

IPM

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Chapter 1

Overview

1.1 Description

Generated Dec 18 2024 1:31 PM on server dem:TEST2 (IRIS for UNIX (Ubuntu Server 22.04 LTS for x86-64) 2024.1 (Build 262U) Thu Mar 7 2024 15:33:55 EST).

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Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Abstract	Superclass for all classes used to process lifecycle events for resources	33
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AbstractSettings	Intended use case: If you want a configuration-related class of which there will be at most one instance, that has settings with names defined in code (not just magic strings, and possibly with default values) that are configurable via the "init" command in the Package Manager shell and the Package Manager > Configuration menu item, extend AbstractSettings and add some properties, and you get all that	43
AbstractStream	46
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AttributeMetadata	53
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Base	59
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CLI	Unit tests for the "zpm" command line (although not using the "zpm" command itself)	73
ClientServer	74
CodeGeneration	75
Commands	76
Comparator	77
ComparisonAdaptor	Handles code generation of a grab bag of useful functions to be code generated, such as the following:	79

Composite	This class provides the API and interface to work with multiple Studio extensions It directs the action and lifecycle calls to corresponding primary/secondary extension class Set Inheritance to right, so that on conflict definitions, CompositeMethodOverrides.cls will take over Studio.↔ Extension.Base.cls This way, CompositeMethodOverrides.cls can override final methods in Studio	82
CompositeMethodOverrides	This class contains inheritance hacks to override final methods in Studio	84
Condition	Tested in the SatisfiesCondition method of <class>IPM.ResourceProcessor.Abstract</class>	88
Constants	Provides class parameters for the magic numbers from <class>Studio.Extension.↔ Base</class> (used in the UserAction and AfterUserAction methods)	89
ContainerClass	Used to wrap Studio document types not supported in Studio project deployments, putting the XML export in a class's XDATA block for later import	91
Copy		92
CSPApplication		95
CSPSecurity		100
DeepSeeItem		101
Default	Custom defaults for module Each <Default Name="" Value="" > element defines one parameter, that can be specified during module installation	104
Definition		106
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DependencyAnalyzer		115
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DeployedModule	Module lifecycle, but with different default handling for deployment of resources	118
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File	Wraps a set of more robust file operations	125
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FileBinaryTar	Most convenient to represent this as an integration test to reuse the integration test packages	132
FileCharacter		133
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Find	Class to enable use of <class>IPM.General.SemanticVersion.Index</class> with FIND	138
Generator		141
Global		142
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IConfigurable	Interface for classes that require some level of configuration	146
IFile	Abstract representation of a file included in an XData archive	148
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Interface	
Additional interface for source control extensions to implement to plug in to module lifecycles	159
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Resource processor to automatically export messages in given list of domains to a particular file after compilation	177
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Utility to make managing locking/unlocking easier in more complex settings	187
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Most basic information that EVERY module must have	228
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ModuleInfo	
Just a Serial Object of ModuleInfo so that it can be persisted in other objects	234
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@API.Object.Instantiable @Modifier Availability InterSystems	236
ModuleSetting	
Abstract class representing a setting applied at the the module level	238
ModuleStream	239
ModuleTemplate	240
MsgDomain	
Registered object representation of a domain in a localized error message document	243
MsgFile	
Registered object representation of a localized error message document	244

NamespaceConfig	Provides information on how to configure the namespace used for the Verify phase (for integration tests), and perhaps also at some point the settings used for a new namespace created to install an application-packaged module	245
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ProcessorDefault		255
Projection	Custom Studio document projection class to ensure that metadata globals are included in Studio Project exports	257
PropertyParameters		257
PropertyParams	Property parameter class for <code><class>IPM.Util.ComparisonAdaptor</class></code>	257
PublishManager		259
PublishService		261
QualifiedModuleInfo	Just a Resolved Module reference with a bit more information about which repository the module is located in	261
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RegExString	A string datatype definition which extends <code><class>Library.String</class></code> with additional regex pattern validation	264
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Scopes	This is an integration test because it creates data	281
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SemanticVersionExpression		289
Settings	This class contains general package manager settings that are configurable via the Package Manager > Configuration section of the Studio extension	290
Singleton	General class to extend to add a "singleton" interface to any registered or persistent class	292
StandaloneFormBuilder		294
StudioProject	Supports packaging and installing modules from Studio projects	294
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TempFileManager	Helper class to ensure temp files/folders are cleaned up @API.Object @Modifier Availability InterSystems @API.Object.Instantiable @Modifier Availability Forbidden	299
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UniversalSettings	IPM settings are placed in <code>^IPM.settings</code> global in SYS namespace Use this class to set or get settings	309
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XDataArchive	
This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance	316
XMLCommentHandler	
Use: Extracts XML comments from a document and allows them to be added back in later, assuming that the XPath paths to their previous locations are still valid	318
XSLTProvider	323

Chapter 5

Namespace Documentation

5.1 `_.IPM` Namespace Reference

Documentation for the `_.IPM` package.

Namespaces

- [CLI](#)
Documentation for the `_.IPM.CLI` package.
- [DataType](#)
Documentation for the `_.IPM.DataType` package.
- [ExtensionBase](#)
Documentation for the `_.IPM.ExtensionBase` package.
- [General](#)
Documentation for the `_.IPM.General` package.
- [JSON](#)
Documentation for the `_.IPM.JSON` package.
- [Lifecycle](#)
Documentation for the `_.IPM.Lifecycle` package.
- [Repo](#)
Documentation for the `_.IPM.Repo` package.
- [ResourceProcessor](#)
Documentation for the `_.IPM.ResourceProcessor` package.
- [Storage](#)
Documentation for the `_.IPM.Storage` package.
- [StudioDocument](#)
Documentation for the `_.IPM.StudioDocument` package.
- [Test](#)
Documentation for the `_.IPM.Test` package.
- [Utils](#)
Documentation for the `_.IPM.Utils` package.

Classes

- class [CLI](#)
- class [DependencyAnalyzer](#)
- class [Main](#)

5.1.1 Detailed Description

Documentation for the [_IPM](#) package.

5.2 [_IPM.CLI](#) Namespace Reference

Documentation for the [_IPM.CLI](#) package.

Classes

- class [Commands](#)

5.2.1 Detailed Description

Documentation for the [_IPM.CLI](#) package.

5.3 [_IPM.DataType](#) Namespace Reference

Documentation for the [_IPM.DataType](#) package.

Classes

- class [GlobalReference](#)
- class [ListOfOptions](#)
- class [ModuleName](#)
- class [RegExString](#)

A string datatype definition which extends `<class>Library.String</class>` with additional regex pattern validation.

- class [ResourceName](#)

5.3.1 Detailed Description

Documentation for the [_IPM.DataType](#) package.

5.4 [_IPM.ExtensionBase](#) Namespace Reference

Documentation for the [_IPM.ExtensionBase](#) package.

Namespaces

- [ServerMenu](#)

Documentation for the [_IPM.ExtensionBase.ServerMenu](#) package.

- [SourceControl](#)

Documentation for the [_IPM.ExtensionBase.SourceControl](#) package.

Classes

- class [Composite](#)

This class provides the API and interface to work with multiple Studio extensions It directs the action and lifecycle calls to corresponding primary/secondary extension class Set Inheritance to right, so that on conflict definitions, CompositeMethodOverrides.cls will take over Studio.Extension.Base.cls This way, CompositeMethodOverrides.cls can override final methods in Studio.

- class [CompositeMethodOverrides](#)

This class contains inheritance hacks to override final methods in Studio.

- class [Constants](#)

Provides class parameters for the magic numbers from `<class>Studio.Extension.Base</class>` (used in the `User←Action` and `AfterUserAction` methods).

- class [ResourceMappingCache](#)

- class [UniversalSettings](#)

- class [Utils](#)

5.4.1 Detailed Description

Documentation for the [_IPM.ExtensionBase](#) package.

5.5 [_IPM.ExtensionBase.ServerMenu](#) Namespace Reference

Documentation for the [_IPM.ExtensionBase.ServerMenu](#) package.

Classes

- class [Interface](#)

Additional interface for server menu source control extensions to implement.

5.5.1 Detailed Description

Documentation for the [_IPM.ExtensionBase.ServerMenu](#) package.

5.6 [_IPM.ExtensionBase.SourceControl](#) Namespace Reference

Documentation for the [_IPM.ExtensionBase.SourceControl](#) package.

Classes

- class [Interface](#)
Additional interface for source control extensions to implement to plug in to module lifecycles.
- class [ResourceInfo](#)

5.6.1 Detailed Description

Documentation for the [_IPM.ExtensionBase.SourceControl](#) package.

5.7 [_IPM.General](#) Namespace Reference

Documentation for the [_IPM.General](#) package.

Namespaces

- [LogManager](#)
Documentation for the [_IPM.General.LogManager](#) package.
- [SemanticVersion](#)
Documentation for the [_IPM.General.SemanticVersion](#) package.
- [SemanticVersionExpression](#)
Documentation for the [_IPM.General.SemanticVersionExpression](#) package.

Classes

- class [AbstractSettings](#)
Intended use case: If you want a configuration-related class of which there will be at most one instance, that has settings with names defined in code (not just magic strings, and possibly with default values) that are configurable via the "init" command in the Package Manager shell and the Package Manager > Configuration menu item, extend [AbstractSettings](#) and add some properties, and you get all that.
- class [Archive](#)
- class [IConfigurable](#)
Interface for classes that require some level of configuration.
- class [InstallContext](#)
- class [LogManager](#)
- class [ModuleInfo](#)
Most basic information that EVERY module must have.
- class [SASchema](#)
- class [SemanticVersion](#)
- class [SemanticVersionExpression](#)
- class [Settings](#)
This class contains general package manager settings that are configurable via the Package Manager > Configuration section of the Studio extension.
- class [Singleton](#)
General class to extend to add a "singleton" interface to any registered or persistent class.

5.7.1 Detailed Description

Documentation for the [_IPM.General](#) package.

5.8 [_IPM.General.LogManager](#) Namespace Reference

Documentation for the [_IPM.General.LogManager](#) package.

Classes

- class [Message](#)

5.8.1 Detailed Description

Documentation for the [_IPM.General.LogManager](#) package.

5.9 [_IPM.General.SemanticVersion](#) Namespace Reference

Documentation for the [_IPM.General.SemanticVersion](#) package.

Classes

- class [Find](#)
Class to enable use of `<class>IPM.General.SemanticVersion.Index</class>` with `FIND`.
- class [Index](#)

5.9.1 Detailed Description

Documentation for the [_IPM.General.SemanticVersion](#) package.

5.10 [_IPM.General.SemanticVersionExpression](#) Namespace Reference

Documentation for the [_IPM.General.SemanticVersionExpression](#) package.

Classes

- class [Comparator](#)
- class [Range](#)

5.10.1 Detailed Description

Documentation for the [_IPM.General.SemanticVersionExpression](#) package.

5.11 [_IPM.JSON](#) Namespace Reference

Documentation for the [_IPM.JSON](#) package.

Classes

- class [Adaptor](#)
- class [Generator](#)

5.11.1 Detailed Description

Documentation for the [_IPM.JSON](#) package.

5.12 [_IPM.Lifecycle](#) Namespace Reference

Documentation for the [_IPM.Lifecycle](#) package.

Namespaces

- [StudioProject](#)
Documentation for the [_IPM.Lifecycle.StudioProject](#) package.

Classes

- class [Base](#)
- class [DeployedModule](#)
[Module](#) lifecycle, but with different default handling for deployment of resources.
- class [Module](#)
- class [StudioProject](#)
Supports packaging and installing modules from Studio projects.

5.12.1 Detailed Description

Documentation for the [_IPM.Lifecycle](#) package.

5.13 [_IPM.Lifecycle.StudioProject](#) Namespace Reference

Documentation for the [_IPM.Lifecycle.StudioProject](#) package.

Namespaces

- [XDataArchive](#)

Documentation for the `_.IPM.Lifecycle.StudioProject.XDataArchive` package.

Classes

- class [ContainerClass](#)

Used to wrap Studio document types not supported in Studio project deployments, putting the XML export in a class's XDATA block for later import.

- class [XDataArchive](#)

This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance.

5.13.1 Detailed Description

Documentation for the `_.IPM.Lifecycle.StudioProject` package.

5.14 `_.IPM.Lifecycle.StudioProject.XDataArchive` Namespace Reference

Documentation for the `_.IPM.Lifecycle.StudioProject.XDataArchive` package.

Classes

- class [FileBinary](#)
- class [FileCharacter](#)
- class [IFile](#)

Abstract representation of a file included in an XData archive.

5.14.1 Detailed Description

Documentation for the `_.IPM.Lifecycle.StudioProject.XDataArchive` package.

5.15 `_.IPM.Repo` Namespace Reference

Documentation for the `_.IPM.Repo` package.

Namespaces

- [Filesystem](#)

Documentation for the `_.IPM.Repo.Filesystem` package.

- [Remote](#)

Documentation for the `_.IPM.Repo.Remote` package.

Classes

- class [Definition](#)
- class [IPackageService](#)
- class [IPublishService](#)
- class [Manager](#)
- class [SearchCriteria](#)
- class [UniversalSettings](#)
 - IPM settings are placed in ^IPM.settings global in SYS namespace Use this class to set or get settings.*
- class [Utils](#)
- class [XSLTProvider](#)

5.15.1 Detailed Description

Documentation for the [_IPM.Repo](#) package.

5.16 [_IPM.Repo.Filesystem](#) Namespace Reference

Documentation for the [_IPM.Repo.Filesystem](#) package.

Classes

- class [Cache](#)
- class [Definition](#)
- class [PackageService](#)

5.16.1 Detailed Description

Documentation for the [_IPM.Repo.Filesystem](#) package.

5.17 [_IPM.Repo.Remote](#) Namespace Reference

Documentation for the [_IPM.Repo.Remote](#) package.

Classes

- class [Definition](#)
- class [Info](#)
- class [ModuleInfo](#)
- class [PackageService](#)
- class [PublishManager](#)
- class [PublishService](#)

5.17.1 Detailed Description

Documentation for the `_.IPM.Repo.Remote` package.

5.18 `_.IPM.ResourceProcessor` Namespace Reference

Documentation for the `_.IPM.ResourceProcessor` package.

Namespaces

- [Default](#)

Documentation for the `_.IPM.ResourceProcessor.Default` package.

- [LocalizationExport](#)

Documentation for the `_.IPM.ResourceProcessor.LocalizationExport` package.

Classes

- class [Abstract](#)

Superclass for all classes used to process lifecycle events for resources.

- class [AbstractCompilable](#)
- class [Copy](#)
- class [CSPApplication](#)
- class [FileCopy](#)
- class [LegacyLocalizedMessages](#)
- class [LocalizationExport](#)

Resource processor to automatically export messages in given list of domains to a particular file after compilation.

- class [ModuleExport](#)
- class [PropertyParameters](#)
- class [Test](#)
- class [UnitTest](#)

Deprecated.

- class [WebApplication](#)

5.18.1 Detailed Description

Documentation for the `_.IPM.ResourceProcessor` package.

5.19 `_.IPM.ResourceProcessor.Default` Namespace Reference

Documentation for the `_.IPM.ResourceProcessor.Default` package.

Classes

- class [Class](#)
- class [DeepSeelItem](#)
- class [Document](#)
- class [Global](#)
- class [Include](#)
- class [Interoperability](#)
- class [LocalizedMessages](#)
- class [Package](#)
- class [Routine](#)

5.19.1 Detailed Description

Documentation for the [_IPM.ResourceProcessor.Default](#) package.

5.20 [_IPM.ResourceProcessor.LocalizationExport](#) Namespace Reference

Documentation for the [_IPM.ResourceProcessor.LocalizationExport](#) package.

Classes

- class [MsgDomain](#)
Registered object representation of a domain in a localized error message document.
- class [MsgFile](#)
Registered object representation of a localized error message document.

5.20.1 Detailed Description

Documentation for the [_IPM.ResourceProcessor.LocalizationExport](#) package.

5.21 [_IPM.Storage](#) Namespace Reference

Documentation for the [_IPM.Storage](#) package.

Namespaces

- [ModuleSetting](#)
Documentation for the [_IPM.Storage.ModuleSetting](#) package.

Classes

- class [InvokeReference](#)
- class [LoadedResource](#)
- class [MappingReference](#)
- class [Module](#)
- class [ModuleAuthorInfo](#)
- class [ModuleInfo](#)
 - Just a Serial Object of [ModuleInfo](#) so that it can be persisted in other objects.*
- class [ModuleReference](#)
 - @API.Object.Instantiable @Modifier Availability InterSystems*
- class [ModuleSetting](#)
 - Abstract class representing a setting applied at the the module level.*
- class [ModuleTemplate](#)
- class [QualifiedModuleInfo](#)
 - Just a Resolved [Module](#) reference with a bit more information about which repository the module is located in.*
- class [ResourceReference](#)
- class [SystemRequirements](#)

5.21.1 Detailed Description

Documentation for the `_.IPM.Storage` package.

5.22 `_.IPM.Storage.ModuleSetting` Namespace Reference

Documentation for the `_.IPM.Storage.ModuleSetting` package.

Namespaces

- [ProcessorDefault](#)
 - Documentation for the `_.IPM.Storage.ModuleSetting.ProcessorDefault` package.*

Classes

- class [Default](#)
 - Custom defaults for module Each `<Default Name="" Value="">` element defines one parameter, that can be specified during module installation.*
- class [NamespaceConfig](#)
 - Provides information on how to configure the namespace used for the Verify phase (for integration tests), and perhaps also at some point the settings used for a new namespace created to install an application-packaged module.*
- class [Parameter](#)
- class [ProcessorDefault](#)

5.22.1 Detailed Description

Documentation for the `_.IPM.Storage.ModuleSetting` package.

5.23 [_IPM.Storage.ModuleSetting.ProcessorDefault](#) Namespace Reference

Documentation for the [_IPM.Storage.ModuleSetting.ProcessorDefault](#) package.

Classes

- class [Condition](#)

Tested in the SatisfiesCondition method of `<class>IPM.ResourceProcessor.Abstract</class>`

5.23.1 Detailed Description

Documentation for the [_IPM.Storage.ModuleSetting.ProcessorDefault](#) package.

5.24 [_IPM.StudioDocument](#) Namespace Reference

Documentation for the [_IPM.StudioDocument](#) package.

Classes

- class [Abstract](#)
- class [AbstractStream](#)
- class [LocalizedMessages](#)
- class [LocalizedMessageStream](#)
- class [Module](#)
- class [ModuleStream](#)
- class [Projection](#)

Custom Studio document projection class to ensure that metadata globals are included in Studio Project exports.

5.24.1 Detailed Description

Documentation for the [_IPM.StudioDocument](#) package.

5.25 [_IPM.Test](#) Namespace Reference

Documentation for the [_IPM.Test](#) package.

Classes

- class [JUnitOutput](#)
- class [Manager](#)
- class [Utils](#)

5.25.1 Detailed Description

Documentation for the [_IPM.Test](#) package.

5.26 [_IPM.Utils Namespace Reference](#)

Documentation for the [_IPM.Utils](#) package.

Namespaces

- [ComparisonAdaptor](#)

Documentation for the [_IPM.Utils.ComparisonAdaptor](#) package.

Classes

- class [Build](#)
- class [Class](#)
- class [CodeGeneration](#)
- class [ComparisonAdaptor](#)

Handles code generation of a grab bag of useful functions to be code generated, such as the following:

- class [File](#)

Wraps a set of more robust file operations.

- class [FileBinaryTar](#)
- class [InterruptManager](#)

Handles setting of "break" to avoid Ctr-C breaking the instance when called during critical sections.

- class [LegacyCompat](#)
- class [LockManager](#)

Utility to make managing locking/unlocking easier in more complex settings.

- class [Migration](#)
- class [Module](#)
- class [TempFileManager](#)

Helper class to ensure temp files/folders are cleaned up @API.Object @Modifier Availability InterSystems @↔ API.Object.Instantiable @Modifier Availability Forbidden.

- class [XMLCommentHandler](#)

Use: Extracts XML comments from a document and allows them to be added back in later, assuming that the XPath paths to their previous locations are still valid.

5.26.1 Detailed Description

Documentation for the [_IPM.Utils](#) package.

5.27 [_IPM.Utils.ComparisonAdaptor Namespace Reference](#)

Documentation for the [_IPM.Utils.ComparisonAdaptor](#) package.

Classes

- class [PropertyParams](#)

Property parameter class for <class>IPM.Utils.ComparisonAdaptor</class>

5.27.1 Detailed Description

Documentation for the [_IPM.Utils.ComparisonAdaptor](#) package.

5.28 IPM Namespace Reference

Documentation for the [IPM](#) package.

Classes

- class [Installer](#)

5.28.1 Detailed Description

Documentation for the [IPM](#) package.

5.29 Test.PM.Integration Namespace Reference

Documentation for the [Test.PM.Integration](#) package.

Classes

- class [Base](#)
- class [ClientServer](#)
- class [DependencyResolution](#)
- class [FileBinaryTar](#)

Most convenient to represent this as an integration test to reuse the integration test packages.

- class [Health](#)
- class [InstallApplication](#)
- class [InstallModule](#)
- class [Interoperability](#)
- class [Mappings](#)
- class [Resources](#)
- class [Scopes](#)

This is an integration test because it creates data.

- class [StandaloneFormBuilder](#)

5.29.1 Detailed Description

Documentation for the [Test.PM.Integration](#) package.

5.30 Test.PM.Unit Namespace Reference

Documentation for the [Test.PM.Unit](#) package.

Namespaces

- [ResourceProcessor](#)
Documentation for the [Test.PM.Unit.ResourceProcessor](#) package.
- [SemVer](#)
Documentation for the [Test.PM.Unit.SemVer](#) package.

Classes

- class [Annotations](#)
Some text up here.
- class [Archive](#)
- class [CLI](#)
Unit tests for the "zpm" command line (although not using the "zpm" command itself)
- class [CSPSecurity](#)
- class [Module](#)
- class [ResourceReference](#)
- class [UniversalSettings](#)

5.30.1 Detailed Description

Documentation for the [Test.PM.Unit](#) package.

5.31 Test.PM.Unit.ResourceProcessor Namespace Reference

Documentation for the [Test.PM.Unit.ResourceProcessor](#) package.

Classes

- class [AttributeMetadata](#)

5.31.1 Detailed Description

Documentation for the [Test.PM.Unit.ResourceProcessor](#) package.

5.32 Test.PM.Unit.SemVer Namespace Reference

Documentation for the [Test.PM.Unit.SemVer](#) package.

Classes

- class [Abstract](#)
- class [Expressions](#)
- class [Versions](#)

5.32.1 Detailed Description

Documentation for the [Test.PM.Unit.SemVer](#) package.

Public Member Functions

- [OnGetStudioProject](#) (`_.Studio.Project pProject, _.Library.Boolean pHandled`)
Subclasses may override to customize the studio project.
- [OnGetUniqueName](#) (`pUniqueName`)
Returns a unique name for this resource.
- `_.Library.String` [OnItemRelativePath](#) (`_.Library.String pItemName`)
Returns the path relative to the module root for item `pItemName` within this resource.
- `_.Library.Status` [OnPhase](#) (`_.Library.String pPhase, pParams, _.Library.Boolean pResourceHandled`)
Called as phase `pPhase` is executed for the resource.

Public Attributes

- [Params](#)

Static Public Attributes

- [ATTRIBUTES](#) = None
Comma-separated list of resource attribute names that this processor uses.
- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)

Private Member Functions

- [__CopyDefaultAttributes](#) (`_.IPM.Storage.ModuleSetting.ProcessorDefault pSource`)
Generated similarly to `<method>CopyAttributes</method>`

Private Attributes

- [__ResourceReference](#)

6.1.1 Detailed Description

Superclass for all classes used to process lifecycle events for resources.

6.1.2 Member Function Documentation

6.1.2.1 OnGetStudioProject()

```
OnGetStudioProject (
    _ .Studio.Project pProject,
    _ .Library.Boolean pHandled )
```

Subclasses may override to customize the studio project.

(e.g., things that use web applications will do this.)

Reimplemented in [CSPApplication](#).

6.1.2.2 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

Default implementation, leaving *pUniqueName* undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented in [Document](#), [DeepSeeltem](#), [WebApplication](#), [Test](#), [CSPApplication](#), and [Copy](#).

6.1.2.3 OnPhase()

```
_ .Library.Status OnPhase (
    _ .Library.String pPhase,
    pParams,
    _ .Library.Boolean pResourceHandled )
```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented in [LocalizedMessages](#), [Global](#), [Document](#), [DeepSeeltem](#), [WebApplication](#), [Test](#), [FileCopy](#), and [Copy](#).

6.1.3 Member Data Documentation

6.1.3.1 Params

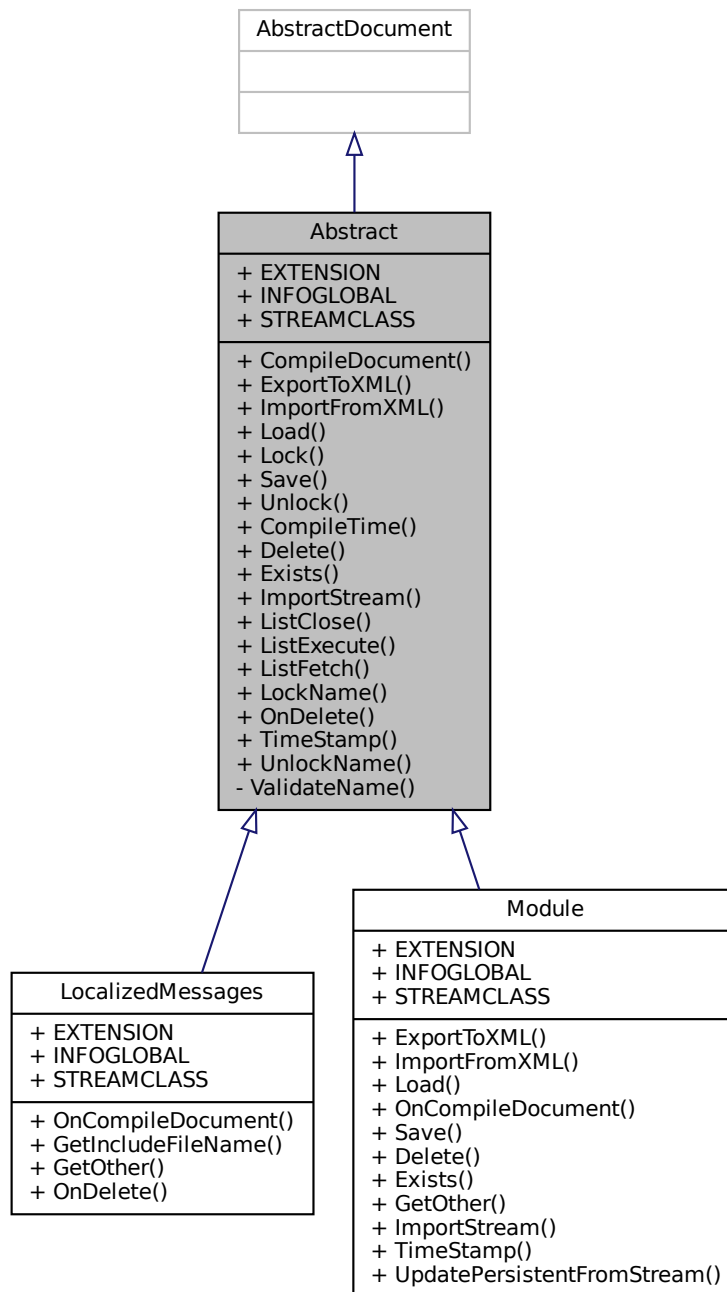
Params

6.1.3.2 __ResourceReference

`__ResourceReference [private]`

6.2 Abstract Class Reference

Inheritance diagram for Abstract:



Public Member Functions

- `_.Library.Status CompileDocument (_.Library.String qstruct)`
CompileDocument is called when the document is to be compiled.

- `_.Library.Status ExportToXML` (`_.Library.String` flags)
Export this document to the current device in XML format.
- `_.Library.Status ImportFromXML` (`_.Library.RegisteredObject` stream, `_.Library.String` flags)
Import from the stream in XML format.
- `_.Library.Status Load` ()
Loads the instance of `..#<parameter>STREAMCLASS</parameter>` identified by `<property>Name</property>` into the stream `<property>Code</property>`
- `_.Library.Status Lock` (`_.Library.String` flags)
Lock the current routine, default method just unlocks the `^ROUTINE` global with the name of the routine.
- `_.Library.Status Save` ()
Save the module definition document.
- `_.Library.Status Unlock` (`_.Library.String` flags)
Unlock the current routine, default method just unlocks the `^ROUTINE` global with the name of the routine.

Static Public Member Functions

- `_.Library.TimeStamp CompileTime` (`_.Library.String` name)
Return the compile time of routine 'name' in TimeStamp format.
- `_.Library.Status Delete` (`_.Library.String` name)
Deletes the instance of `..#<parameter>STREAMCLASS</parameter>` identified by name
- `_.Library.Boolean Exists` (`_.Library.String` name)
Return 1 if the given document exists and 0 if it does not.
- `_.Library.Status ImportStream` (`_.Library.String` pName, `_.Library.GlobalCharacterStream` pStream)
Saves the document in pStream to the database as an instance of `..#<parameter>STREAMCLASS</parameter>`, with name pName
- `_.Library.Status LockName` (`_.Library.String` name)
Called from `Library.RoutineMgr:LockItem` to lock a document by name (including extension)
- `_.Library.Status OnDelete` (`_.Library.String` name)
Subclasses may override to take additional steps during deletion.
- `_.Library.TimeStamp TimeStamp` (`_.Library.String` name)
Return the timestamp of schema category 'name' in TimeStamp format, i.e.
- `_.Library.Status UnlockName` (`_.Library.String` name)
Called from `Library.RoutineMgr:UnlockItem` to unlock a document by name (including extension)

Static Public Attributes

- `STREAMCLASS` = None
Optional subclass of `IPM.StudioDocument.AbstractStream` that stores code in a character stream.

6.2.1 Member Function Documentation

6.2.1.1 CompileDocument()

```
_.Library.Status CompileDocument (
    _.Library.String qstruct )
```

CompileDocument is called when the document is to be compiled.

It has already called the source control hooks at this point

6.2.1.2 CompileTime()

```
_.Library.TimeStamp CompileTime (
    _.Library.String name ) [static]
```

Return the compile time of routine 'name' in TimeStamp format.

The format should be \$zdatetime(\$horolog,3),

or "" if the routine does not exist.

6.2.1.3 Lock()

```
_.Library.Status Lock (
    _.Library.String flags )
```

Lock the current routine, default method just unlocks the ^ROUTINE global with the name of the routine.

If it fails then return a status code of the error, otherwise return \$\$\$OK

6.2.1.4 OnDelete()

```
_.Library.Status OnDelete (
    _.Library.String name ) [static]
```

Subclasses may override to take additional steps during deletion.

The caller handles transactions.

Reimplemented in [LocalizedMessages](#).

6.2.1.5 TimeStamp()

```
_.Library.TimeStamp TimeStamp (
    _.Library.String name ) [static]
```

Return the timestamp of schema category 'name' in TimeStamp format, i.e.

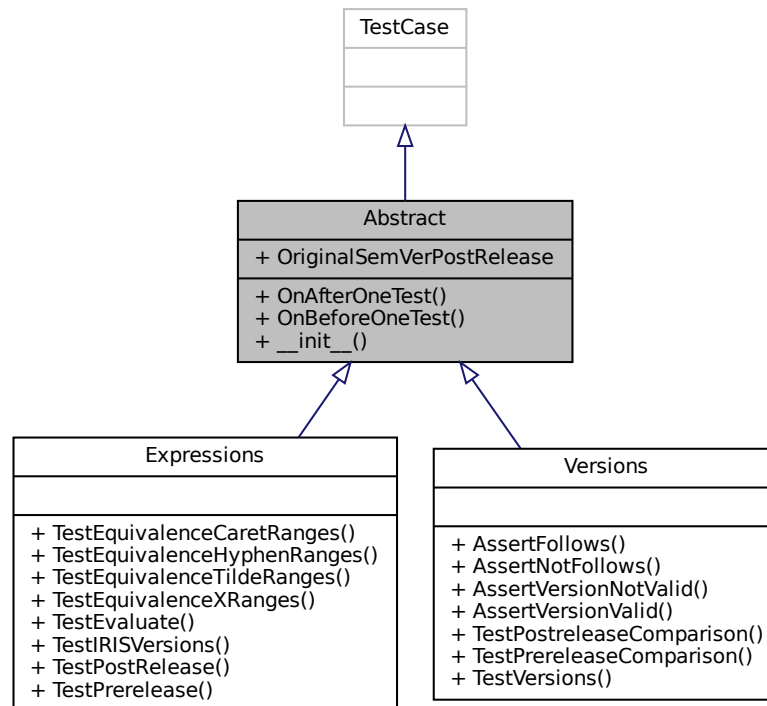
\$zdatetime(\$horolog,3).

This is used to determine if the category has been updated on the server and so needs reloading into Studio. So the format should be \$zdatetime(\$horolog,3), or "" if the category does not exist.

Reimplemented in [Module](#).

6.3 Abstract Class Reference

Inheritance diagram for Abstract:



Public Member Functions

- `_.Library.Status OnAfterOneTest (_.Library.String testname)`
After each test, restore the original value of the SemVerPostRelease setting.
- `_.Library.Status OnBeforeOneTest (_.Library.String testname)`
Before each test, record the original value of the SemVerPostRelease setting and set it to 0 for a clean slate.

Public Attributes

- `OriginalSemVerPostRelease`
Original value of the SemVerPostRelease setting.

6.3.1 Member Data Documentation

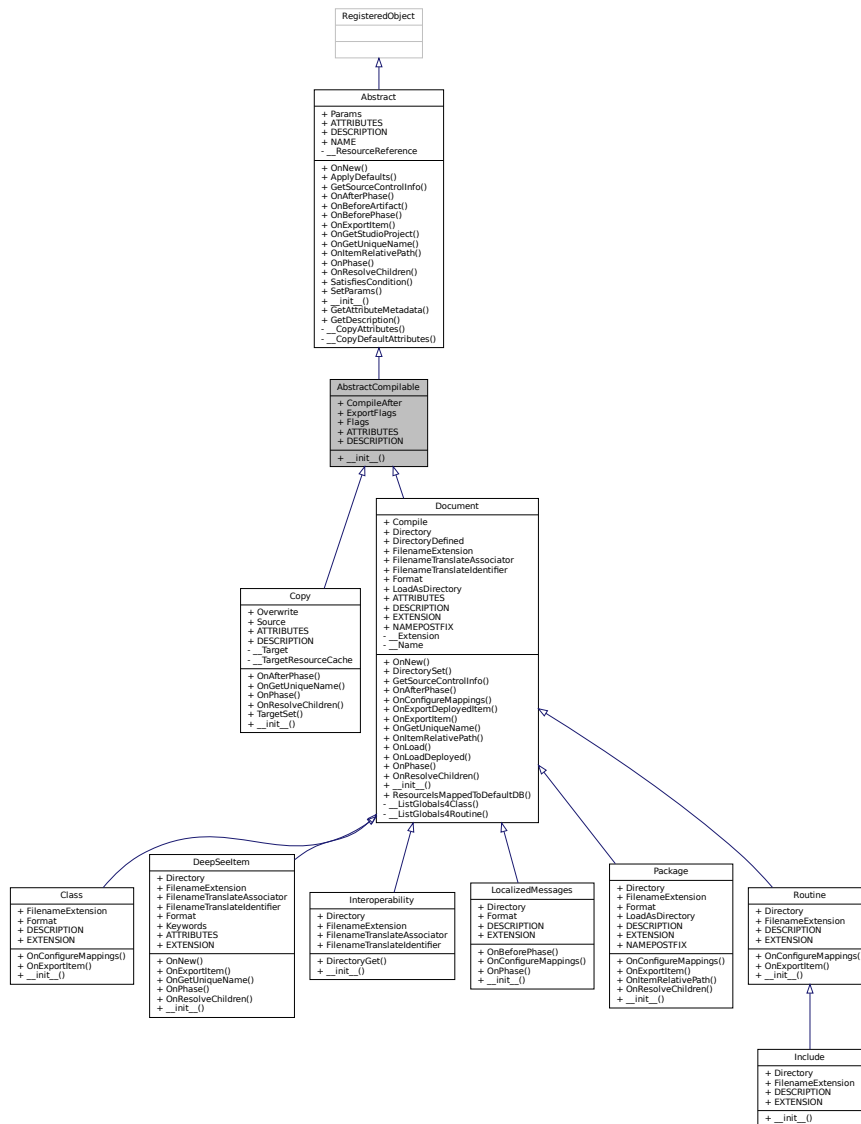
6.3.1.1 OriginalSemVerPostRelease

OriginalSemVerPostRelease

Original value of the SemVerPostRelease setting.

6.4 AbstractCompilable Class Reference

Inheritance diagram for AbstractCompilable:



Public Attributes

- [CompileAfter](#)

Comma-separated list of resource names after which this resource should be compiled.

- [ExportFlags](#)

Flags/qualifiers to export items with.

- [Flags](#)

Flags/qualifiers to compile with (overriding any more general defaults); "verbose" added per lifecycle command.

Static Public Attributes

- [ATTRIBUTES](#) = None

Comma-separated list of resource attribute names that this processor uses.

- [DESCRIPTION](#) = None

Description of resource processor class (shown in UI)

Additional Inherited Members

6.4.1 Member Data Documentation

6.4.1.1 CompileAfter

CompileAfter

Comma-separated list of resource names after which this resource should be compiled.

6.4.1.2 ExportFlags

ExportFlags

Flags/qualifiers to export items with.

6.4.1.3 Flags

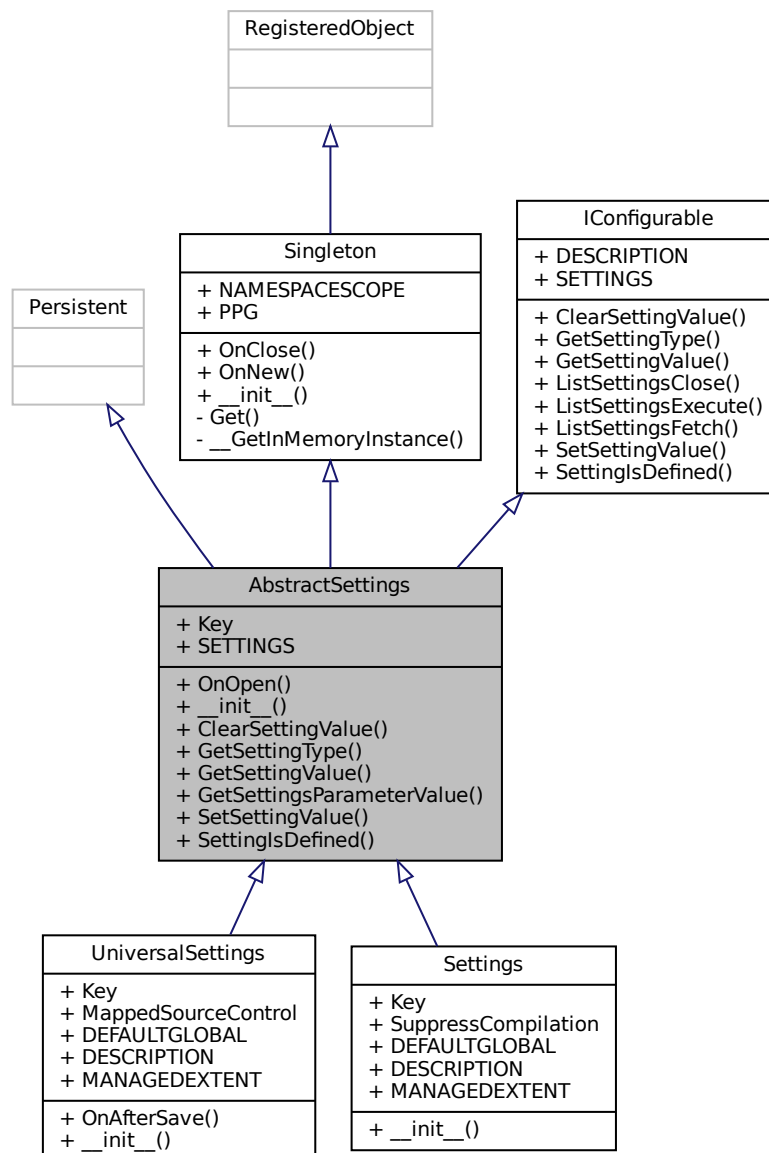
Flags

Flags/qualifiers to compile with (overriding any more general defaults); "verbose" added per lifecycle command.

6.5 AbstractSettings Class Reference

Intended use case: If you want a configuration-related class of which there will be at most one instance, that has settings with names defined in code (not just magic strings, and possibly with default values) that are configurable via the "init" command in the Package Manager shell and the Package Manager > Configuration menu item, extend [AbstractSettings](#) and add some properties, and you get all that.

Inheritance diagram for AbstractSettings:



Public Member Functions

- `_.Library.Status OnOpen ()`

For properties without a defined value in data, automatically populates with the InitialExpression for that property.

Static Public Member Functions

- `_.Library.Status ClearSettingValue` (`_.Library.String pName`)
Clears value of setting pName
- `_.Library.String GetSettingType` (`_.Library.String pName`)
Returns the datatype of a setting, as one of:
- `_.Library.String GetSettingValue` (`_.Library.String pName`)
Clears value of setting pName
- `_.Library.String GetSettingsParameterValue` ()
*Returns a list of all properties available as "settings" (for *IConfigurable*),.*
- `_.Library.Status SetSettingValue` (`_.Library.String pName`, `_.Library.String pValue`)
Sets setting pName to pValue.
- `_.Library.Boolean SettingsDefined` (`_.Library.String pName`)
Returns true if a value is defined for setting pName.

Public Attributes

- `Key`

Static Public Attributes

- `SETTINGS = None`
A delimited string in the format:

6.5.1 Detailed Description

Intended use case: If you want a configuration-related class of which there will be at most one instance, that has settings with names defined in code (not just magic strings, and possibly with default values) that are configurable via the "init" command in the Package Manager shell and the Package Manager > Configuration menu item, extend [AbstractSettings](#) and add some properties, and you get all that.

The description of the settings is taken from the triple-slash documentation for them.

6.5.2 Member Function Documentation

6.5.2.1 OnOpen()

```
_.Library.Status OnOpen ( )
```

For properties without a defined value in data, automatically populates with the InitialExpression for that property.

(Only handles properties in the default storage for the class.)

