ARIS UML Designer
MIGRATION GUIDELINES

Version 10.0 - Service Release 4

April 2018

Document content not changed since release 10.0.1. It applies to version 10.0.4 without changes.

Contents

1 Preface

ARIS UML Designer 10 supports UML 2.5. UML 1.4 content created with ARIS UML Designer 7.x must be migrated to UML 2.5 before it can be used by ARIS UML Designer 10.

The first chapter Running the UML Migration (page 2) shows how the UML migration can be started and which options are provided to the user.

The chapter UML Migration Basics (page 4) describes how UML 1.4 elements and diagrams are migrated into UML 2.

UML 2 is not 100 % backward compatible to UML 1.4. The chapter UML Migration Details (page 6) describes how most of these incompatibilities are solved automatically by the UML migration and which parts of a UML 1.4 model should be adapted manually in ARIS UML Designer 7.x to avoid the risk of data loss by the UML Migration.

2 Running the UML Migration

Important

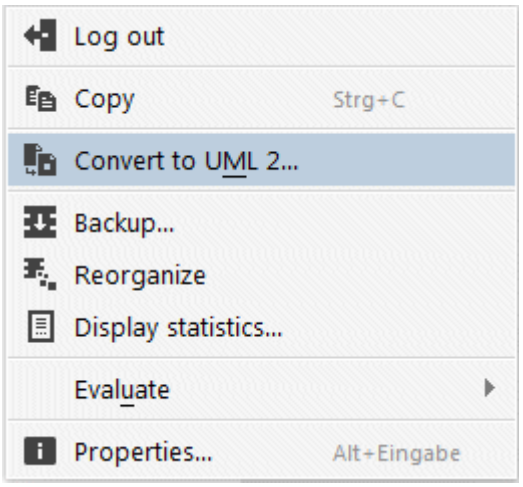
We strongly recommend creating a backup of each database with UML 1.4 content in ARIS 7.x before migrating it to UML 2 in ARIS UML Designer 9.x or a following version. By doing so migration problems based on inconsistencies in the UML 1.4 data can be fixed in ARIS UML Designer 7.x.

When starting the UML migration, only the administrator should be logged into the database.

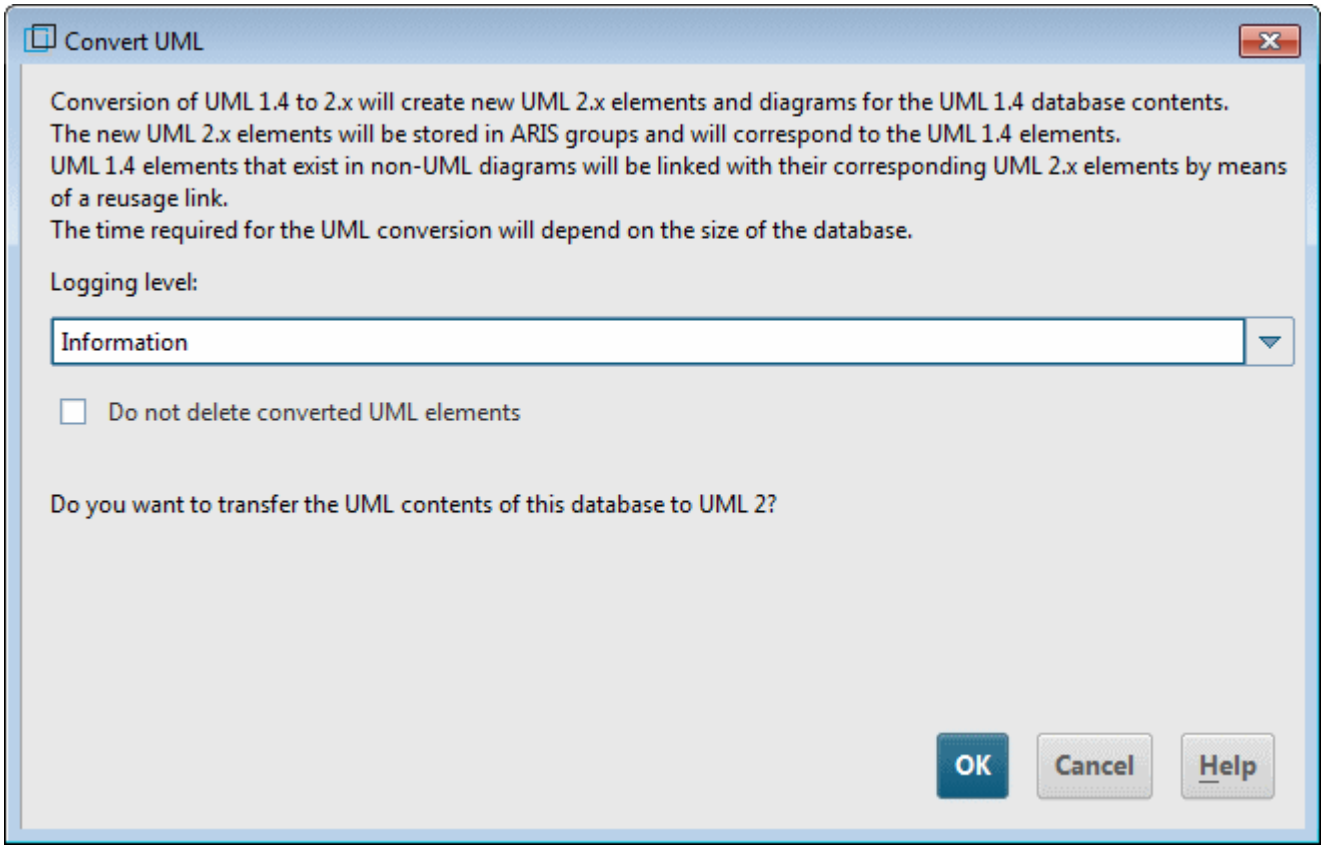
UML 1.4 diagrams and elements which have not been created or saved by ARIS UML Designer 7.x are not migrated.

