\_rsl\_unparse, 20
  - globus\_rsl\_value\_print\_recursive, 20
  - globus\_rsl\_value\_unparse, 21



- globus\_rsl\_print\_recursive
  - globus\_rsl\_print, [20](#)
- globus\_rsl\_relation\_get\_attribute
  - globus\_rsl\_accessor, [13](#)
- globus\_rsl\_relation\_get\_operator
  - globus\_rsl\_accessor, [13](#)
- globus\_rsl\_relation\_get\_single\_value
  - globus\_rsl\_accessor, [14](#)
- globus\_rsl\_relation\_get\_value\_sequence
  - globus\_rsl\_accessor, [14](#)
- globus\_rsl\_unparse
  - globus\_rsl\_print, [20](#)
- globus\_rsl\_value\_concatenation\_get\_left
  - globus\_rsl\_accessor, [16](#)
- globus\_rsl\_value\_concatenation\_get\_right
  - globus\_rsl\_accessor, [16](#)
- globus\_rsl\_value\_concatenation\_set\_left
  - globus\_rsl\_param, [18](#)
- globus\_rsl\_value\_concatenation\_set\_right
  - globus\_rsl\_param, [18](#)
- globus\_rsl\_value\_copy\_recursive
  - globus\_rsl\_memory, [9](#)
- globus\_rsl\_value\_eval
  - globus\_rsl\_memory, [11](#)
- globus\_rsl\_value\_free
  - globus\_rsl\_memory, [9](#)
- globus\_rsl\_value\_free\_recursive
  - globus\_rsl\_memory, [10](#)
- globus\_rsl\_value\_is\_concatenation
  - globus\_rsl\_predicates, [6](#)
- globus\_rsl\_value\_is\_literal
  - globus\_rsl\_predicates, [5](#)
- globus\_rsl\_value\_is\_sequence
  - globus\_rsl\_predicates, [5](#)
- globus\_rsl\_value\_is\_variable
  - globus\_rsl\_predicates, [5](#)
- globus\_rsl\_value\_list\_literal\_replace
  - globus\_rsl\_memory, [10](#)
- globus\_rsl\_value\_list\_param\_get
  - globus\_rsl\_param, [18](#)
- globus\_rsl\_value\_literal\_get\_string
  - globus\_rsl\_accessor, [14](#)
- globus\_rsl\_value\_make\_concatenation
  - globus\_rsl\_constructors, [8](#)
- globus\_rsl\_value\_make\_literal
  - globus\_rsl\_constructors, [7](#)
- globus\_rsl\_value\_make\_sequence
  - globus\_rsl\_constructors, [7](#)
- globus\_rsl\_value\_make\_variable
  - globus\_rsl\_constructors, [8](#)
- globus\_rsl\_value\_print\_recursive
  - globus\_rsl\_print, [20](#)
- globus\_rsl\_value\_sequence\_get\_list\_ref
  - globus\_rsl\_accessor, [17](#)
- globus\_rsl\_value\_sequence\_get\_value\_list
  - globus\_rsl\_accessor, [14](#)

- globus\_rsl\_value\_unparse
  - globus\_rsl\_print, [21](#)
- globus\_rsl\_value\_variable\_get\_default
  - globus\_rsl\_accessor, [15](#)
- globus\_rsl\_value\_variable\_get\_name
  - globus\_rsl\_accessor, [15](#)
- globus\_rsl\_value\_variable\_get\_sequence
  - globus\_rsl\_accessor, [15](#)
- globus\_rsl\_value\_variable\_get\_size
  - globus\_rsl\_accessor, [16](#)

List Functions, [17](#)

RSL Accessor Functions, [12](#)

RSL Constructors, [6](#)

RSL Display, [20](#)

RSL Memory Management, [9](#)

RSL Parsing, [21](#)

RSL Predicates, [1](#)

RSL Value Accessors, [17](#)