6.5.2.2 GetSettingType()

```
_.Library.String GetSettingType (
    _.Library.String pName ) [static]
```

Returns the datatype of a setting, as one of:

boolean, string The default implementation is to always return "string"

Reimplemented from [IConfigurable](#).

6.5.2.3 GetSettingsParameterValue()

```
_.Library.String GetSettingsParameterValue ( ) [static]
```

Returns a list of all properties available as "settings" (for [IConfigurable](#)),.

along with their triple-slash comments as descriptions. Omits calculated, multidimensional, transient, and read-only properties.

6.5.2.4 SetSettingValue()

```
_.Library.Status SetSettingValue (
    _.Library.String pName,
    _.Library.String pValue ) [static]
```

Sets setting *pName* to *pValue*.

Should return an error Status if *pValue* is invalid.

Reimplemented from [IConfigurable](#).

6.5.3 Member Data Documentation

6.5.3.1 SETTINGS

```
SETTINGS = None [static]
```

A delimited string in the format:

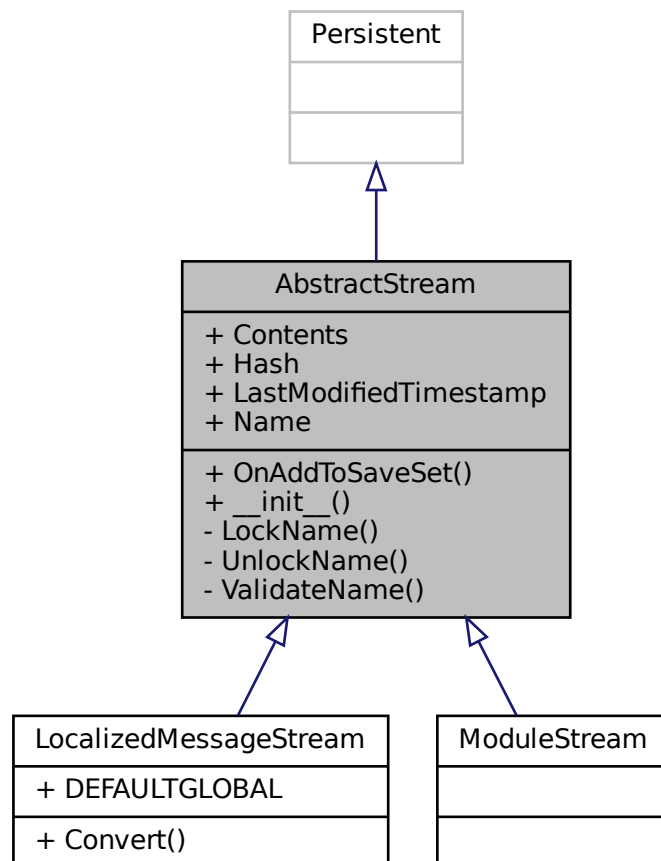
Key:Description[|Key:Description...]

6.5.3.2 Key

Key

6.6 AbstractStream Class Reference

Inheritance diagram for AbstractStream:



Public Member Functions

- `__Library.Status OnAddToSaveSet (__Library.Integer depth, __Library.Integer insert, __Library.Integer call-count)`

This callback method is invoked when the current object is added to the SaveSet.

Public Attributes

- [Contents](#)
- [Hash](#)
- [LastModifiedTimestamp](#)
- [Name](#)

Static Private Member Functions

- `_.Library.Status LockName` (`_.Library.String pName`, `_.Library.Boolean pShared`, `_.Library.Integer pTimeout`)
Given a document name (including extension), lock it and report a descriptive error if the lock fails.
- `_.Library.Status UnlockName` (`_.Library.String pName`, `_.Library.Boolean pShared`, `_.Library.Boolean pImmediate`)
Given a document name (including extension), unlock it.
- `_.Library.Status ValidateName` (`_.Library.String pName`, `_.Library.String pLogicalName`)
Ensures that pName is a valid Studio document name (including / based on extension) for this stream class.

6.6.1 Member Function Documentation

6.6.1.1 OnAddToSaveSet()

```
_.Library.Status OnAddToSaveSet (
    _.Library.Integer depth,
    _.Library.Integer insert,
    _.Library.Integer callcount )
```

This callback method is invoked when the current object is added to the SaveSet,.

either because Save() was invoked on this object or on an object that references this object. OnAddToSaveSet can modify the current object. It can also add other objects to the current SaveSet by invoking AddToSaveSet or remove objects by calling RemoveFromSaveSet.

If this method returns an error status then Save() will fail and the transaction will be rolled back.

6.6.2 Member Data Documentation

6.6.2.1 Contents

Contents

6.6.2.2 Hash

Hash

6.6.2.3 LastModifiedTimestamp

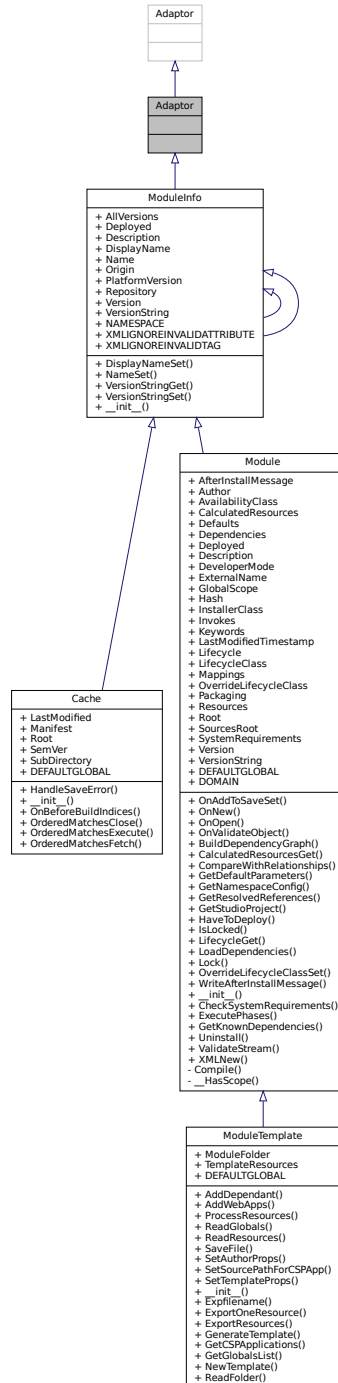
LastModifiedTimestamp

6.6.2.4 Name

Name

6.7 Adaptor Class Reference

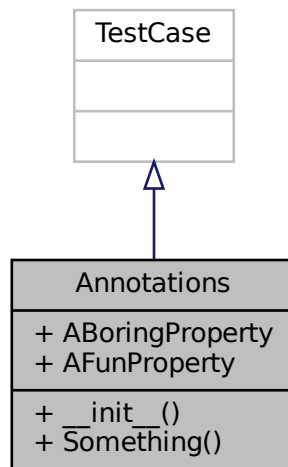
Inheritance diagram for Adaptor:



6.8 Annotations Class Reference

Some text up here.

Inheritance diagram for Annotations:



Static Public Member Functions

- [Something \(\)](#)
@Deprecated

Public Attributes

- [ABoringProperty](#)
No annotations here.
- [AFunProperty](#)
@Fun

6.8.1 Detailed Description

Some text up here.

@SampleTestClass

6.8.2 Member Data Documentation

6.8.2.1 ABoringProperty

ABoringProperty

No annotations here.

6.8.2.2 AFunProperty

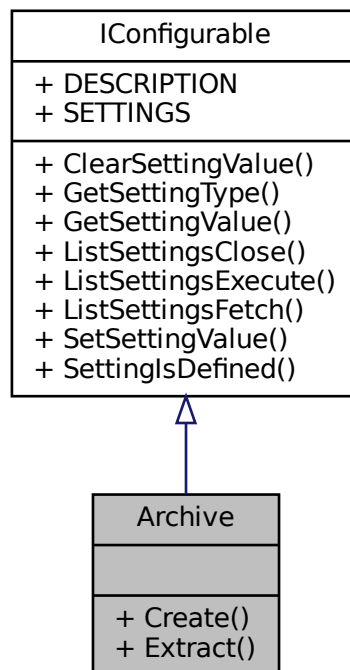
AFunProperty

@Fun

No annotations here.

6.9 Archive Class Reference

Inheritance diagram for Archive:



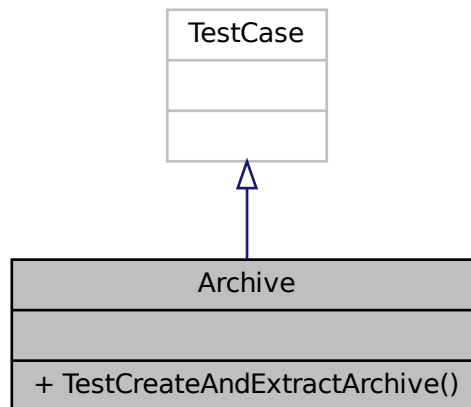
Static Public Member Functions

- `_.Library.Status Create` (`_.Library.String pSourceDirectory`, `_.Library.String pArchiveFileName`, `pOutput`)
Creates an archive with the contents of `pSourceDirectory` in `pArchiveFileName`
- `_.Library.Status Extract` (`_.Library.String pArchiveFileName`, `_.Library.String pTargetDirectory`, `pOutput`)
Extracts the contents of `pArchiveFileName` into `pTargetDirectory`

Additional Inherited Members

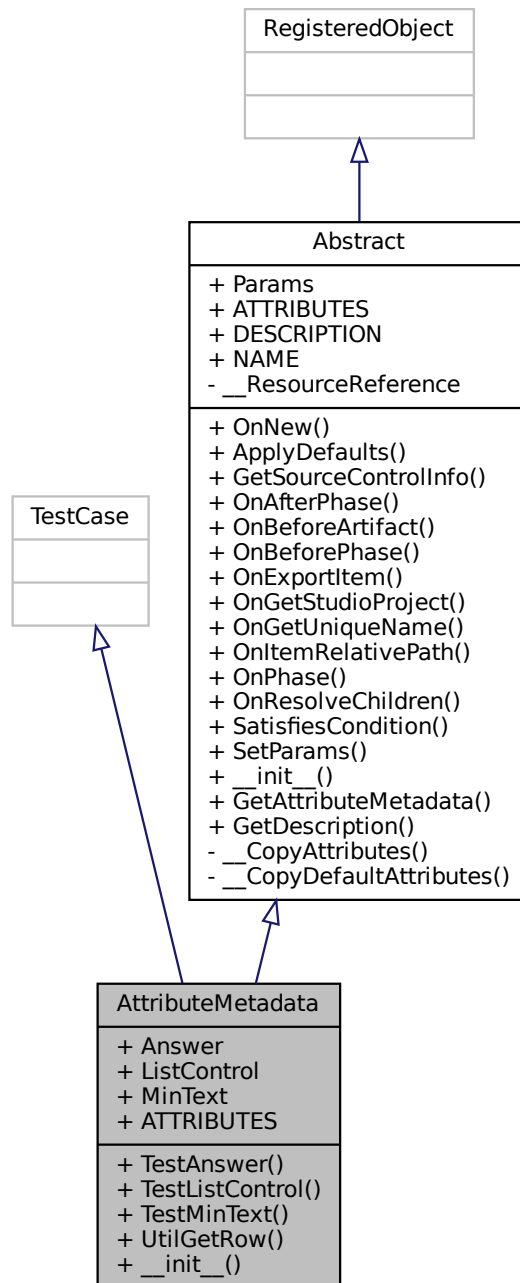
6.10 Archive Class Reference

Inheritance diagram for Archive:



6.11 AttributeMetadata Class Reference

Inheritance diagram for AttributeMetadata:



Public Attributes

- [Answer](#)

- [ListControl](#)
List.
- [MinText](#)
Text.

Static Public Attributes

- `ATTRIBUTES` = None
Comma-separated list of resource attribute names that this processor uses.

Additional Inherited Members

6.11.1 Member Data Documentation

6.11.1.1 Answer

Answer

42

6.11.1.2 ListControl

ListControl

List.

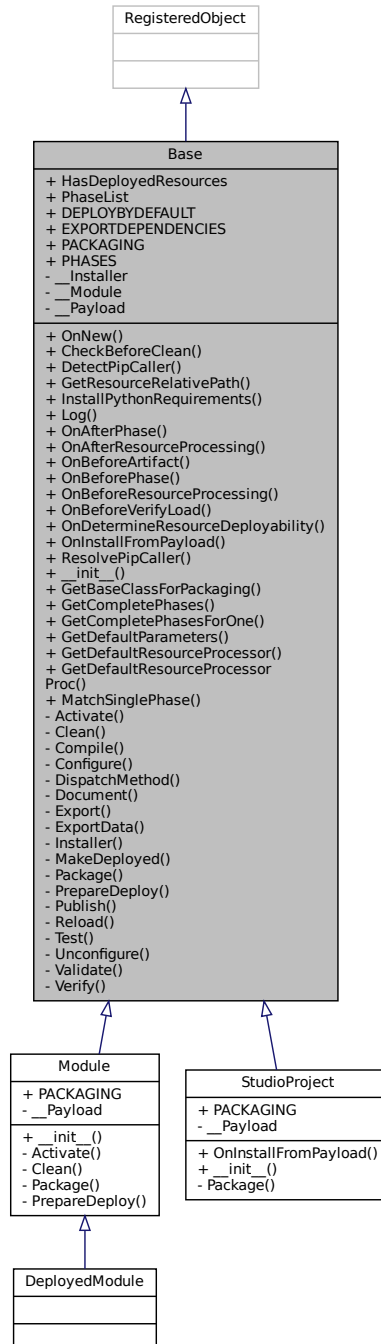
6.11.1.3 MinText

MinText

Text.

6.12 Base Class Reference

Inheritance diagram for Base:



Public Member Functions

- `__Library.String GetResourceRelativePath (__Library.String pResource, __Library.String pExtension)`
Helper method to get the relative path to the file corresponding to a resource (used in Reload/Export).

- `_.Library.Status OnAfterResourceProcessing` (`_.Library.String pPhase, pParams`)
This method can be overridden to include any action that needs to be executed.
- `_.Library.Status OnBeforeResourceProcessing` (`_.Library.String pPhase, pParams`)
This method can be overridden to include any action that needs to be executed.
- `_.Library.Status OnBeforeVerifyLoad` (`pParams`)
Allows for subclasses to do additional setup or modify pParams before the "verify" phase runs.

Static Public Member Functions

- `_.Library.List GetCompletePhases` (`_.Library.List pPhases`)
This method defines what a complete phase means for a given list of phases.
- `_.Library.List GetCompletePhasesForOne` (`_.Library.String pOnePhase`)
This method defines what a complete phase means for a given phase.
- `GetDefaultParameters` (`pParams, _.Library.List pPhases`)
Merges default parameters into pParams.
- `_.Dictionary.Classname GetDefaultResourceProcessor` (`_.Library.String pResourceName`)
Returns the default resource processor class to use for a given resource name.
- `_.Library.String MatchSinglePhase` (`_.Library.String pOnePhase`)
Match single inputted phase to the correctly CamelCased lifecycle phase

Public Attributes

- `HasDeployedResources`
- `PhaseList`

Static Public Attributes

- `PHASES` = None
\$ListBuild list of phases in this lifecycle.

Private Member Functions

- `_.Library.Status Export` (`pParams, _.Library.String pTargetDirectory, pDependencyGraph`)
Note: This is a utility method, and not a full lifecycle phase at this point.

Private Attributes

- `__Installer`
- `__Module`
- `__Payload`

6.12.1 Member Function Documentation

6.12.1.1 Export()

```

_.Library.Status Export (
    pParams,
    _.Library.String pTargetDirectory,
    pDependencyGraph ) [private]

```

Note: This is a utility method, and not a full lifecycle phase at this point.

This method exports the module's resources, based on the mappings defined in `^Sources` (by `Reload`), to the specified directory. If no directory is provided, a new temp directory is created (returned by reference). If dependencies are to be exported, `pDependencyGraph` is augmented with a "Location" subscript with the relative path within `pTargetDirectory` in which the module's contents have been exported.

6.12.1.2 GetDefaultParameters()

```

GetDefaultParameters (
    pParams,
    _.Library.List pPhases ) [static]

```

Merges default parameters into `pParams`.

For now, just looks at `^SYS("PackageManager","DefaultParameters")`

6.12.1.3 GetResourceRelativePath()

```

_.Library.String GetResourceRelativePath (
    _.Library.String pResource,
    _.Library.String pExtension )

```

Helper method to get the relative path to the *file* corresponding to a resource (used in `Reload/Export`).

If `pExtension` is empty, then `pResource` is interpreted as having an extension. If `pExtension` is specified, then `pResource` is interpreted as not having an extension. Note: does not support `.PKG` Note: does not yet support CSP/static files resources

6.12.1.4 OnAfterResourceProcessing()

```

_.Library.Status OnAfterResourceProcessing (
    _.Library.String pPhase,
    pParams )

```

This method can be overridden to include any action that needs to be executed.

after the process of module's lifecycle, and also after notifying resource processors

6.12.1.5 OnBeforeResourceProcessing()

```
_.Library.Status OnBeforeResourceProcessing (
    _.Library.String pPhase,
    pParams )
```

This method can be overridden to include any action that needs to be executed.

before the process of module's lifecycle, and also before notifying resource processors

6.12.2 Member Data Documentation

6.12.2.1 PHASES

```
PHASES = None [static]
```

\$ListBuild list of phases in this lifecycle.

For each phase name, an instance method named "%<phase name>" must be defined in the class with a return type of Status.

6.12.2.2 HasDeployedResources

```
HasDeployedResources
```

6.12.2.3 __Installer

```
__Installer [private]
```

6.12.2.4 __Module

```
__Module [private]
```

6.12.2.5 __Payload

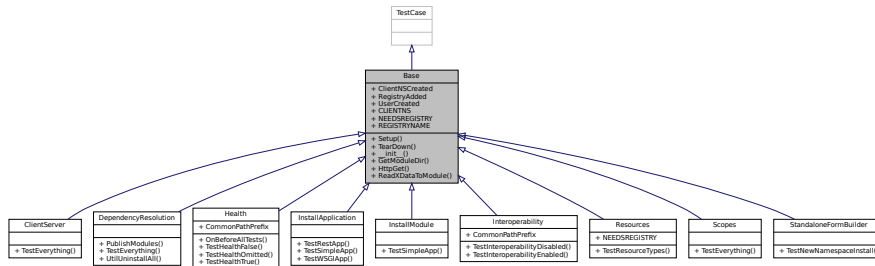
__Payload [private]

6.12.2.6 PhaseList

PhaseList

6.13 Base Class Reference

Inheritance diagram for Base:



Public Attributes

- [ClientNSCreated](#)
- [RegistryAdded](#)
- [UserCreated](#)

6.13.1 Member Data Documentation

6.13.1.1 ClientNSCreated

ClientNSCreated

6.13.1.2 RegistryAdded

RegistryAdded

6.13.1.3 UserCreated

UserCreated

6.14 Build Class Reference

Static Public Member Functions

- `_.Library.Status CleanBuild` (`_.Library.String pModuleToClean`, `_.Library.Boolean pDoBuild`)
Called from build.mac.
- `_.Library.Status CleanUpNamespace` (`_.Library.String pPostfix`, `_.Library.Boolean pVerbose`)
@API.Method
- `_.Library.Status DeleteDatabase` (`_.Library.String pDBName`, `_.Library.Boolean pIsLibraryDatabase`)
Delete the given database with name pDBName.
- `_.Library.Status DeleteNamespace` (`_.Library.String pNSName`, `_.Library.Boolean pVerbose`)
Delete the given namespace with name pNSName.
- `_.Library.Status InitializeBuildNamespace` (`_.Library.Boolean pVerbose`, `_.IPM.Storage.ModuleSetting.NamespaceConfig pNSConfig`)
@API.Method
- `_.Library.Status InitializeNamespace` (`_.Library.String pPostfix`, `_.Library.Boolean pVerbose`, `pNew↔Namespace`, `_.IPM.Storage.ModuleSetting.NamespaceConfig pNSConfig`)
@API.Method
- `_.Library.Status MapClassDataEquivalently` (`_.Library.String pClassName`, `_.Library.String pSource↔Namespace`, `_.Library.String pMappedToNamespace`)
Maps globals used by pClassName to the same database as in pSourceNamespace in pMappedToNamespace.
- `_.Library.Status MapGlobalEquivalently` (`_.Library.String pGlobalName`, `_.Library.String pSource↔Namespace`, `_.Library.String pMappedToNamespace`)
Maps pGlobalName in pMappedToNamespace to the same database as in pSourceNamespace

- `_.Library.Status` [MapPackageEquivalently](#) (`_.Library.String` `pPackageName`, `_.Library.String` `pSourceNamespace`, `_.Library.String` `pMappedToNamespace`)
Maps `pPackageName` in `pMappedToNamespace` to the same database as in `pSourceNamespace`
- `_.Library.Status` [MapRoutineEquivalently](#) (`_.Library.String` `pRoutineName`, `_.Library.String` `pSourceNamespace`, `_.Library.String` `pType`, `_.Library.String` `pMappedToNamespace`)
Maps `pRoutineName` in `pMappedToNamespace` to the same database as in `pSourceNamespace`
- `_.Library.Status` [RetrieveBuiltDatabase](#) (`_.Stream.TmpBinary` `pStream`, `_.Library.Boolean` `pVerbose`)
@API.Method
- `_.Library.Status` [SwitchToBuildNamespace](#) ()
@API.Method
- `_.Library.Status` [SwitchToNamespace](#) (`_.Library.String` `pPostfix`)
@API.Method

6.14.1 Member Function Documentation

6.14.1.1 CleanUpNamespace()

```
_.Library.Status CleanUpNamespace (
    _.Library.String pPostfix,
    _.Library.Boolean pVerbose ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.14.1.2 DeleteDatabase()

```
_.Library.Status DeleteDatabase (
    _.Library.String pDBName,
    _.Library.Boolean pIsLibraryDatabase ) [static]
```

Delete the given database with name `pDBName`.

Optionally indicate whether this is a component library database (like HSLIB).

6.14.1.3 DeleteNamespace()

```
_.Library.Status DeleteNamespace (
    _.Library.String pNSName,
    _.Library.Boolean pVerbose ) [static]
```

Delete the given namespace with name `pNSName`.

Optionally indicate whether this is a component namespace (like HSLIB).

6.14.1.4 InitializeBuildNamespace()

```
_.Library.Status InitializeBuildNamespace (
    _.Library.Boolean pVerbose,
    _.IPM.Storage.ModuleSetting.NamespaceConfig pNSConfig ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.14.1.5 InitializeNamespace()

```
_.Library.Status InitializeNamespace (
    _.Library.String pPostfix,
    _.Library.Boolean pVerbose,
    pNewNamespace,
    _.IPM.Storage.ModuleSetting.NamespaceConfig pNSConfig ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.14.1.6 MapClassDataEquivalently()

```
_.Library.Status MapClassDataEquivalently (
    _.Library.String pClassName,
    _.Library.String pSourceNamespace,
    _.Library.String pMappedToNamespace ) [static]
```

Maps globals used by *pClassName* to the same database as in *pSourceNamespace* in *pMappedToNamespace*.

The class does not yet need to exist or be mapped in *pMappedToNamespace*.

6.14.1.7 RetrieveBuiltDatabase()

```
_.Library.Status RetrieveBuiltDatabase (
    _.Stream.TmpBinary pStream,
    _.Library.Boolean pVerbose ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.14.1.8 SwitchToBuildNamespace()

```
_.Library.Status SwitchToBuildNamespace ( ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.14.1.9 SwitchToNamespace()

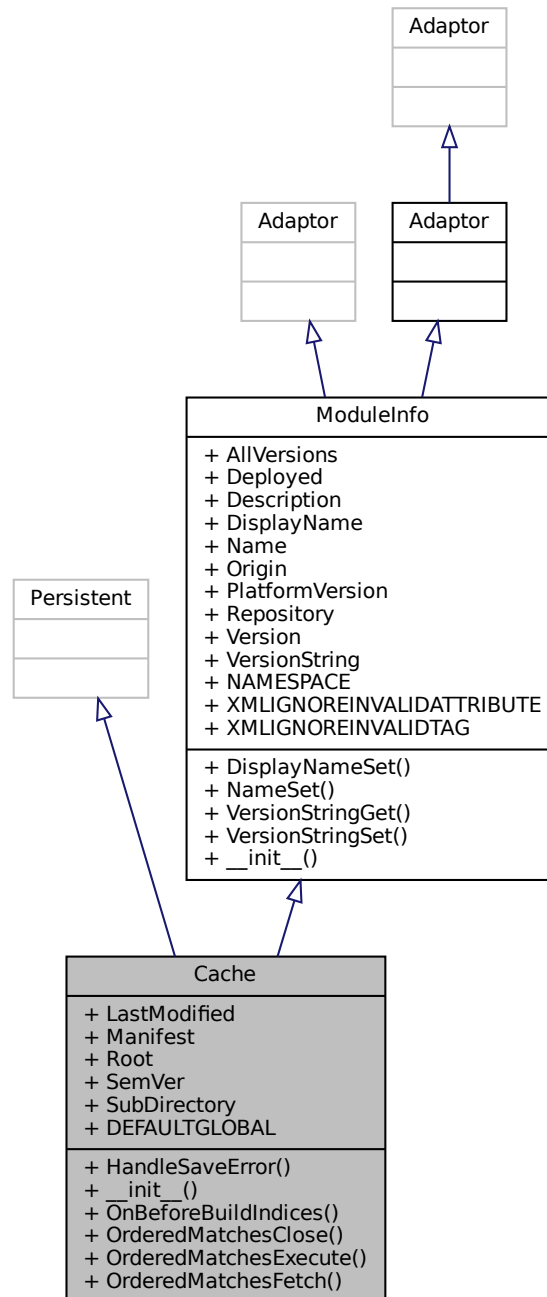
```
_.Library.Status SwitchToNamespace (  
    _.Library.String pPostfix ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.15 Cache Class Reference

Inheritance diagram for Cache:



Public Attributes

- [LastModified](#)

- [Manifest](#)
Full module manifest.
- [Root](#)

- [SemVer](#)
Property associated with the index to allow quick \$Query'ing over SemVer order based on ID.
- [SubDirectory](#)

6.15.1 Member Data Documentation

6.15.1.1 LastModified

LastModified

6.15.1.2 Manifest

Manifest

Full module manifest.

6.15.1.3 Root

Root

6.15.1.4 SemVer

SemVer

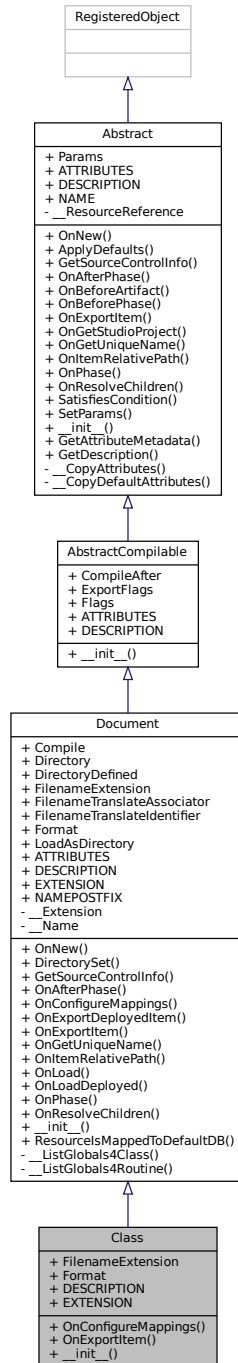
Property associated with the index to allow quick \$Query'ing over SemVer order based on ID.

6.15.1.5 SubDirectory

SubDirectory

6.16 Class Class Reference

Inheritance diagram for Class:



Public Member Functions

- `_.Library.Status OnConfigureMappings (pParams)`

Subclasses may override to customize mapping behavior at the beginning of the Reload phase.

Public Attributes

- [FilenameExtension](#)

- [Format](#)

Export format.

Static Public Attributes

- [DESCRIPTION](#) = None

Description of resource processor class (shown in UI)

Additional Inherited Members

6.16.1 Member Data Documentation

6.16.1.1 [FilenameExtension](#)

`FilenameExtension`

6.16.1.2 [Format](#)

`Format`

Export format.

6.17 Class Class Reference

Static Public Member Functions

- `__Library.Status` [OverrideAbstractMembers](#) (`__Library.String` pClassName, `__Library.Boolean` pDefaultTo↵
Super)

Overrides all abstract methods, properties, of pClassName's parents (removing the [Abstract] flag) and saves the class definition.

6.17.1 Member Function Documentation

6.17.1.1 OverrideAbstractMembers()

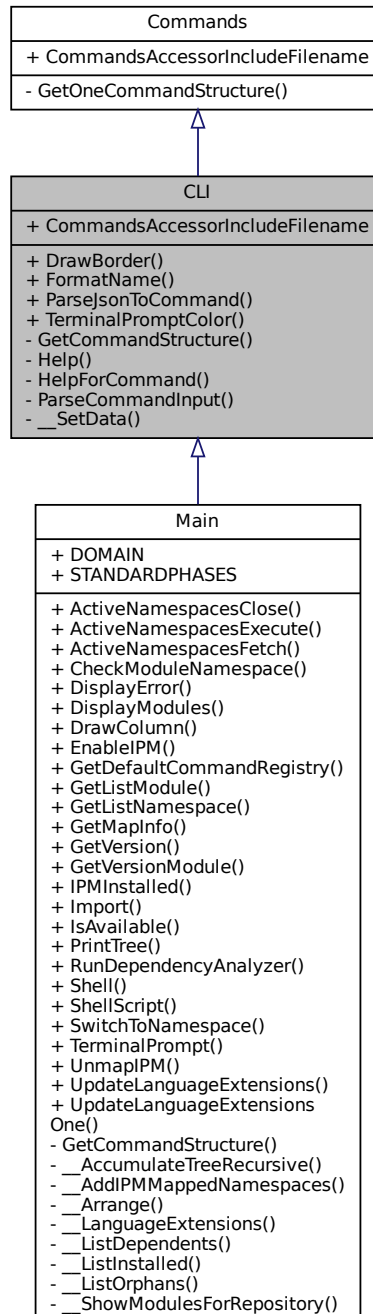
```
_.Library.Status OverrideAbstractMembers (
    _.Library.String pClassName,
    _.Library.Boolean pDefaultToSuper ) [static]
```

Overrides all abstract methods, properties, of *pClassName*'s parents (removing the [Abstract] flag) and saves the class definition.

If *pDefaultToSuper* is 1, defaults method implementations to call `##super()` (either do or quit depending on the return type). If the parent class method is unimplemented, this won't be done.

6.18 CLI Class Reference

Inheritance diagram for CLI:



Static Public Member Functions

- `DrawBorder` (`_.Library.List pLineList`, `_.Library.Integer pTextFormat`)
Draw a border around a list of strings.

- `_.Library.String FormatName (_.Library.String pName)`
Format the given name such that all punctuation characters are remove and.
- `ParseJsonToCommand (_.Library.DynamicObject pJson)`
Read [JSON](#) and construct a command matching the schema in the [Commands](#) XData blocks.

Static Public Attributes

- `CommandsAccessorIncludeFilename = None`
Name of include file that will contain accessor macros for modifiers.

Static Private Member Functions

- `Help (pCommandInfo)`
Displays help for a given command.
- `_.Library.Status ParseCommandInput (_.Library.String pCommandString, pCommandInfo)`
Parses a command, validating it based on the [Commands](#) XData block and structuring output as follows:
- `__SetData (pTargetArray, pDataName, pDataValue, pCustomParam)`
Utility method for setting multiple subscripts based on .

6.18.1 Member Function Documentation

6.18.1.1 ParseCommandInput()

```
_.Library.Status ParseCommandInput (
    _.Library.String pCommandString,
    pCommandInfo ) [static], [private]
```

Parses a command, validating it based on the [Commands](#) XData block and structuring output as follows:

```
pCommandInfo = "<command name>"
pCommandInfo("modifiers","<modifier-name>") = "<modifier-value>"
pCommandInfo("parameters","<parameter-name>") = "<parameter-value>"
pCommandInfo("data","<data-name>") = "<data-value>"
```

6.18.1.2 DrawBorder()

```
DrawBorder (
    _.Library.List pLineList,
    _.Library.Integer pTextFormat ) [static]
```

Draw a border around a list of strings.

Optionally provide a text format for the strings.

@Argument pLineList List of strings to write.

@Argument pTextFormat Text format (e.g. \$\$\$Red, \$\$\$Bold, etc.).

6.18.1.3 FormatName()

```

_.Library.String FormatName (
    _.Library.String pName ) [static]

```

Format the given name such that all punctuation characters are remove and.

the name is in camelCase, with the first letter capitalized.
 @Argument pName String to format.

6.18.1.4 ParseJsonToCommand()

```

ParseJsonToCommand (
    _.Library.DynamicObject pJson ) [static]

```

Read [JSON](#) and construct a command matching the schema in the [Commands](#) XData blocks.

that can be parsed using `<method>ParseCommandInput</method>`.

[JSON](#) format:

{ "command": "command name", "parameters": { ... }, "modifiers": { ... }, "custom_modifiers": { ... } } where each nested object contains key-value pairs.

6.18.1.5 __SetData()

```

__SetData (
    pTargetArray,
    pDataName,
    pDataValue,
    pCustomParam ) [static], [private]

```

Utility method for setting multiple subscripts based on .

-delimited *pDataName*

6.18.2 Member Data Documentation

6.18.2.1 CommandsAccessorIncludeFilename

```

CommandsAccessorIncludeFilename = None [static]

```

Name of include file that will contain accessor macros for modifiers.

and parameters referenced in the "Commands" XData block.

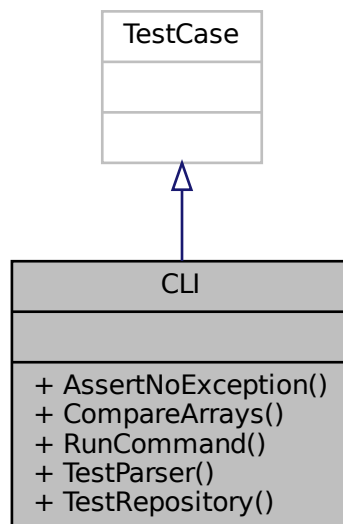
If provided, an include file will be generated and included in the sub-class during compilation.

@API.Parameter @API.Overrideable

6.19 CLI Class Reference

[Unit](#) tests for the "zpm" command line (although not using the "zpm" command itself)

Inheritance diagram for CLI:



Public Member Functions

- [AssertNoException](#) (`_.Library.String pCommand`)
Unit tests for the "zpm" command line (although not using the "zpm" command itself)
- `_.Library.Boolean` [CompareArrays](#) (`first`, `second`, `pMessage`)
Returns true if arrays first and second have all the same subscripts and all.

6.19.1 Detailed Description

[Unit](#) tests for the "zpm" command line (although not using the "zpm" command itself)

6.19.2 Member Function Documentation

6.19.2.1 CompareArrays()

```

_.Library.Boolean CompareArrays (
    first,
    second,
    pMessage )

```

Returns true if arrays *first* and *second* have all the same subscripts and all.

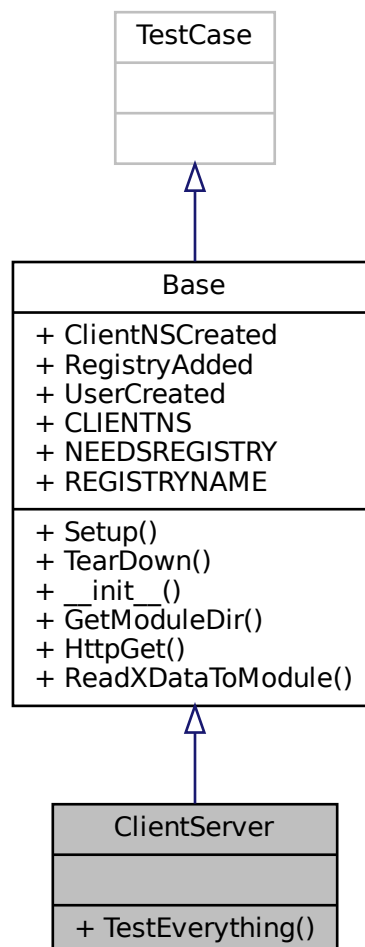
the same values at those subscripts.

If *first* and *second* both happen to be either undefined or unsubscripted variables, returns true if they're both undefined or have the same value.

pMessage has details of the first difference found, if any. See <https://community.intersystems.com/post/best-way-compare-two-arrays-equality-same-subscripts-and-values>

6.20 ClientServer Class Reference

Inheritance diagram for ClientServer:



Additional Inherited Members

6.21 CodeGeneration Class Reference

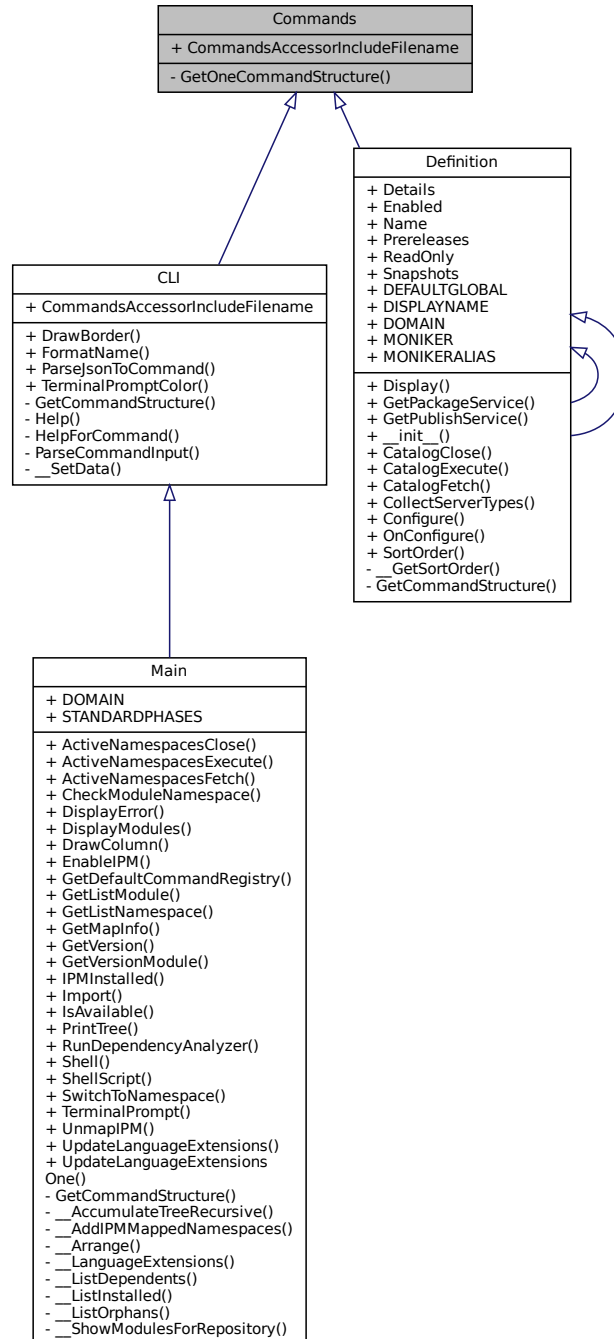
Static Public Member Functions

- `_.Library.Status` [CheckCompiledClassValidityAgainstAbstractClass](#) (`_.Dictionary.CompiledClass` p↔
`CompiledClassToCheck`, `_.Library.String` pClassNameToCheckAgainst)

Checks if the necessary abstract methods and parameters have implementations in non abstract subclasses.

6.22 Commands Class Reference

Inheritance diagram for Commands:



Static Public Attributes

- `CommandsAccessorIncludeFilename` = None

Name of include file that will contain accessor macros for modifiers.

6.22.1 Member Data Documentation

6.22.1.1 CommandsAccessorIncludeFilename

```
CommandsAccessorIncludeFilename = None [static]
```

Name of include file that will contain accessor macros for modifiers.

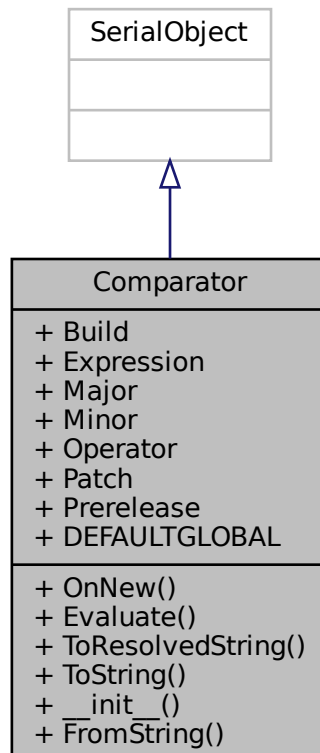
and parameters referenced in the "Commands" XData block.

If provided, an include file will be generated and included in the sub-class during compilation.