The UML migration is started on the **Administration** tab of ARIS UML Designer 9.x or a following version. You can access the **Administration** tab, if you have selected the working environment **Configuration & Administration**.

After having logged into a database, its context menu provides the menu item **Convert to UML 2**:



This menu item opens a dialog where some options for the UML migration can be specified:



The option **Logging level** specifies the level of details which are written into the migration log file. The file is created in the log directory of the ARIS Design Server. Its name is created based on the following schema: **uml2migration_<name of the database>_<date>_<time>.log**. Parts of the schema marked by angled brackets are filled with the actual values.

The option **Do not delete converted UML elements**, which is disabled by default, is described in the chapter UML Migration Basics (page 4).

There is also an ARIS report API of the UML migration available which allows migrating databases by script (see **ARIS > Help > ARIS Script > Methods for reports and semantic checks > Global objects > Report component interfaces > OMF > OMF > migrateDatabaseToOmf**).

Depending on the size of the database and its amount of UML 1.4 content the UML migration takes a few seconds up to several hours.

3 UML Migration Basics

The UML 2 implementation of ARIS UML Designer 9.x and the following versions is based on a completely new architecture providing much better UML support than ARIS UML Designer 7.x and a new flexible and user-definable way of integration of business process and UML modeling. As a consequence all UML 2 object, connection, attribute and model types in the ARIS methodology are pure UML 2 types.

Basically the UML migration creates new UML 2 elements and new UML 2 diagrams corresponding to the existing UML 1.4 content. Only UML 1.4 elements and diagrams which had been created or at least saved by ARIS UML Designer 7.x are migrated. Such elements and diagrams are tagged with a special UML Designer flag in the database. UML 1.4 diagrams and elements which had been created by an ARIS 7.x client without UML Designer license and which had never been loaded and saved by ARIS UML Designer 7.x are ignored by the UML migration.

By default all UML 1.4 elements without occurrences in non-UML diagrams and all UML 1.4 diagrams are deleted at the end of the migration process unless the option **Do not delete converted UML elements** has been set. Setting this option makes only sense, if the UML 1.4 elements and diagrams provide information which is not handled by the UML migration such as user-defined attributes or other non-UML attribute content. Such information must be migrated manually or by a user-defined script.

