



# EMu Documentation

## EMu GUID Support

Document Version 1

**EMu version 4.3**

**EMu**  
Museum  
Management  
System



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## SECTION 1

# GUID Support

A Globally Unique Identifier (GUID) is a persistent unique reference number used as an identifier in computer software. The term GUID typically refers to various implementations of the Universally Unique Identifier (UUID) standard but is often more generally used to refer to other unique identification methods. Comprehensive details about UUIDs, such as how they are stored (typically as 128-bit values, commonly displayed as 32 hexadecimal digits with groups separated by hyphens) and how they are generated can be found on [Wikipedia](#).

With increasing global initiatives in data sharing, the need for a unique identifier for each discrete bit of data is increasingly important. Already organizations such as the US National Science Foundation (NSF) mandate the use of GUIDs for those wishing to participate in its programs.

GUID support is being implemented in EMu in four phases:

1. Storage of GUIDs in EMu modules
2. GUID generation on EMu record save
3. Local IMu web service for local resolution of EMu GUIDs
4. Global IMu web service portal for global resolution of EMu GUIDs

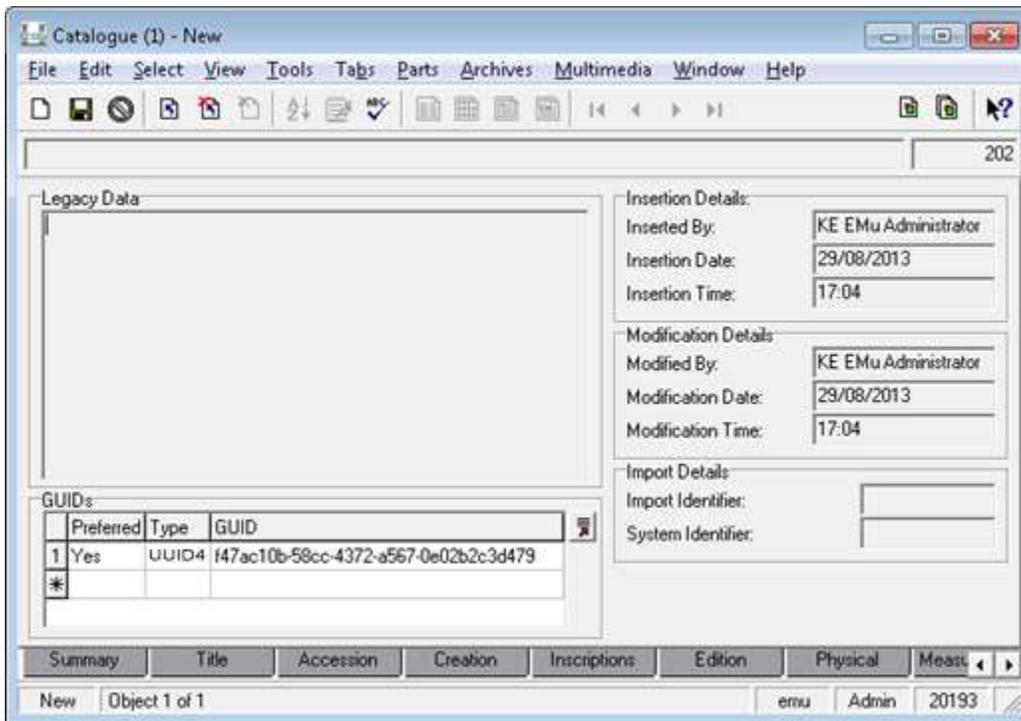
As of July 2014 the first two phases have been completed.

## Storage of GUIDs in EMu modules

Almost all EMu modules are capable of making use of GUIDs. Exceptions include:

- Audit Trails (eaudit)
- Condition Checks (econdition)
- Field Help (efieldhelp)
- Gazetteer (egazetteer)
- Internal Movements (einternal)
- Scheduled Operations (eoperations)
- Registry (eregistry)
- Statistics (estatistics)
- Valuations (evaluations)

where the use of GUIDs is thought to be unnecessary. For all GUID capable modules a *GUIDs* table displays on the Admin tab, allowing GUIDs to be added, edited, displayed, searched and included in reports:



The *GUIDs* table comprises three columns:

Field	Value
<i>Preferred</i>	Yes / No. Only one GUID in the <i>GUIDs</i> table can be marked as preferred.
<i>Type</i>	Lookup List of GUID types.
<i>GUID</i>	The GUID itself.

The *GUIDs* table can hold multiple internally generated and externally generated identifiers.