@API.Parameter @API.Overrideable

6.23 Comparator Class Reference

Inheritance diagram for Comparator:



Public Attributes

- [Build](#)
- [Expression](#)
- [Major](#)
- [Minor](#)
- [Operator](#)
- [Patch](#)
- [Prerelease](#)

6.23.1 Member Data Documentation

6.23.1.1 Build

Build

6.23.1.2 Expression

Expression

6.23.1.3 Major

Major

6.23.1.4 Minor

Minor

6.23.1.5 Operator

Operator

6.23.1.6 Patch

Patch

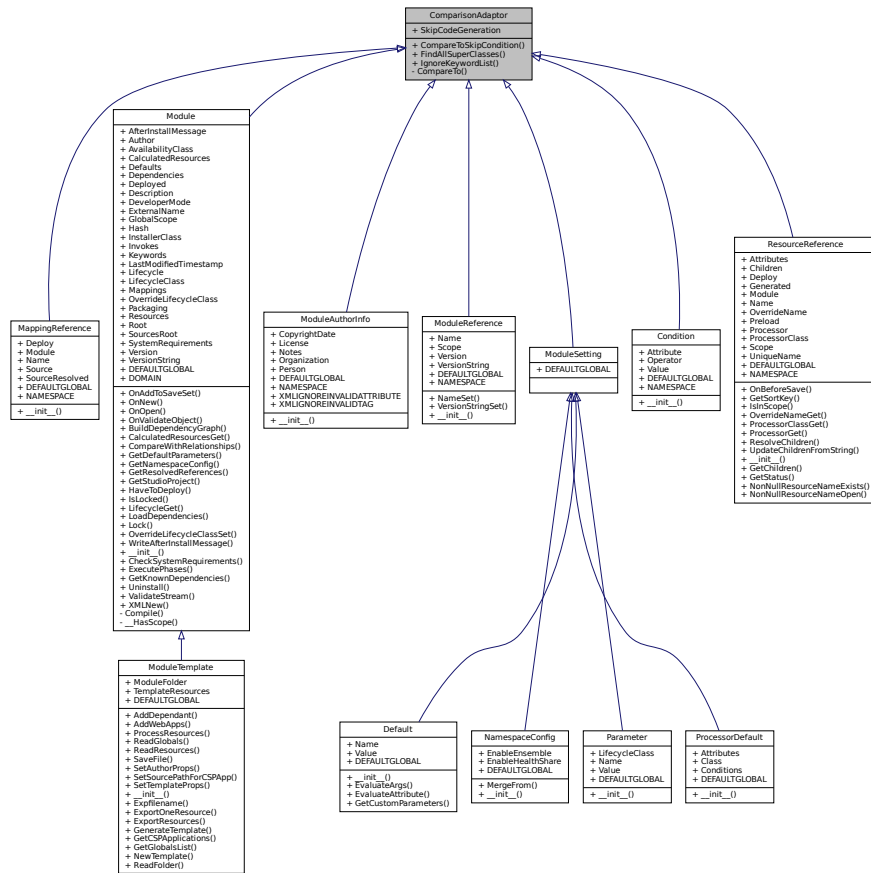
6.23.1.7 Prerelease

Prerelease

6.24 ComparisonAdaptor Class Reference

Handles code generation of a grab bag of useful functions to be code generated, such as the following:

Inheritance diagram for ComparisonAdaptor:



Static Public Member Functions

- __Library.Boolean [CompareToSkipCondition](#) (__Dictionary.CompiledProperty pCompiledProperty)

Condition under which a given property is skipped when generating code for the.
- __Library.List [FindAllSuperClasses](#) (__Dictionary.Classname pClassname)

Returns a list of all super classes for a given class pClassname
- __Library.List [IgnoreKeywordList](#) ()

Returns a list of keywords such that, if a property contains any of these.

Static Public Attributes

- [SkipCodeGeneration](#) = None

Handles code generation of a grab bag of useful functions to be code generated, such as the following:

Private Member Functions

- __Library.Boolean [CompareTo](#) (__IPM.Utils.ComparisonAdaptor pObj, __Library.List pIgnorePropertyList, __Library.List pDifferingPropertyArray)

Compares the properties of the existing object to the provided object of the same type.

6.24.1 Detailed Description

Handles code generation of a grab bag of useful functions to be code generated, such as the following:

- Comparison functions that compare instances of a class by comparing their properties.

6.24.2 Member Function Documentation

6.24.2.1 CompareTo()

```

_.Library.Boolean CompareTo (
    _.IPM.Utills.ComparisonAdaptor pObj,
    _.Library.List pIgnorePropertyList,
    _.Library.List pDifferingPropertyArray ) [private]

```

Compares the properties of the existing object to the provided object of the same type.

If comparison of certain properties is to be skipped, the property names can be listed in *pIgnorePropertyList*. Returns 1 if all properties match. Else 0. *pDifferingPropertyArray* returns in an array, the values of the properties that differed in the following format:
pDifferingPropertyArray("property name", "any nested property names or indices/keys for iterable properties") = \$↔
ListBuild("value in calling object", "value in pObj").

6.24.2.2 CompareToSkipCondition()

```

_.Library.Boolean CompareToSkipCondition (
    _.Dictionary.CompiledProperty pCompiledProperty ) [static]

```

Condition under which a given property is skipped when generating code for the.

<method>CompareTo</method>. The instance of the compiled property is provided in *pCompiledProperty*. This is intended to be used only if the properties to be skipped match a certain pattern. To hardcode specific properties to be skipped, use the property parameters. Returns 1 if the property should be skipped. 0 otherwise.

6.24.2.3 IgnoreKeywordList()

```

_.Library.List IgnoreKeywordList ( ) [static]

```

Returns a list of keywords such that, if a property contains any of these,.

code generation of the property is ignored. @API.Overrideable

6.24.3 Member Data Documentation

6.24.3.1 SkipCodeGeneration

```
SkipCodeGeneration = None [static]
```

Handles code generation of a grab bag of useful functions to be code generated, such as the following:

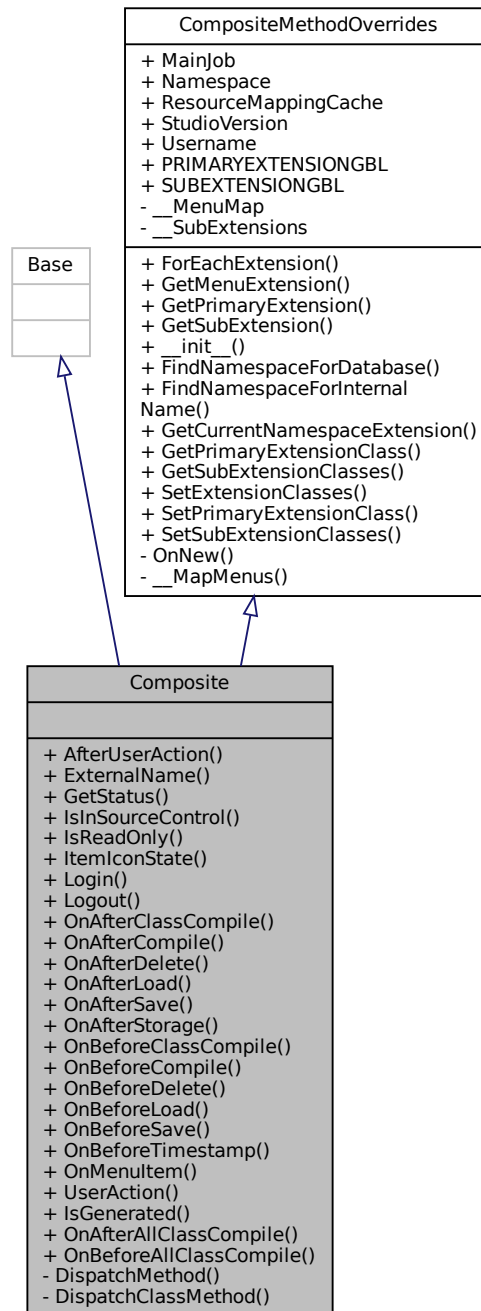
- Comparison functions that compare instances of a class by comparing their properties.

Set to true to skip code generation in this class

6.25 Composite Class Reference

This class provides the API and interface to work with multiple Studio extensions. It directs the action and lifecycle calls to corresponding primary/secondary extension class. Set Inheritance to right, so that on conflict definitions, CompositeMethodOverrides.cls will take over Studio.Extension.Base.cls. This way, CompositeMethodOverrides.cls can override final methods in Studio.

Inheritance diagram for Composite:



Private Member Functions

- [DispatchMethod](#) (Library.String Method, Args)
Dispatch unknown methods to primary extension class.

Static Private Member Functions

- [DispatchClassMethod](#) (Library.String Class, Library.String Method, Args)
Dispatch unknown class methods to primary extension class.

Additional Inherited Members

6.25.1 Detailed Description

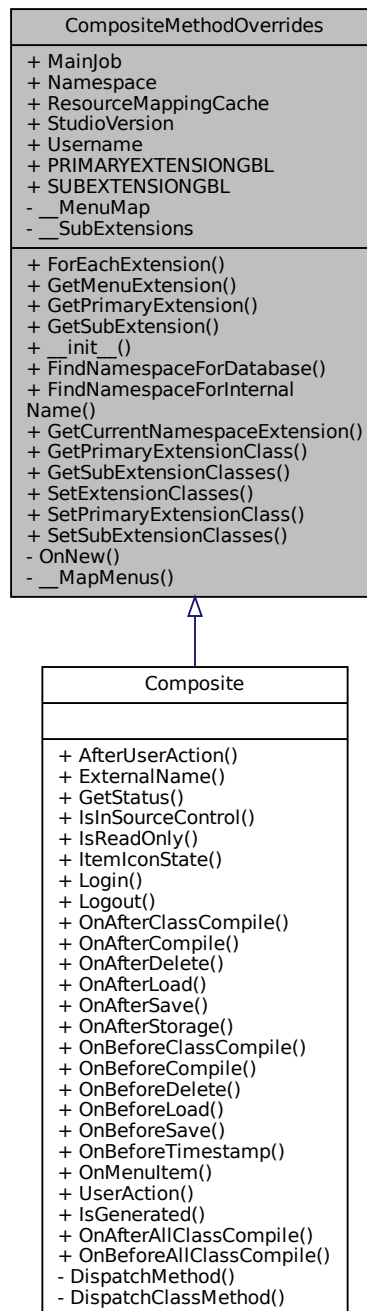
This class provides the API and interface to work with multiple Studio extensions. It directs the action and lifecycle calls to corresponding primary/secondary extension class. Set Inheritance to right, so that on conflict definitions, CompositeMethodOverrides.cls will take over Studio.Extension.Base.cls. This way, CompositeMethodOverrides.cls can override final methods in Studio.

- methods

6.26 CompositeMethodOverrides Class Reference

This class contains inheritance hacks to override final methods in Studio.

Inheritance diagram for CompositeMethodOverrides:



Public Attributes

- [MainJob](#)
\$Job number of the main Studio process or blank if this is the main Studio connection.
- [Namespace](#)
Namespace this extension started out in.
- [ResourceMappingCache](#)

Cache of information related to mapping of resources across namespaces.

- [StudioVersion](#)

Version of Studio that is connecting to this server.

- [Username](#)

The username of this source control user.

Static Public Attributes

- [PRIMARYEXTENSIONGBL](#) = None

This class contains inheritance hacks to override final methods in Studio.

Private Member Functions

- `_.Library.Status` [OnNew](#) (`_.Library.String` `initval`)

This just calls the `<method>Login</method>` to perform an initialisation.

Private Attributes

- [__MenuMap](#)

Array associating top-level menu IDs to the class that implements them.

- [__SubExtensions](#)

Array of top-level menu ID to configured handling class.

6.26.1 Detailed Description

This class contains inheritance hacks to override final methods in Studio.

- methods And provides utilities to work with extension classes and namespace-specific source control classes

6.26.2 Member Function Documentation

6.26.2.1 OnNew()

```
_.Library.Status OnNew (
    _.Library.String initval ) [private]
```

This just calls the `<method>Login</method>` to perform an initialisation.

Note that this is called by Studio automatically via the `<class>Studio.SourceControl.Interface</class>` class, do not call `New` directly.

6.26.3 Member Data Documentation

6.26.3.1 PRIMARYEXTENSIONGBL

```
PRIMARYEXTENSIONGBL = None [static]
```

This class contains inheritance hacks to override final methods in Studio.

- methods And provides utilities to work with extension classes and namespace-specific source control classes

6.26.3.2 MainJob

```
MainJob
```

\$Job number of the main Studio process or blank if this is the main Studio connection.

This can be used to help co-ordinate between the jobs if Studio is using another server process for things like find in files or a big compile. (From Studio.Extension.Base.)

6.26.3.3 __MenuMap

```
__MenuMap [private]
```

Array associating top-level menu IDs to the class that implements them.

6.26.3.4 Namespace

```
Namespace
```

Namespace this extension started out in.

6.26.3.5 ResourceMappingCache

```
ResourceMappingCache
```

Cache of information related to mapping of resources across namespaces.

6.26.3.6 StudioVersion

StudioVersion

Version of Studio that is connecting to this server.

(From Studio.Extension.Base.)

6.26.3.7 __SubExtensions

__SubExtensions [private]

Array of top-level menu ID to configured handling class.

6.26.3.8 Username

Username

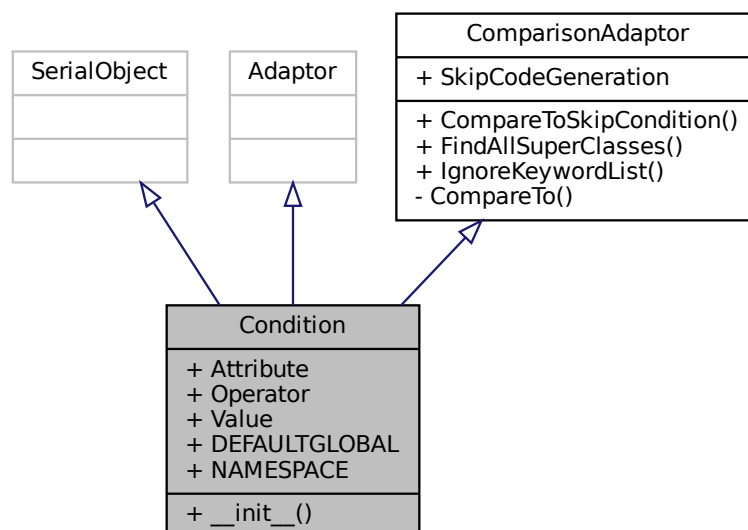
The username of this source control user.

(From Studio.Extension.Base.)

6.27 Condition Class Reference

Tested in the SatisfiesCondition method of <class>IPM.ResourceProcessor.Abstract</class>

Inheritance diagram for Condition:



Public Attributes

- [Attribute](#)
Name of other attribute to test.
- [Operator](#)
Comparison operator; if empty, "eq" is assumed (although not the InitialExpression for sake of XML re-export).
- [Value](#)
Value to compare to - may be empty.

Additional Inherited Members

6.27.1 Detailed Description

Tested in the SatisfiesCondition method of `<class>IPM.ResourceProcessor.Abstract</class>`

6.27.2 Member Data Documentation

6.27.2.1 Attribute

Attribute

Name of other attribute to test.

6.27.2.2 Operator

Operator

Comparison operator; if empty, "eq" is assumed (although not the InitialExpression for sake of XML re-export).

6.27.2.3 Value

Value

Value to compare to - may be empty.

6.28 Constants Class Reference

Provides class parameters for the magic numbers from `<class>Studio.Extension.Base</class>` (used in the UserAction and AfterUserAction methods).

Static Public Attributes

- [ActionAlert](#) = None
Action: alert.
- [ActionDoNothing](#) = None
Action: do nothing.
- [ActionInsertText](#) = None
Action: insert text in current document at current selection point.
- [ActionOpenDocuments](#) = None
Action: open document(s)
- [ActionPrompt](#) = None
Action: prompt, with Yes/No/Cancel buttons.
- [ActionRunCSP](#) = None
Action: run CSP page/template.
- [ActionRunEXEOrWebPage](#) = None
Action: run .EXE or launch non-CSP web page.
- [ActionYesNoCancel](#) = None
Action: yes/no/cancel dialog.
- [EditorClosedDocument](#) = None
Other editor action: "User has closed a document"

- [EditorConnectedToNewNamespace](#) = None
Other editor action: "User has connected to a new namespace document".
- [EditorCreatedNewDocument](#) = None
Other editor action: "User has created a new document".
- [EditorDeletedDocument](#) = None
Other editor action: "User has deleted a document".
- [EditorImportedDocumentList](#) = None
Other editor action: "User has selected to import a comma-delimited list of documents"

- [EditorLockedDocumentChanged](#) = None
Other editor action: "User has tried to change a document that is locked in source control".
- [EditorOpenedDocument](#) = None
Other editor action: "User has opened a document"

- [MenuItemActionType](#) = None
Type (first argument to UserAction/AfterUserAction) for menu item-based actions.
- [OtherEditorActionType](#) = None
Type (first argument to UserAction/AfterUserAction) for other editor (Studio/Atelier) actions.

6.28.1 Detailed Description

Provides class parameters for the magic numbers from `<class>Studio.Extension.Base</class>` (used in the `UserAction` and `AfterUserAction` methods).

6.28.2 Member Data Documentation

6.28.2.1 EditorClosedDocument

```
EditorClosedDocument = None [static]
```

Other editor action: "User has closed a document"

Note: Not supported in Atelier as of Atelier 1.2.

6.28.2.2 EditorImportedDocumentList

```
EditorImportedDocumentList = None [static]
```

Other editor action: "User has selected to import a comma-delimited list of documents"

Note: Not supported in Atelier as of Atelier 1.2.

6.28.2.3 EditorOpenedDocument

```
EditorOpenedDocument = None [static]
```

Other editor action: "User has opened a document"

Note: Not supported in Atelier as of Atelier 1.2.

6.29 ContainerClass Class Reference

Used to wrap Studio document types not supported in Studio project deployments, putting the XML export in a class's XDATA block for later import.

6.29.1 Detailed Description

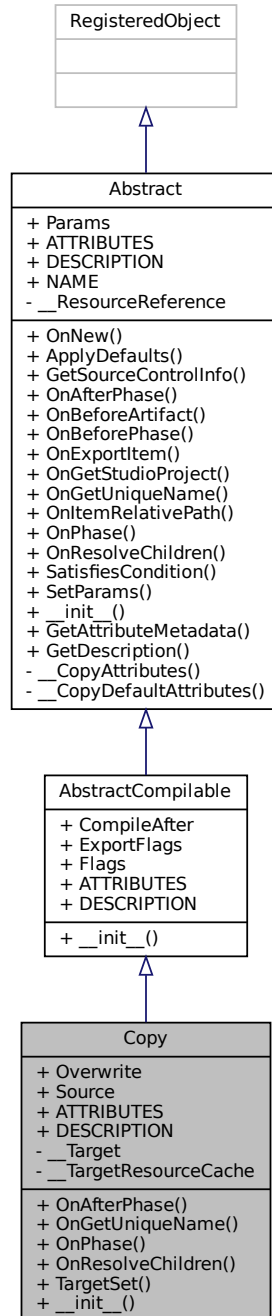
Used to wrap Studio document types not supported in Studio project deployments, putting the XML export in a class's XDATA block for later import.

For example:

```
// Pack up Foo.ZPM in class Foo.ModuleWrappedInAClass: Set tItems("Foo.ZPM") = "" Set tSC = ##class(IPM.Lifecycle.StudioProject.ContainerClass).Create("Foo.ModuleWrappedInAClass",.tItems) // ... on another environment, after Foo.ModuleWrappedInAClass is loaded, retrieve the module manifest document from it: Set tSC = ##class(Foo.ModuleWrappedInAClass).Unpack()
```

6.30 Copy Class Reference

Inheritance diagram for Copy:



Public Member Functions

- [OnGetUniqueName](#) (pUniqueName)
Returns a unique name for this resource.
- `__Library.Status` [OnPhase](#) (`__Library.String` pPhase, `pParams`, `__Library.Boolean` pResourceHandled)
Called as phase pPhase is executed for the resource.

Public Attributes

- [Overwrite](#)
If set to false (default is true), resources that already exist in the current/target namespace will not be overwritten.
- [Source](#)
Name of the namespace we are copying the resources from.

Static Public Attributes

- [ATTRIBUTES](#) = None
Comma-separated list of resource attribute names that this processor uses.
- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)

Private Attributes

- [__Target](#)
Namespace to which the resources will be copied (managed internally)
- [__TargetResourceCache](#)
Cache of resources discovered in the target namespace.

6.30.1 Member Function Documentation

6.30.1.1 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

Default implementation, leaving *pUniqueName* undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Abstract](#).

6.30.1.2 OnPhase()

```
_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )
```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Abstract](#).

6.30.2 Member Data Documentation

6.30.2.1 Overwrite

Overwrite

If set to false (default is true), resources that already exist in the current/target namespace will not be overwritten.

6.30.2.2 Source

Source

Name of the namespace we are copying the resources from.

6.30.2.3 __Target

__Target [private]

Namespace to which the resources will be copied (managed internally)

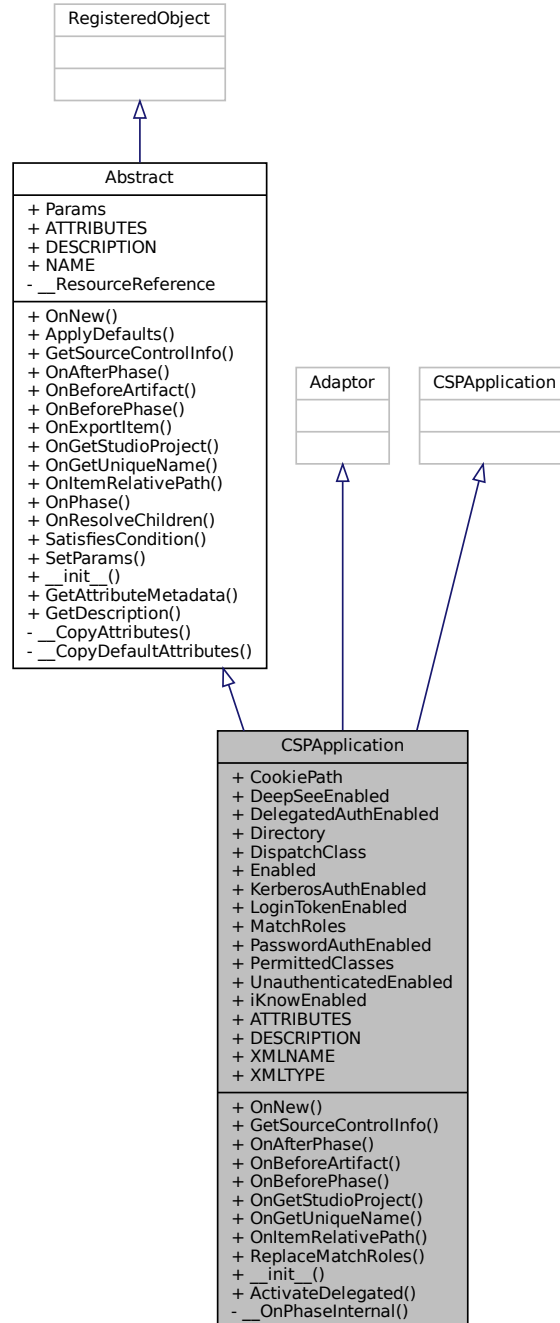
6.30.2.4 __TargetResourceCache

__TargetResourceCache [private]

Cache of resources discovered in the target namespace.

6.31 CSPApplication Class Reference

Inheritance diagram for CSPApplication:



Public Member Functions

- [OnGetStudioProject](#) (`_.Studio.Project pProject, _.Library.Boolean pHandled`)
Subclasses may override to customize the studio project.

- [OnGetUniqueName](#) (pUniqueName)
Returns a unique name for this resource.
- `_.Library.String` [OnItemRelativePath](#) (`_.Library.String` pItemName)
Returns the path relative to the module root for item pItemName within this resource.

Static Public Member Functions

- `_.Library.Status` [ActivateDelegated](#) (`_.Library.String` Role)
Enable Delegated Auth system-wide.

Public Attributes

- [CookiePath](#)
Cookie Path.
- [DeepSeeEnabled](#)
DeepSee Enabled.
- [DelegatedAuthEnabled](#)
Delegated authentication enabled.
- [Directory](#)
Physical path for CSP files.
- [DispatchClass](#)
If defined, this will dispatch all requests in this CSP application to this one class.
- [Enabled](#)
Enabled.
- [KerberosAuthEnabled](#)
Kerberos authentication enabled.
- [LoginTokenEnabled](#)
Login token authentication enabled.
- [MatchRoles](#)
Mapping of Match Roles to added Target Role.
- [PasswordAuthEnabled](#)
Password authentication enabled.
- [PermittedClasses](#)
PermittedClasses default.
- [UnauthenticatedEnabled](#)
Unauthenticated access enabled.
- [iKnowEnabled](#)
iKnow Enabled

Static Public Attributes

- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)
- [XMLNAME](#) = None
Overridden to avoid issues in Installer generation.
- [XMLTYPE](#) = None
Overridden to avoid issues in Installer generation.

6.31.1 Member Function Documentation

6.31.1.1 ActivateDelegated()

```
_.Library.Status ActivateDelegated (
    _.Library.String Role ) [static]
```

Enable Delegated Auth system-wide.

And add role to CSPSystem, so, it will have access to do delegated auth

6.31.1.2 OnGetStudioProject()

```
OnGetStudioProject (
    _.Studio.Project pProject,
    _.Library.Boolean pHandled )
```

Subclasses may override to customize the studio project.

(e.g., things that use web applications will do this.)

Reimplemented from [Abstract](#).

6.31.1.3 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

[Default](#) implementation, leaving *pUniqueName* undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Abstract](#).

6.31.2 Member Data Documentation

6.31.2.1 CookiePath

```
CookiePath
```

Cookie Path.

6.31.2.2 DeepSeeEnabled

DeepSeeEnabled

DeepSee Enabled.

6.31.2.3 DelegatedAuthEnabled

DelegatedAuthEnabled

Delegated authentication enabled.

6.31.2.4 Directory

Directory

Physical path for CSP files.

6.31.2.5 DispatchClass

DispatchClass

If defined, this will dispatch all requests in this CSP application to this one class.

6.31.2.6 Enabled

Enabled

Enabled.

6.31.2.7 KerberosAuthEnabled

KerberosAuthEnabled

Kerberos authentication enabled.

6.31.2.8 LoginTokenEnabled

LoginTokenEnabled

Login token authentication enabled.

6.31.2.9 MatchRoles

MatchRoles

Mapping of Match Roles to added Target Role.

6.31.2.10 PasswordAuthEnabled

PasswordAuthEnabled

Password authentication enabled.

6.31.2.11 PermittedClasses

PermittedClasses

PermittedClasses default.

6.31.2.12 UnauthenticatedEnabled

UnauthenticatedEnabled

Unauthenticated access enabled.

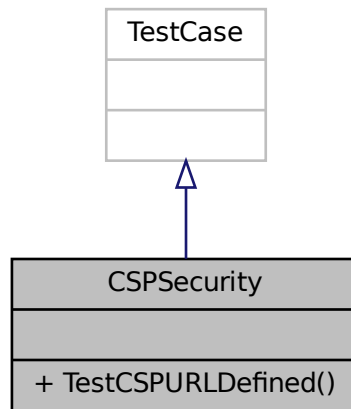
6.31.2.13 iKnowEnabled

iKnowEnabled

iKnow Enabled

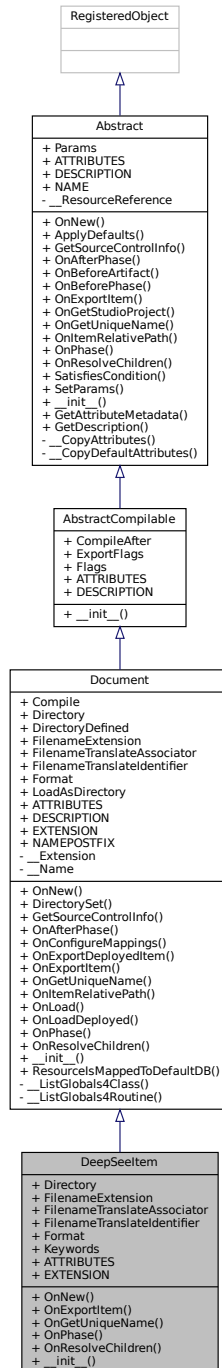
6.32 CSPSecurity Class Reference

Inheritance diagram for CSPSecurity:



6.33 DeepSeeltem Class Reference

Inheritance diagram for DeepSeeltem:



Public Member Functions

- [OnGetUniqueName](#) (pUniqueName)
Returns a unique name for this resource.

- `_.Library.Status OnPhase` (`_.Library.String pPhase`, `pParams`, `_.Library.Boolean pResourceHandled`)
Called as phase `pPhase` is executed for the resource.
- `_.Library.Status OnResolveChildren` (`pResourceArray`)
Enumerate all documents contained in the resource being processed.

Public Attributes

- [Directory](#)
- [FilenameExtension](#)
- [FilenameTranslateAssociator](#)
Characters in the filename to use as the associator in `$translate` when determining the resource's filename on disk.
- [FilenameTranslateIdentifier](#)
Characters in the filename to use as the identifier in `$translate` when determining the resource's filename on disk.
- [Format](#)
Export format.
- [Keywords](#)

Additional Inherited Members

6.33.1 Member Function Documentation

6.33.1.1 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

Default implementation, leaving `pUniqueName` undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Document](#).

6.33.1.2 OnPhase()

```
_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )
```

Called as phase `pPhase` is executed for the resource.

If `pResourceHandled` is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Document](#).

6.33.1.3 OnResolveChildren()

```
_.Library.Status OnResolveChildren (
    pResourceArray )
```

Enumerate all documents contained in the resource being processed.

@Argument pResourceArray ByRef: array of the following format: pResourceArray(<Studio document name>) = <module that contains document> pResourceArray(<Studio document name>, <resource referenty property>) = value of resource reference property for given document

Reimplemented from [Document](#).

6.33.2 Member Data Documentation

6.33.2.1 Directory

Directory

6.33.2.2 FilenameExtension

FilenameExtension

6.33.2.3 FilenameTranslateAssociator

FilenameTranslateAssociator

Characters in the filename to use as the associator in \$translate when determining the resource's filename on disk.

The default behavior is to replace "." with "/" and ignore "%"

6.33.2.4 FilenameTranslateIdentifier

FilenameTranslateIdentifier

Characters in the filename to use as the identifier in \$translate when determining the resource's filename on disk.

The default behavior is to replace "." with "/" and ignore "%"

6.33.2.5 Format

Format

Export format.

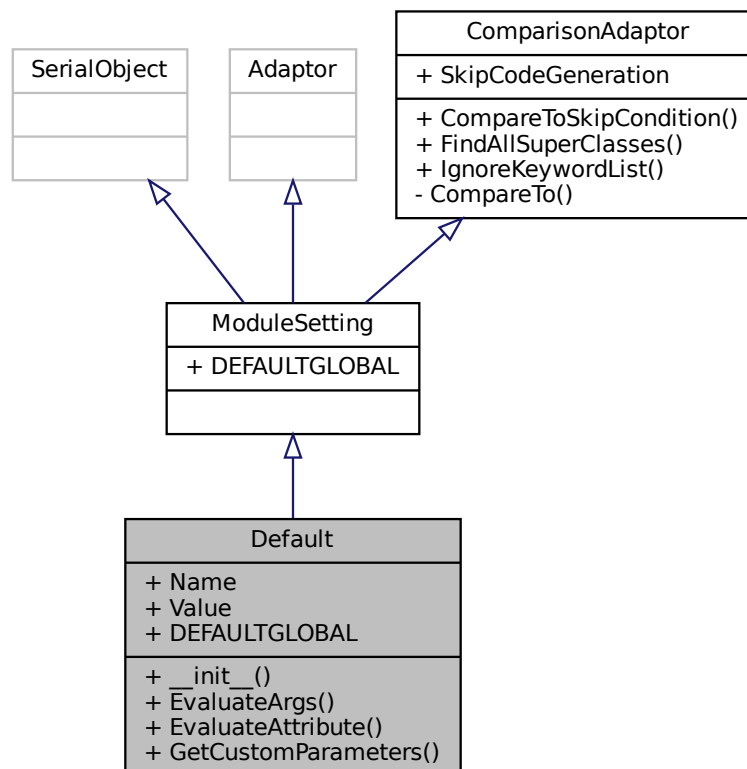
6.33.2.6 Keywords

Keywords

6.34 Default Class Reference

Custom defaults for module Each <Default Name="" Value="" > element defines one parameter, that can be specified during module installation.

Inheritance diagram for Default:



Public Attributes

- [Name](#)
- [Value](#)

Additional Inherited Members

6.34.1 Detailed Description

Custom defaults for module Each `<Default Name="" Value="" >` element defines one parameter, that can be specified during module installation.

6.34.2 Member Data Documentation

6.34.2.1 Name

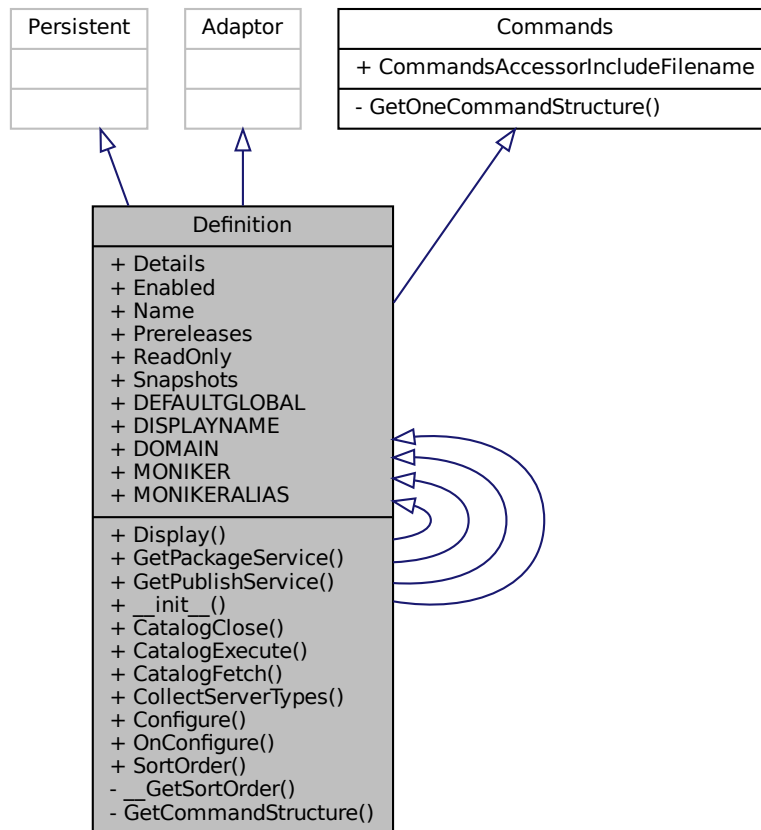
Name

6.34.2.2 Value

Value

6.35 Definition Class Reference

Inheritance diagram for Definition:



Public Member Functions

- `Display ()`
Outputs information about this server to the current device.
- `_.IPM.Repo.IPackageService GetPackageService ()`
Returns a client to interact with this server.
- `_.IPM.Repo.IPublishService GetPublishService ()`
Returns a client to publish modules/applications to this server.

Static Public Member Functions

- `_.Library.Status Configure (_.Library.Boolean pInteractive, pModifiers, pData, _.Dictionary.Classname pExpectedType)`
Called from package manager shell to create or update an instance of this class.
- `_.Library.Status OnConfigure (_.IPM.Repo.Definition pInstance, _.Library.Boolean pInteractive, pModifiers, pData)`
Subclasses must override.

Public Attributes

- [Details](#)
- [Enabled](#)
- [Name](#)
- [Prereleases](#)
- [ReadOnly](#)
Boolean flag indicating that modules installed from this repository.
- [Snapshots](#)

Static Public Attributes

- [DISPLAYNAME](#) = None
Display name for this type of repository, shown in the UI and package manager shell.
- [MONIKER](#) = None
Short/logical name for this type of repository, used in the package manager shell as an alternative to the full class name.

Private Member Functions

- `__Library.Integer __GetSortOrder ()`
Subclasses must override.

6.35.1 Member Function Documentation

6.35.1.1 Configure()

```
__Library.Status Configure (  
    __Library.Boolean pInteractive,  
    pModifiers,  
    pData,  
    __Dictionary.Classname pExpectedType ) [static]
```

Called from package manager shell to create or update an instance of this class.

Acceptable values in *pModifiers* and *pData* may vary between classes, but some (such as "name", "enabled", "snapshots", and "prereleases") are common to all. For a full list of modifiers, see the Commands XDATA block in `<class>IPM.Main</class>`. If specified, *pExpectedType* will be compared against the full classname of the existing instance matched by *pModifiers("name")*; an error will be returned if they do not match.

6.35.1.2 Display()

```
Display ( )
```

Outputs information about this server to the current device.

Subclasses may override to show additional information, but should typically call `##super()` at the beginning.

Reimplemented in [Definition](#).

6.35.1.3 GetPublishService()

```
_.IPM.Repo.IPublishService GetPublishService ( )
```

Returns a client to publish modules/applications to this server.

If publishing modules/applications is not supported, returns `$$$NULLLOREF`. Errors are thrown as exceptions.

Reimplemented in [Definition](#), and [Definition](#).

6.35.1.4 __GetSortOrder()

```
_.Library.Integer __GetSortOrder ( ) [private]
```

Subclasses must override.

Orders repositories by type and possibly other factors.

Reimplemented in [Definition](#), and [Definition](#).

6.35.1.5 OnConfigure()

```
_.Library.Status OnConfigure (
    _.IPM.Repo.Definition pInstance,
    _.Library.Boolean pInteractive,
    pModifiers,
    pData ) [static]
```

Subclasses must override.

Allows handling of any custom modifiers/data attributes provided from the package manager shell.

6.35.2 Member Data Documentation

6.35.2.1 Details

Details

6.35.2.2 Enabled

Enabled

6.35.2.3 Name

Name

6.35.2.4 Prereleases

Prereleases

6.35.2.5 ReadOnly

ReadOnly

Boolean flag indicating that modules installed from this repository.

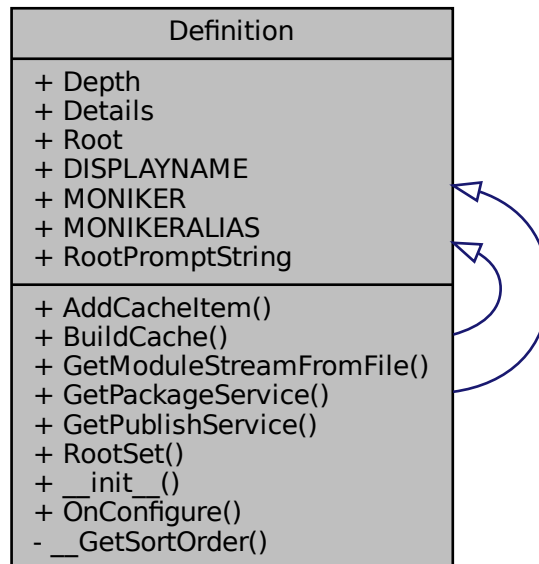
are ALWAYS installed in non-developer mode.

6.35.2.6 Snapshots

Snapshots

6.36 Definition Class Reference

Inheritance diagram for Definition:



Public Member Functions

- [_IPM.Repo.IPackageService GetPackageService \(\)](#)
Returns a client to interact with this server.
- [_IPM.Repo.IPublishService GetPublishService \(\)](#)
Returns a client to publish modules/applications to this server.

Static Public Member Functions

- [_Library.Status OnConfigure \(_IPM.Repo.Definition pInstance, _Library.Boolean pInteractive, pModifiers, pData\)](#)
Handles modifiers/data attributes provided from the package manager shell.

Public Attributes

- [Depth](#)
How many levels of depth to search for module.xml files; 0 indicates unlimited.
- [Details](#)
- [Root](#)
Root folder on the server filesystem.

Static Public Attributes

- [RootPromptString](#) = None
Prompt to use for Root in interactive configuration of this repository type.

Private Member Functions

- `_.Library.Integer __GetSortOrder ()`
Subclasses must override.

6.36.1 Member Function Documentation

6.36.1.1 `__GetSortOrder()`

```
_.Library.Integer __GetSortOrder ( ) [private]
```

Subclasses must override.

Orders repositories by type and possibly other factors.

Reimplemented from [Definition](#).

6.36.2 Member Data Documentation

6.36.2.1 Depth

Depth

How many levels of depth to search for module.xml files; 0 indicates unlimited.

6.36.2.2 Details

Details

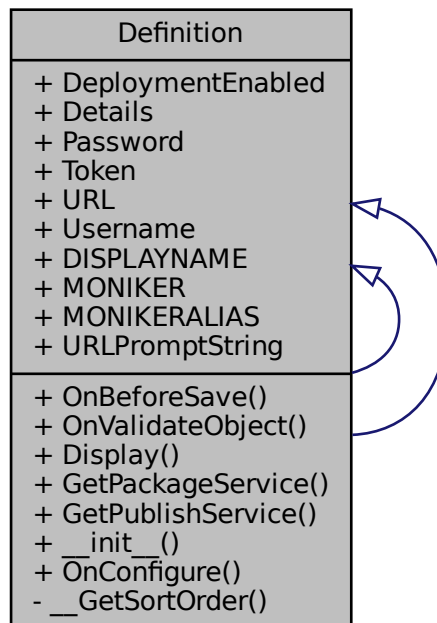
6.36.2.3 Root

Root

Root folder on the server filesystem.

6.37 Definition Class Reference

Inheritance diagram for Definition:



Public Member Functions

- `_.Library.Status OnBeforeSave (_.Library.Boolean insert)`
This callback method is invoked by the <METHOD> Save</METHOD> method to.
- `_.Library.Status OnValidateObject ()`
This callback method is invoked by the <METHOD> ValidateObject</METHOD> method to.
- `Display ()`
Outputs information about this server to the current device.
- `_.IPM.Repo.IPackageService GetPackageService ()`
Returns a REST client to interact with this server.
- `_.IPM.Repo.IPublishService GetPublishService ()`
Returns a REST client to publish modules/applications to this server.

Static Public Member Functions

- `__Library.Status OnConfigure` (`__IPM.Repo.Definition` pInstance, `__Library.Boolean` pInteractive, `pModifiers`, `pData`)

Handles modifiers/data attributes provided from the package manager shell.

Public Attributes

- `DeploymentEnabled`
- `Details`
- `Password`
- `Token`
- `URL`
- `Username`

Private Member Functions

- `__Library.Integer __GetSortOrder` ()

Subclasses must override.

Additional Inherited Members

6.37.1 Member Function Documentation

6.37.1.1 OnBeforeSave()

```
__Library.Status OnBeforeSave (  
    __Library.Boolean insert )
```

This callback method is invoked by the `<METHOD>Save</METHOD>` method to

provide notification that the object is being saved. It is called before any data is written to disk.

`insert` will be set to 1 if this object is being saved for the first time.

If this method returns an error then the call to `<METHOD>Save</METHOD>` will fail.

6.37.1.2 OnValidateObject()

```
_.Library.Status OnValidateObject ( )
```

This callback method is invoked by the `<METHOD>ValidateObject</METHOD>` method to

provide notification that the current object is being validated.

If this method returns an error then `<METHOD>ValidateObject</METHOD>` will fail.

6.37.1.3 Display()

```
Display ( )
```

Outputs information about this server to the current device.

Subclasses may override to show additional information.

Reimplemented from [Definition](#).

6.37.1.4 __GetSortOrder()

```
_.Library.Integer __GetSortOrder ( ) [private]
```

Subclasses must override.

Orders repositories by type and possibly other factors.

Reimplemented from [Definition](#).