If UML 1.4 elements and diagrams are not deleted by the UML migration, their UML Designer flag is removed in the database so that from that time on they are handled as standard ARIS content and no longer as special UML content in ARIS.

All UML 1.4 elements which had not been deleted (either because they occur in a classical ARIS diagram or because the do-not-delete-option had been set) are connected to their corresponding UML 2 element by a re-usage link. If, for example, an EPC function occurred in a UML 1.4 use case diagram as UML use case it has a re-usage link to the corresponding UML 2 use case.

Important

Although migrated UML 1.4 diagrams can be opened in ARIS Designer their layout is most probably corrupted, because ARIS Designer cannot handle UML-specific things like edges visualizing an object (e.g. associations) or edges connected to other edges. These diagrams should be deleted as soon as their additional information had been migrated manually.

UML 2 root elements (i.e. packages, models and profiles which are not owned by other UML 2 elements) are created in the ARIS group containing the corresponding UML 1.4 root element so that the same user permissions are applied to them.

According to the UML 2 specification only packages, models and profiles do not require an owning UML element, i.e. only these three types can directly exist in an ARIS group. Therefore all other UML elements and all UML diagrams must be owned by another UML element in ARIS UML Designer 9 and the following versions. In ARIS UML Designer 7.x UML elements and UML diagrams can exist and not be part of the containment hierarchy of a package, model or profile. If such an element is migrated a default owner is created for the element in the ARIS

group. If, for example, a class without owner is migrated, the UML migration creates a default package for the migrated class. If an attribute or operation is migrated, the UML migration creates a default class owned by default package for the attribute or operation in the ARIS group of the attribute or operation.

The GUID of each UML 2 element is calculated based on the GUID of its original UML 1.4 element. If the same UML 1.4 element is contained in different databases, these databases can be merged after having been migrated to UML 2 without duplicating the corresponding UML 2 element. Do not merge not yet migrated UML 1.4 elements into a database which contained the same UML 1.4 elements and which has already been migrated to UML 2. Otherwise, if started again, the UML 2 migration will create new corresponding UML 2 elements having the same GUIDs like the ones created by the previous migration.

Important

ARIS 7.x standard functionalities like **Merge** or **Definition copy** did not support UML-1.4-specific structures entirely. Therefore they could cause certain inconsistencies in the UML 1.4 structure of the database like attributes and operations owned by more than one class (i.e. the classes showed the same attributes and operations in diagrams or property dialogs). The UML 2 migration can handle such inconsistencies but might not always create the expected result. If, e.g., a UML 1.4 operation is owned by two different UML 1.4 classes the corresponding UML 2 operation is owned by exactly one of the two corresponding UML 2 classes and the other UML 2 class does not show this operation in diagrams or its properties dialog at all. We recommend fixing such inconsistencies in ARIS UML Designer 7.x before migrating a database to UML 2.

4 UML Migration Details

4.1 UML 1.4 Compatibility Profile

UML 1.4 defines several stereotypes which are either no longer supported by UML 2 at all or do not extend any longer the same meta classes. Examples for such stereotypes are **«Become»** extending dependencies or **«Table»** extending artifacts. UML 1.4 also defines for some meta classes in addition to their attributes so-called **default tagged values** which are also no longer supported by UML 2 like semantics for associations.

ARIS UML Designer 7.x provided in addition to the predefined stereotypes and default tagged values of the UML 1.4 specification some ARIS-specific stereotypes and tagged values like **«OrganizationalUnit»** extending actors or nonfunctionalRequirements defined for UseCases.

In ARIS UML Designer 9 and the following versions all these stereotypes and tagged values are provided by the UML 1.4 Compatibility Profile which is applied automatically by the UML migration if it detects stereotypes or tagged values which are no longer supported by UML 2.

After the migration the UML models should be revised by adapting them better to UML 2 or by providing corresponding user-defined profiles so that the UML 1.4 compatibility profile is not required any longer and can be detached.