The GUID fields are also available for querying in Search mode:

The screenshot shows a software window titled "Catalogue (1) - Search". The window has a menu bar with "File", "Edit", "Select", "View", "Tools", "Tabs", "Parts", "Archives", "Multimedia", "Window", and "Help". Below the menu bar is a toolbar with icons for home, search, and help. The main area is divided into several sections:

- Internal Record Number:** A text input field.
- Summary Data:** A text input field.
- Legacy Data:** A text input field.
- Preferred GUID:** A section containing a "Type:" dropdown menu and a "GUID:" text input field.
- GUIDs:** A section containing a "Preferred:" dropdown menu, a "Type:" dropdown menu, and a "GUID:" text input field.
- Insertion Details:** A section containing "Inserted By:" (dropdown), "Insertion Date:" (text), and "Insertion Time:" (text) fields.
- Modification Details:** A section containing "Modified By:" (dropdown), "Modification Date:" (text), and "Modification Time:" (text) fields.
- Import Details:** A section containing "Import Identifier:" (text) and "System Identifier:" (text) fields.

At the bottom of the window, there is a navigation bar with tabs for "Location", "Condition", "Tasks", "Notes", "Multimedia", "Security", and "Admin". The "Admin" tab is currently selected. Below the navigation bar is a search bar with the text "Search" and a status bar showing "emu Admin 20193".

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## Auto-generation of GUID on record save

EMu can auto-generate GUID values on record save. Currently, GUIDs are auto-generated in compliance with UUID Version 4 (page 11).



EMu's GUID support is extensible and it is possible for organizations to substitute or extend the base EMu code to generate other or additional GUIDs. Please contact KE Support for details.

By default, GUID auto-generation is disabled for all modules.

In order to enable auto-generation of GUIDs in a module (or system-wide), the two GUID Registry entries must be specified:

- GUID Enabled Registry entry (page 7) must be set to `true`
- AND-
- A GUID Auto Types Registry entry (page 9) must specify which GUID type(s) to generate for a module (or system-wide). Currently only `UUID4` is supported.

On record save EMu checks whether the *GUIDs* table includes an entry for each type specified in a GUID Auto Types Registry entry, and generates a GUID for each type that is missing.

Currently EMu will auto-generate a UUID Version 4 GUID if one has not already been added to the record's *GUIDs* table.

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## Considerations when enabling GUID support

- Organizations may need to consider their policy for deleting records that contain locally generated GUIDs. Once a record is assigned a GUID, that record should generally never be deleted. KE's preference has always been that records are `Retired` (using Record Level Security settings) rather than deleted. A `Retired` record is hidden from all users except for those authorized to view it.
- The merging of records that contain GUIDs is another case to be considered. Organizations may want to retain the old GUID(s) from the merged record(s) within the `GUIDs` table on the master record (i.e. the one into which the merge took place).

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## GUID Registry entries

By default, GUID auto-generation is disabled for all modules.

In order to enable auto-generation of GUIDs in a module (or system-wide), the two GUID Registry entries must be specified:

- GUID Enabled Registry entry (page 7) must be set to `true`  
-AND-
- GUID Auto Types Registry entry (page 9) must specify which GUID type(s) to generate. Currently only `UUID4` is supported.

On record save EMu checks whether the *GUIDs* table includes an entry for each type specified in the GUID Auto Types Registry entry, and generates a GUID for each type that is missing.

Currently EMu will auto-generate a UUID Version 4 GUID if one has not already been added to the record's *GUIDs* table.

## GUID Enabled Registry entry

Registry Entry	Purpose
GUID Enabled	Specifies whether or not auto-generation of GUIDs is enabled for a table or system-wide.

### Overview

A Globally Unique Identifier (GUID) is a persistent unique reference number used as an identifier in computer software. Almost all EMu modules are capable of making use of GUIDs. Exceptions include:

- Audit Trails (eaudit)
- Condition Checks (econdition)
- Field Help (efieldhelp)
- Gazetteer (egazetteer)
- Internal Movements (einternal)
- Scheduled Operations (eoperations)
- Registry (eregistry)
- Statistics (estatistics)
- Valuations (evaluations)

where the use of GUIDs is thought to be unnecessary.

By default auto-generation of GUIDs is disabled. With this Registry entry, it is possible to enable GUID support on a per table or system-wide basis.



In order to enable auto-generation of GUIDs on record save, a GUID Auto Types Registry entry (page 9) must also specify which GUID type(s) to generate. Currently only `UUID4` is supported.

### Format of the Registry entry

The format of this Registry entry is:

```
System|Setting|Table|table|GUID Enabled|boolean
System|Setting|Table|Default|GUID Enabled|boolean
```

where:

*boolean* is `true` (auto-generation of GUIDs is enabled) or `false` (auto-generation of GUIDs is disabled).