6.37.2 Member Data Documentation

6.37.2.1 DeploymentEnabled

```
DeploymentEnabled
```

6.37.2.2 Details

```
Details
```

6.37.2.3 Password

Password

6.37.2.4 Token

Token

6.37.2.5 URL

URL

6.37.2.6 Username

Username

6.38 DependencyAnalyzer Class Reference

Static Public Member Functions

- `_.Library.Status` [RunForAllModules](#) ()
@API.Method
- `_.Library.Status` [RunForAllReferences](#) (`_.Library.String` pName, `pReferences`, `_.Library.Boolean` pVerbose, `_.Library.Boolean` pSave, `pProgressListener`, `_.Library.String` pRunID, `_.Library.String` plgnoredStringRef, `↔` `_.Library.Boolean` pDirectDepsOnly)
@API.Method
- `_.Library.Status` [RunForInvalidReferences](#) (`_.Library.String` pName, `plInvalidReferences`, `_.Library.Boolean` pVerbose, `_.Library.Boolean` pSave, `pProgressListener`, `_.Library.String` pRunID, `_.Library.String` plgnoredStringRef, `_.Library.Boolean` pDirectDepsOnly)
@API.Method

Static Public Attributes

- `INCPREFIX` = None
Prefix to indentify .inc files.

6.38.1 Member Function Documentation

6.38.1.1 RunForAllModules()

```
_.Library.Status RunForAllModules ( ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.38.1.2 RunForAllReferences()

```
_.Library.Status RunForAllReferences (
    _.Library.String pName,
    pReferences,
    _.Library.Boolean pVerbose,
    _.Library.Boolean pSave,
    pProgressListener,
    _.Library.String pRunID,
    _.Library.String pIgnoredStringRef,
    _.Library.Boolean pDirectDepsOnly ) [static]
```

@API.Method

@Modifier Availability InterSystems pName: Name of the item that you want to run the dependency analyzer on to find all its references. pReferences: multi-dim array of references in the input item, including class/include files + module references pVerbose: default to 1. If set to 1, references will be written to terminal / Studio output window pProgressListener: Dependency analyzer socket for running deps pRunID: ID of ModuleResults persistent class pIgnoredStringRef: comma-separated string of string references that will be ignored. If set to \$char(0), then will ignore all string references including classes. pDirectDepsOnly: Include only direct dependencies rather than transitive ones as well.

6.38.1.3 RunForInvalidReferences()

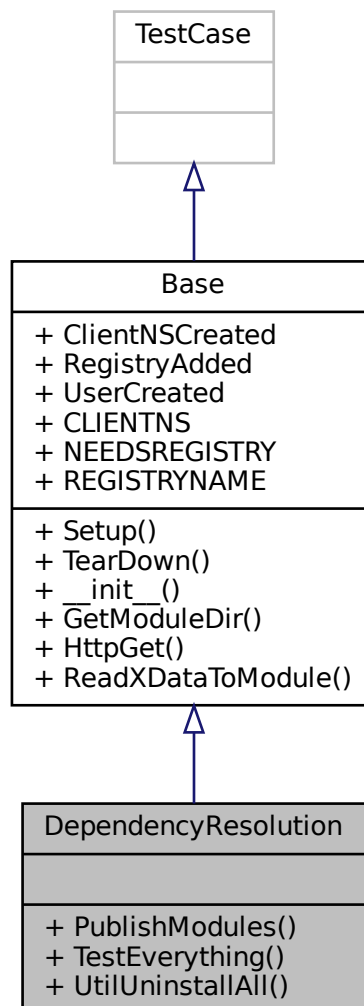
```
_.Library.Status RunForInvalidReferences (
    _.Library.String pName,
    pInvalidReferences,
    _.Library.Boolean pVerbose,
    _.Library.Boolean pSave,
    pProgressListener,
    _.Library.String pRunID,
    _.Library.String pIgnoredStringRef,
    _.Library.Boolean pDirectDepsOnly ) [static]
```

@API.Method

@Modifier Availability InterSystems pName: Name of the module / item that you want to run the dependency analyzer on, to find all invalid references. If no extension is specified, it will be recognized as a module pInvalidReferences: multi-dim array of invalid references in the input module / item, including missing class/include files + missing module references pVerbose: default to 1. If set to 1, invalid references will be written to terminal / Studio output window pProgressListener: Dependency analyzer socket for running deps pRunID: ID of ModuleResults persistent class plgnoredStringRef: comma-separated string of string references that will be ignored. If set to \$char(0), then will ignore all string references including classes. pDirectDepsOnly: Include only direct dependencies rather than transitive ones as well.

6.39 DependencyResolution Class Reference

Inheritance diagram for DependencyResolution:

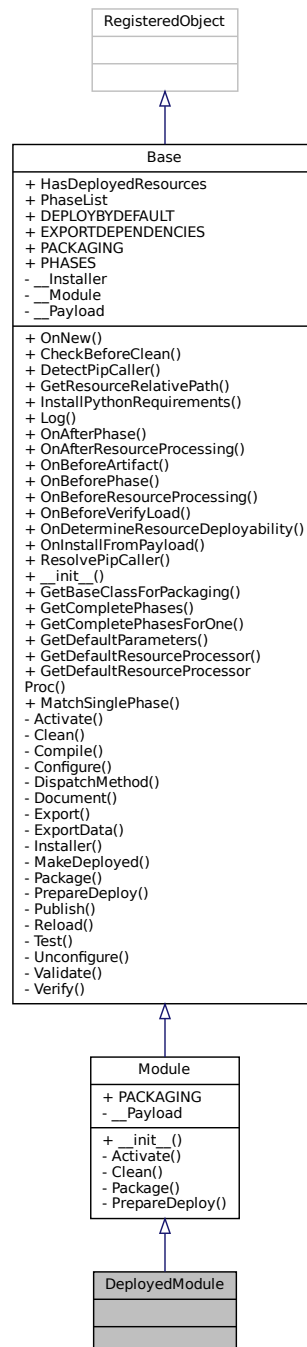


Additional Inherited Members

6.40 DeployedModule Class Reference

[Module](#) lifecycle, but with different default handling for deployment of resources.

Inheritance diagram for DeployedModule:



Additional Inherited Members

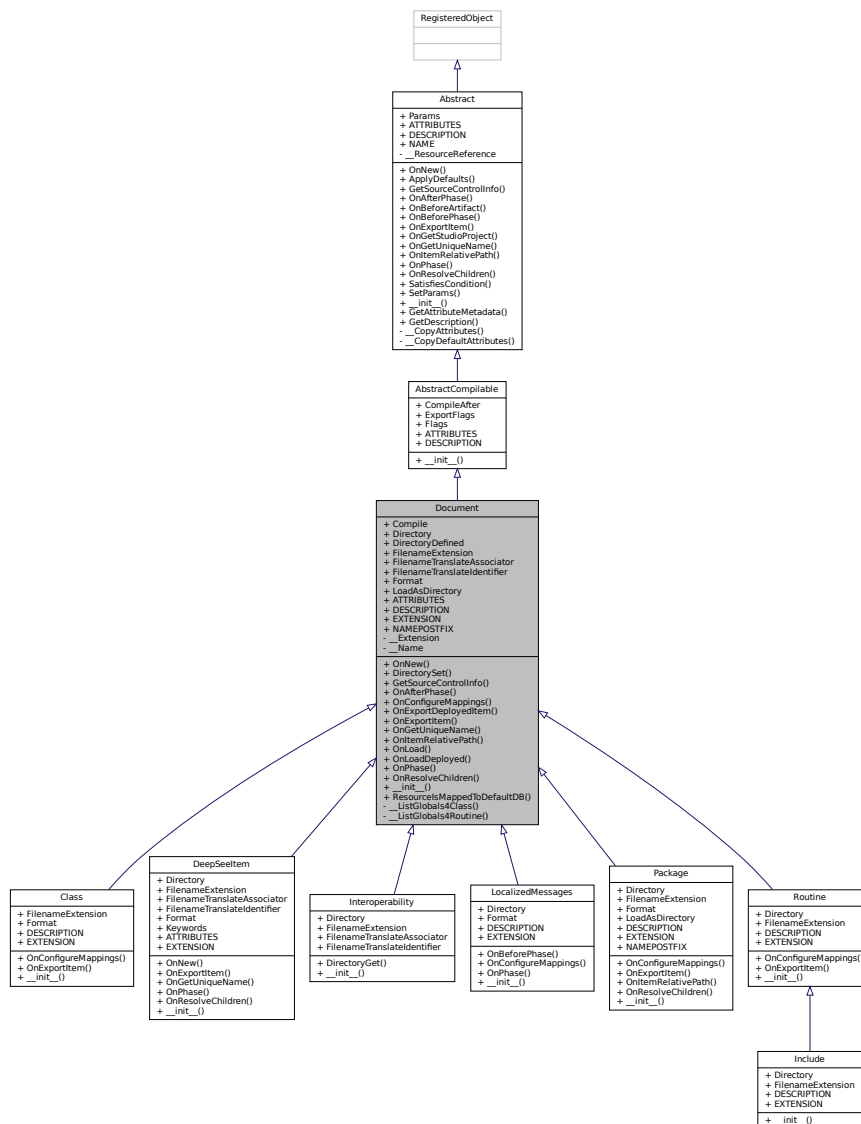
6.40.1 Detailed Description

[Module](#) lifecycle, but with different default handling for deployment of resources.

If no value is specified for the "Deploy" attribute, the resource is marked for deployment.

6.41 Document Class Reference

Inheritance diagram for Document:



Public Member Functions

- `_.Library.Status OnConfigureMappings` (pParams)
Subclasses may override to customize mapping behavior at the beginning of the Reload phase.
- `OnGetUniqueName` (pUniqueName)
Returns a unique name for this resource.
- `_.Library.String OnItemRelativePath` (_.Library.String pItemName)
Returns the path relative to the module root for item pItemName within this resource.
- `_.Library.Status OnLoad` (_.Library.String pFullResourcePath, _.Library.Boolean pVerbose, _.Library.Boolean pCompile, _.Library.String pLoadedList, _.Library.String pParams)
Subclasses may override to customize resource load behavior during the Reload phase.
- `_.Library.Status OnPhase` (_.Library.String pPhase, pParams, _.Library.Boolean pResourceHandled)
Called as phase pPhase is executed for the resource.
- `_.Library.Status OnResolveChildren` (pResourceArray)
Enumerate all documents contained in the resource being processed.

Static Public Member Functions

- `_.Library.Boolean ResourcesMappedToDefaultDB` (_.Library.String pResourceName)
Helper method to be used in derived classes' `OnConfigureMappings()` to skip creating unnecessary mappings.

Public Attributes

- `Compile`
If true, the resource will be compiled during the compilation phase in the module lifecycle.
- `Directory`
Directory relative to module root containing the exported resource.
- `DirectoryDefined`
- `FilenameExtension`
Extension for individual filename(s) that comprise this resource.
- `FilenameTranslateAssociator`
Characters in the filename to use as the associator in `$translate` when determining the resource's filename on disk.
- `FilenameTranslateIdentifier`
Characters in the filename to use as the identifier in `$translate` when determining the resource's filename on disk.
- `Format`
Export format - list of acceptable values may differ by subclass.
- `LoadAsDirectory`
If true (default is false), the resource is loaded as a directory.

Static Public Attributes

- `ATTRIBUTES` = None
Comma-separated list of resource attribute names that this processor uses.
- `DESCRIPTION` = None
Description of resource processor class (shown in UI)
- `EXTENSION` = None
May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.
- `NAMEPOSTFIX` = None
When a module is loaded in developer mode, this is appended to the resource name in `^ Sources` - e.g., `^ Sources(..Extension, <resource name>_..NAMEPOSTFIX)`

Private Attributes

- [__Extension](#)
Extension of the server document(s) represented by this resource.
- [__Name](#)
Name of the server document (without extension)

6.41.1 Member Function Documentation

6.41.1.1 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

[Default](#) implementation, leaving *pUniqueName* undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Abstract](#).

Reimplemented in [DeepSeeltem](#).

6.41.1.2 OnLoad()

```
_.Library.Status OnLoad (
    _.Library.String pFullResourcePath,
    _.Library.Boolean pVerbose,
    _.Library.Boolean pCompile,
    _.Library.String pLoadedList,
    _.Library.String pParams )
```

Subclasses may override to customize resource load behavior during the Reload phase.

@Argument pFullResourcePath The absolute path to the resource present on the file system **@Argument pVerbose** 1: display output from loading files, 0: do not display output **@Argument pCompile** 1: compile files upon load, 0: do not compile files **@Argument pLoadedList** Output: comma delimited list of files that have been loaded

6.41.1.3 OnPhase()

```

_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )

```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Abstract](#).

Reimplemented in [LocalizedMessages](#), and [DeepSeeltem](#).

6.41.1.4 OnResolveChildren()

```

_.Library.Status OnResolveChildren (
    pResourceArray )

```

Enumerate all documents contained in the resource being processed.

@Argument pResourceArray ByRef: array of the following format: pResourceArray(<Studio document name>) = <module that contains document> pResourceArray(<Studio document name>, <resource referenty property>) = value of resource reference property for given document

Reimplemented in [Package](#), and [DeepSeeltem](#).

6.41.1.5 ResourceIsMappedToDefaultDB()

```

_.Library.Boolean ResourceIsMappedToDefaultDB (
    _.Library.String pResourceName ) [static]

```

Helper method to be used in derived classes' [OnConfigureMappings\(\)](#) to skip creating unnecessary mappings.

Returns true if *pResourceName* (in InternalName format - e.g., Foo.Bar.PKG) is mapped to the current namespace's default routine database.

6.41.2 Member Data Documentation

6.41.2.1 EXTENSION

```
EXTENSION = None [static]
```

May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.

The only expected use case at this point is class packages (.PKG, but Extension will be .CLS)

6.41.2.2 NAMEPOSTFIX

```
NAMEPOSTFIX = None [static]
```

When a module is loaded in developer mode, this is appended to the resource name in `^Sources` - e.g., `^Sources(..Extension, <resource name>_..NAMEPOSTFIX)`

The only expected use case at this point is class packages (.PKG, but Extension will be .CLS)

6.41.2.3 Compile

```
Compile
```

If true, the resource will be compiled during the compilation phase in the module lifecycle.

6.41.2.4 Directory

```
Directory
```

Directory relative to module root containing the exported resource.

Defaults to the resource's extension (lower-case) if unspecified.

6.41.2.5 DirectoryDefined

```
DirectoryDefined
```

6.41.2.6 __Extension

```
__Extension [private]
```

Extension of the server document(s) represented by this resource.

6.41.2.7 FilenameExtension

FilenameExtension

Extension for individual filename(s) that comprise this resource.

6.41.2.8 FilenameTranslateAssociator

FilenameTranslateAssociator

Characters in the filename to use as the associator in \$translate when determining the resource's filename on disk.

The default behavior is to replace "." with "/" and ignore "%"

6.41.2.9 FilenameTranslateIdentifier

FilenameTranslateIdentifier

Characters in the filename to use as the identifier in \$translate when determining the resource's filename on disk.

The default behavior is to replace "." with "/" and ignore "%"

6.41.2.10 Format

Format

Export format - list of acceptable values may differ by subclass.

6.41.2.11 LoadAsDirectory

LoadAsDirectory

If true (default is false), the resource is loaded as a directory.

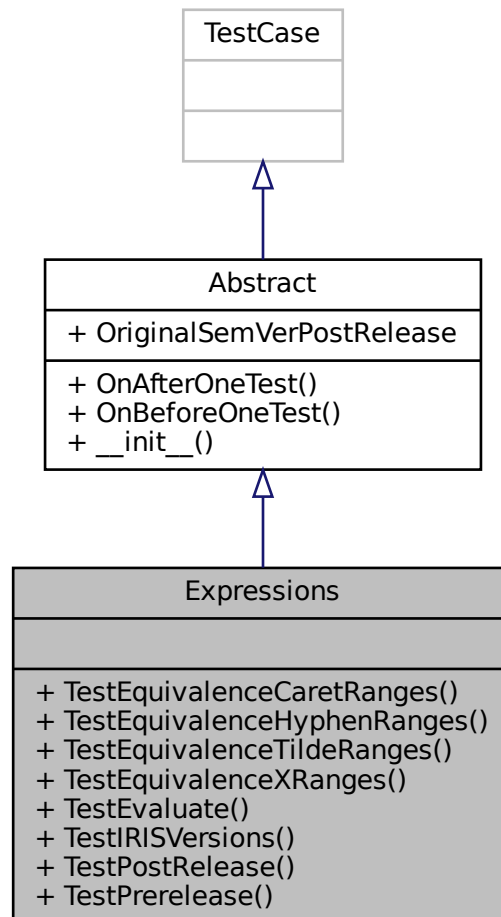
6.41.2.12 __Name

__Name [private]

Name of the server document (without extension)

6.42 Expressions Class Reference

Inheritance diagram for Expressions:



Additional Inherited Members

6.43 File Class Reference

Wraps a set of more robust file operations.

Static Public Member Functions

- `_.Library.Status CopyDir` (`_.Library.String pSource`, `_.Library.String pDest`, `_.Library.Boolean pDeleteFirst`, `_.Library.Boolean pVerbose`)

Wraps a set of more robust file operations.

- `_.Library.Status CopyFile` (`_.Library.String pSource`, `_.Library.String pDest`, `_.Library.Boolean pDeleteBeforeCopy`)
Copy a file *pSource* to file *pDest*.
- `_.Library.Status CreateDirectoryChain` (`_.Library.String pName`)
Create this directory and all the parent directories if they do not exist.
- `_.Library.Boolean Exists` (`pFilename`, `pReturn`)
Check if file exists but case insensitive.

6.43.1 Detailed Description

Wraps a set of more robust file operations.

6.43.2 Member Function Documentation

6.43.2.1 CopyFile()

```
_.Library.Status CopyFile (
    _.Library.String pSource,
    _.Library.String pDest,
    _.Library.Boolean pDeleteBeforeCopy ) [static]
```

Copy a file *pSource* to file *pDest*.

Parameter *pDeleteBeforeCopy* may be used to specify that if the target file already exists then it should be deleted before being overwritten with the source file. The default is 0 or false.

6.43.2.2 CreateDirectoryChain()

```
_.Library.Status CreateDirectoryChain (
    _.Library.String pName ) [static]
```

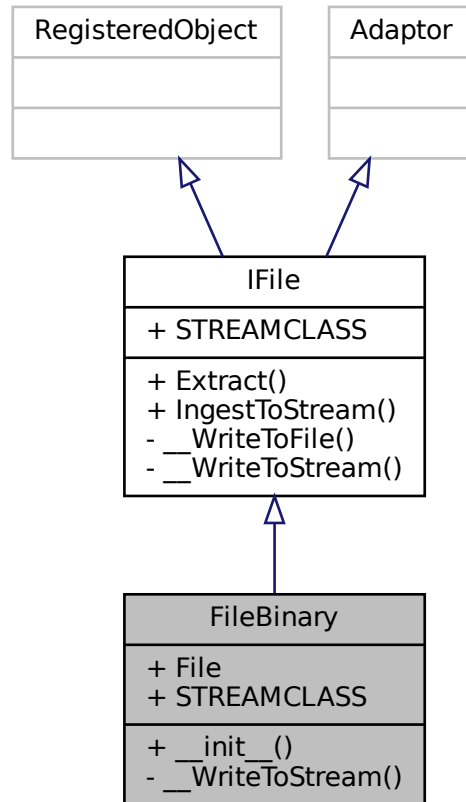
Create this directory and all the parent directories if they do not exist.

This differs from

`<method>CreateDirectory</method>` as that method only creates one new directory where as this will create the entire chain of directories. Returns true if it succeeds and false otherwise. Pass *return* by reference to obtain the low level return value in case of errors

6.44 FileBinary Class Reference

Inheritance diagram for FileBinary:



Public Attributes

- [File](#)

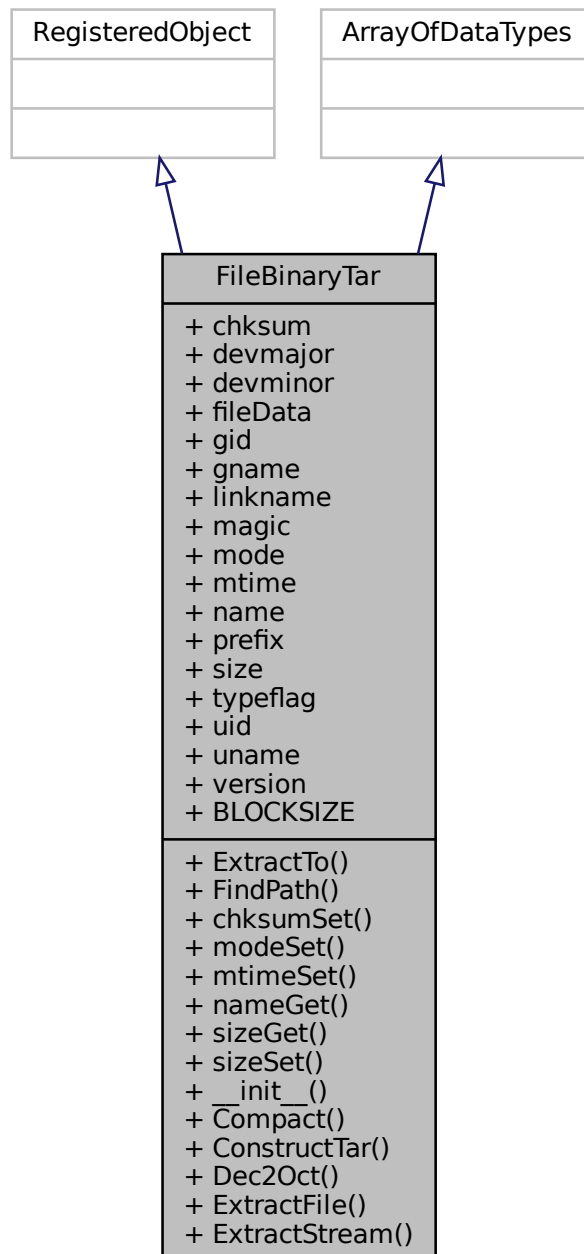
6.44.1 Member Data Documentation

6.44.1.1 File

File

6.45 FileBinaryTar Class Reference

Inheritance diagram for FileBinaryTar:



Public Attributes

- [chksum](#)

checksum for header

- [devmajor](#)
device major number
- [devminor](#)
device minor number
- [fileData](#)
file data
- [gid](#)
owner group ID
- [gname](#)
owner group name
- [linkname](#)
name of linked file
- [magic](#)
USTAR indicator.
- [mode](#)
file mode
- [mtime](#)
modify time of file
- [name](#)
name of file
- [prefix](#)
prefix for file name
- [size](#)
length of file in bytes
- [typeflag](#)
type of file
- [uid](#)
owner user ID
- [uname](#)
owner user name
- [version](#)
USTAR version.

6.45.1 Member Data Documentation

6.45.1.1 chksum

chksum

checksum for header

6.45.1.2 devmajor`devmajor`

device major number

6.45.1.3 devminor`devminor`

device minor number

6.45.1.4 fileData`fileData`

file data

6.45.1.5 gid`gid`

owner group ID

6.45.1.6 gname`gname`

owner group name

6.45.1.7 linkname`linkname`

name of linked file

6.45.1.8 magic

magic

USTAR indicator.

6.45.1.9 mode

mode

file mode

6.45.1.10 mtime

mtime

modify time of file

6.45.1.11 name

name

name of file

6.45.1.12 prefix

prefix

prefix for file name

6.45.1.13 size

size

length of file in bytes

6.45.1.14 typeflag

typeflag

type of file

6.45.1.15 uid

uid

owner user ID

6.45.1.16 uname

uname

owner user name

6.45.1.17 version

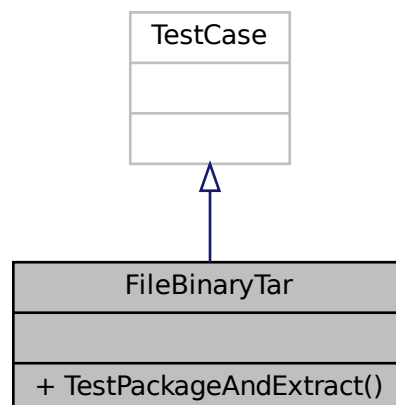
version

USTAR version.

6.46 FileBinaryTar Class Reference

Most convenient to represent this as an integration test to reuse the integration test packages.

Inheritance diagram for FileBinaryTar:



Public Member Functions

- [TestPackageAndExtract\(\)](#)

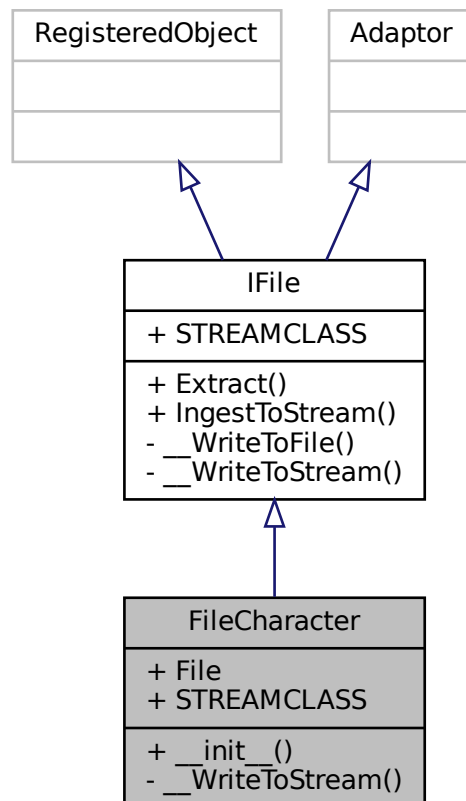
Most convenient to represent this as an integration test to reuse the integration test packages.

6.46.1 Detailed Description

Most convenient to represent this as an integration test to reuse the integration test packages.

6.47 FileCharacter Class Reference

Inheritance diagram for FileCharacter:



Public Attributes

- [File](#)

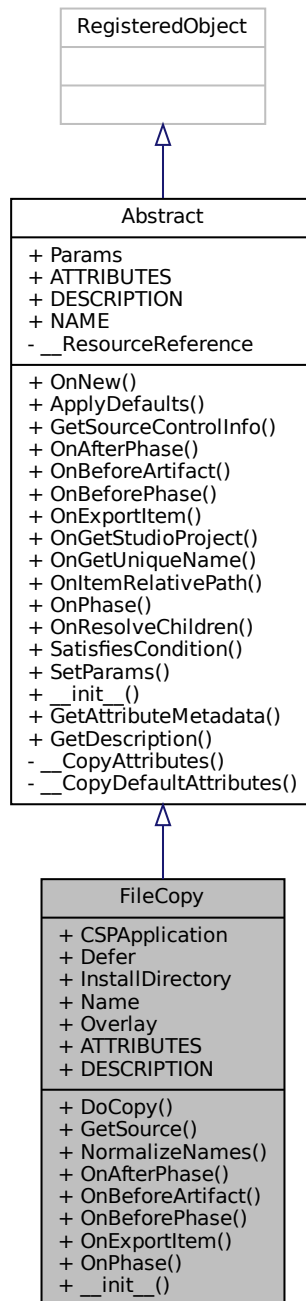
6.47.1 Member Data Documentation

6.47.1.1 File

File

6.48 FileCopy Class Reference

Inheritance diagram for FileCopy:



Public Member Functions

- [GetSource](#) ()
Prefixes the path to the module root if it does not start with a \$ variable.
- `_.Library.Status` [OnPhase](#) (`_.Library.String` pPhase, `pParams`, `_.Library.Boolean` pResourceHandled)
Called as phase pPhase is executed for the resource.

Public Attributes

- [CSPApplication](#)

Optional hint to source control class: which CSP application path do these files map to?

- [Defer](#)

If true, the files will be copied at the end of the Activate phase rather than at the beginning.

- [InstallDirectory](#)

Path to which the directory or file (a full filename, in that case) should be copied upon installation; may contain expressions.

- [Name](#)

- [Overlay](#)

If true, the files should be added to the target location (rather than fully replacing it, causing other files there to be deleted)

Static Public Attributes

- [ATTRIBUTES](#) = None

Comma-separated list of resource attribute names that this processor uses.

- [DESCRIPTION](#) = None

Description of resource processor class (shown in UI)

6.48.1 Member Function Documentation

6.48.1.1 OnPhase()

```

_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )

```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Abstract](#).

6.48.2 Member Data Documentation

6.48.2.1 CSPApplication

`CSPApplication`

Optional hint to source control class: which CSP application path do these files map to?

For use cases where the `CSPApplication` resource processor is too heavy-handed - e.g., `/csp/xslt`. Of course, this is only relevant for files that need to be copied to a CSP application. Note that this may be a full CSP file path, not only the name of a CSP application.

6.48.2.2 Defer

`Defer`

If true, the files will be copied at the end of the Activate phase rather than at the beginning.

The default is to copy the files at the beginning of the Activate phase. Use this for build artifacts.

6.48.2.3 InstallDirectory

`InstallDirectory`

Path to which the directory or file (a full filename, in that case) should be copied upon installation; may contain expressions.

6.48.2.4 Name

`Name`

6.48.2.5 Overlay

`Overlay`

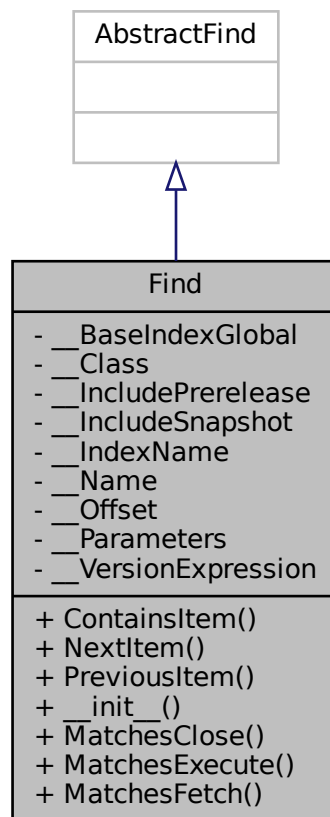
If true, the files should be added to the target location (rather than fully replacing it, causing other files there to be deleted)

Relevant for directories only.

6.49 Find Class Reference

Class to enable use of `<class>IPM.General.SemanticVersion.Index</class>` with FIND.

Inheritance diagram for Find:



Public Member Functions

- `_.Library.Boolean` [ContainsItem](#) (`_.Library.String` pitem)
 At minimum, `<METHOD>ContainsItem()</METHOD>` must always be supported.
- `_.Library.String` [NextItem](#) (`_.Library.String` pitem)
 Supports *INSUB* (eventually?) - for now called from class query.
- `_.Library.String` [PreviousItem](#) (`_.Library.String` pitem)
 Supports *INSUB* (eventually?) - for now called from class query.

Private Attributes

- `__BaseIndexGlobal`

- [__Class](#)
- [__IncludePrerelease](#)
- [__IncludeSnapshot](#)
- [__IndexName](#)
- [__Name](#)
- [__Offset](#)
- [__Parameters](#)
- [__VersionExpression](#)

6.49.1 Detailed Description

Class to enable use of `<class>IPM.General.SemanticVersion.Index</class>` with FIND.

For detailed documentation, see `<class>IPM.General.SemanticVersion.Index</class>`. TODO: emulate bitmap index by overriding `GetChunk/NextChunk/PreviousChunk?`

6.49.2 Member Function Documentation

6.49.2.1 ContainsItem()

```
_.Library.Boolean ContainsItem (  
    _.Library.String pItem )
```

At minimum, `<METHOD>ContainsItem()</METHOD>` must always be supported.

It returns 1 iff the given pItem is in the set S.

6.49.3 Member Data Documentation

6.49.3.1 __BaseIndexGlobal

```
__BaseIndexGlobal [private]
```

6.49.3.2 __Class

`__Class` [private]

6.49.3.3 __IncludePrerelease

`__IncludePrerelease` [private]

6.49.3.4 __IncludeSnapshot

`__IncludeSnapshot` [private]

6.49.3.5 __IndexName

`__IndexName` [private]

6.49.3.6 __Name

`__Name` [private]

6.49.3.7 __Offset

`__Offset` [private]

6.49.3.8 __Parameters

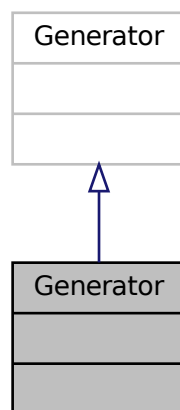
```
__Parameters [private]
```

6.49.3.9 __VersionExpression

```
__VersionExpression [private]
```

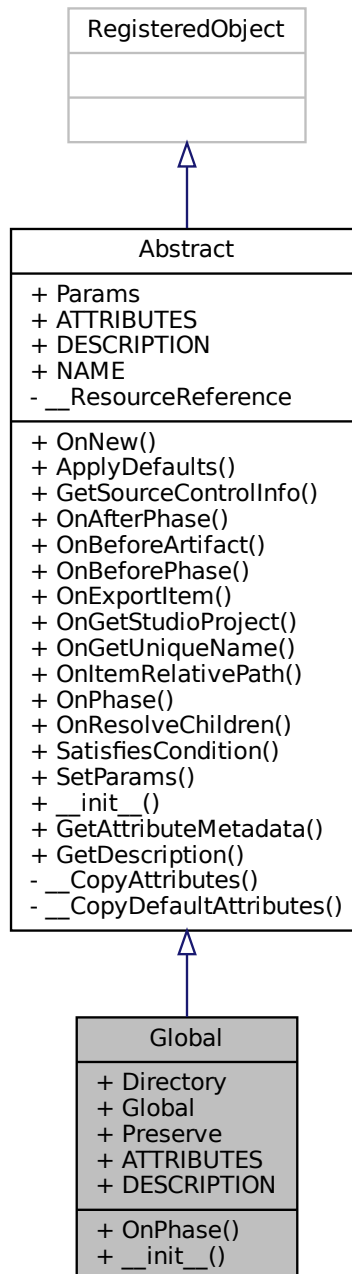
6.50 Generator Class Reference

Inheritance diagram for Generator:



6.51 Global Class Reference

Inheritance diagram for Global:



Public Member Functions

- `__Library.Status OnPhase` (`__Library.String pPhase`, `pParams`, `__Library.Boolean pResourceHandled`)
Called as phase pPhase is executed for the resource.

Public Attributes

- [Directory](#)
Directory relative to module root containing the exported resource.
- [Global](#)
Optional name of global within the file.
- [Preserve](#)
If set to 1, do not delete the global when the module is cleaned/uninstalled.

Static Public Attributes

- [ATTRIBUTES](#) = None
Comma-separated list of resource attribute names that this processor uses.
- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)

6.51.1 Member Function Documentation

6.51.1.1 OnPhase()

```
_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )
```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Abstract](#).

6.51.2 Member Data Documentation

6.51.2.1 Directory

Directory

Directory relative to module root containing the exported resource.

Defaults to the resource's extension (lower-case) if unspecified.

6.51.2.2 Global

`Global`

Optional name of global within the file.

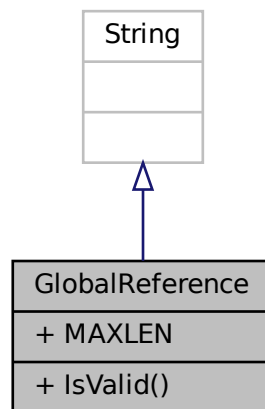
6.51.2.3 Preserve

`Preserve`

If set to 1, do not delete the global when the module is cleaned/uninstalled.

6.52 GlobalReference Class Reference

Inheritance diagram for GlobalReference:



Static Public Attributes

- `MAXLEN` = None

511 is an upper bound for the maximum length of a global reference - see:

6.52.1 Member Data Documentation

6.52.1.1 MAXLEN

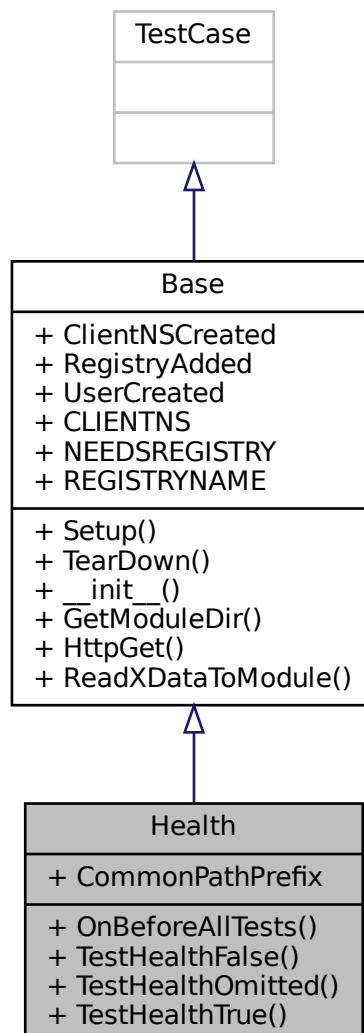
```
MAXLEN = None [static]
```

511 is an upper bound for the maximum length of a global reference - see:

[Maximum Length of a Global Reference](#)

6.53 Health Class Reference

Inheritance diagram for Health:

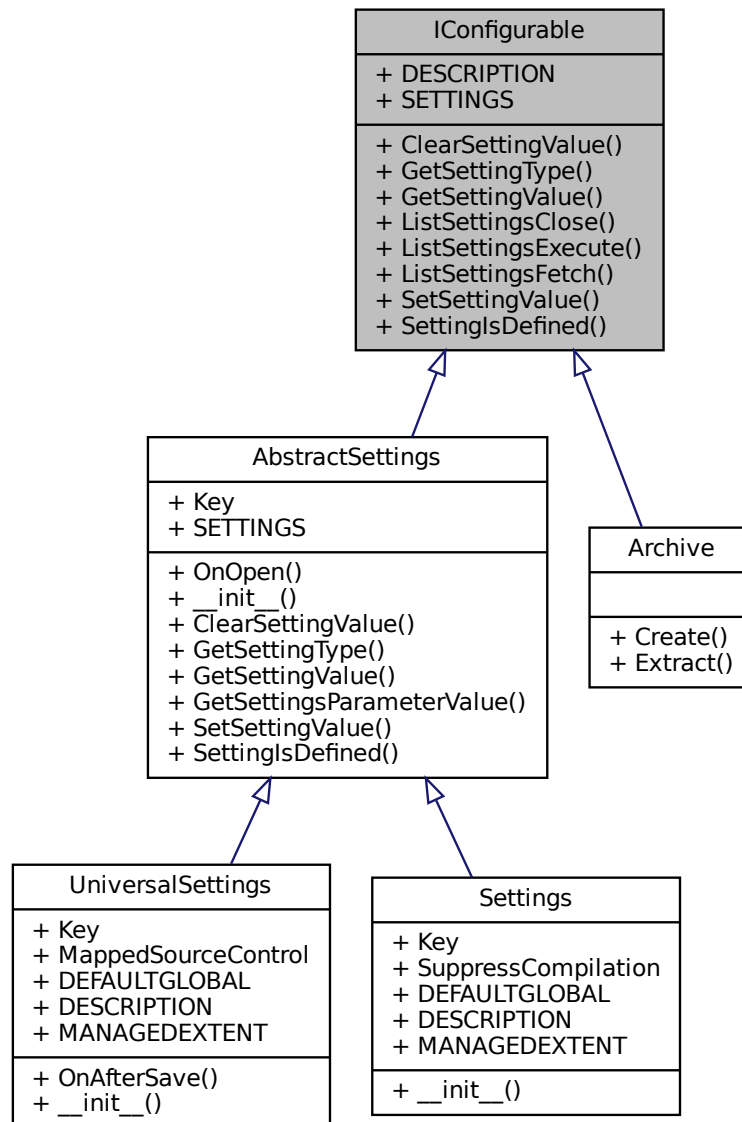


Additional Inherited Members

6.54 IConfigurable Class Reference

Interface for classes that require some level of configuration.

Inheritance diagram for IConfigurable:



Static Public Member Functions

- `_.Library.Status ClearSettingValue (_.Library.String pName)`
Clears value of setting pName

- `_.Library.String` [GetSettingType](#) (`_.Library.String pName`)
Returns the datatype of a setting, as one of:
- `_.Library.String` [GetSettingValue](#) (`_.Library.String pName`)
Clears value of setting pName
- `_.Library.Status` [SetSettingValue](#) (`_.Library.String pName`, `_.Library.String pValue`)
Sets setting pName to pValue.
- `_.Library.Boolean` [SettingsIsDefined](#) (`_.Library.String pName`)
Returns true if a value is defined for setting pName.

Static Public Attributes

- [DESCRIPTION](#) = None
Interface for classes that require some level of configuration.
- [SETTINGS](#) = None
A delimited string in the format:

6.54.1 Detailed Description

Interface for classes that require some level of configuration.

SETTINGS and DESCRIPTION are used to dynamically populate `IPM.Extension.ServerMenu.Configuration` with all classes that implement [IConfigurable](#).

6.54.2 Member Function Documentation

6.54.2.1 GetSettingType()

```
_.Library.String GetSettingType (  
    _.Library.String pName ) [static]
```

Returns the datatype of a setting, as one of:

boolean, string The default implementation is to always return "string"

Reimplemented in [AbstractSettings](#).

6.54.2.2 SetSettingValue()

```
_.Library.Status SetSettingValue (  
    _.Library.String pName,  
    _.Library.String pValue ) [static]
```

Sets setting *pName* to *pValue*.

Should return an error Status if *pValue* is invalid.

Reimplemented in [AbstractSettings](#).

6.54.3 Member Data Documentation

6.54.3.1 DESCRIPTION

```
DESCRIPTION = None [static]
```

Interface for classes that require some level of configuration.

SETTINGS and DESCRIPTION are used to dynamically populate IPM.Extension.ServerMenu.Configuration with all classes that implement [IConfigurable](#).

A string to show in the grouping of settings for this class

6.54.3.2 SETTINGS

```
SETTINGS = None [static]
```

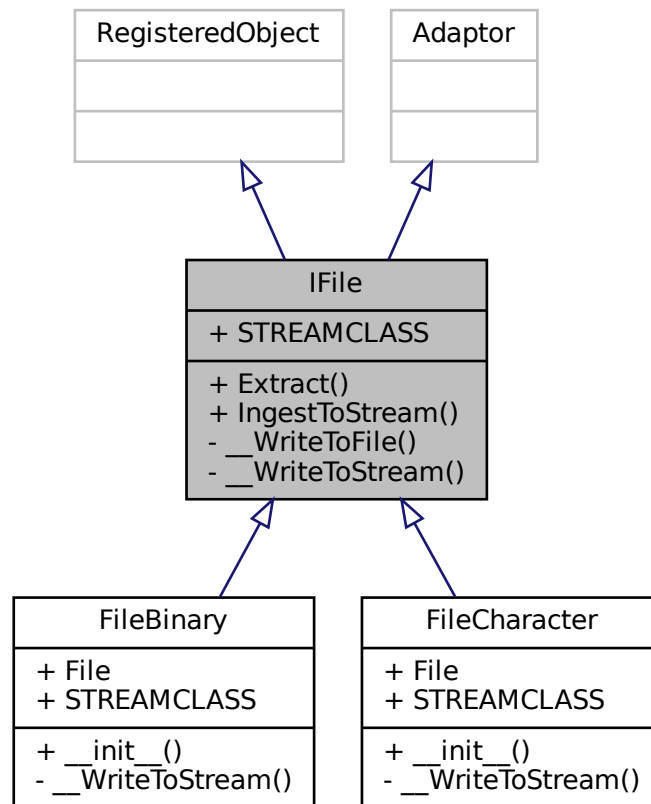
A delimited string in the format:

```
Key:Description[|Key:Description...]
```

6.55 IFile Class Reference

Abstract representation of a file included in an XData archive.

Inheritance diagram for IFile:



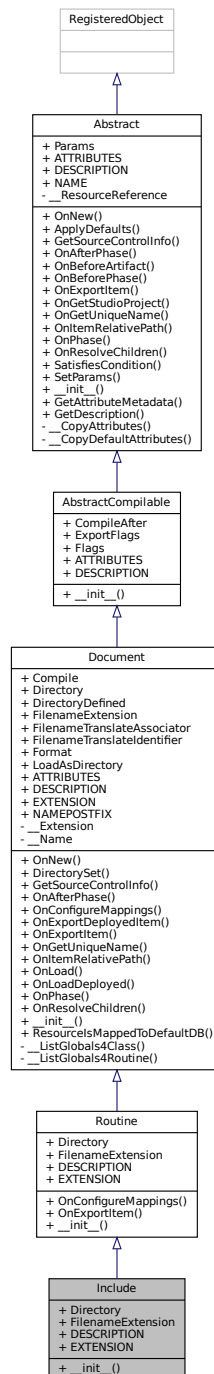
6.55.1 Detailed Description

Abstract representation of a file included in an XData archive.

Subclasses may customize the stream type.

6.56 Include Class Reference

Inheritance diagram for Include:



Public Attributes

- [Directory](#)
Directory relative to module root containing the exported resource.
- [FilenameExtension](#)
Extension for individual filename(s) that comprise this resource.

Static Public Attributes

- `DESCRIPTION` = None

Description of resource processor class (shown in UI)

- `EXTENSION` = None

May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.

Additional Inherited Members

6.56.1 Member Data Documentation

6.56.1.1 Directory

`Directory`

Directory relative to module root containing the exported resource.

Normally defaults to the resource's extension (lower-case) if unspecified; In this case, overridden because the default `Routine` processor hard-codes to "rtn"

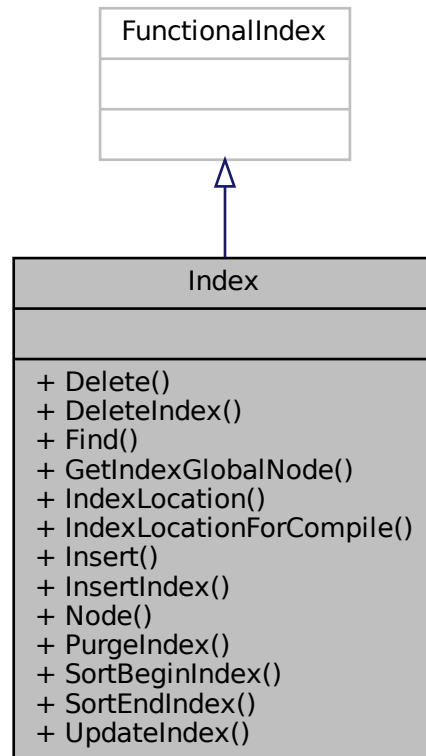
6.56.1.2 FilenameExtension

`FilenameExtension`

Extension for individual filename(s) that comprise this resource.

6.57 Index Class Reference

Inheritance diagram for Index:



Static Public Member Functions

- [DeleteIndex](#) (`_.Library.CacheString pID, _.Library.Binary pArg`)
This method is invoked when an existing instance of a class is deleted.
- [InsertIndex](#) (`_.Library.CacheString pID, _.Library.Binary pArg`)
This method is invoked when a new instance of a class is inserted into the database.
- [UpdateIndex](#) (`_.Library.CacheString pID, _.Library.Binary pArg`)
This method is invoked when an existing instance of a class is updated.

6.57.1 Detailed Description

Functional index on semantic versions. This serves two purposes:

1. Enable searching based on module name and semantic version expression without scanning the whole extent
2. Simplify ordering based on latest semantic version, properly handling major/minor/patch version numbers and prerelease designations.

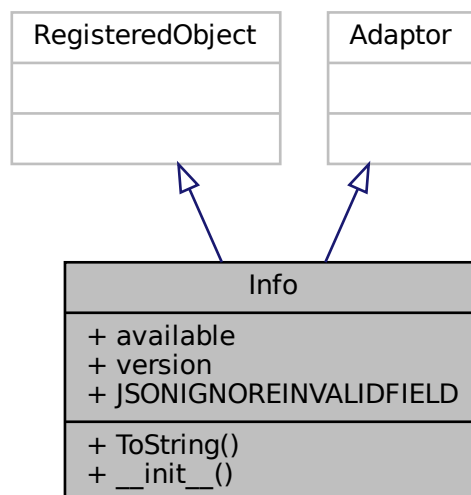
To use this index in a class, define an index on a string property (the module name) and a property of type `<class>IPM.General.SemanticVersion</class>`. `Index SemVer On (Name, Version) As IPM.General.SemanticVersion.Index;` You must also define a property with the same name as that index, as follows: `Property SemVer As String(MAXLEN = 512) [SqlComputeCode = {set {*} = ##class(IPM.Repo.Filesystem.Cache).SemVerNode({Name},{Version})}, SqlComputed, SqlComputeOnChange = (%INSERT, %UPDATE)];`

For an example, see `<class>IPM.Repo.Filesystem.Cache</class>`.

To use the generated `Find` method and the `IPM.General.SemanticVersion.Find` (as in the example of `IPM.PackageManager_Server.Module`): `SELECT Name,VersionString FROM IPM.PackageManager_Server.Module WHERE ID INSET IPM.PackageManager_Server.Module_SemVerFind('HS.JSON','0.x','snapshot')` To facilitate ordering by semantic version, classes that define such indices may also implement class queries to wrap `IPM.General.SemanticVersion.Find:Matches`.

6.58 Info Class Reference

Inheritance diagram for Info:



Public Attributes

- [available](#)
- [version](#)

6.58.1 Member Data Documentation

6.58.1.1 available

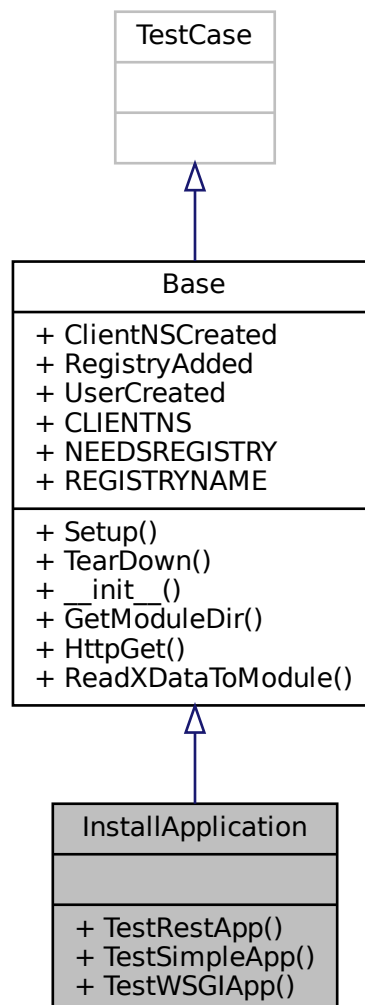
available

6.58.1.2 version

version

6.59 InstallApplication Class Reference

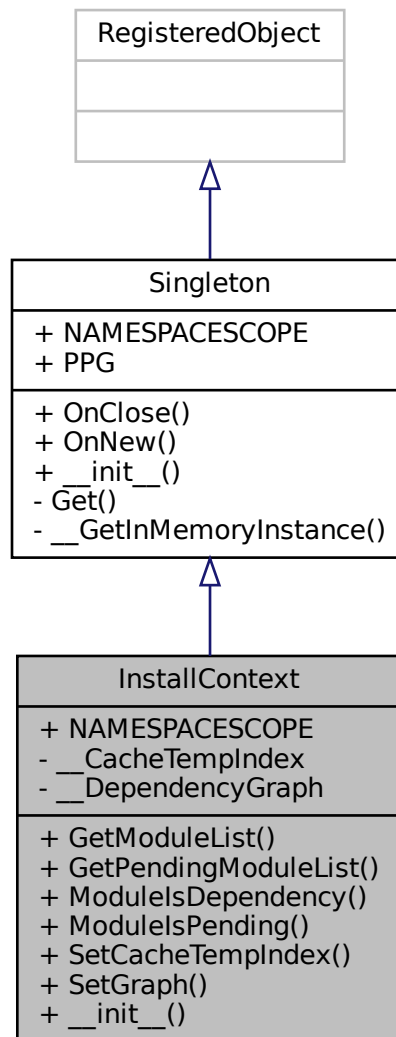
Inheritance diagram for InstallApplication:



Additional Inherited Members

6.60 InstallContext Class Reference

Inheritance diagram for InstallContext:



Static Public Attributes

- `NAMESPACESCOPE` = None

If set to 1, calls to `Get` must return an instance of this class created in the current namespace; a new instance will be created if none exists.

Private Attributes

- [__CacheTempIndex](#)
- [__DependencyGraph](#)

Additional Inherited Members

6.60.1 Member Data Documentation

6.60.1.1 [__CacheTempIndex](#)

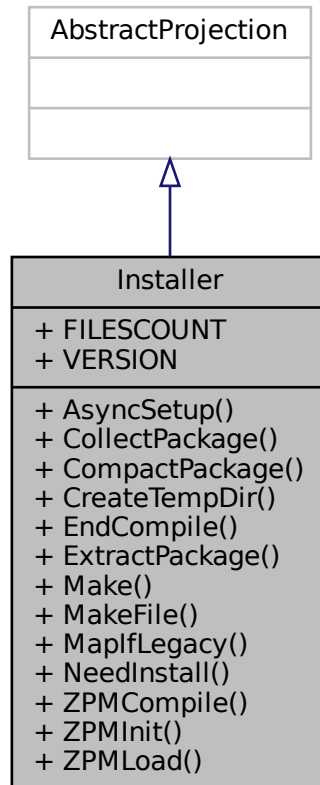
`__CacheTempIndex` [private]

6.60.1.2 [__DependencyGraph](#)

`__DependencyGraph` [private]

6.61 Installer Class Reference

Inheritance diagram for Installer:



Static Public Member Functions

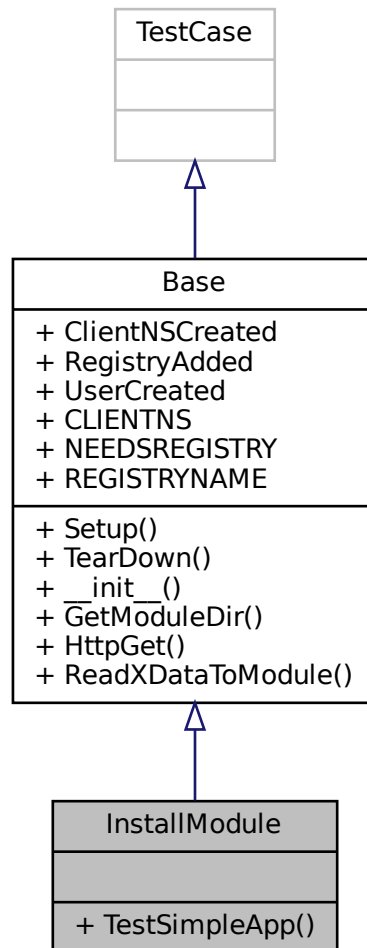
- [NeedInstall](#) (Library.String version)
Check currently installed version, if any.

Static Public Attributes

- [FILESCOUNT](#) = None
Number of files for autoinstall release.
- [VERSION](#) = None
Version used for autoinstall release.

6.62 InstallModule Class Reference

Inheritance diagram for InstallModule:

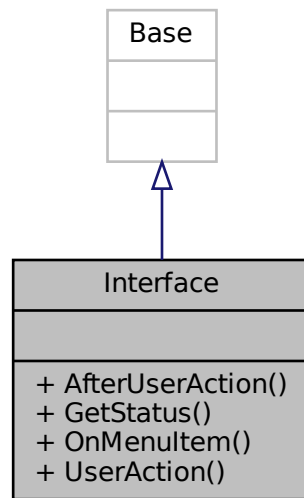


Additional Inherited Members

6.63 Interface Class Reference

Additional interface for server menu source control extensions to implement.

Inheritance diagram for Interface:



6.63.1 Detailed Description

Additional interface for server menu source control extensions to implement.

6.64 Interface Class Reference

Additional interface for source control extensions to implement to plug in to module lifecycles.

Static Public Member Functions

- `_.Library.Status Configure ()`
Invoked after `zpm "init"` to configure settings for this source control class.
- `_.Library.Status OnAfterBuild (_.Library.Boolean plsDev, _.Library.Boolean pSuccessful)`
Invoked after build process runs.
- `_.Library.Status OnBeforeBuild (_.Library.Boolean plsDev)`
Invoked before build process runs.
- `_.Library.Status OnChangeModuleRoot (_.IPM.Storage.Module pModule)`
Invoked when an existing module is reloaded from a different directory than its known module root.
- `_.Library.Status OnMakeModuleEditable (_.IPM.Storage.Module pModule)`
Invoked when the user has attempted to edit a module document reported by the active Studio extension as read-only (i.e., because it is not checked out)

Static Public Attributes

- `SETTINGSPAGE` = None

Name of page to help configure source control on a per-module basis.

Static Private Member Functions

- `_.Library.Status OnAfterBuild` (`_.Library.Boolean pIsDev`, `_.Library.Boolean pSuccessful`)

Invoked after running build processes.

- `_.Library.Status OnBeforeBuild` (`_.Library.Boolean pIsDev`)

Invoked prior to running build processes.

- `_.Library.Status SourceControlMethod` (`pMethod`, `pArgs`)

Follows a similar pattern to `Studio.SourceControl.Interface`, but permits all methods defined in the current Studio extension.

6.64.1 Detailed Description

Additional interface for source control extensions to implement to plug in to module lifecycles.

6.64.2 Member Function Documentation

6.64.2.1 OnAfterBuild()

```
_.Library.Status OnAfterBuild (
    _.Library.Boolean pIsDev,
    _.Library.Boolean pSuccessful ) [static], [private]
```

Invoked after running build processes.

Should be called even if the build fails

6.64.2.2 SourceControlMethod()

```
_.Library.Status SourceControlMethod (
    pMethod,
    pArgs ) [static], [private]
```

Follows a similar pattern to `Studio.SourceControl.Interface`, but permits all methods defined in the current Studio extension.

Moves `SourceControl` (which must be defined!) to a different variable name, `New's SourceControl`, then runs `p->Method` of that object with `pArgs...` If expected to return a value, will return what this method does (most often a `Status`); otherwise, will just do `$method`. Much low-level (`^apiOBJ`, etc.) import/export code behaves differently when `SourceControl` is defined, so this is typically necessary and always safest.

6.64.2.3 Configure()

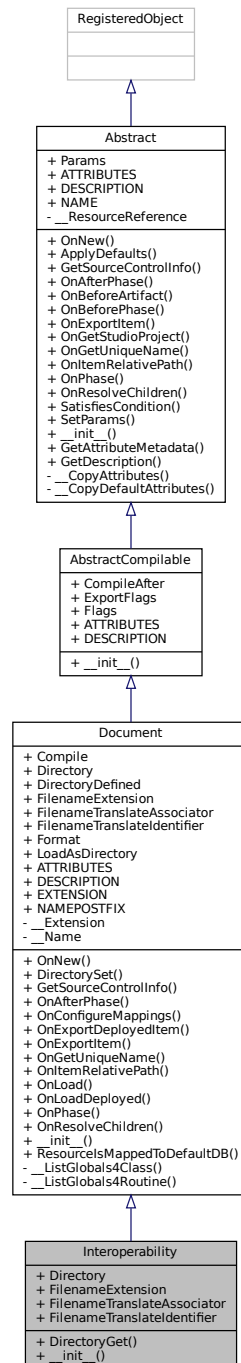
```
_.Library.Status Configure ( ) [static]
```

Invoked after zpm "init" to configure settings for this source control class.

Default implementation is a no-op

6.65 Interoperability Class Reference

Inheritance diagram for Interoperability:



Public Attributes

- [Directory](#)

- [FilenameExtension](#)
Extension for individual filename(s) that comprise this resource.
- [FilenameTranslateAssociator](#)
- [FilenameTranslateIdentifier](#)

Additional Inherited Members

6.65.1 Member Data Documentation

6.65.1.1 Directory

Directory

6.65.1.2 FilenameExtension

FilenameExtension

Extension for individual filename(s) that comprise this resource.

6.65.1.3 FilenameTranslateAssociator

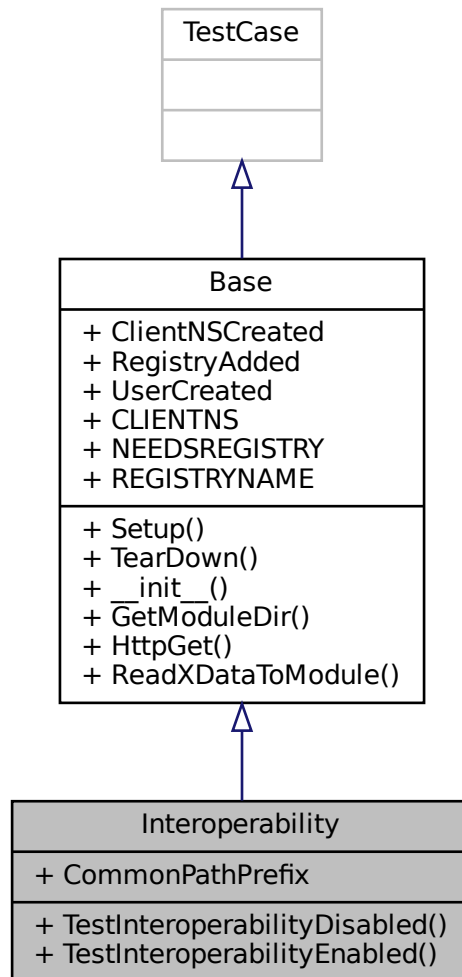
FilenameTranslateAssociator

6.65.1.4 FilenameTranslateIdentifier

FilenameTranslateIdentifier

6.66 Interoperability Class Reference

Inheritance diagram for Interoperability:

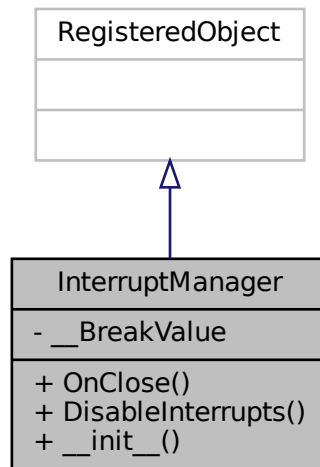


Additional Inherited Members

6.67 InterruptManager Class Reference

Handles setting of "break" to avoid Ctr-C breaking the instance when called during critical sections.

Inheritance diagram for InterruptManager:



Public Member Functions

- `_.Library.Status OnClose ()`
This callback method is invoked by the `<METHOD>Close</METHOD>` method to.
- `DisableInterrupts ()`
Disables interrupts.

Private Attributes

- `__BreakValue`
Stores the value associated with the "break" command.

6.67.1 Detailed Description

Handles setting of "break" to avoid Ctr-C breaking the instance when called during critical sections.

6.67.2 Member Function Documentation

6.67.2.1 OnClose()

```
_.Library.Status OnClose ( )
```

This callback method is invoked by the `<METHOD>Close</METHOD>` method to.

provide notification that the current object is being closed.

The return value of this method is ignored.

6.67.3 Member Data Documentation

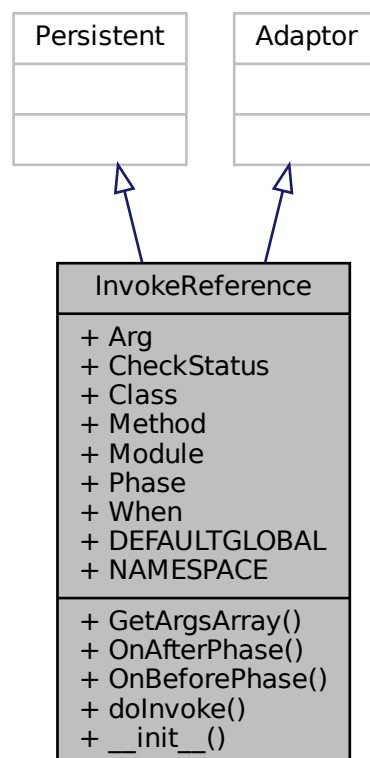
6.67.3.1 `__BreakValue`

```
__BreakValue [private]
```

Stores the value associated with the "break" command.

6.68 InvokeReference Class Reference

Inheritance diagram for InvokeReference:



Public Attributes

- [Arg](#)
- [CheckStatus](#)
- [Class](#)
- [Method](#)
- [Module](#)
- [Phase](#)
- [When](#)

6.68.1 Member Data Documentation

6.68.1.1 Arg

Arg

6.68.1.2 CheckStatus

CheckStatus

6.68.1.3 Class

Class

6.68.1.4 Method

Method

6.68.1.5 Module

Module

6.68.1.6 Phase

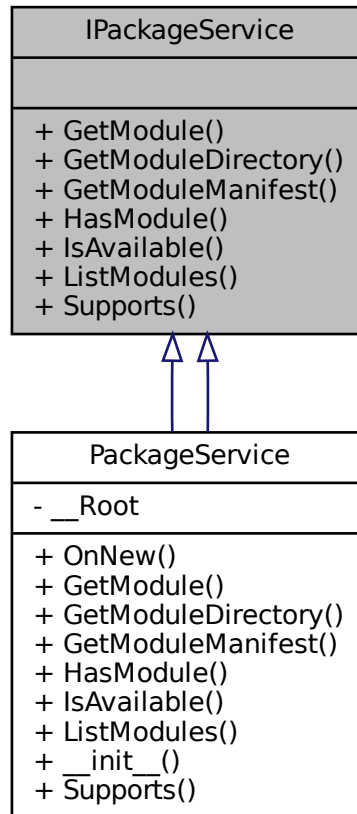
Phase

6.68.1.7 When

When

6.69 IPackageService Class Reference

Inheritance diagram for IPackageService:



Public Member Functions

- `_.Library.Boolean IsAvailable ()`

For run-time checks to ensure the service is available before attempting to invoke it.

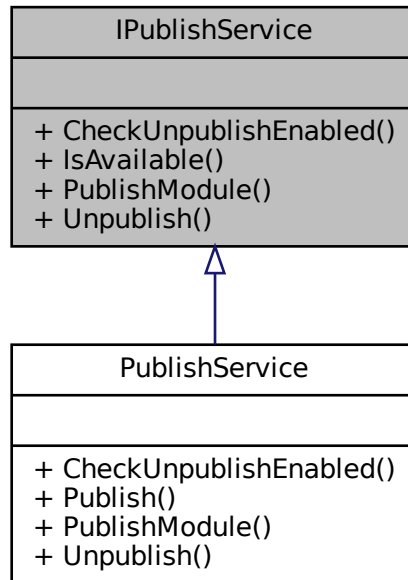
Static Public Member Functions

- `_.Library.Boolean Supports (_.Library.String pMethod)`

Returns 1 if the service supports a particular method.

6.70 IPublishService Class Reference

Inheritance diagram for IPublishService:



Public Member Functions

- `_.Library.Boolean IsAvailable ()`

For run-time checks to ensure the service is available before attempting to invoke it.

6.71 JUnitOutput Class Reference

6.72 LegacyCompat Class Reference

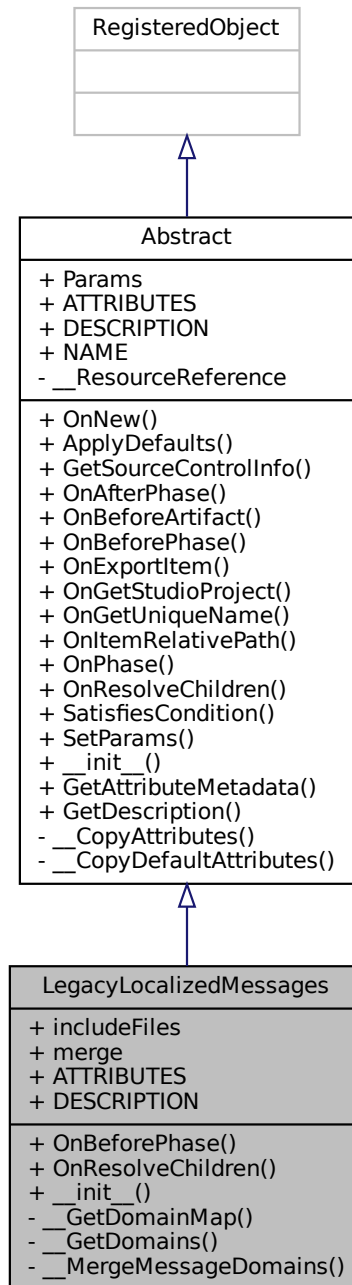
Static Public Member Functions

- `_.Library.Status UpdateSuperclassAndCompile (pltems, qSpec)`

This method updates the superclasses of a list of classes that have been loaded but not compiled.

6.73 LegacyLocalizedMessages Class Reference

Inheritance diagram for LegacyLocalizedMessages:



Public Attributes

- [includeFiles](#)

Acceptable Formats:

- [merge](#)

Set to 1 to merge the domain (i.e., in \wedge IRIS.Msg(domain)/ \wedge IRIS.MsgNames(domain)) with contents loaded from other error message XML files.

Static Public Attributes

- [ATTRIBUTES](#) = None

Comma-separated list of resource attribute names that this processor uses.

- [DESCRIPTION](#) = None

Description of resource processor class (shown in UI)

Private Member Functions

- [__GetDomainMap](#) (pMap)

Builds map of domain to target include file (for multi-include case)

Additional Inherited Members

6.73.1 Member Data Documentation

6.73.1.1 includeFiles

includeFiles

Acceptable Formats:

<domain>:[,<domain>:[,<domain>:...]]

6.73.1.2 merge

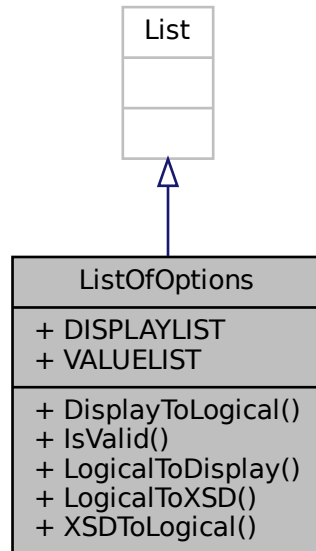
merge

Set to 1 to merge the *domain* (i.e., in \wedge IRIS.Msg(domain)/ \wedge IRIS.MsgNames(domain)) with contents loaded from other error message XML files.

Additional work will likely be required to make the domain available for localization in such cases, likely using the [LocalizationExport](#) resource processor. (See the HSBASE module for an example of this.)

6.74 ListOfOptions Class Reference

Inheritance diagram for ListOfOptions:



Static Public Member Functions

- `_.Library.String DisplayToLogical (_, _.Library.String val)`
 Converts the input value *val*, which is a string, into the logical string format, based on `<parameter> VALUELIST</parameter>` and `<parameter> DISPLAYLIST</parameter>`.
- `_.Library.Status IsValid (_, _.Library.CacheString val)`
 Tests if the logical value *val*, which is a string, is valid.
- `_.Library.String LogicalToDisplay (_, _.Library.String val)`
 Converts the value of *val*, which is in logical format, into a display string, based on `<parameter> VALUELIST</parameter>` and `<parameter> DISPLAYLIST</parameter>`.
- `_.Library.String LogicalToXSD (_.Library.List val)`
 Converts the Cache \$list value to the canonical SOAP encoded value.
- `_.Library.List XSDToLogical (_.Library.String val)`
 Converts the SOAP encoded input list value into a Cache \$list value.

Static Public Attributes

- `DISPLAYLIST = None`
 Used in conjunction with `<parameter> VALUELIST</parameter>`.
- `VALUELIST = None`
 If specified, validation ensures that each element in the list is one of the specified values.

6.74.1 Member Function Documentation

6.74.1.1 DisplayToLogical()

```
_.Library.String DisplayToLogical (
    -/
    _.Library.String val ) [static]
```

Converts the input value *val*, which is a string, into the logical string format, based on `<parameter>VALUELIST</parameter>` and `<parameter>DISPLAYLIST</parameter>`.

Returns the logical value of the input string *val*.

6.74.1.2 IsValid()

```
_.Library.Status IsValid (
    -/
    _.Library.CacheString val ) [static]
```

Tests if the logical value *val*, which is a string, is valid.

The validation is based on the class parameter settings used for the class attribute this data type is associated with. In this case, `MINLEN`, `MAXLEN`, `VALUELIST`, and `PATTERN`.

6.74.1.3 LogicalToDisplay()

```
_.Library.String LogicalToDisplay (
    -/
    _.Library.String val ) [static]
```

Converts the value of *val*, which is in logical format, into a display string, based on `<parameter>VALUELIST</parameter>` and `<parameter>DISPLAYLIST</parameter>`.

Returns the string value of *val*.

6.74.1.4 LogicalToXSD()

```
_.Library.String LogicalToXSD (
    _.Library.List val ) [static]
```

Converts the Cache \$list value to the canonical SOAP encoded value.

Overridden to generate even in non-XML enabled classes (implementation copied from parent and minimally modified)

6.74.1.5 XSDToLogical()

```

_.Library.List XSDToLogical (
    _.Library.String val ) [static]

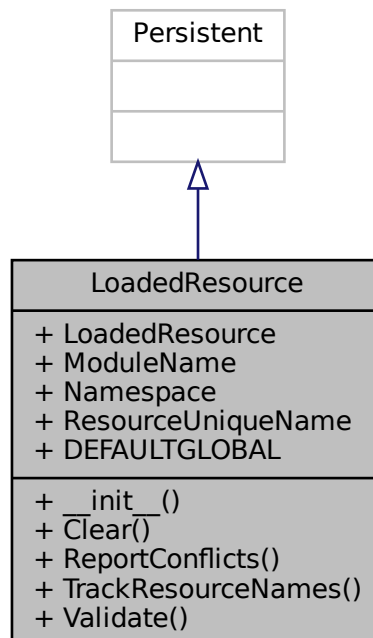
```

Converts the SOAP encoded input list value into a Cache \$list value.

Overridden to generate even in non-XML enabled classes (implementation copied from parent and minimally modified)

6.75 LoadedResource Class Reference

Inheritance diagram for LoadedResource:



Static Public Member Functions

- `_.Library.Status Clear (_.Library.String pNamespace)`
@API.Method
- `ReportConflicts ()`
@API.Method
- `_.Library.Status Validate (_.Library.String pNamespace, pErrorList)`
@API.Method

Public Attributes

- [LoadedResource](#)
- [ModuleName](#)
- [Namespace](#)
- [ResourceUniqueName](#)

6.75.1 Member Function Documentation

6.75.1.1 Clear()

```
_.Library.Status Clear (
    _.Library.String pNamespace ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.75.1.2 ReportConflicts()

```
ReportConflicts ( ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.75.1.3 Validate()

```
_.Library.Status Validate (
    _.Library.String pNamespace,
    pErrorList ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.75.2 Member Data Documentation

6.75.2.1 LoadedResource

[LoadedResource](#)

6.75.2.2 ModuleName

[ModuleName](#)

6.75.2.3 Namespace

[Namespace](#)

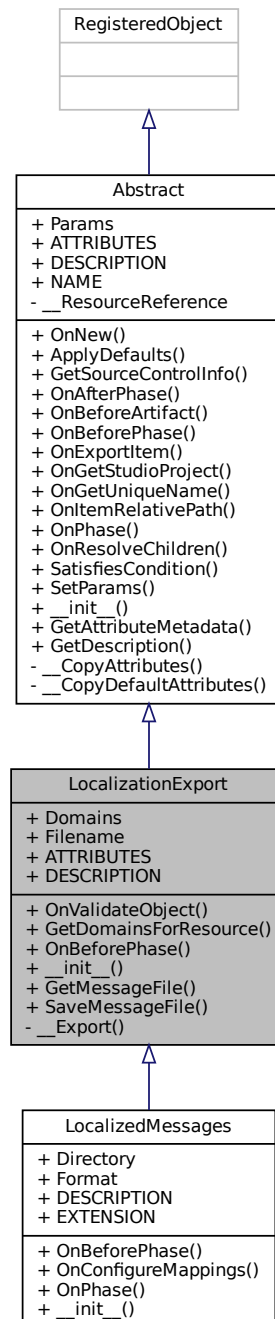
6.75.2.4 ResourceUniqueName

[ResourceUniqueName](#)

6.76 LocalizationExport Class Reference

Resource processor to automatically export messages in given list of domains to a particular file after compilation.

Inheritance diagram for LocalizationExport:



Public Member Functions

- `_.Library.Status OnValidateObject ()`
This callback method is invoked by the `<METHOD> ValidateObject</METHOD>` method to.
- `_.Library.String GetDomainsForResource ()`
Returns a comma-separated list of domains for the specified resource.

Static Public Member Functions

- `_.Library.Status GetMessageFile` (`_.Library.String pDocName`, `_.IPM.ResourceProcessor.LocalizationExport.MsgFile pFileObject`)
pDocName is the full document name (including the .LOC extension)
- `_.Library.Status SaveMessageFile` (`_.Library.String pDocName`, `_.IPM.ResourceProcessor.LocalizationExport.MsgFile pFileObject`, `_.Library.Boolean pCompile`, `pConsoleOutput`)
pDocName is the full document name (including the .LOC extension)

Public Attributes

- `Domains`
Comma-separated list of domains to export to the specified file.
- `Filename`
Filename to export to.

Static Public Attributes

- `ATTRIBUTES` = None
Comma-separated list of resource attribute names that this processor uses.
- `DESCRIPTION` = None
Description of resource processor class (shown in UI)

Static Private Member Functions

- `_.Library.Status __Export` (`_.Library.String pDocName`, `_.IPM.ResourceProcessor.LocalizationExport.MsgFile pSource`, `pSourceControlOutput`)
Utility method to export an error message document (with a given name).

6.76.1 Detailed Description

Resource processor to automatically export messages in given list of domains to a particular file after compilation.

This works with a resource like `/localize/MessageFileName.xml` (Domains attribute required; resource name used as export target), or `MyPackage.Errors.LOC` (Filename attribute required; Domains populated automatically from the message file) For `.LOC` resources, the default resource processor class (`IPM.ResourceProcessor.Default.LocalizedMessages`) should be used instead.

6.76.2 Member Function Documentation

6.76.2.1 OnValidateObject()

```
_.Library.Status OnValidateObject ( )
```

This callback method is invoked by the <METHOD>ValidateObject</METHOD> method to

provide notification that the current object is being validated.

If this method returns an error then <METHOD>ValidateObject</METHOD> will fail.

6.76.2.2 GetMessageFile()

```
_.Library.Status GetMessageFile (
    _.Library.String pDocName,
    _.IPM.ResourceProcessor.LocalizationExport.MsgFile pFileObject ) [static]
```

pDocName is the full document name (including the .LOC extension)

pFileObject is an instance of IPM.ResourceProcessor.LocalizationExport.MsgFile corresponding to the document's content.

@API.Method @Modifier Availability InterSystems

6.76.2.3 SaveMessageFile()

```
_.Library.Status SaveMessageFile (
    _.Library.String pDocName,
    _.IPM.ResourceProcessor.LocalizationExport.MsgFile pFileObject,
    _.Library.Boolean pCompile,
    pConsoleOutput ) [static]
```

pDocName is the full document name (including the .LOC extension)

pFileObject is an instance of IPM.ResourceProcessor.LocalizationExport.MsgFile corresponding to the document's content.

If *pCompile* is set to 1 (by default, it is), then the file will be compiled after save.

pConsoleOutput is an integer-subscripted array of lines of output from everything that happened.

@API.Method @Modifier Availability InterSystems

6.76.3 Member Data Documentation

6.76.3.1 Domains

Domains

Comma-separated list of domains to export to the specified file.

For .LOC documents, this is determined automatically and is not overridable.

6.76.3.2 Filename

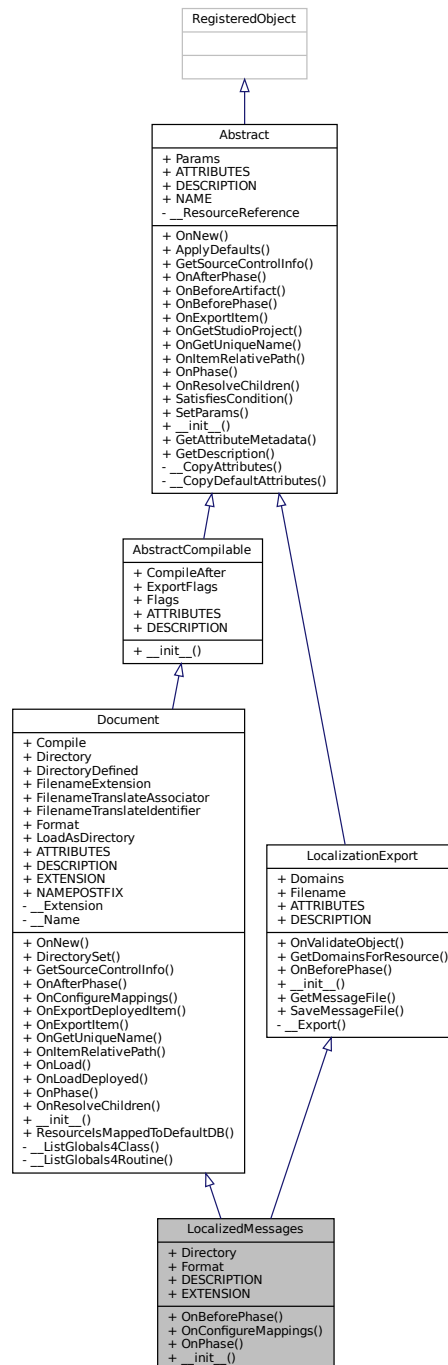
Filename

Filename to export to.

For .LOC documents, this is required; otherwise, this is set to the resource name and is not overridable.

6.77 LocalizedMessages Class Reference

Inheritance diagram for LocalizedMessages:



Public Member Functions

- `__Library.Status OnConfigureMappings (pParams)`
Subclasses may override to customize mapping behavior at the beginning of the Reload phase.
- `__Library.Status OnPhase (__Library.String pPhase, pParams, __Library.Boolean pResourceHandled)`
Called as phase `pPhase` is executed for the resource.

Public Attributes

- [Directory](#)
Directory relative to module root containing the exported resource.
- [Format](#)
Export format - list of acceptable values may differ by subclass.

Static Public Attributes

- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)
- [EXTENSION](#) = None
May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.

Additional Inherited Members

6.77.1 Member Function Documentation

6.77.1.1 OnPhase()

```

__Library.Status OnPhase (
    __Library.String pPhase,
    pParams,
    __Library.Boolean pResourceHandled )

```

Called as phase `pPhase` is executed for the resource.

If `pResourceHandled` is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Document](#).

6.77.2 Member Data Documentation

6.77.2.1 EXTENSION

```
EXTENSION = None [static]
```

May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.

The only expected use case at this point is class packages (.PKG, but Extension will be .CLS)

6.77.2.2 Directory

Directory

Directory relative to module root containing the exported resource.

Defaults to the resource's extension (lower-case) if unspecified.

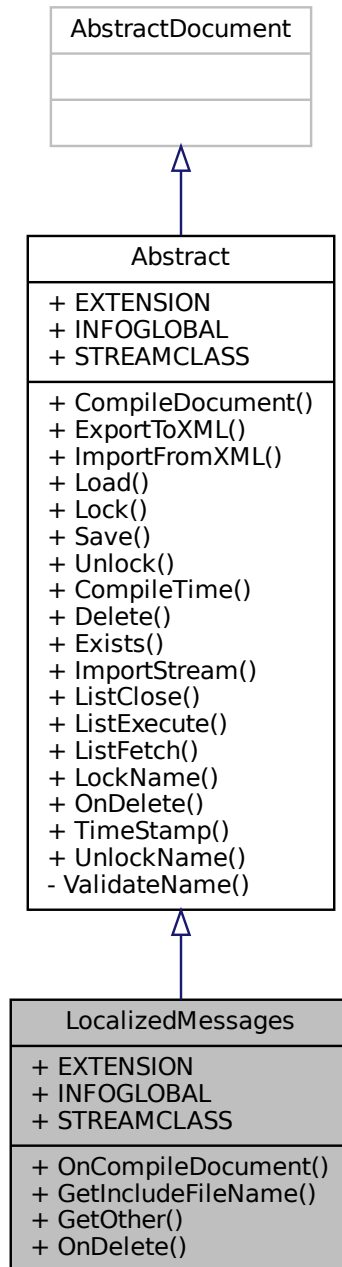
6.77.2.3 Format

Format

Export format - list of acceptable values may differ by subclass.

6.78 LocalizedMessages Class Reference

Inheritance diagram for LocalizedMessages:



Static Public Member Functions

- `_.Library.String GetIncludeFileName (_.Library.String pDocumentName)`

Given a full error message document name (with .LOC extension), returns the full name (with extension) of the associated .INC file.

- `_.Library.String` [GetOther](#) (`_.Library.String Name`)
Return other document types that this is related to.
- `_.Library.Status` [OnDelete](#) (`_.Library.String name`)
Deletes the include file associated with this document.

Additional Inherited Members

6.78.1 Member Function Documentation

6.78.1.1 GetOther()

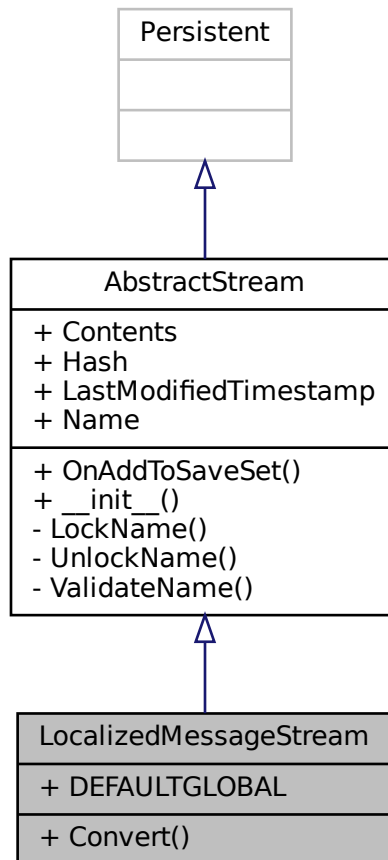
```
_.Library.String GetOther (  
    _.Library.String Name ) [static]
```

Return other document types that this is related to.