UML 1.4 and UML Designer 7.x standard stereotypes and tagged values are no longer supported by UML 2:

UML 2 meta class (corresponding UML 1.4 meta class)	**Stereotype***	**Tagged Value**
Actor	ApplicationSystemType	
	Group	
	OrganizationalUnit	
	Person	
	Position	
Artifact	Table	
Association	Implicit	
CallEvent	Create	
	Destroy	
Classifier	ExtendedClassifier	isPersistent
	Metaclass	
	Powertype	

UML 2 meta class (corresponding UML 1.4 meta class)	**Stereotype***	**Tagged Value**
	Process	
	Thread	
	Utility	
Comment	Requirement	
	Responsibility	
Constraint	Invariant	
Dependency (Dependency, Flow)	Become	
	Copy	
	Flow	
Generalization	Implementation	
ObjectNode (ObjectFlowState)	SignalFlow	
RedefinableElement (Classifier, Association)	ExtendedRedefinableElement	isRoot
		semantics
Package	Facade	
	Stub	
	TopLevel	
State (State, StubState, SynchState)	StubState	
	Synchstate	
UseCase	ExtendedUseCase	changeAnnotations
		changeHistory
		contactPersons
		exceptions
		invariances
		nonfunctionalRequirements
		processDescription
		requirements
		result
		rules

UML 2 meta class (corresponding UML 1.4 meta class)	Stereotype*	Tagged Value
		services
		trigger
		variations

* All stereotype names in the UML 1.4 compatibility profile are followed by the postfix **(UML 1.4)** which has been removed from this table for better readability.

4.2 Class diagrams

If a UML 1.4 class diagram is owned by a UML 1.4 profile it is migrated into a UML 2 profile diagram.

The UML 1.4 type subsystem is no longer supported by UML 2. UML 1.4 subsystems are migrated into UML 2 components with applied UML 2 standard stereotype **«Subsystem»**.

The UML 1.4 type flow is no longer supported by UML 2. UML 1.4 flows are migrated into UML 2 dependencies with applied stereotype **«Flow (UML 1.4)»** provided by the UML 1.4 compatibility profile.

4.3 Deployment diagrams

In UML 2 there is no longer a deployment relationship between nodes and components, i.e. components can no longer be nested graphically in nodes in deployment diagrams using this relationship. It has been replaced by a deployment relationship between nodes and artifacts.

If a UML 1.4 component has a deployment relationship to a node the UML migration creates a default artifact for the component both connected by a manifestation relationship. This artifact is also connected to the node by a deployment relationship. By doing so there is still a connection between the migrated node and the migrated component.

In the migrated deployment diagram the component is still visible at the same location but it is no longer graphically nested. The diagram should be revised after migration so that the relationship between node and component should be expressed by using the newly created artifact.

4.4 State machine diagrams

UML 2 no longer supports the types **synch state** and **stub state**. Both types are migrated into standard states with corresponding stereotypes provided by the UML 1.4 compatibility profile. However affected diagrams should be revised because these states have lost their original semantics after migration.

4.5 Activity diagrams

Dependency relationships between objects and **signal send** and **signal receive** symbols are no longer supported. Affected diagrams should be revised in ARIS UML Designer 7.x before migrating them to UML 2.

4.6 Sequence diagrams

UML 1.4 uses objects as lifeline symbols in sequence diagrams at instance level (sequence diagrams at classifier level are not supported by ARIS UML Designer 7.x). In UML 2 lifeline is a new element type, so that lifeline symbols are no longer occurrences of objects which could also appear in class diagrams.

If a UML 1.4 object occurs in a sequence diagram and in a class diagram it is migrated into a UML 2 lifeline and a UML 2 instance specification.

If the UML 1.4 object has a type the property represented by the corresponding UML 2 lifeline has the corresponding UML 2 type.

4.7 Communication diagrams

While UML 1.4 collaboration diagrams at instance level (collaboration diagrams at classifier level are not supported by ARIS UML Designer 7.x) contain objects connected by links with attached stimuli, UML 2 communication diagrams contain lifelines connected by connectors with attached messages.

If a UML 1.4 link occurs in a collaboration diagram and in a class diagram it is migrated into a UML 2 connector and a UML 2 instance specification.

The remarks above about objects and lifelines in sequence diagrams are also valid for communication diagrams.