If this entry is not present, a setting of `false` is assumed.

### Example

This entry specifies that auto-generation of GUIDs is enabled for the Catalog module:

Field	Value
<i>Key 1</i>	System
<i>Key 2</i>	Setting
<i>Key 3</i>	Table
<i>Key 4</i>	ecatalogue
<i>Key 5</i>	GUID Enabled
<i>Value</i>	true

## GUID Auto Types Registry entry

Registry Entry	Purpose
GUID Auto Types	Specifies which GUID variant is used when auto-generating a GUID on record save. Auto-generation of GUIDs also requires the GUID Enabled Registry entry (page 7) to be set to <code>true</code> .

### Overview

A Globally Unique Identifier (GUID) is a persistent unique reference number used as an identifier in computer software. Almost all EMu modules are capable of making use of GUIDs. Exceptions include:

- Audit Trails (eaudit)
- Condition Checks (econdition)
- Field Help (efieldhelp)
- Gazetteer (egazetteer)
- Internal Movements (einternal)
- Scheduled Operations (eoperations)
- Registry (eregistry)
- Statistics (estatistics)
- Valuations (evaluations)

where the use of GUIDs is thought to be unnecessary.

EMu can auto-generate GUID values on record save. Currently, GUIDs are auto-generated in compliance with UUID Version 4 (page 11).



EMu's GUID support is extensible and it is possible for organizations to substitute or extend the base EMu code to generate other or additional GUIDs. Please contact KE Support for details.

By default, GUID auto-generation is disabled for all modules.

In order to enable auto-generation of GUIDs in a module (or system-wide), the two GUID Registry entries must be specified:

- GUID Enabled Registry entry (page 7) must be set to `true`
- AND-
- A GUID Auto Types Registry entry must specify which GUID type(s) to generate. Currently only `UUID4` is supported.

On record save EMu checks whether the *GUIDs* table includes an entry for each type specified in the GUID Auto Types Registry entry, and generates a GUID for each type that is missing.

Currently EMu will auto-generate a UUID Version 4 GUID if one has not already been added to the record's *GUIDs* table.

### Format of the Registry entry

The format of this Registry entry is:

```
System|Setting|Table|table|GUID Auto Types|type;type;...  
System|Setting|Table|Default|GUID Auto Types|type;type;...
```

where:

*type;type;...* is a semicolon separated list of GUID variants.



Currently only UUID Version 4 is supported.

### Example

This entry specifies that when a GUID is auto-generated on record save in all available tables, the GUID generated will comply with the UUID Version 4 variant:

Field	Value
<i>Key 1</i>	System
<i>Key 2</i>	Setting
<i>Key 3</i>	Table
<i>Key 4</i>	Default
<i>Key 5</i>	GUID Auto Types
<i>Value</i>	UUID4

## UUID Version 4 GUID

The GUID Enabled Registry entry (page 7) specifies whether GUID support is enabled for a table or system-wide (by default GUID support is disabled). The GUID Auto Types Registry entry (page 9) specifies which GUID formats are to be auto-generated. In theory more than one variant can be used to specify the auto-generated GUIDs but EMu currently supports only UUID Version 4.

For more details see:

- [http://en.wikipedia.org/wiki/Universally\\_unique\\_identifier](http://en.wikipedia.org/wiki/Universally_unique_identifier)

A UUID is a 128 bit quantity typically represented in text as a 32 character hexadecimal string with hyphen separators at set positions. For example:

```
84b567d5-dbbd-468a-be12-770747ebc397
```

```
71820e9a-1eb0-4b02-9382-20de614fbcdd
```

UUID Version 4 is an extensively used GUID generation method that provides a randomly generated GUID with infinitesimal probability of a duplicate. A prime advantage of this scheme is that GUIDs can be generated quickly and locally on demand without contacting a central naming authority or having to pre-allocate identifiers.

A UUID can be represented simply as a Uniform Resource Name (URN). For example:

```
urn:uuid:84b567d5-dbbd-468a-be12-770747ebc397
```

```
urn:uuid:71820e9a-1eb0-4b02-9382-20de614fbcdd
```

The URN name space identifier of uuid is used.

Refer to:

- [http://en.wikipedia.org/wiki/Uniform\\_resource\\_identifier](http://en.wikipedia.org/wiki/Uniform_resource_identifier)
- [http://en.wikipedia.org/wiki/Uniform\\_resource\\_name](http://en.wikipedia.org/wiki/Uniform_resource_name)
- [http://en.wikipedia.org/wiki/Uniform\\_resource\\_locator](http://en.wikipedia.org/wiki/Uniform_resource_locator)



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