Passed a name and you return a comma separated list of the other documents it is related to or "" if it is not related to anything. Note that this can be passed a document of another type for example if your 'test.XXX' document creates a 'test.INT' routine then it will also be called with 'test.INT' so you can return 'test.XXX' to complete the cycle.

6.79 LocalizedMessageStream Class Reference

Inheritance diagram for LocalizedMessageStream:

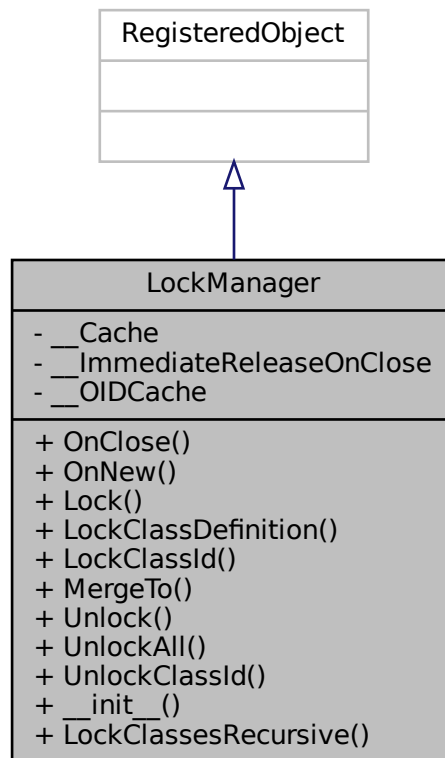


Additional Inherited Members

6.80 LockManager Class Reference

Utility to make managing locking/unlocking easier in more complex settings.

Inheritance diagram for LockManager:



Public Member Functions

- `_.Library.Status OnClose ()`
Utility to make managing locking/unlocking easier in more complex settings.
- `_.Library.Status OnNew (_.Library.Boolean plmmmediateRelease)`
Set `plmmmediateRelease` to 0 to keep locks in an instance of this class.

Private Attributes

- `__Cache`
Map of (`<global>`, `<flags>`) to lock count.
- `__ImmediateReleaseOnClose`
If true, locks are released immediately when the instance of this class goes out of scope.
- `__OIDCache`
Map of (`<class>`, `<id>`) to lock count.

6.80.1 Detailed Description

Utility to make managing locking/unlocking easier in more complex settings.

Usage pattern:

1. Create an instance of this class at the beginning of a method.
2. Call the Lock() and (optionally) Unlock() methods.
3. When the object goes out of scope, remaining locks are automatically released with the correct flags.

6.80.2 Member Function Documentation

6.80.2.1 OnClose()

```
__Library.Status OnClose ( )
```

Utility to make managing locking/unlocking easier in more complex settings.

Usage pattern:

1. Create an instance of this class at the beginning of a method.
2. Call the Lock() and (optionally) Unlock() methods.
3. When the object goes out of scope, remaining locks are automatically released with the correct flags.

Performs an immediate unlock

6.80.2.2 OnNew()

```
__Library.Status OnNew (
    __Library.Boolean pImmediateRelease )
```

Set *pImmediateRelease* to 0 to keep locks in an instance of this class.

until the end of the current transaction even once the instance goes out of scope.

6.80.3 Member Data Documentation

6.80.3.1 `__Cache`

`__Cache` [private]

Map of (<global>,<flags>) to lock count.

6.80.3.2 `__ImmediateReleaseOnClose`

`__ImmediateReleaseOnClose` [private]

If true, locks are released immediately when the instance of this class goes out of scope.

(If not, standard handling for transactions will apply instead.)

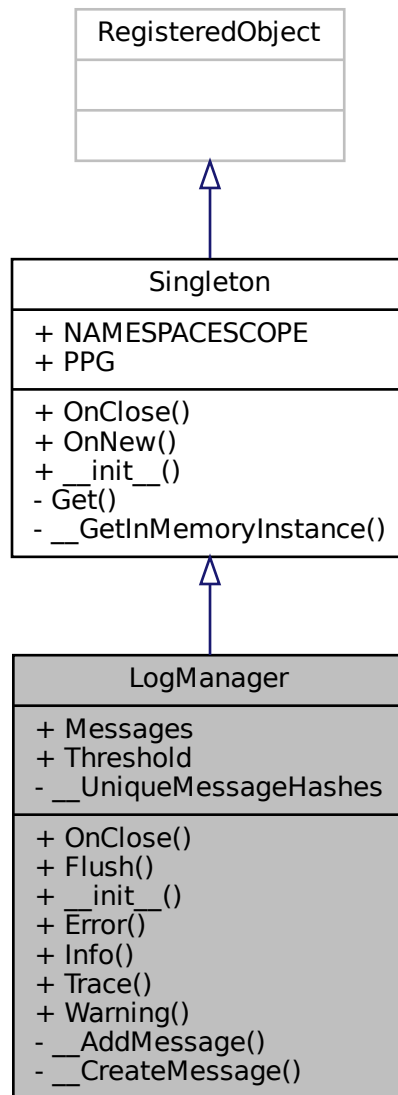
6.80.3.3 `__OIDCache`

`__OIDCache` [private]

Map of (<class>,<id>) to lock count.

6.81 LogManager Class Reference

Inheritance diagram for LogManager:



Public Member Functions

- `_.Library.Status OnClose ()`
Flushes out the log of messages before doing the standard singleton cleanup.

Static Public Member Functions

- `Error (_.Library.String pMessage, _.Library.Boolean pUnique)`

- *@API.Method*
• [Info](#) (`_.Library.String pMessage, _.Library.Boolean pUnique`)
• *@API.Method*
- [Trace](#) (`_.Library.String pMessage, _.Library.Boolean pUnique`)
• *@API.Method*
- [Warning](#) (`_.Library.String pMessage, _.Library.Boolean pUnique`)
• *@API.Method*

Public Attributes

- [Messages](#)
- [Threshold](#)

Private Attributes

- [__UniqueMessageHashes](#)
Has hashes of unique messages (with data equal to the index in ..Messages of that message)

Additional Inherited Members

6.81.1 Member Data Documentation

6.81.1.1 Messages

Messages

6.81.1.2 Threshold

Threshold

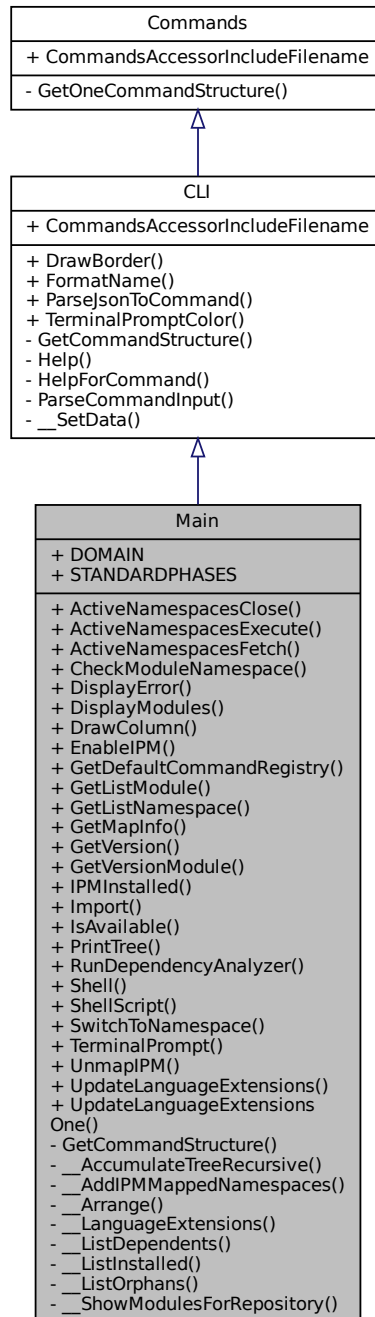
6.81.1.3 __UniqueMessageHashes

`__UniqueMessageHashes` [private]

Has hashes of unique messages (with data equal to the index in ..Messages of that message)

6.82 Main Class Reference

Inheritance diagram for Main:



Static Public Member Functions

- `_.Library.String DrawColumn` (desc)
draw description

- [GetDefaultCommandRegistry](#) ()
 - Get Default Command of Registry.*
- `_.Library.Status` [GetListModule](#) (ns, Mod, OnlyName)
 - Get module list in currently namespace.*
- [GetListNamespace](#) (list, `_.Library.String` pSearch)
 - Get list Namespace, example do `##class(IPM.Main).GetListNamespace(.ns)`*
- [GetMapInfo](#) (plsMappedFrom, plsMappedTo)
 - Get the mapping relationship for IPM package.*
- [GetVersion](#) (ModuleName, out, list)
 - @API.Method*
- [GetVersionModule](#) (name, namespace)
 - Get Version Module.*
- `_.Library.Boolean` [IsAvailable](#) (`_.Library.String` pModuleName, `_.Library.String` pNamespace, pArgs)
 - @API.Method*
- [PrintTree](#) (pTree)
 - Prints a tree with unicode box art.*
- [RunDependencyAnalyzer](#) (pCommandInfo)
 - Run Dependency Analyzer for the given module.*
- `_.Library.Status` [Shell](#) (`_.Library.String` pCommand, `_.Library.Boolean` pTerminateOnError, `_.Library.Boolean` pHaltOnComplete)
 - @API.Method*
- [ShellScript](#) (`_.Library.String` pCommand, `_.Library.String` pOutputLogFile, `_.Library.Boolean` pAppendToLog)
 - Runs package manager commands in a way that is friendly to the OS-level shell.*

Static Private Member Functions

- [__AddIPMMappedNamespaces](#) (list)
 - Argument `list` is a multidimensional array where `list` contains the a numeric value `n`, indicating the length of the list.*

Additional Inherited Members

6.82.1 Member Function Documentation

6.82.1.1 [__AddIPMMappedNamespaces\(\)](#)

```
__AddIPMMappedNamespaces (
    list ) [static], [private]
```

Argument `list` is a multidimensional array where `list` contains the a numeric value `n`, indicating the length of the list.

Each subnode `list(i)` where $1 \leq i \leq n$ contains a `$ListBuild` of a single namespace Each subnote `list(i, "modules")` contains the number of modules in the namespace For $1 \leq j \leq list(i, "modules")$, each subnode `list(i, "modules", j)` contains a `$ListBuild` of the module name, version, external name, and whether the module is installed in developer mode Additional nodes are also accepted, although they are not used in this method For example: `list=1 list(1)=$!b("USER") list(1,"modules")=2 list(1,"modules",1)=$!b("zpm","0.9.0-SNAPSHOT","Package Management System",1) list(1,"modules",2)=$!b("zpm-registry","1.3.2","ZPM Registry",0) list(1,"modules","width")=12 list("ns")="*" list("width")=4`

6.82.1.2 GetDefaultCommandRegistry()

```
GetDefaultCommandRegistry ( ) [static]
```

Get Default Command of Registry.

```
example d ##class(IPM.Main).GetDefaultCommandRegistry()
```

6.82.1.3 GetMapInfo()

```
GetMapInfo (
    pIsMappedFrom,
    pIsMappedTo ) [static]
```

Get the mapping relationship for IPM package.

Format:

- pIsMappedFrom(destinationNamespace) = sourceNamespace
- pIsMappedTo(sourceNamespace, destinationNamespace) = ""

6.82.1.4 GetVersion()

```
GetVersion (
    moduleName,
    out,
    list ) [static]
```

@API.Method

Get Version modules and current registry example do ##class(IPM.Main).GetVersion("zpm,zpm-registry",.out,.list)

6.82.1.5 PrintTree()

```
PrintTree (
    pTree ) [static]
```

Prints a tree with unicode box art.

Tree representation should be: pTree(<node no.>) = \$listbuild(

, <first child node no.>, <next sibling node no.>) With the first node in node #1 (no root - it can have siblings), and the subscripts are sequential according to pre-order (which is how the tree will be displayed, one node per line).

6.82.1.6 ShellScript()

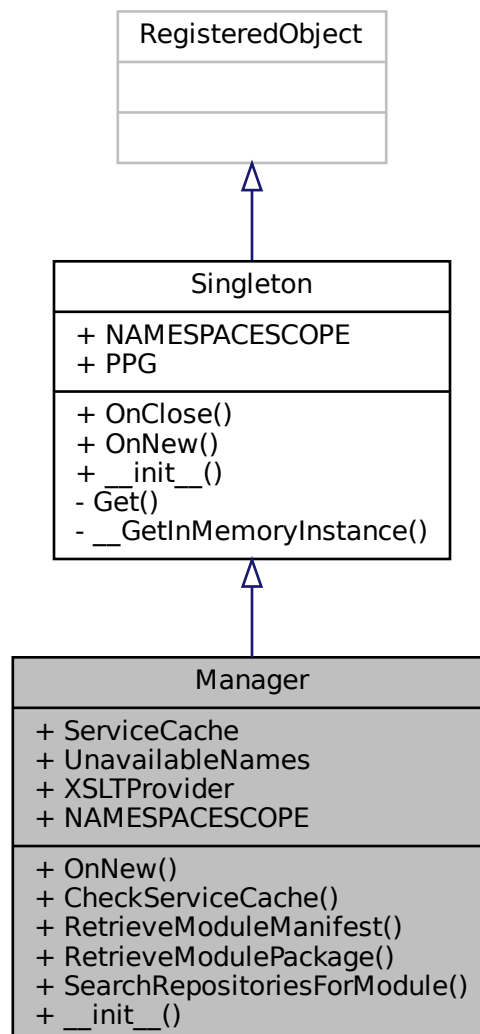
```
ShellScript (
    _.Library.String pCommand,
    _.Library.String pOutputLogFile,
    _.Library.Boolean pAppendToLog ) [static]
```

Runs package manager commands in a way that is friendly to the OS-level shell.

Creates *pOutputLogFile* if it does not exist. If it does, and *pAppendToLog* is true, appends to it; otherwise, deletes the file before outputting to it.

6.83 Manager Class Reference

Inheritance diagram for Manager:



Public Member Functions

- `_.Library.Status OnNew ()`
Tracks the OREF of this instance in a PPG for later reference.
- `_.Library.Status RetrieveModuleManifest (_.IPM.Storage.QualifiedModuleInfo pQualifiedReference, _↔Stream.Object pManifestStream)`
Loads the module reference.
- `_.Library.Status RetrieveModulePackage (_.IPM.Storage.QualifiedModuleInfo pQualifiedReference, _↔Stream.Object pPackageStream)`
Loads the module reference.
- `_.Library.Status SearchRepositoriesForModule (_.IPM.Repo.SearchCriteria pSearchCriteria, _.Library.List↔OfObjects pResults, _.Library.Boolean pForceRemoteRepo)`
Returns a list of all resolved module references matching the search criteria from configured repositories.

Public Attributes

- `ServiceCache`
Avoids constantly instantiating the package service objects, which may be expensive.
- `UnavailableNames`
Keeps track of which repositories are unavailable (by name - the keys are important, values don't matter)
- `XSLTProvider`
Performance optimization for XSLTs.

Static Public Attributes

- `NAMESPACESCOPE = None`
If set to 1, calls to Get must return an instance of this class created in the current namespace; a new instance will be created if none exists.

6.83.1 Member Function Documentation

6.83.1.1 OnNew()

```
_.Library.Status OnNew ( )
```

Tracks the OREF of this instance in a PPG for later reference.

Subclasses of `IPM.General.Singleton` that override this method *MUST* call `##super()`.

Reimplemented from `Singleton`.

6.83.2 Member Data Documentation

6.83.2.1 ServiceCache

`ServiceCache`

Avoids constantly reinstantiating the package service objects, which may be expensive.

6.83.2.2 UnavailableNames

`UnavailableNames`

Keeps track of which repositories are unavailable (by name - the keys are important, values don't matter)

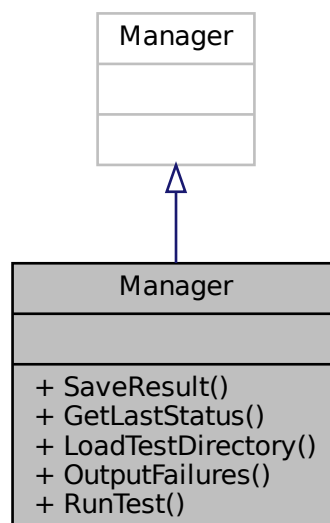
6.83.2.3 XSLTProvider

`XSLTProvider`

Performance optimization for XSLTs.

6.84 Manager Class Reference

Inheritance diagram for Manager:



Public Member Functions

- [SaveResult](#) (duration)
Does the default behavior, then stashes the latest run index.

Static Public Member Functions

- `_.Library.Status` [GetLastStatus](#) (`_.Library.Integer` pFailureCount)
Returns \$\$\$OK if the last unit test run was successful, or an error if it was unsuccessful.
- `_.Library.Status` [LoadTestDirectory](#) (`_.Library.String` pRootDirectory, `_.Library.Boolean` pVerbose, `_.Library.String` pLoadedList, `_.Library.String` pFormat)
Loads unit test classes from a directory without compiling or running them.
- `_.Library.Status` [RunTest](#) (`_.Library.String` testspec, `_.Library.String` qspec, userparam)
Ensures the last run variable is cleared out, then just does the usual.

6.84.1 Member Function Documentation

6.84.1.1 LoadTestDirectory()

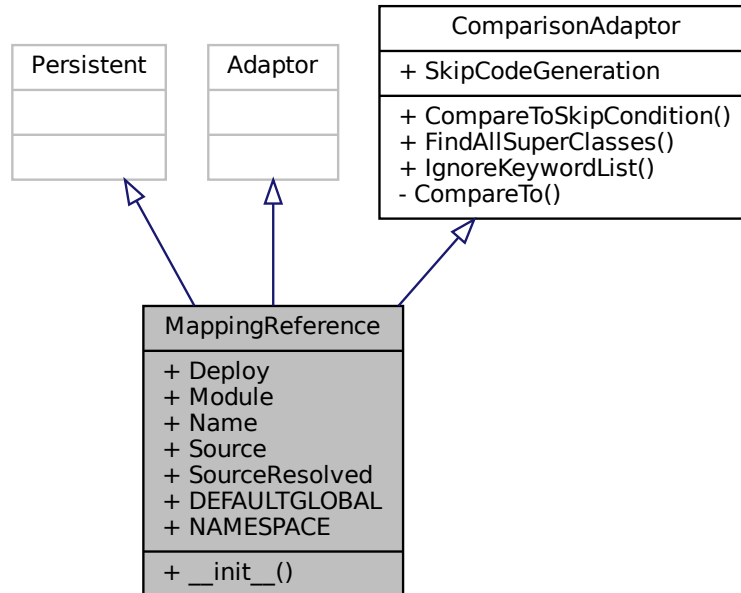
```
_.Library.Status LoadTestDirectory (  
    _.Library.String pRootDirectory,  
    _.Library.Boolean pVerbose,  
    _.Library.String pLoadedList,  
    _.Library.String pFormat ) [static]
```

Loads unit test classes from a directory without compiling or running them.

(Other debug loading approaches would compile them.)

6.85 MappingReference Class Reference

Inheritance diagram for MappingReference:



Public Attributes

- [Deploy](#)

If set to true, this source code is not shipped in application packaging.

- [Module](#)

- [Name](#)

- [Source](#)

Database from which it is mapped or copied.

- [SourceResolved](#)

Resolved value after evaluating any permitted expressions in `<property>Source</property>`.

Additional Inherited Members

6.85.1 Member Data Documentation

6.85.1.1 Deploy

Deploy

If set to true, this source code is not shipped in application packaging.

(Of course, it must be included in module packaging.)

6.85.1.2 Module

Module

6.85.1.3 Name

Name

6.85.1.4 Source

Source

Database from which it is mapped or copied.

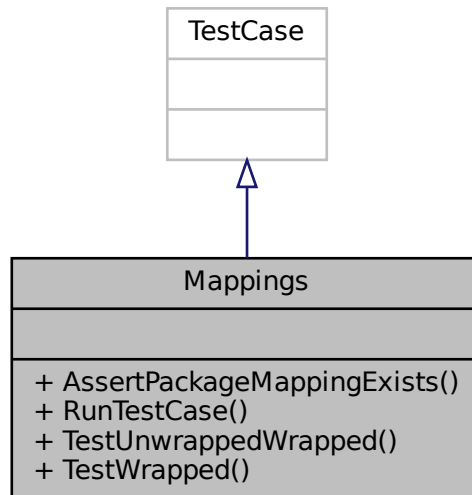
6.85.1.5 SourceResolved

SourceResolved

Resolved value after evaluating any permitted expressions in `<property>Source</property>`.

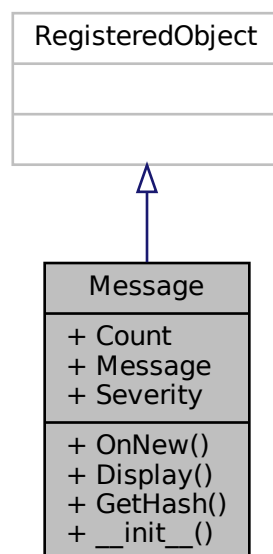
6.86 Mappings Class Reference

Inheritance diagram for Mappings:



6.87 Message Class Reference

Inheritance diagram for Message:



Public Member Functions

- [Display \(\)](#)

Outputs the message to the current device.

Public Attributes

- [Count](#)
- [Message](#)
- [Severity](#)

Severity display name -> logical value also available via macros in IPM.Common.inc:

6.87.1 Member Data Documentation

6.87.1.1 Count

Count

6.87.1.2 Message

[Message](#)

6.87.1.3 Severity

Severity

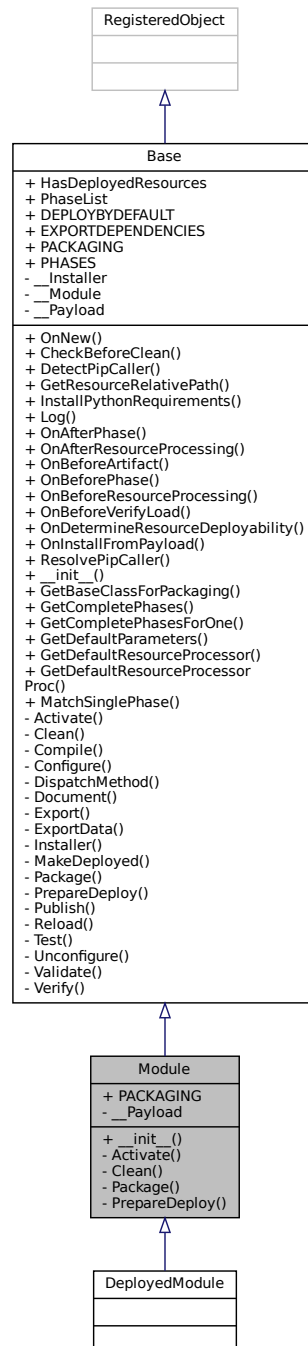
Severity display name -> logical value also available via macros in IPM.Common.inc:

```
$$$ZPMLogTRACE $$$ZPMLogINFO $$$ZPMLogWARNING $$$ZPMLogERROR
```

6.88 Migration Class Reference

6.89 Module Class Reference

Inheritance diagram for Module:



Private Attributes

- [__Payload](#)

Additional Inherited Members

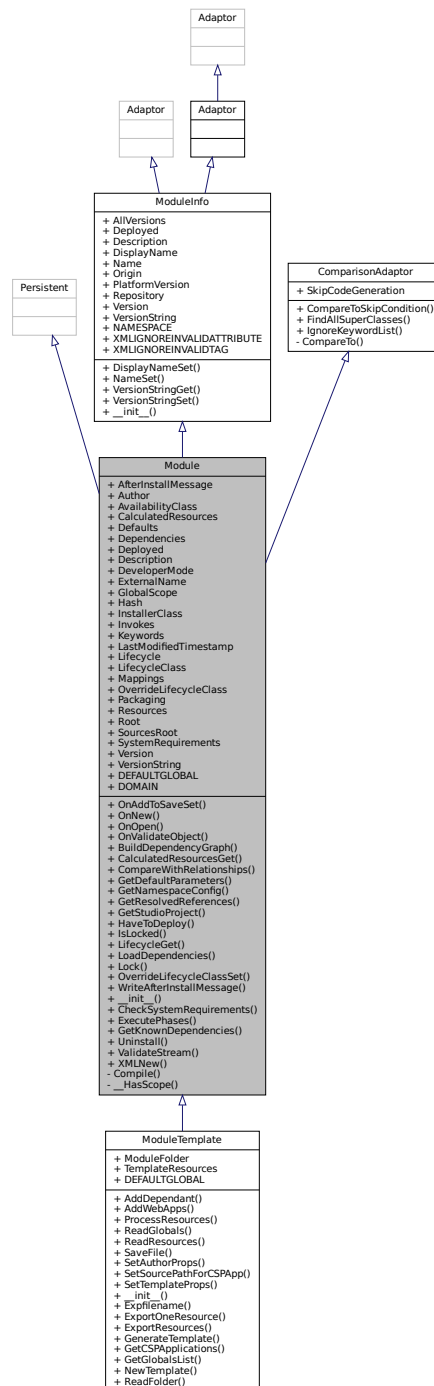
6.89.1 Member Data Documentation

6.89.1.1 `__Payload`

`__Payload` [private]

6.90 Module Class Reference

Inheritance diagram for Module:



Public Member Functions

- `_.Library.Status OnAddToSaveSet` (`_.Library.Integer depth`, `_.Library.Integer insert`, `_.Library.Integer call-count`)

- This callback method is invoked when the current object is added to the SaveSet.*

 - `_.Library.Status OnNew ()`

This callback method is invoked by the `<METHOD>New</METHOD>` method to.
 - `_.Library.Status OnOpen ()`

This callback method is invoked by the `<METHOD>Open</METHOD>` method to.
 - `_.Library.Status OnValidateObject ()`

This callback method is invoked by the `<METHOD>ValidateObject</METHOD>` method to.
 - `_.Library.Boolean CompareWithRelationships (_.IPM.Storage.Module pModuleObj, _.Library.List pIgnorePropertyList, _.Library.List pDifferingPropertyArray)`

Calls `<method>CompareTo</method>` on this object and also calls it on any relationships in the class.
 - `_.Library.Status GetResolvedReferences (pReferenceArray, _.Library.Boolean pLockedDependencies, _.Library.List pPhases, _.Library.Boolean pSkipDependencies, pDependencyGraph)`

Builds a module's immediate dependency graph and array of resources.
 - `_.Library.Status GetStudioProject (_.Studio.Project pProject, _.Library.Boolean pDeployedCode, _.Library.Boolean pDefaultDeployedValue, _.Library.String pProjectSuffix)`

By default (first byref argument only), creates a Studio project containing all of the module's resources.

Static Public Member Functions

- `_.Library.Status ExecutePhases (_.Library.String pModuleName, _.Library.List pPhases, _.Library.Boolean plsComplete, pParams)`

Execute multiple lifecycle phases in sequence.
- `_.Library.List GetKnownDependencies (_.Library.String pModuleName)`

This method builds a list of any direct/indirect dependencies of the module named pModuleName in a breadth-first manner.
- `_.Library.Status Uninstall (_.Library.String pModuleName, _.Library.Boolean pForce, _.Library.Boolean pRecurse, pParams)`

Uninstalls a named module (pModuleName).
- `_.Library.Status ValidateStream (_.Stream.Object pManifest, _.IPM.Storage.QualifiedModuleInfo pModuleReference, _.IPM.Storage.Module pModule)`

Validates the module manifest in pManifest - both that it can be interpreted properly as XML, and also that the module it contains (returned in pModule) has.
- `_.Library.RegisteredObject XMLNew (_.XML.Document document, _.Library.Integer node, _.Library.RegisteredObject containerOref)`

Get an instance of an XML enabled class.

Public Attributes

- [AfterInstallMessage](#)
- [Author](#)
- [AvailabilityClass](#)

Defined class which can report that a module is not available for this instance/namespace.
- [CalculatedResources](#)

Calculated property used for XML output of Resources relationship (in a reasonable order:
- [Defaults](#)

Default settings - there may be several types of these (subclasses of [ModuleSetting](#)).
- [Dependencies](#)
- [Deployed](#)

- [Description](#)
- [DeveloperMode](#)
 - Set to 1 if this module is in development mode, 0 if it is not.*
- [ExternalName](#)
- [GlobalScope](#)
- [Hash](#)
- [InstallerClass](#)
- [Invokes](#)
- [Keywords](#)
- [LastModifiedTimestamp](#)
- [Lifecycle](#)
- [LifecycleClass](#)
 - Lifecycle class used by default for this module.*
- [Mappings](#)
- [OverrideLifecycleClass](#)
 - Lifecycle class to use for a specific command (may be overridden from command line)*
- [Packaging](#)
 - Typically "module" or "application", but intentionally not enforced with VALUELIST.*
- [Resources](#)
- [Root](#)
 - Root directory on the filesystem from which this module was loaded.*
- [SourcesRoot](#)
 - Sources root, where placed any source code.*
- [SystemRequirements](#)
- [Version](#)
 - Does not need comparison method to be code generated because that comparing `<property>Version←String</property>` is good enough.*
- [VersionString](#)

Static Private Member Functions

- [__HasScope](#) (`_.Library.List pPhases, _.Library.String pScope`)
 - Returns whether pScope is in the list of pPhases*

Additional Inherited Members

6.90.1 Member Function Documentation

6.90.1.1 OnAddToSaveSet()

```
_.Library.Status OnAddToSaveSet (
    _.Library.Integer depth,
    _.Library.Integer insert,
    _.Library.Integer callcount )
```

This callback method is invoked when the current object is added to the SaveSet,.

either because Save() was invoked on this object or on an object that references this object. OnAddToSaveSet can modify the current object. It can also add other objects to the current SaveSet by invoking AddToSaveSet or remove objects by calling RemoveFromSaveSet.

If this method returns an error status then Save() will fail and the transaction will be rolled back.

6.90.1.2 OnNew()

```
_.Library.Status OnNew ( )
```

This callback method is invoked by the <METHOD>New</METHOD> method to.

provide notification that a new instance of an object is being created.

If this method returns an error then the object will not be created.

It is passed the arguments provided in the New call. When customizing this method, override the arguments with whatever variables and types you expect to receive from New(). For example, if you're going to call New, passing 2 arguments, OnNew's signature could be:

Method OnNew(dob as Date = "", name as Name = "") as Status If instead of returning a Status code this returns an oref and this oref is a subclass of the current class then this oref will be the one returned to the caller of New method.

6.90.1.3 OnOpen()

```
_.Library.Status OnOpen ( )
```

This callback method is invoked by the <METHOD>Open</METHOD> method to.

provide notification that the object specified by *oid* is being opened.

If this method returns an error then the object will not be opened.

6.90.1.4 OnValidateObject()

```
_.Library.Status OnValidateObject ( )
```

This callback method is invoked by the `<METHOD>ValidateObject</METHOD>` method to provide notification that the current object is being validated.

If this method returns an error then `<METHOD>ValidateObject</METHOD>` will fail.

6.90.1.5 CompareWithRelationships()

```
_.Library.Boolean CompareWithRelationships (
    _.IPM.Storage.Module pModuleObj,
    _.Library.List pIgnorePropertyList,
    _.Library.List pDifferingPropertyArray )
```

Calls `<method>CompareTo</method>` on this object and also calls it on any relationships in the class. specifically `<property>Mappings</property>` and `<property>Resources</property>`.

6.90.1.6 ExecutePhases()

```
_.Library.Status ExecutePhases (
    _.Library.String pModuleName,
    _.Library.List pPhases,
    _.Library.Boolean pIsComplete,
    pParams ) [static]
```

Execute multiple lifecycle phases in sequence.

Execution is terminated if one fails.

Example: `$ListBuild("Clean","Test")` or `$ListBuild("Test","Install") @API.Method`

6.90.1.7 GetResolvedReferences()

```
_.Library.Status GetResolvedReferences (
    pReferenceArray,
    _.Library.Boolean pLockedDependencies,
    _.Library.List pPhases,
    _.Library.Boolean pSkipDependencies,
    pDependencyGraph )
```

Builds a module's immediate dependency graph and array of resources.

Optionally loads uninstalled dependency modules and recurses over each module in the dependency graph.

`@Argument pReferenceArray` Array of all module's resources (including resources that compose a resource) that contain the appropriate phase scope.

`@Argument pLockedDependencies` Whether method should be recursively applied to the module's dependencies (true = yes).

`@Argument pPhases` List of [IPM](#) lifecycle phases to be applied to the current module.

`@Argument pSkipDependencies` Whether to skip loading uninstalled dependency modules.

`@Argument pDependencyGraph` Tree of module's dependencies.

6.90.1.8 GetStudioProject()

```

_.Library.Status GetStudioProject (
    _.Studio.Project pProject,
    _.Library.Boolean pDeployedCode,
    _.Library.Boolean pDefaultDeployedValue,
    _.Library.String pProjectSuffix )

```

By default (first byref argument only), creates a Studio project containing all of the module's resources.

If *pDeployedCode* is non-empty, only includes code that should be deployed (if true) or not deployed (if false). *pDefaultDeployedValue* specifies the default behavior for resources with the Deploy attribute left null. *pProjectSuffix* is appended to the project name (which defaults to the module name, with periods replaced by underscores). The project suffix may be used (for example) to distinguish between projects for deployed and undeployed code.

6.90.1.9 Uninstall()

```

_.Library.Status Uninstall (
    _.Library.String pModuleName,
    _.Library.Boolean pForce,
    _.Library.Boolean pRecurse,
    pParams ) [static]

```

Uninstalls a named module (*pModuleName*).

May optionally force installation (uninstalling even if required by other modules) if *pForce* is 1. May optionally recurse to also uninstall dependencies that are not required by other modules if *pRecurse* is 1. If both *pForce* and *pRecurse* are 1, then dependencies will also be uninstalled forcibly. @API.Method

6.90.1.10 ValidateStream()

```

_.Library.Status ValidateStream (
    _.Stream.Object pManifest,
    _.IPM.Storage.QualifiedModuleInfo pModuleReference,
    _.IPM.Storage.Module pModule ) [static]

```

Validates the module manifest in *pManifest* - both that it can be interpreted properly as XML, and also that the module it contains (returned in *pModule*) has.

a name and version matching the supplied *pModuleReference*.

6.90.1.11 XMLNew()

```

_.Library.RegisteredObject XMLNew (
    _.XML.Document document,
    _.Library.Integer node,
    _.Library.RegisteredObject containerOref ) [static]

```

Get an instance of an XML enabled class.

You may override this method to do custom processing (such as initializing the object instance) before returning an instance of this class. However, this method should not be called directly from user code.

Arguments:

document is the document with XML.Node or macros in xmlDOM.inc.

nodeId is a node id of the node which defines this object. An XML.Node object may be obtained for this node using document.GetNode(nodeId)

containerOref is the containing object instance when called from XMLImport and is "" when called from XML.Reader for Correlate'd objects.

6.90.2 Member Data Documentation

6.90.2.1 AfterInstallMessage

AfterInstallMessage

6.90.2.2 Author

Author

6.90.2.3 AvailabilityClass

AvailabilityClass

Defined class which can report that a module is not available for this instance/namespace.

6.90.2.4 CalculatedResources

CalculatedResources

Calculated property used for XML output of Resources relationship (in a reasonable order:

packages, classes, includes, globals, routines, CSP resources, then in alphabetical order within those categories).

6.90.2.5 Defaults

Defaults

Default settings - there may be several types of these (subclasses of [ModuleSetting](#)).

6.90.2.6 Dependencies

Dependencies

6.90.2.7 Deployed

Deployed

6.90.2.8 Description

Description

6.90.2.9 DeveloperMode

DeveloperMode

Set to 1 if this module is in development mode, 0 if it is not.

6.90.2.10 ExternalName

ExternalName

6.90.2.11 GlobalScope

GlobalScope

6.90.2.12 Hash

Hash

6.90.2.13 InstallerClass

InstallerClass

6.90.2.14 Invokes

Invokes

6.90.2.15 Keywords

Keywords

6.90.2.16 LastModifiedTimestamp

LastModifiedTimestamp

6.90.2.17 Lifecycle

Lifecycle

6.90.2.18 LifecycleClass

LifecycleClass

[Lifecycle](#) class used by default for this module.

6.90.2.19 Mappings

Mappings

6.90.2.20 OverrideLifecycleClass

OverrideLifecycleClass

[Lifecycle](#) class to use for a specific command (may be overridden from command line)

6.90.2.21 Packaging

Packaging

Typically "module" or "application", but intentionally not enforced with VALUelist.

6.90.2.22 Resources

Resources

6.90.2.23 Root

Root

Root directory on the filesystem from which this module was loaded.

6.90.2.24 SourcesRoot

SourcesRoot

Sources root, where placed any source code.

6.90.2.25 SystemRequirements

[SystemRequirements](#)

6.90.2.26 Version

Version

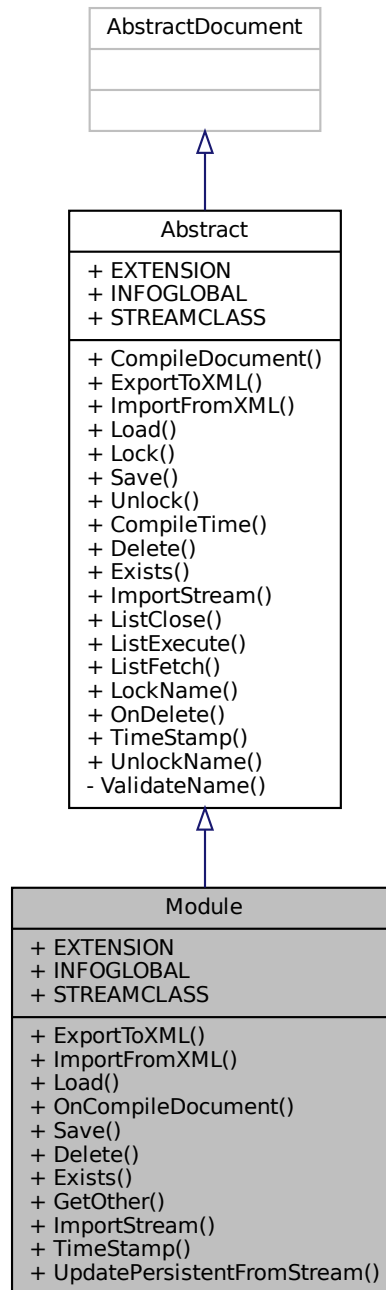
Does not need comparison method to be code generated because that comparing `<property>Version↔String</property>` is good enough.

6.90.2.27 VersionString

VersionString

6.91 Module Class Reference

Inheritance diagram for Module:



Public Member Functions

- `_.Library.Status` `ExportToXML` (`_.Library.String` flags)
Export this document to the current device in XML format.

- `_.Library.Status ImportFromXML` (`_.Library.RegisteredObject stream`, `_.Library.String flags`)
Import from the stream in XML format.
- `_.Library.Status Load` ()
Load the module definition `<property>Name</property>` into the stream `<property>Code</property>`
- `_.Library.Status Save` ()
Save the module definition document.

Static Public Member Functions

- `_.Library.Status Delete` (`_.Library.String name`)
Delete the module definition name.
- `_.Library.Boolean Exists` (`_.Library.String name`)
Return 1 if the given document exists and 0 if it does not.
- `_.Library.String GetOther` (`_.Library.String Name`)
Returns a comma-separated list of individual resources listed in the module manifest.
- `_.Library.Status ImportStream` (`_.Library.String pName`, `_.Library.GlobalCharacterStream pStream`)
Save the module definition document from stream to database.
- `_.Library.TimeStamp TimeStamp` (`_.Library.String name`)
Return the timestamp of schema category 'name' in TimeStamp format, i.e.

Additional Inherited Members

6.91.1 Member Function Documentation

6.91.1.1 GetOther()

```
_.Library.String GetOther (
    _.Library.String Name ) [static]
```

Returns a comma-separated list of *individual* resources listed in the module manifest.

This does not include packages or CSP/filesystem resources.

6.91.1.2 TimeStamp()

```
_.Library.TimeStamp TimeStamp (
    _.Library.String name ) [static]
```

Return the timestamp of schema category 'name' in TimeStamp format, i.e.

`$zdatetime($horolog,3)`.

This is used to determine if the category has been updated on the server and so needs reloading into Studio. So the format should be `$zdatetime($horolog,3)`, or "" if the category does not exist.

Reimplemented from [Abstract](#).

6.92 Module Class Reference

Static Public Member Functions

- `_.Library.Status` [BeginCaptureOutput](#) (`_.Library.String` pCookie)

This method enables I/O redirection (see `EndCaptureOutput` for retrieval).
- [ConstructInvertedDependencyGraph](#) (`pDependencyGraph`, `pInvertedDependencyGraph`)

Construct an inverted dependency graph from the dependency graph of a module.
- [CopyItems](#) (`itemspec`, `source`, `target`, `qspec`)

This method exports items (classes, routines, etc.) and reloads it into a different namespace.
- [CopyItemsInPackage](#) (`_.Library.String` pPackage, `_.Library.String` pFromNamespace, `_.Library.String` pToNamespace)

Copy a package from one namespace to another.
- `_.Library.String` [CreateAndGetSSLConfig](#) (`pProperties`)

Returns the name of the default SSL config after creating if it does not already exist.
- [CreateOrUpdateIncludeFile](#) (`_.Library.String` pName, `_.Library.String` pLineArray)

Creates (or updates) an include file with name pName and contents in an indexed.
- `_.Library.Status` [EndCaptureOutput](#) (`_.Library.String` pCookie, `pText`)

This method captures the output from a program and delivers it as an array of lines.
- `_.Library.Status` [GetDependentsAsTree](#) (`pTree`, `pErrorList`, `_.Library.String` pModuleName, `_.Library.String` pModuleVersion, `_.Library.List` pRepoNames)

Returns a tree of dependents, with dependent modules at the root, for a given module name (and optional version)
- `_.Library.Status` [GetDependentsList](#) (`_.Library.ListOfObjects` pList, `pErrorList`, `_.Library.String` pModuleName, `_.Library.String` pModuleVersion, `_.Library.List` pRepoNames)

Returns a flat list of dependents for a given module name (and optional version)
- `_.Library.ListOfObjects` [GetFlatDependencyListFromInvertedDependencyGraph](#) (`pInvertedDependencyGraph`)

Given an inverted dependency graph, construct an ordered dependency list.
- `_.Library.Status` [GetInstalledModuleListSQL](#) (`_.Library.String` pSQL, `_.Library.Boolean` pSnapshots)

If pSnapshots is empty, lists all modules.
- `_.IPM.Storage.Module` [GetModuleObjectFromPath](#) (`_.Library.String` pPath, `_.Library.Boolean` pFound)

Given a path to a module.xml file (directory), tries to correlate it to an instance of `<class>IPM.Storage.Module</class>`.
- `_.IPM.Storage.Module` [GetModuleObjectFromStream](#) (`_.Stream.Object` pStream, `_.Library.Boolean` pFound)

Given a stream, tries to correlate it to an instance of `<class>IPM.Storage.Module</class>`.
- `_.Library.Status` [GetRequiredVersionExpression](#) (`_.Library.String` pModuleName, `_.Library.List` pExcludeModules, `_.IPM.General.SemanticVersionExpression` pExpression, `_.Library.List` pSourceList)

Returns a semantic version expression capturing all version requirements for a given module name in the current namespace.
- `_.Library.Status` [LoadCompleted](#) (`_.Library.String` pServerName, `_.Library.String` pModuleName, `_.Library.String` pVersion, `_.Library.String` pDeployed, `_.Library.String` pPlatformVersion, `pParams`, `pDependencyGraph`)

Intended to be invoked only as a work queue callback (so status and workqueue will be defined)
- [LoadDependencies](#) (`pDependencyGraph`, `pParams`, `_.SYSTEM.WorkMgr` pWorkQueue)

Format of pDependencyGraph:
- `_.Library.Status` [LockWithCurrentDependencies](#) (`_.Library.String` pModuleName)

Short-term approach to lock a module's dependencies within the module manifest (rather than using a separate file).
- `_.Library.Boolean` [NamespaceHasModule](#) (`_.Library.String` pNamespace, `_.Library.String` pModuleName)

Helper method to see if pNamespace has pModule (a module name) installed.
- `_.Library.Status` [ResolveItems](#) (`itemlist`, `itemspec`, `namespace`)

This method resolves itemspec used by Name sttribute in <Resource> and <Mapping>

- `_.Library.Status RunCommand` (`_.Library.String pCwd`, `_.Library.List pCmd`, `_.Stream.Object pLogOutput`, `↔` `_.Stream.Object pErrOutput`, `_.Library.String pRetCode`)
Run command with \$ZF(-100)
- `_.Library.Status RunCommandViaZF` (`_.Library.String pCmd`, `pLogOutput`, `pErrOutput`, `_.Library.Integer p↔` `Timeout`, `_.Library.String pRetCode`, `_.Library.String pArgs`)
Copied from Net.Remote.Utility:RunCommandViaCPIPE and modified slightly to fit these purposes:
- `SyncLoadDependencies` (`_.IPM.Storage.Module pModule`, `pParams`)
Temporary workaround to synchronously load dependencies.
- `_.Library.Status UninstallAll` (`_.Library.Boolean pForce`, `pParams`)
Uninstalls all modules from the current namespace.

6.92.1 Member Function Documentation

6.92.1.1 BeginCaptureOutput()

```
_.Library.Status BeginCaptureOutput (
    _.Library.String pCookie ) [static]
```

This method enables I/O redirection (see EndCaptureOutput for retrieval).

`pCookie` has the previous I/O redirection info.

6.92.1.2 ConstructInvertedDependencyGraph()

```
ConstructInvertedDependencyGraph (
    pDependencyGraph,
    pInvertedDependencyGraph ) [static]
```

Construct an inverted dependency graph from the dependency graph of a module.

@Argument `pDependencyGraph` Dependency graph constructed.

@Argument `pInvertedDependencyGraph` Inverted dependency graph constructed.

6.92.1.3 CopyItems()

```
CopyItems (
    itemspec,
    source,
    target,
    qspec ) [static]
```

This method exports items (classes, routines, etc.) and reloads it into a different namespace.

The syntax for `itemspec` is the `Name` attribute in `<Resource>` tag and `<Mapping>` tag

6.92.1.4 CopyItemsInPackage()

```
CopyItemsInPackage (
    _ .Library.String pPackage,
    _ .Library.String pFromNamespace,
    _ .Library.String pToNamespace ) [static]
```

Copy a package from one namespace to another.

This works whether or not the contents of

the package are deployed.

This copies classes and include files in the package.

6.92.1.5 CreateOrUpdateIncludeFile()

```
CreateOrUpdateIncludeFile (
    _ .Library.String pName,
    _ .Library.String pLineArray ) [static]
```

Creates (or updates) an include file with name *pName* and contents in an indexed.

subscripted array *pLineArray*.

@Argument *pName* Name of include file.

@Argument *pLineArray* Subscripted array whose keys are indices and values correspond to lines in the include file.

The top level node should have the number of lines.

6.92.1.6 GetDependentsAsTree()

```
_ .Library.Status GetDependentsAsTree (
    pTree,
    pErrorList,
    _ .Library.String pModuleName,
    _ .Library.String pModuleVersion,
    _ .Library.List pRepoNames ) [static]
```

Returns a tree of dependents, with dependent modules at the root, for a given module name (and optional version)

pRepoNames is a \$ListBuild list of repositories in which to search for dependents; if blank, only currently-installed modules (and any missing dependencies) are considered.

Tree subscripts are \$lb(Name,VersionString,ServerName).

@API.Method @Modifier Availability InterSystems

6.92.1.7 GetDependentsList()

```
_ .Library.Status GetDependentsList (
    _ .Library.ListOfObjects pList,
    pErrorList,
    _ .Library.String pModuleName,
    _ .Library.String pModuleVersion,
    _ .Library.List pRepoNames ) [static]
```

Returns a flat list of dependents for a given module name (and optional version)

pRepoNames is a \$ListBuild list of repositories in which to search for dependents; if blank, only currently-installed modules (and any missing dependencies) are considered.

@API.Method @Modifier Availability InterSystems

6.92.1.8 GetFlatDependencyListFromInvertedDependencyGraph()

```

_.Library.ListOfObjects GetFlatDependencyListFromInvertedDependencyGraph (
    pInvertedDependencyGraph ) [static]

```

Given an inverted dependency graph, construct an ordered dependency list.

The ordering is from least dependent module to most dependent. It is essentially a flattened dependency graph.
@Argument `pInvertedDependencyGraph` Inverted dependency graph.

6.92.1.9 GetInstalledModuleListSQL()

```

_.Library.Status GetInstalledModuleListSQL (
    _.Library.String pSQL,
    _.Library.Boolean pSnapshots ) [static]

```

If `pSnapshots` is empty, lists all modules.

If 1, only snapshots; if 0, only non-snapshots.

6.92.1.10 GetModuleObjectFromPath()

```

_.IPM.Storage.Module GetModuleObjectFromPath (
    _.Library.String pPath,
    _.Library.Boolean pFound ) [static]

```

Given a path to a module.xml file (directory), tries to correlate it to an instance of `<class>IPM.Storage.Module</class>`.

Throws errors.

6.92.1.11 GetModuleObjectFromStream()

```

_.IPM.Storage.Module GetModuleObjectFromStream (
    _.Stream.Object pStream,
    _.Library.Boolean pFound ) [static]

```

Given a stream, tries to correlate it to an instance of `<class>IPM.Storage.Module</class>`.

Throws errors.

6.92.1.12 GetRequiredVersionExpression()

```

_.Library.Status GetRequiredVersionExpression (
    _.Library.String pModuleName,
    _.Library.List pExcludeModules,
    _.IPM.General.SemanticVersionExpression pExpression,
    _.Library.List pSourceList ) [static]

```

Returns a semantic version expression capturing all version requirements for a given module name in the current namespace.

A list of modules to exclude may be provided (for example, if these modules would be updated at the same time).

6.92.1.13 LoadCompleted()

```

_.Library.Status LoadCompleted (
    _.Library.String pServerName,
    _.Library.String pModuleName,
    _.Library.String pVersion,
    _.Library.String pDeployed,
    _.Library.String pPlatformVersion,
    pParams,
    pDependencyGraph ) [static]

```

Intended to be invoked only as a work queue callback (so status and workqueue will be defined)

Signature must match `<method>LoadModuleReference</method>` per work queue manager conventions.

6.92.1.14 LoadDependencies()

```

LoadDependencies (
    pDependencyGraph,
    pParams,
    _.SYSTEM.WorkMgr pWorkQueue ) [static]

```

Format of *pDependencyGraph*:

pDependencyGraph("module name") = `$ListBuild(<depth>,<server name>,<version>)` *pDependencyGraph*("module name", "<dependent module> <dependent module version>") = <irrelevant>

6.92.1.15 NamespaceHasModule()

```

_.Library.Boolean NamespaceHasModule (
    _.Library.String pNamespace,
    _.Library.String pModuleName ) [static]

```

Helper method to see if *pNamespace* has *pModule* (a module name) installed.

Returns false if the module is not installed (which may be because the namespace does not exist).

6.92.1.16 RunCommand()

```

_.Library.Status RunCommand (
    _.Library.String pCwd,
    _.Library.List pCmd,
    _.Stream.Object pLogOutput,
    _.Stream.Object pErrOutput,
    _.Library.String pRetCode ) [static]

```

Run command with \$ZF(-100)

pCwd - Working folder
pCmd - `$ListBuild` for command with arguments
pLogOutput - Pass filename or stream object, to get all output, empty string to ignore and have output from command in default output
pErrOutput - if not specified, gets the value from *pLogOutput*
pRetCode - Code returned by OS

6.92.1.17 RunCommandViaZF()

```

_.Library.Status RunCommandViaZF (
    _.Library.String pCmd,
    pLogOutput,
    pErrOutput,
    _.Library.Integer pTimeout,
    _.Library.String pRetCode,
    _.Library.String pArgs ) [static]

```

Copied from Net.Remote.Utility:RunCommandViaCPIPE and modified slightly to fit these purposes:

Run a command using \$ZF(-1) and an external temporary file to store the command output.

If *pDeleteTempFile* is 0 (false), the temporary file is not deleted; in this case, it is up to the caller to delete it when done with it.

6.92.1.18 SyncLoadDependencies()

```

SyncLoadDependencies (
    _.IPM.Storage.Module pModule,
    pParams ) [static]

```

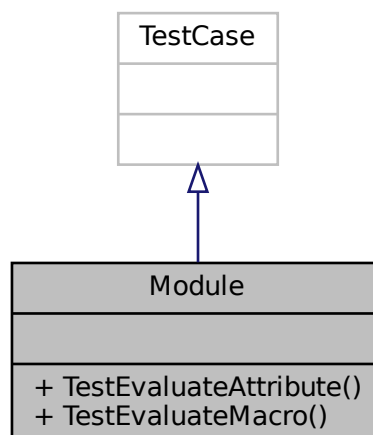
Temporary workaround to synchronously load dependencies.

Can be removed once

HSIEO-4450 is complete.

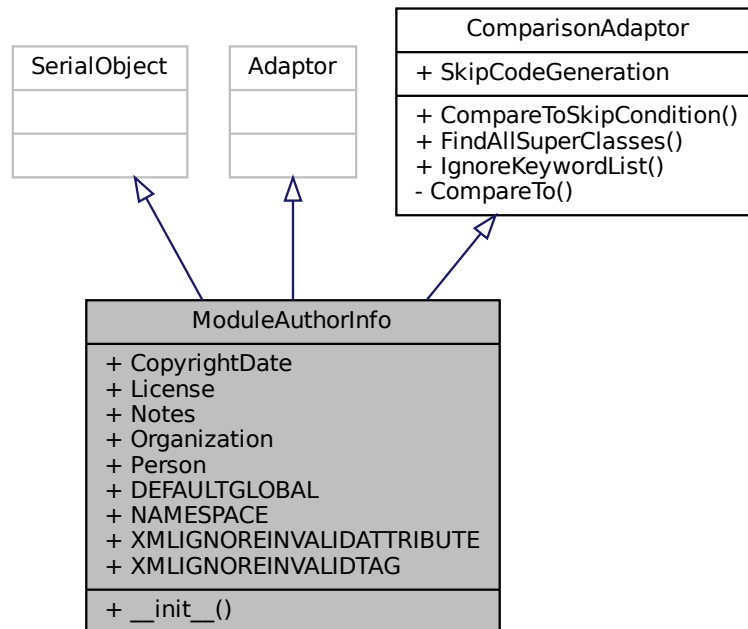
6.93 Module Class Reference

Inheritance diagram for Module:



6.94 ModuleAuthorInfo Class Reference

Inheritance diagram for ModuleAuthorInfo:



Public Attributes

- [CopyrightDate](#)
- [License](#)
- [Notes](#)
- [Organization](#)
- [Person](#)

Additional Inherited Members

6.94.1 Member Data Documentation

6.94.1.1 CopyrightDate

CopyrightDate

6.94.1.2 License

License

6.94.1.3 Notes

Notes

6.94.1.4 Organization

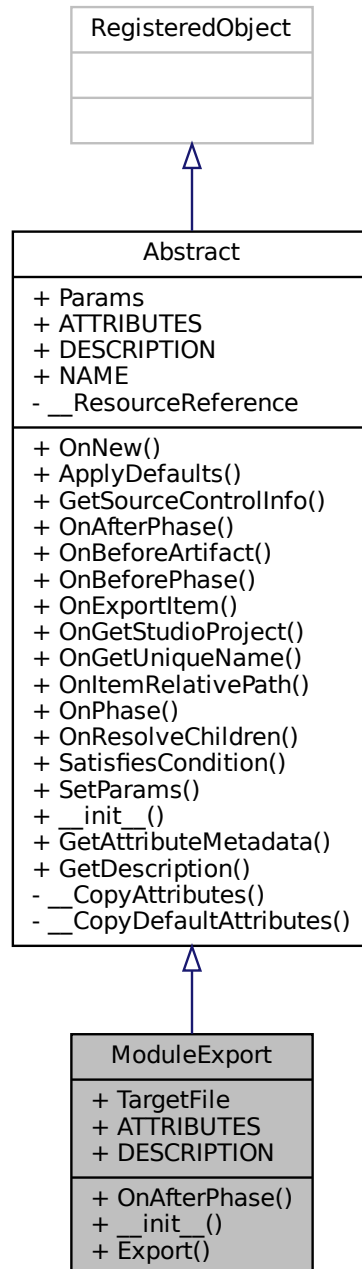
Organization

6.94.1.5 Person

Person

6.95 ModuleExport Class Reference

Inheritance diagram for ModuleExport:



Public Attributes

- [TargetFile](#)

File to which the module should be exported.

Static Public Attributes

- `ATTRIBUTES` = None
Comma-separated list of resource attribute names that this processor uses.
- `DESCRIPTION` = None
Description of resource processor class (shown in UI)

Additional Inherited Members

6.95.1 Member Data Documentation

6.95.1.1 TargetFile

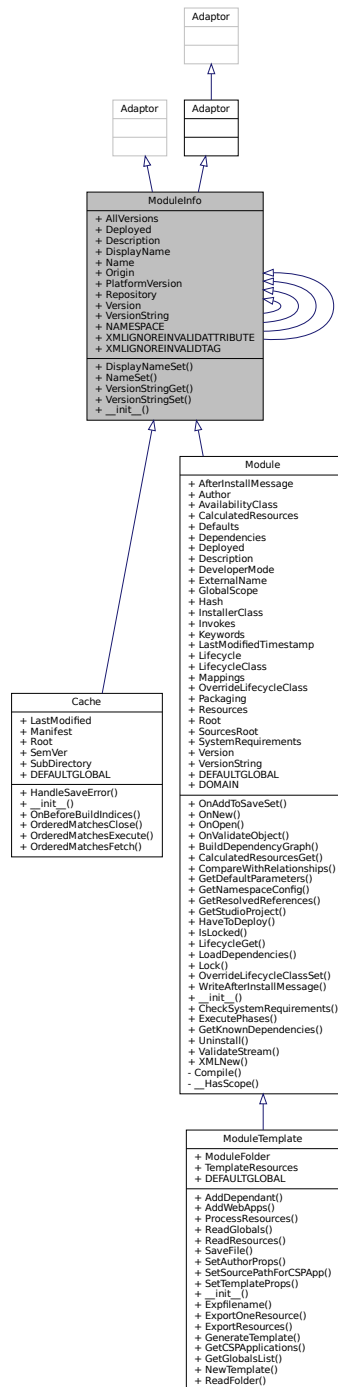
TargetFile

File to which the module should be exported.

6.96 ModuleInfo Class Reference

Most basic information that EVERY module must have.

Inheritance diagram for ModuleInfo:



Public Attributes

- [AllVersions](#)
- [Deployed](#)
- [Description](#)

- [DisplayName](#)
Case-sensitive display name of the module as it appears in the module manifest.
- [Name](#)
lowercase storage name of the module
- [Origin](#)

- [PlatformVersion](#)
Version of IRIS for Deployed modules.
- [Repository](#)
The repository from which this module was loaded.
- [Version](#)

- [VersionString](#)

6.96.1 Detailed Description

Most basic information that EVERY module must have.

6.96.2 Member Data Documentation

6.96.2.1 AllVersions

AllVersions

6.96.2.2 Deployed

Deployed

6.96.2.3 Description

Description

6.96.2.4 DisplayName

DisplayName

Case-sensitive display name of the module as it appears in the module manifest.

6.96.2.5 Name

Name

lowercase storage name of the module

6.96.2.6 Origin

Origin

6.96.2.7 PlatformVersion

PlatformVersion

Version of IRIS for Deployed modules.

6.96.2.8 Repository

Repository

The repository from which this module was loaded.

Is "" if the module was loaded using the load command (i.e. directly from a file and not from a repository).

6.96.2.9 Version

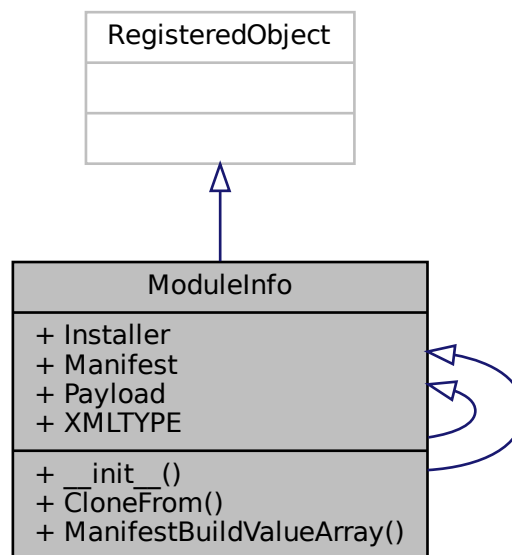
Version

6.96.2.10 VersionString

VersionString

6.97 ModuleInfo Class Reference

Inheritance diagram for ModuleInfo:



Public Attributes

- [Installer](#)
- [Manifest](#)
- [Payload](#)

Static Public Attributes

- `XMLTYPE = None`

Since `IPM.General.ModuleInfo` is XML enabled, XMLTYPEs of all its child classes must be able to differentiate from each other.

6.97.1 Member Data Documentation

6.97.1.1 XMLTYPE

```
XMLTYPE = None [static]
```

Since IPM.General.ModuleInfo is XML enabled, XMLTYPEs of all its child classes must be able to differentiate from each other.

So set it differently to avoid having the same XMLTYPE (default to be "ModuleInfo" taken from the classname) with IPM.Storage.ModuleInfo

6.97.1.2 Installer

```
Installer
```

6.97.1.3 Manifest

```
Manifest
```

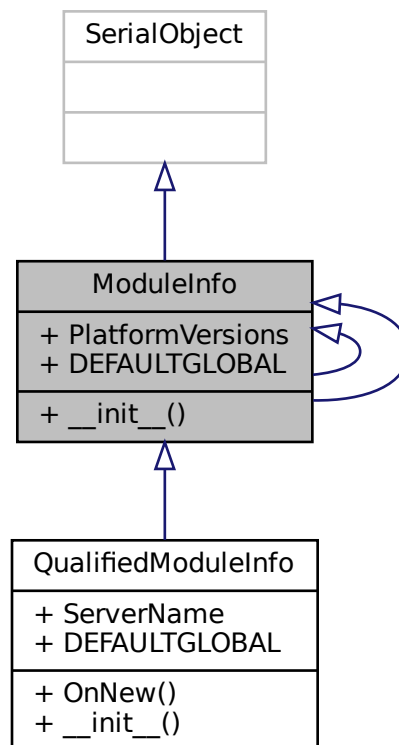
6.97.1.4 Payload

```
Payload
```

6.98 ModuleInfo Class Reference

Just a Serial Object of [ModuleInfo](#) so that it can be persisted in other objects.

Inheritance diagram for ModuleInfo:



Public Attributes

- [PlatformVersions](#)

6.98.1 Detailed Description

Just a Serial Object of [ModuleInfo](#) so that it can be persisted in other objects.

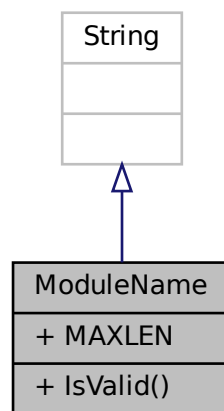
6.98.2 Member Data Documentation

6.98.2.1 PlatformVersions

PlatformVersions

6.99 ModuleName Class Reference

Inheritance diagram for ModuleName:



Static Public Member Functions

- `_.Library.Status IsValid (__, _.Library.RawString val)`
Tests if the logical value `val`, which is a string, is valid.

6.99.1 Member Function Documentation

6.99.1.1 IsValid()

```

_.Library.Status IsValid (
    /
    _.Library.RawString val ) [static]
  
```

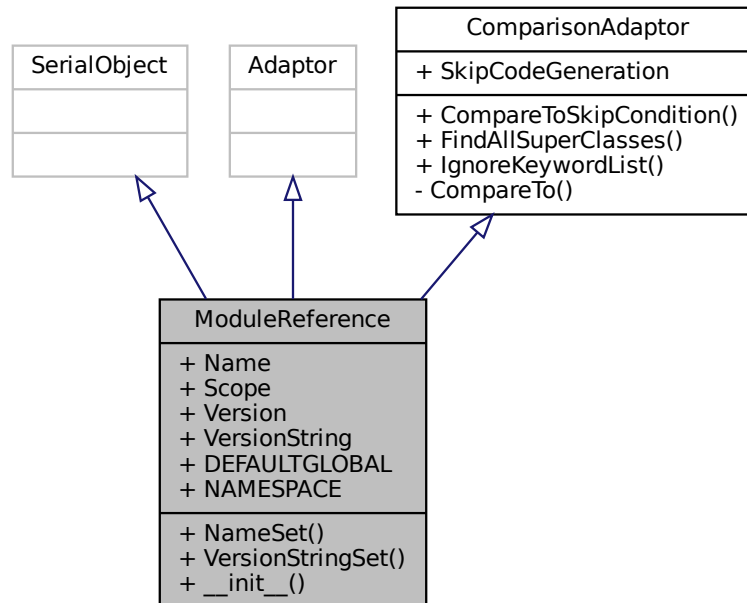
Tests if the logical value `val`, which is a string, is valid.

The validation is based on the class parameter settings used for the class attribute this data type is associated with. In this case, `MINLEN`, `MAXLEN`, `VALUELIST`, and `PATTERN`.

6.100 ModuleReference Class Reference

@API.Object.Instantiable @Modifier Availability InterSystems

Inheritance diagram for ModuleReference:



Public Attributes

- [Name](#)
- [Scope](#)
Restrict the scope in which this reference is relevant.
- [Version](#)
Does not need code generation for comparison because `<property>VersionString</property>` comparison is good enough.
- [VersionString](#)

Additional Inherited Members

6.100.1 Detailed Description

@API.Object.Instantiable @Modifier Availability InterSystems

6.100.2 Member Data Documentation

6.100.2.1 Name

Name

6.100.2.2 Scope

Scope

Restrict the scope in which this reference is relevant.

Default is "all scopes"

6.100.2.3 Version

Version

Does not need code generation for comparison because `<property>VersionString</property>` comparison is good enough.

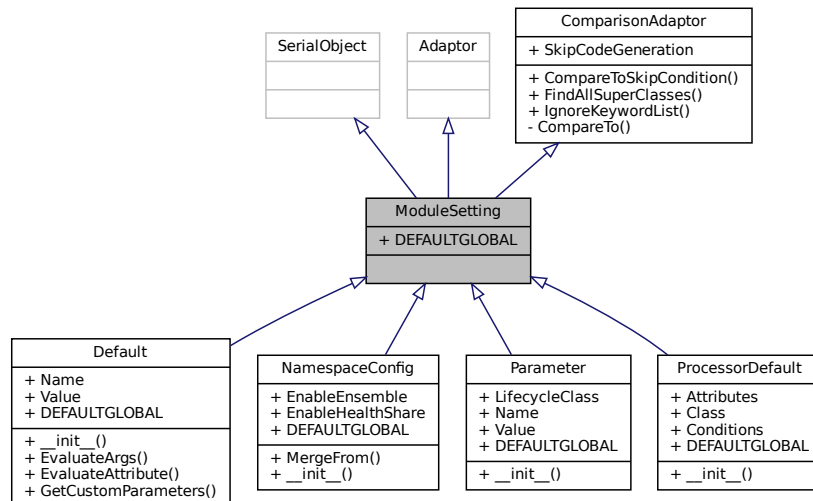
6.100.2.4 VersionString

VersionString

6.101 ModuleSetting Class Reference

Abstract class representing a setting applied at the the module level.

Inheritance diagram for ModuleSetting:



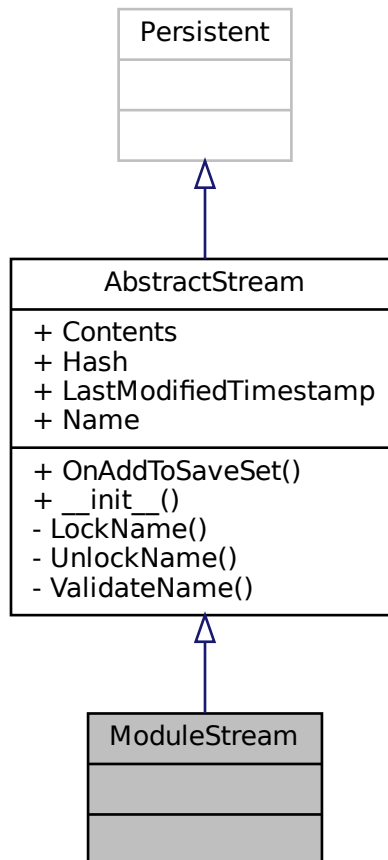
Additional Inherited Members

6.101.1 Detailed Description

Abstract class representing a setting applied at the the module level.

6.102 ModuleStream Class Reference

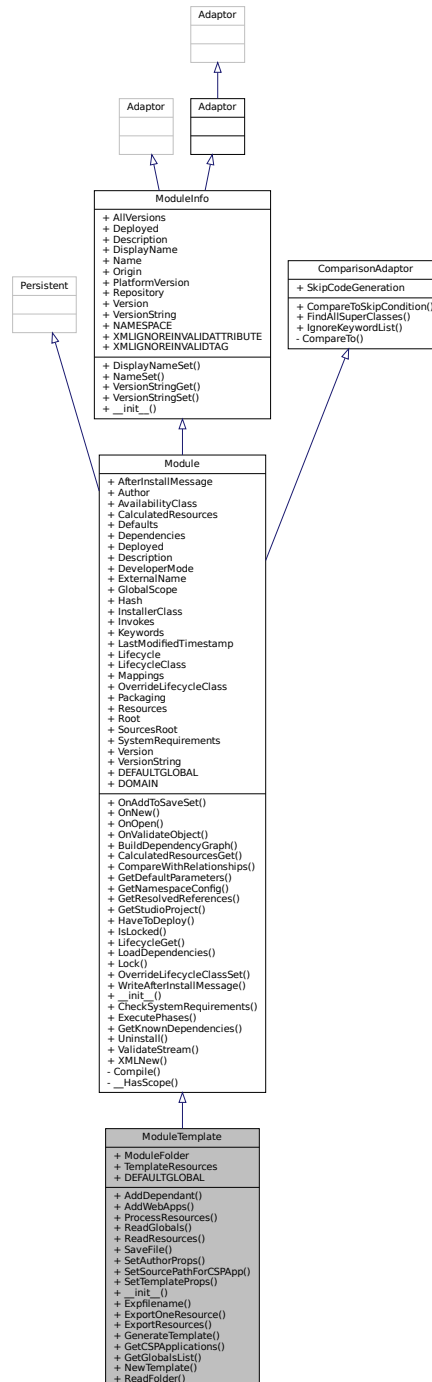
Inheritance diagram for ModuleStream:



Additional Inherited Members

6.103 ModuleTemplate Class Reference

Inheritance diagram for ModuleTemplate:



Public Member Functions

- `_.Library.Status AddDependant (_.Library.String pDependant)`

- add dependancy*
 • `_.Library.Status AddWebApps` (`_.Library.String pApps, _.Library.List cspapps, curns`)
adds a web application to the temporary array of module resources
- `_.Library.Status ReadGlobals` (`_.Library.String pSearchString`)
pSearchString - a mask, or comma-separated list of masks, to select globals

Static Public Member Functions

- `Expfilename` (`code, wd`)
test.dfi -> /dfi/test.dfi
- `ExportOneResource` (`workdir, flags, mask, ignoremask`)
Export different types of modules in different subfolders in UDL (plain) format.
- `_.Library.Status ExportResources` (`_.Library.String Path, _.Library.String ExportList`)
Export Resources.
- `_.Library.Status GenerateTemplate` (`_.Library.String pPath`)
creates a module.xml file with fictional data
- `_.Library.Status GetCSPApplications` (`_.Library.List pApplications, currentNamespace`)
returns list of non-system csp applications in the current namespace

Public Attributes

- `ModuleFolder`
- `TemplateResources`

Additional Inherited Members

6.103.1 Member Function Documentation

6.103.1.1 Expfilename()

```
Expfilename (
    code,
    wd ) [static]
```

```
test.dfi -> /dfi/test.dfi
```

```
test.cls -> /cls/test.cls testpkg.test.cls -> /cls/testpkg/test.cls
```

6.103.1.2 ExportOneResource()

```
ExportOneResource (
    workdir,
    flags,
    mask,
    ignoremask ) [static]
```

Export different types of modules in different subfolders in UDL (plain) format.

```
test.dfi -> /dfi/test.dfi testpkg.test.cls -> /cls/testpkg/test.cls Fork from https://github.com/intersystems-ru/cache-d
d ##class(IPM.Storage.ModuleTemplate).ExportOneResource("d:\_proj\app","00000","apptools.,"apptools.M")
byte=1 isGenerated byte=2 isSystem byte=3 isPercented byte=4 isMapped byte=5 isDFI
```

6.103.1.3 ExportResources()

```
_.Library.Status ExportResources (
    _.Library.String Path,
    _.Library.String ExportList ) [static]
```

Export Resources.

Example: ExportList="00000,apptools.,apptools.M^00000,apptools.,apptools.M"

6.103.2 Member Data Documentation

6.103.2.1 ModuleFolder

ModuleFolder

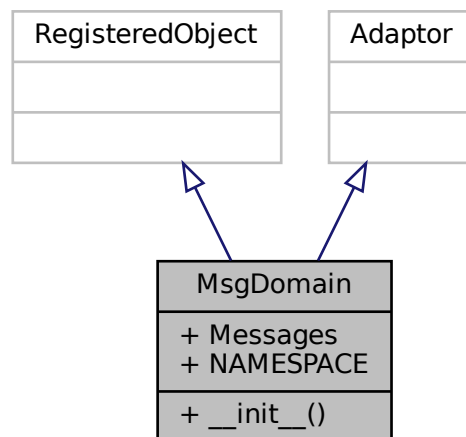
6.103.2.2 TemplateResources

TemplateResources

6.104 MsgDomain Class Reference

Registered object representation of a domain in a localized error message document.

Inheritance diagram for MsgDomain:



Public Attributes

- [Messages](#)

6.104.1 Detailed Description

Registered object representation of a domain in a localized error message document.

6.104.2 Member Data Documentation

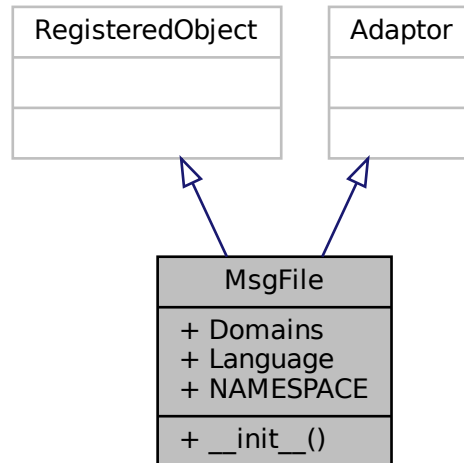
6.104.2.1 Messages

Messages

6.105 MsgFile Class Reference

Registered object representation of a localized error message document.

Inheritance diagram for MsgFile:



Public Attributes

- [Domains](#)
- [Language](#)

6.105.1 Detailed Description

Registered object representation of a localized error message document.

6.105.2 Member Data Documentation

6.105.2.1 Domains

`Domains`

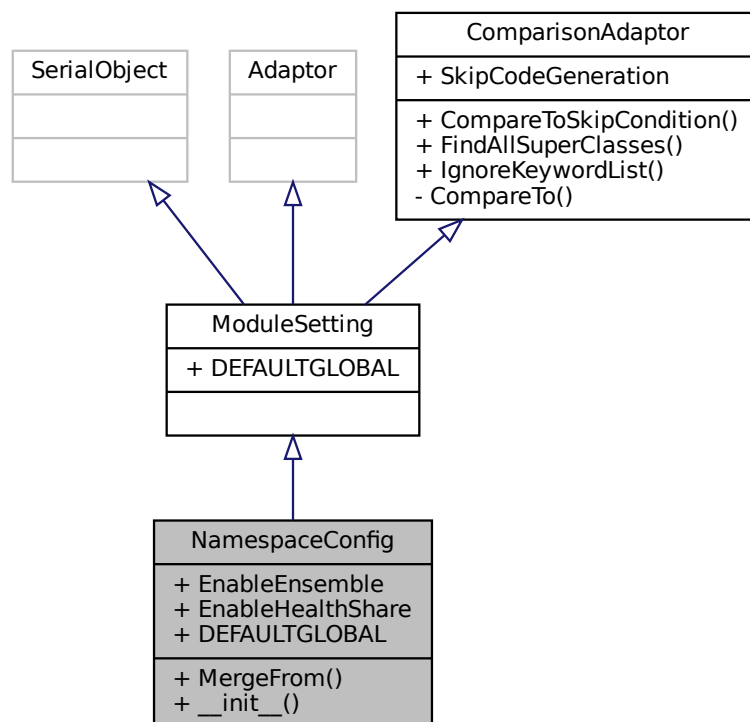
6.105.2.2 Language

Language

6.106 NamespaceConfig Class Reference

Provides information on how to configure the namespace used for the Verify phase (for integration tests), and perhaps also at some point the settings used for a new namespace created to install an application-packaged module.

Inheritance diagram for NamespaceConfig:



Public Attributes

- [EnableEnsemble](#)
Set to 1 if the Verify namespace should be Ensemble-enabled.
- [EnableHealthShare](#)
Set to 1 if the Verify namespace should be HealthShare-enabled.

Additional Inherited Members

6.106.1 Detailed Description

Provides information on how to configure the namespace used for the Verify phase (for integration tests), and perhaps also at some point the settings used for a new namespace created to install an application-packaged module.

6.106.2 Member Data Documentation

6.106.2.1 EnableEnsemble

`EnableEnsemble`

Set to 1 if the Verify namespace should be Ensemble-enabled.

6.106.2.2 EnableHealthShare

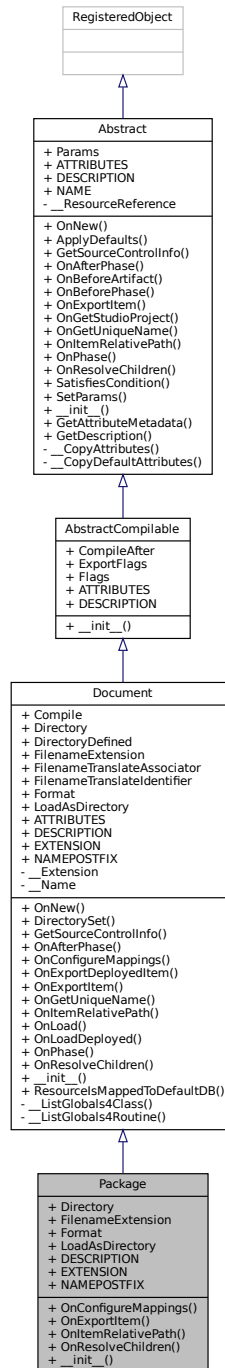
`EnableHealthShare`

Set to 1 if the Verify namespace should be HealthShare-enabled.

May only be set to 1 if `EnableEnsemble` is also 1.

6.107 Package Class Reference

Inheritance diagram for Package:



Public Member Functions

- `_.Library.Status OnConfigureMappings (pParams)`

Subclasses may override to customize mapping behavior at the beginning of the Reload phase.

- `_.Library.String OnItemRelativePath` (`_.Library.String pItemName, _.Library.Boolean plsUnitTest`)
Returns the path relative to the module root for item pItemName within this resource.
- `_.Library.Status OnResolveChildren` (`pResourceArray`)
Enumerate all documents contained in the resource being processed.

Public Attributes

- [Directory](#)
- [FilenameExtension](#)
Extension for individual filename(s) that comprise this resource.
- [Format](#)
Export format.
- [LoadAsDirectory](#)

Static Public Attributes

- `DESCRIPTION` = None
Description of resource processor class (shown in UI)

Additional Inherited Members

6.107.1 Member Function Documentation

6.107.1.1 OnResolveChildren()

```
_.Library.Status OnResolveChildren (
    pResourceArray )
```

Enumerate all documents contained in the resource being processed.

@Argument pResourceArray ByRef: array of the following format: pResourceArray(<Studio document name>) = <module that contains document> pResourceArray(<Studio document name>, <resource referenty property>) = value of resource reference property for given document

Reimplemented from [Document](#).

6.107.2 Member Data Documentation

6.107.2.1 Directory

Directory

6.107.2.2 FilenameExtension

FilenameExtension

Extension for individual filename(s) that comprise this resource.

6.107.2.3 Format

Format

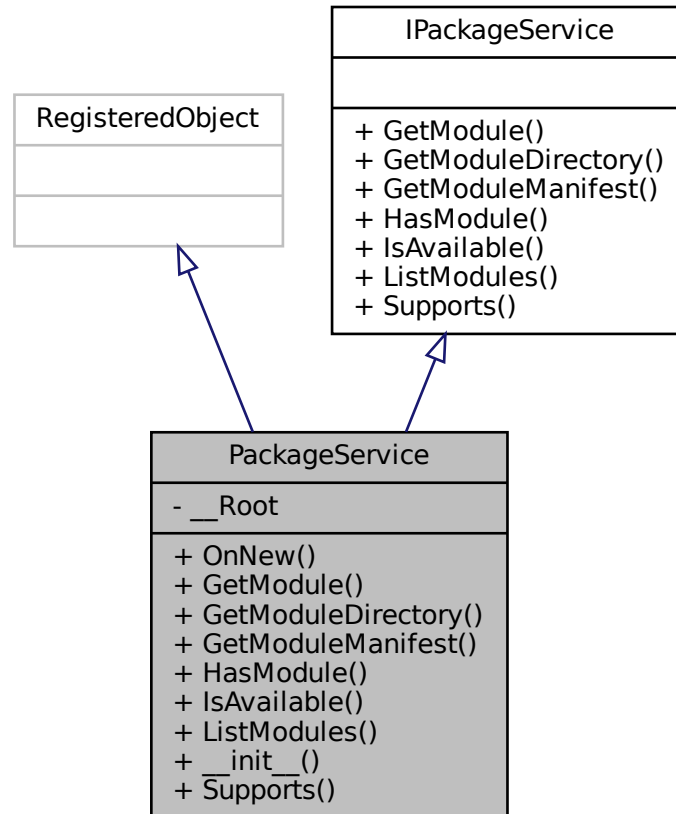
Export format.

6.107.2.4 LoadAsDirectory

LoadAsDirectory

6.108 PackageService Class Reference

Inheritance diagram for PackageService:



Public Member Functions

- `_.Library.Boolean` [IsAvailable](#) ()

For run-time checks to ensure the service is available before attempting to invoke it.

Static Public Member Functions

- `_.Library.Boolean` [Supports](#) (`_.Library.String` pMethod)

Returns 1 if the service supports a particular method.

Private Attributes

- `__Root`

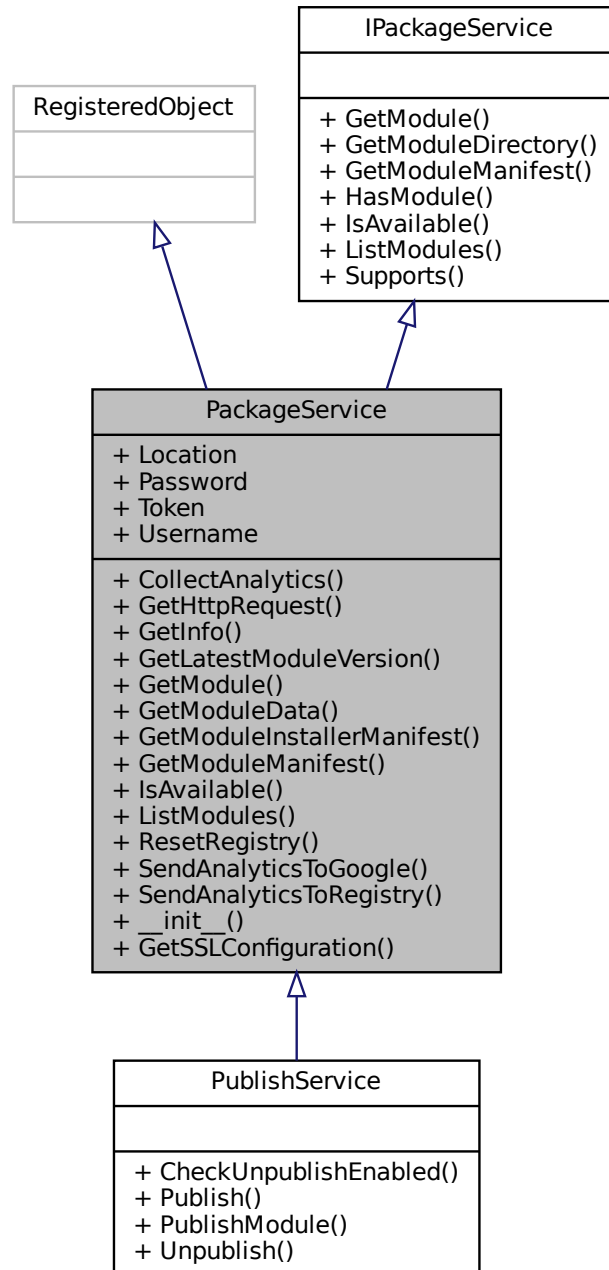
6.108.1 Member Data Documentation

6.108.1.1 `__Root`

`__Root` [private]

6.109 PackageService Class Reference

Inheritance diagram for PackageService:



Public Member Functions

- `_.Library.Boolean IsAvailable ()`
For run-time checks to ensure the service is available before attempting to invoke it.
- `_.Library.Status ResetRegistry ()`
Used for unittests, reset's external temporary registry from any packages.

Public Attributes

- [Location](#)
- [Password](#)
- [Token](#)
- [Username](#)

Additional Inherited Members

6.109.1 Member Data Documentation

6.109.1.1 Location

Location

6.109.1.2 Password

Password

6.109.1.3 Token

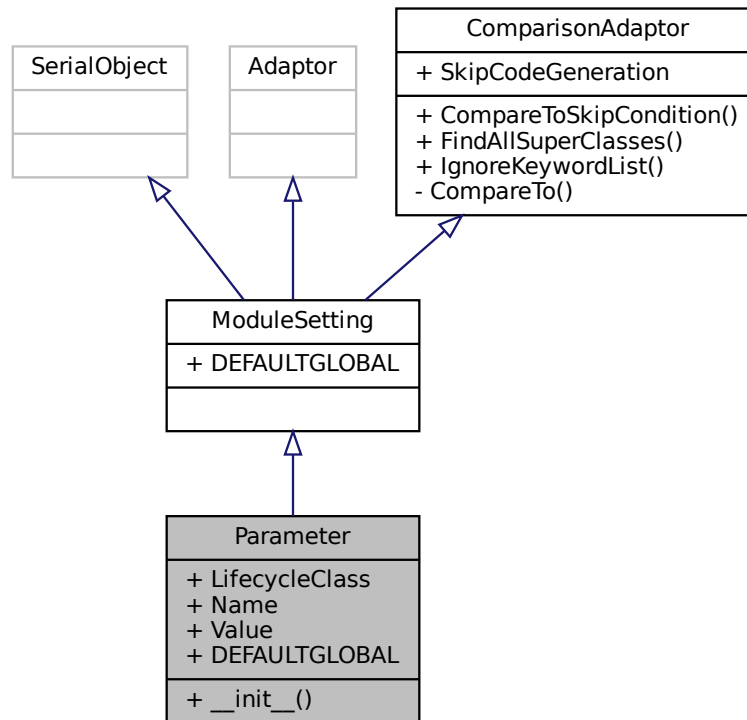
Token

6.109.1.4 Username

Username

6.110 Parameter Class Reference

Inheritance diagram for Parameter:



Public Attributes

- [LifecycleClass](#)

Optional; if specified, parameter default only applies when the lifecycle class is the one in question.

- [Name](#)

Name of the parameter (may contain "." to indicate a subscript in the array passed to lifecycle phases)

- [Value](#)

Value of the parameter (may be empty)

Additional Inherited Members

6.110.1 Member Data Documentation

6.110.1.1 LifecycleClass

LifecycleClass

Optional; if specified, parameter default only applies when the lifecycle class is the one in question.

6.110.1.2 Name

Name

Name of the parameter (may contain "." to indicate a subscript in the array passed to lifecycle phases)

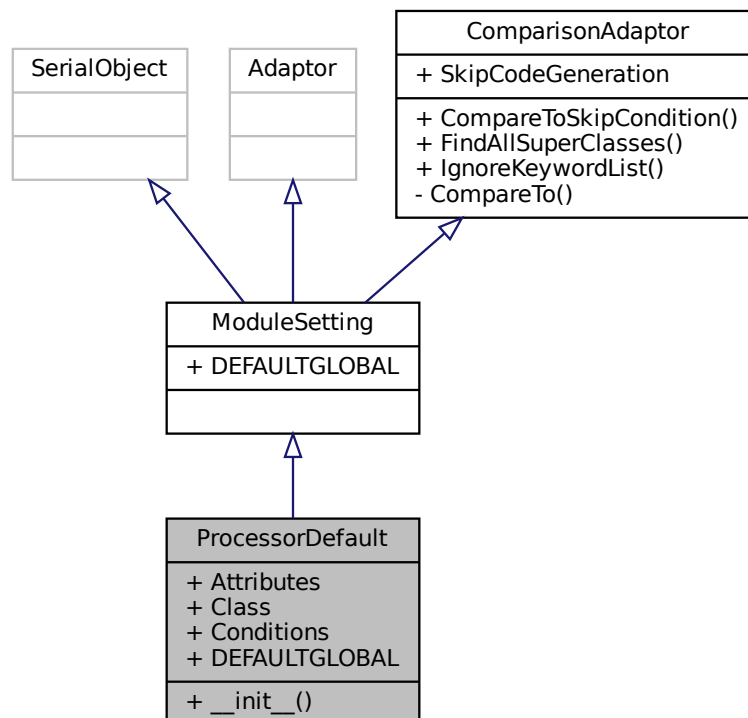
6.110.1.3 Value

Value

Value of the parameter (may be empty)

6.111 ProcessorDefault Class Reference

Inheritance diagram for ProcessorDefault:



Public Attributes

- [Attributes](#)
Default attributes to apply to the resources with the specified ProcessorClass.
- [Class](#)
Resource processor class to which this default setting applies.
- [Conditions](#)
Conditions under which the default settings apply.

Additional Inherited Members

6.111.1 Member Data Documentation

6.111.1.1 Attributes

Attributes

[Default](#) attributes to apply to the resources with the specified ProcessorClass.

6.111.1.2 Class

Class

Resource processor class to which this default setting applies.

6.111.1.3 Conditions

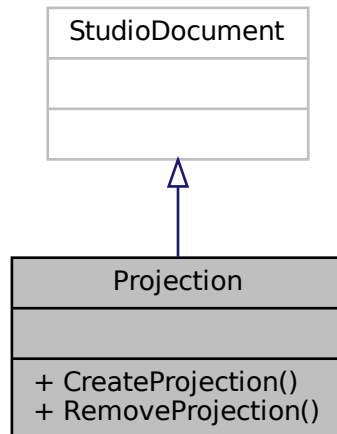
Conditions

Conditions under which the default settings apply.

6.112 Projection Class Reference

Custom Studio document projection class to ensure that metadata globals are included in Studio Project exports.

Inheritance diagram for Projection:



6.112.1 Detailed Description

Custom Studio document projection class to ensure that metadata globals are included in Studio Project exports.

This will allow the package manager to be installed (and function properly) from a Studio project export.

6.113 PropertyParameters Class Reference

6.114 PropertyParams Class Reference

Property parameter class for `<class>IPM.Utils.ComparisonAdaptor</class>`

Static Public Attributes

- `ForceCodeGenerate` = None
Forces code generation for the given property.

6.114.1 Detailed Description

Property parameter class for `<class>IPM.Utils.ComparisonAdaptor</class>`

6.114.2 Member Data Documentation

6.114.2.1 ForceCodeGenerate

`ForceCodeGenerate = None [static]`

Forces code generation for the given property.

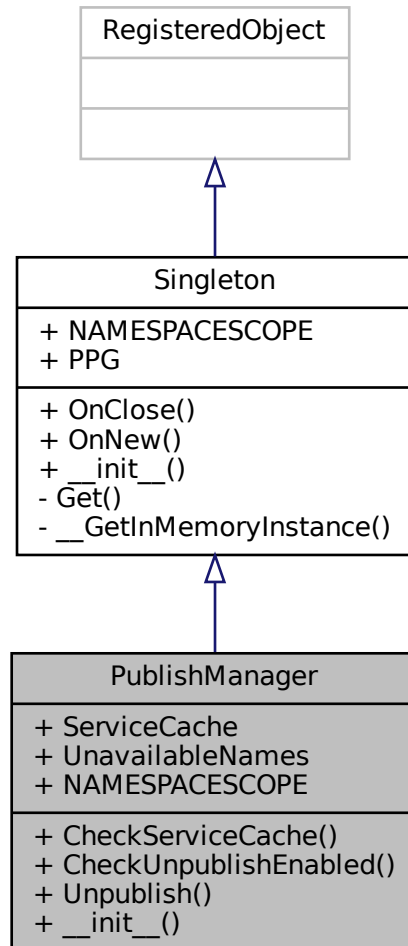
If 1, then force code generate.

If 0, then force skipping of code generation.

If -1, ignore this parameter.

6.115 PublishManager Class Reference

Inheritance diagram for PublishManager:



Public Attributes

- [ServiceCache](#)

Avoids constantly reinstantiating the package service objects, which may be expensive.

- [UnavailableNames](#)

Keeps track of which repositories are unavailable (by name - the keys are important, values don't matter)

Additional Inherited Members

6.115.1 Member Data Documentation

6.115.1.1 ServiceCache

ServiceCache

Avoids constantly reinstantiating the package service objects, which may be expensive.

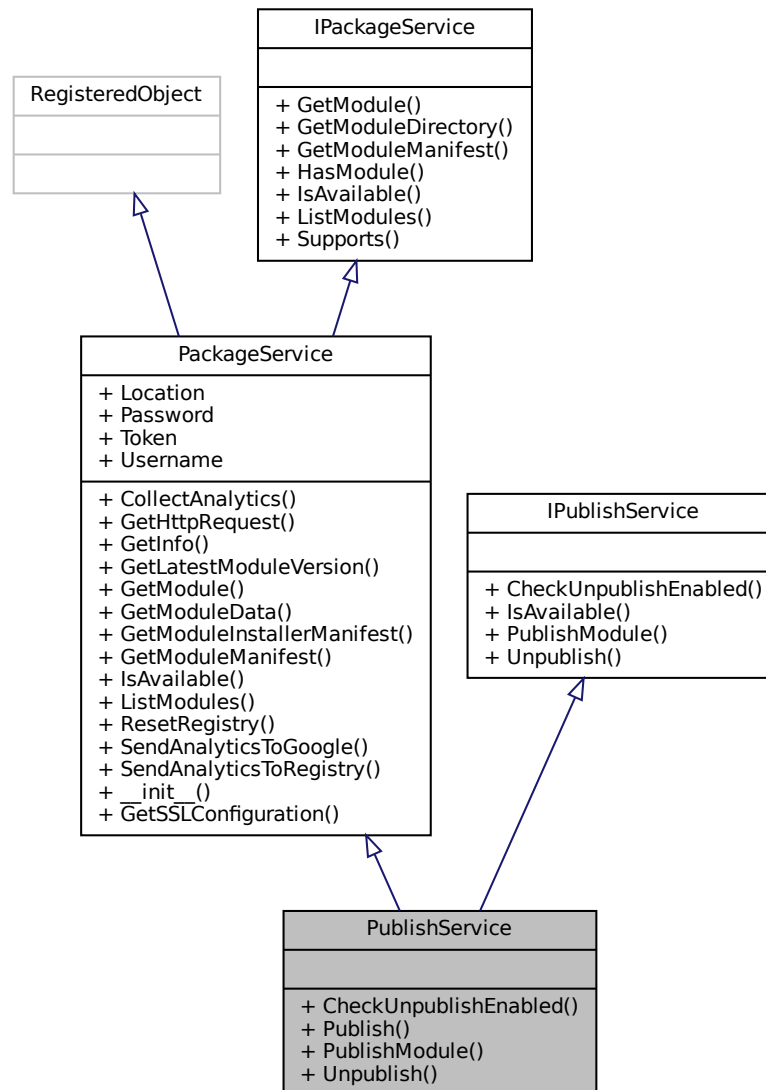
6.115.1.2 UnavailableNames

UnavailableNames

Keeps track of which repositories are unavailable (by name - the keys are important, values don't matter)

6.116 PublishService Class Reference

Inheritance diagram for PublishService:

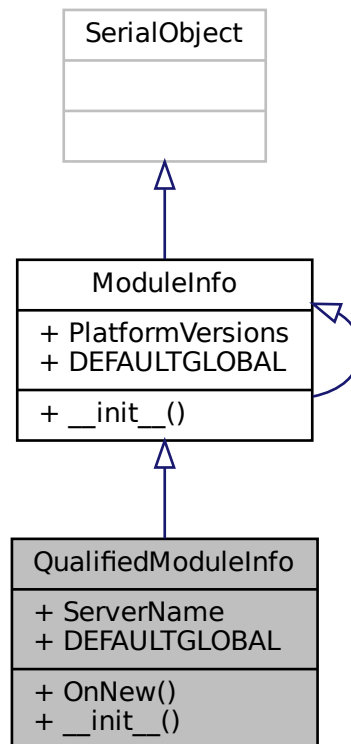


Additional Inherited Members

6.117 QualifiedModuleInfo Class Reference

Just a Resolved [Module](#) reference with a bit more information about which repository the module is located in.

Inheritance diagram for QualifiedModuleInfo:



Public Attributes

- [ServerName](#)

The name of the repository the module is in (The Name property in `<class>IPM.Repo.Definition</class>`).

6.117.1 Detailed Description

Just a Resolved [Module](#) reference with a bit more information about which repository the module is located in.

6.117.2 Member Data Documentation

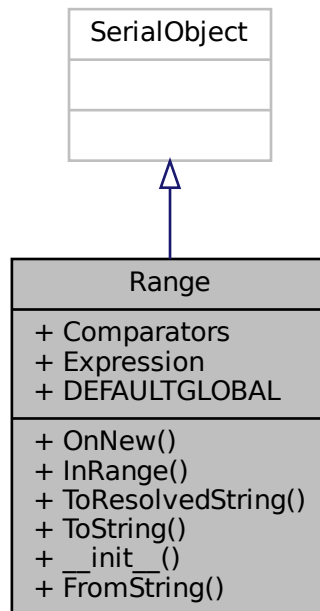
6.117.2.1 ServerName

ServerName

The name of the repository the module is in (The Name property in `<class>IPM.Repo.Definition</class>`).

6.118 Range Class Reference

Inheritance diagram for Range:



Public Attributes

- [Comparators](#)
- [Expression](#)

6.118.1 Member Data Documentation

6.118.1.1 Comparators

Comparators

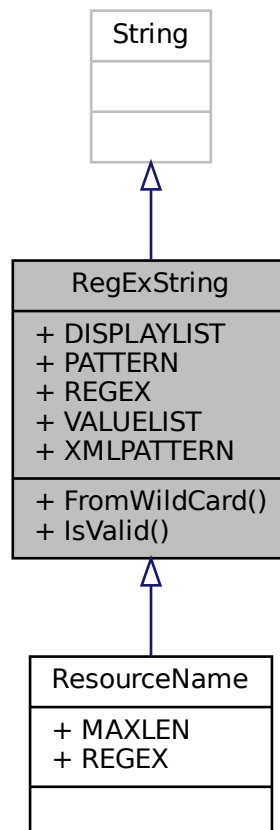
6.118.1.2 Expression

Expression

6.119 RegExString Class Reference

A string datatype definition which extends `<class>Library.String</class>` with additional regex pattern validation.

Inheritance diagram for RegExString:



Static Public Member Functions

- `_.Library.Status IsValid (__, _.Library.CacheString val)`
Tests if the logical value val, which is a string, is valid.

Static Public Attributes

- **DISPLAYLIST** = None
A string datatype definition which extends `<class>Library.String</class>` with additional regex pattern validation.
- **PATTERN** = None
Set **PATTERN** to empty and final, as it is not relevant on.
- **REGEX** = None
Set a valid regex pattern for value validation.
- **VALUELIST** = None
Set **VALUELIST** to empty and final, as it is not relevant on.
- **XMLPATTERN** = None
The **XMLPATTERN** to regex by default.

6.119.1 Detailed Description

A string datatype definition which extends `<class>Library.String</class>` with additional regex pattern validation.

From <https://community.intersystems.com/post/string-datatype-regular-expression-validation>

6.119.2 Member Function Documentation

6.119.2.1 IsValid()

```

_.Library.Status IsValid (
    _/
    _.Library.CacheString val ) [static]

```

Tests if the logical value *val*, which is a string, is valid.

The validation is based on the class parameter settings used for the class attribute this data type is associated with. In this case, **MINLEN**, **MAXLEN**, and **REGEX**.

6.119.3 Member Data Documentation

6.119.3.1 DISPLAYLIST

```
DISPLAYLIST = None [static]
```

A string datatype definition which extends `<class>Library.String</class>` with additional regex pattern validation.

From <https://community.intersystems.com/post/string-datatype-regular-expression-validation>

Set **DISPLAYLIST** to empty and final, as it is not relevant on

this type, but is inherited from `<class>Library.String</class>`

6.119.3.2 PATTERN

```
PATTERN = None [static]
```

Set PATTERN to empty and final, as it is not relevant on.

this type, but is inherited from `<class>Library.String</class>`

6.119.3.3 VALUELIST

```
VALUELIST = None [static]
```

Set VALUELIST to empty and final, as it is not relevant on.

this type, but is inherited from `<class>Library.String</class>`

6.119.3.4 XMLPATTERN

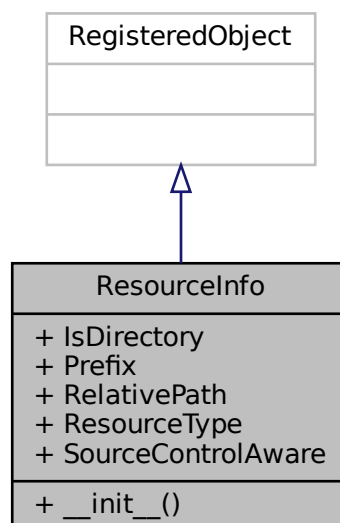
```
XMLPATTERN = None [static]
```

The XMLPATTERN to regex by default.

Can be overridden.

6.120 ResourceInfo Class Reference

Inheritance diagram for ResourceInfo:



Public Attributes

- [IsDirectory](#)
Set to 1 if the relative path is a directory.
- [Prefix](#)
The prefix (or possibly full name) of the resource.
- [RelativePath](#)
Path to map the resource to, relative to the module root.
- [ResourceType](#)
The type of resource being considered (typically a document extension, or "/CSP/" for CSP resources).
- [SourceControlAware](#)
Set to 1 for resources that may be mapped to files/source control.

6.120.1 Member Data Documentation

6.120.1.1 IsDirectory

`IsDirectory`

Set to 1 if the relative path is a directory.

(It almost always will be.)

6.120.1.2 Prefix

`Prefix`

The prefix (or possibly full name) of the resource.

e.g., `MyModule.PackageName.` for a package; `MyModule.PackageName.ClassName` for an individual class.

6.120.1.3 RelativePath

`RelativePath`

Path to map the resource to, relative to the module root.

e.g., `/cls/`

6.120.1.4 ResourceType

`ResourceType`

The type of resource being considered (typically a document extension, or "/CSP/" for CSP resources).

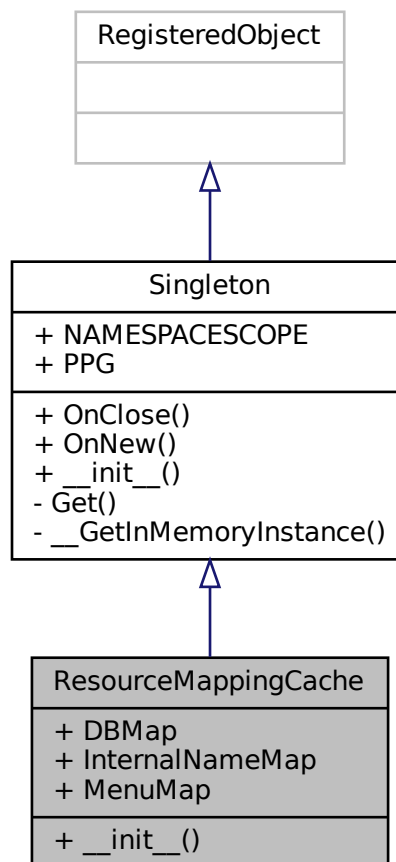
6.120.1.5 SourceControlAware

SourceControlAware

Set to 1 for resources that may be mapped to files/source control.

6.121 ResourceMappingCache Class Reference

Inheritance diagram for ResourceMappingCache:



Public Attributes

- [DBMap](#)
- [InternalNameMap](#)
- [MenuMap](#)

Additional Inherited Members

6.121.1 Member Data Documentation

6.121.1.1 DBMap

DBMap

6.121.1.2 InternalNameMap

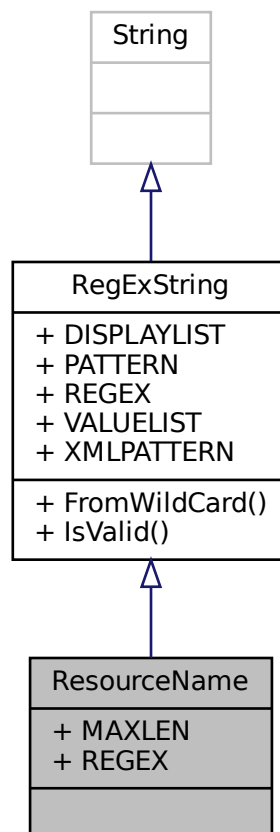
InternalNameMap

6.121.1.3 MenuMap

MenuMap

6.122 ResourceName Class Reference

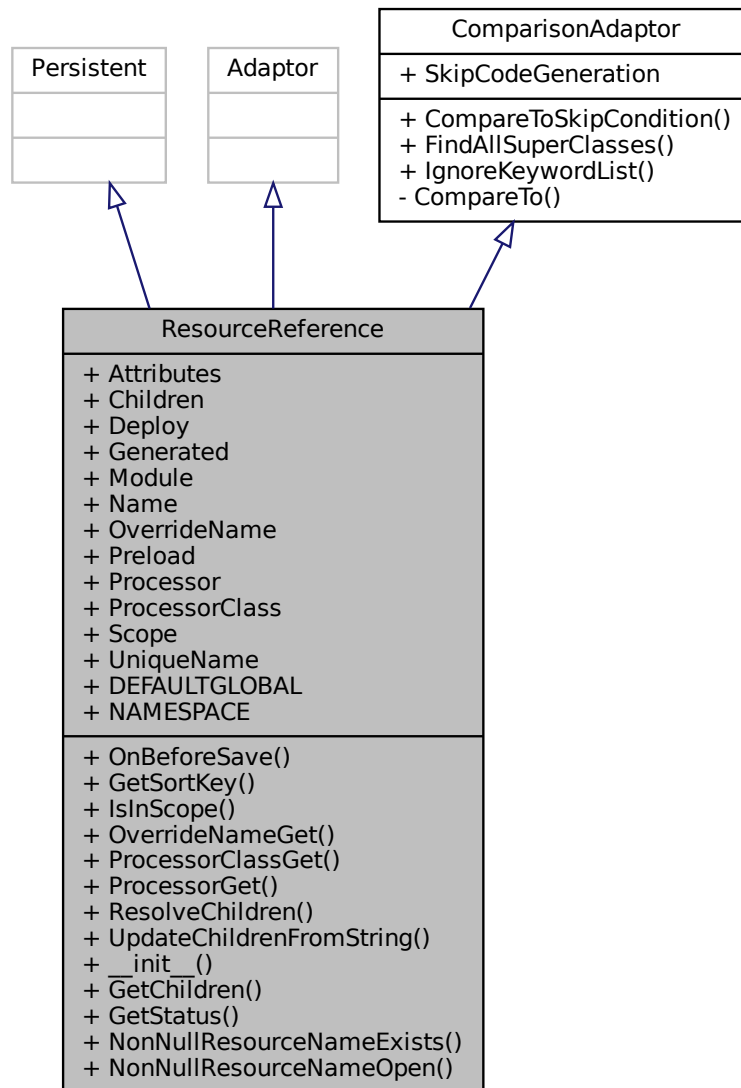
Inheritance diagram for ResourceName:



Additional Inherited Members

6.123 ResourceReference Class Reference

Inheritance diagram for ResourceReference:



Public Member Functions

- `_.Library.Status OnBeforeSave` (`_.Library.Boolean insert`)
This callback method is invoked by the <METHOD> Save</METHOD> method to.
- `_.Library.Boolean IsInScope` (`_.Library.String pCurrentPhase, _.Library.Boolean pInCurrentPhase`)
Returns true if the resource is in scope for the current module lifecycle operation.

- `_.Library.Status ResolveChildren` (`pResourceArray`, `_.Library.Boolean pCheckModuleOwnership`)
Returns an array of resources composing this resource, with the names as subscripts of `pResourceArray`.
- `UpdateChildrenFromString` (`_.Library.String pChildren`)
Updates `<property>Children</property>` to the contents of `pChildren`.

Static Public Member Functions

- `_.Library.Status GetChildren` (`_.Library.String pResourceName`, `_.Library.String pModuleName`, `_.Library.Boolean pCheckModuleOwnership`, `pResourceInfoArray`, `pResourceArray`)
helper for `<method>ResolveChildren</method>`
- `_.Library.Boolean NonNullResourceNameExists` (`_.Library.String pResourceName`, `_.Library.Integer pID`)
For performance reasons, this should be used rather than `<method>ResourceNameExists</method>`.
- `_.IPM.Storage.ResourceReference NonNullResourceNameOpen` (`_.Library.String pResourceName`, `_.Library.Integer pConcurrency`, `_.Library.Status pSC`)
For performance reasons, this should be used rather than `<method>ResourceNameOpen</method>`.

Public Attributes

- `Attributes`
Additional name-value pairs related to this resource.
- `Children`
Array where key = name of child, value = "".
- `Deploy`
If set to true, this source code is not shipped in application packaging.
- `Generated`
Specify if this resource is generated.
- `Module`
- `Name`
- `OverrideName`
Overridden unique identifier for this resource; provided by resource processor classes.
- `Preload`
Specify if this resource is from reload directory.
- `Processor`
Transient instance of `ProcessorClass`.
- `ProcessorClass`
Specifies a class that handles lifecycle events for this resource.
- `Scope`
Restrict the scope in which this resource is included.
- `UniqueName`
Unique identifier for the resource.

Additional Inherited Members

6.123.1 Member Function Documentation

6.123.1.1 OnBeforeSave()

```
_.Library.Status OnBeforeSave (
    _.Library.Boolean insert )
```

This callback method is invoked by the <METHOD>Save</METHOD> method to

provide notification that the object is being saved. It is called before any data is written to disk.

insert will be set to 1 if this object is being saved for the first time.

If this method returns an error then the call to <METHOD>Save</METHOD> will fail.

6.123.1.2 IsInScope()

```
_.Library.Boolean IsInScope (
    _.Library.String pCurrentPhase,
    _.Library.Boolean pInCurrentPhase )
```

Returns true if the resource is in scope for the current module lifecycle operation.

May also be used to test if the resource's scope matches the current phase.

6.123.1.3 ResolveChildren()

```
_.Library.Status ResolveChildren (
    pResourceArray,
    _.Library.Boolean pCheckModuleOwnership )
```

Returns an array of resources composing this resource, with the names as subscripts of *pResourceArray*.

If *pCheckModuleOwnership* is 0 (the default is 1), for .PKG resources, all classes in the package will be included (even if they are actually part of another module).

6.123.1.4 UpdateChildrenFromString()

```
UpdateChildrenFromString (
    _.Library.String pChildren )
```

Updates <property>Children</property> to the contents of *pChildren*.

@Argument *pChildren* comma delimited string of Studio document names that are contained in this resource

6.123.2 Member Data Documentation

6.123.2.1 Attributes

Attributes

Additional name-value pairs related to this resource.

May be referred to in lifecycle methods

6.123.2.2 Children

Children

Array where key = name of child, value = "".

6.123.2.3 Deploy

Deploy

If set to true, this source code is not shipped in application packaging.

(Of course, it must be included in module packaging.)

6.123.2.4 Generated

Generated

Specify if this resource is generated.

A generated resource will not be loaded nor exported by lifecycle methods

6.123.2.5 Module

Module

6.123.2.6 Name

Name

6.123.2.7 OverrideName

OverrideName

Overridden unique identifier for this resource; provided by resource processor classes.

6.123.2.8 Preload

Preload

Specify if this resource is from reload directory.

6.123.2.9 Processor

Processor

Transient instance of ProcessorClass.

6.123.2.10 ProcessorClass

ProcessorClass

Specifies a class that handles lifecycle events for this resource.

Typically only applicable to directory/file resources

6.123.2.11 Scope

Scope

Restrict the scope in which this resource is included.

Default is "all scopes"

6.123.2.12 UniqueName

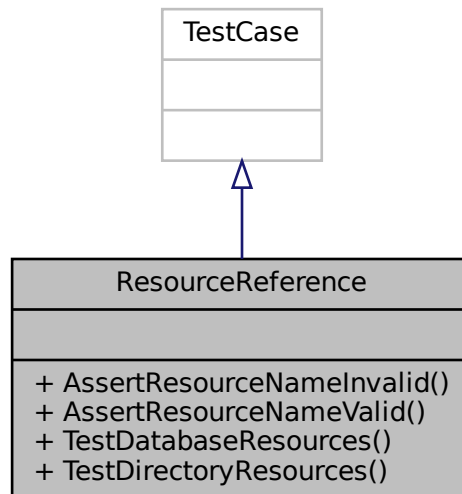
UniqueName

Unique identifier for the resource.

For most typical resources (classes, include files, etc.) this is set to the resource name. For resources starting with /, this is set to "" by default (indicating "not required to be unique"). If a resource processor class is defined, this name can be customized via the OnGetUniqueName method, and override the above behaviors (via <property>OverrideName</property>)

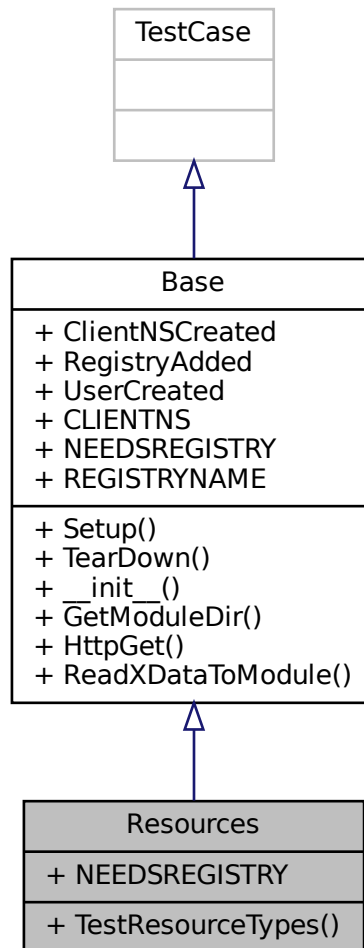
6.124 ResourceReference Class Reference

Inheritance diagram for ResourceReference:



6.125 Resources Class Reference

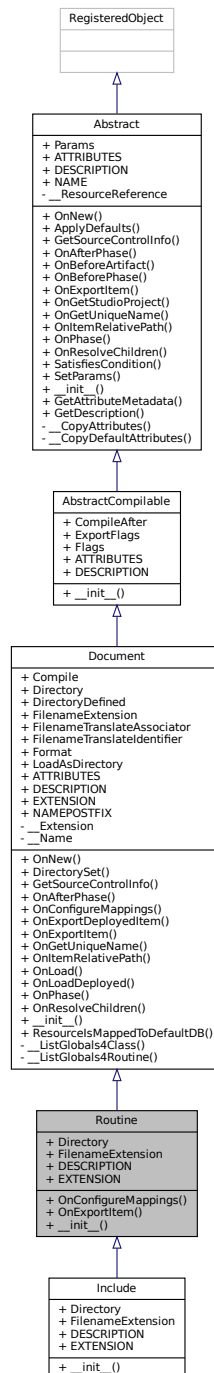
Inheritance diagram for Resources:



Additional Inherited Members

6.126 Routine Class Reference

Inheritance diagram for Routine:



Public Member Functions

- `_.Library.Status` [OnConfigureMappings](#) (pParams)

Subclasses may override to customize mapping behavior at the beginning of the Reload phase.

Public Attributes

- [Directory](#)
Directory relative to module root containing the exported resource.
- [FilenameExtension](#)
Extension for individual filename(s) that comprise this resource.

Static Public Attributes

- [DESCRIPTION](#) = None
Description of resource processor class (shown in UI)
- [EXTENSION](#) = None
May be set to determine the value of `<property>Extension</property>` based on a static value rather than based on the resource name.

Additional Inherited Members

6.126.1 Member Data Documentation

6.126.1.1 Directory

`Directory`

Directory relative to module root containing the exported resource.

Defaults to the resource's extension (lower-case) if unspecified.

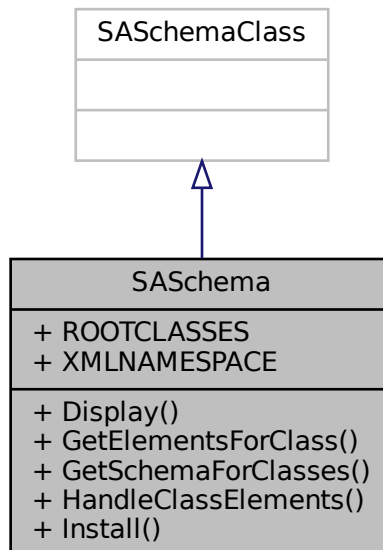
6.126.1.2 FilenameExtension

`FilenameExtension`

Extension for individual filename(s) that comprise this resource.

6.127 SASchema Class Reference

Inheritance diagram for SASchema:



Static Public Member Functions

- `Display ()`
Outputs the schema to the current device.
- `_.Library.Status GetElementsForClass (_.Library.String pClass, pElementList, pReferencedClasses, pXMLNameAliases)`
Overridden to handle list collections and relationships.
- `_.Library.Status GetSchemaForClasses (_.Library.String pClassList)`
Overridden to handle wrapped collections and relationships.

Static Public Attributes

- `ROOTCLASSES = None`
This is a comma-separated list of the classes whose xml elements.
- `XMLNAMESPACE = None`
This is the namespace value used to identify this SA schema.

6.127.1 Member Function Documentation

6.127.1.1 Display()

```
Display ( ) [static]
```

Outputs the schema to the current device.

Useful for testing/debugging.

6.127.2 Member Data Documentation

6.127.2.1 ROOTCLASSES

```
ROOTCLASSES = None [static]
```

This is a comma-separated list of the classes whose xml elements.

can be used as the root level element of a document separated with a ':' and the XML tag name to correlate this with e.g. "User.Person:person,User.Company:company".

6.127.2.2 XMLNAMESPACE

```
XMLNAMESPACE = None [static]
```

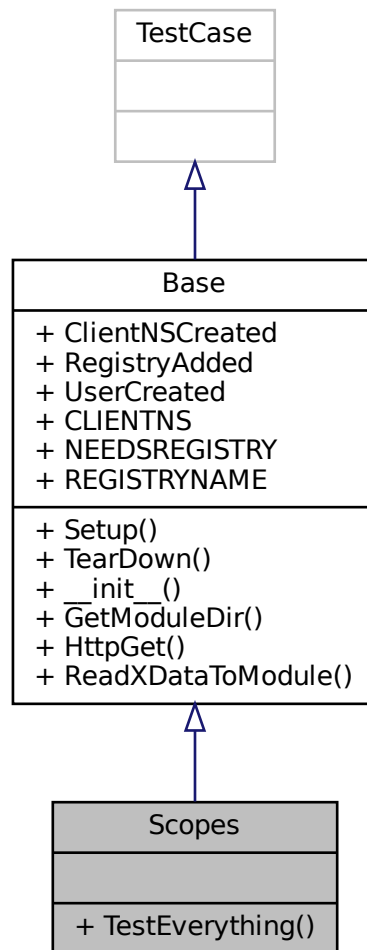
This is the namespace value used to identify this SA schema.

This corresponds to the XMLNamespace keyword of a Studio XData block.

6.128 Scopes Class Reference

This is an integration test because it creates data.

Inheritance diagram for Scopes:



Public Member Functions

- [TestEverything\(\)](#)

This is an integration test because it creates data.

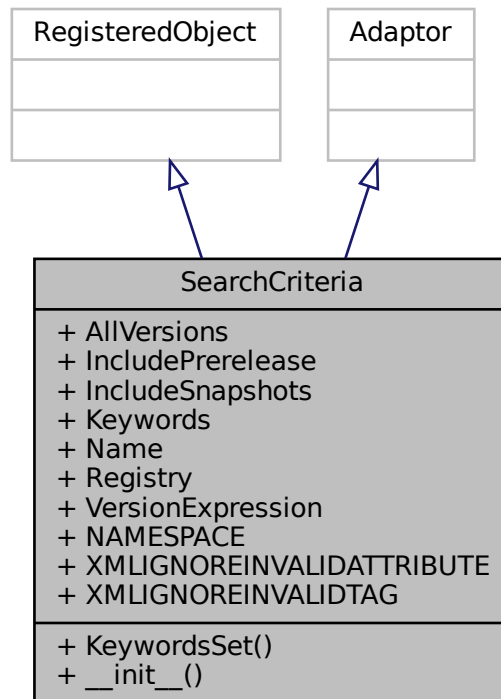
Additional Inherited Members

6.128.1 Detailed Description

This is an integration test because it creates data.

6.129 SearchCriteria Class Reference

Inheritance diagram for SearchCriteria:



Public Attributes

- [AllVersions](#)
- [IncludePrerelease](#)
- [IncludeSnapshots](#)
- [Keywords](#)
- [Name](#)
- [Registry](#)
- [VersionExpression](#)

6.129.1 Member Data Documentation

6.129.1.1 AllVersions

AllVersions

6.129.1.2 IncludePrerelease

IncludePrerelease

6.129.1.3 IncludeSnapshots

IncludeSnapshots

6.129.1.4 Keywords

Keywords

6.129.1.5 Name

Name

6.129.1.6 Registry

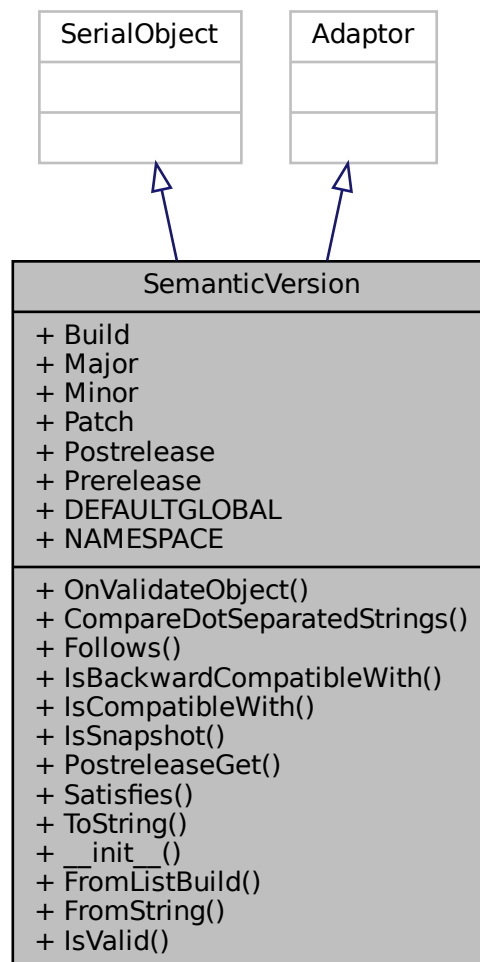
Registry

6.129.1.7 VersionExpression

`VersionExpression`

6.130 SemanticVersion Class Reference

Inheritance diagram for SemanticVersion:



Public Member Functions

- `_.Library.Status OnValidateObject ()`
This callback method is invoked by the `<METHOD>ValidateObject</METHOD>` method to.
- `_.Library.Boolean CompareDotSeparatedStrings (_.Library.String pThis, _.Library.String pOther)`
Compare two dot-separated strings (usually prerelease or postrelease identifiers).
- `_.Library.Boolean Follows (_.IPM.General.SemanticVersion pVersion)`
Returns 1 if this version is a later version than pVersion.
- `_.Library.Boolean IsBackwardCompatibleWith (_.IPM.General.SemanticVersion pVersion)`
Returns 1 if this version's number indicates that it will also support everything in pVersion.
- `_.Library.Boolean IsCompatibleWith (_.IPM.General.SemanticVersion pVersion)`
Returns 1 if this version's number indicates that it supports in pVersion.

Public Attributes

- `Build`
- `Major`
- `Minor`
- `Patch`
- `Postrelease`
This is an alias for Prerelease.
- `Prerelease`

6.130.1 Member Function Documentation

6.130.1.1 OnValidateObject()

```
_.Library.Status OnValidateObject ( )
```

This callback method is invoked by the `<METHOD>ValidateObject</METHOD>` method to.

provide notification that the current object is being validated.

If this method returns an error then `<METHOD>ValidateObject</METHOD>` will fail.

6.130.1.2 Follows()

```
_.Library.Boolean Follows (
    _.IPM.General.SemanticVersion pVersion )
```

Returns 1 if this version is a later version than *pVersion*.

From [the SemVer 2.0.0 specification](#):

1.0.0-alpha < 1.0.0-alpha.1 < 1.0.0-alpha.beta < 1.0.0-beta < 1.0.0-beta.2 < 1.0.0-beta.11 < 1.0.0-rc.1 < 1.0.0 Also, two prerelease versions with mismatched major/minor/patch should *not* follow each other; see: [node-semver](#)

6.130.1.3 IsBackwardCompatibleWith()

```
_.Library.Boolean IsBackwardCompatibleWith (
    _.IPM.General.SemanticVersion pVersion )
```

Returns 1 if this version's number indicates that it will also support everything in *pVersion*.

That is, it has the same major and a later or equal minor version to *pVersion*.

6.130.1.4 IsCompatibleWith()

```
_.Library.Boolean IsCompatibleWith (
    _.IPM.General.SemanticVersion pVersion )
```

Returns 1 if this version's number indicates that it supports in *pVersion*.

That is, it has the same major and minor version as *pVersion*.

6.130.2 Member Data Documentation

6.130.2.1 Build

Build

6.130.2.2 Major

Major

6.130.2.3 Minor

Minor

6.130.2.4 Patch

Patch

6.130.2.5 Postrelease

Postrelease

This is an alias for Prerelease.

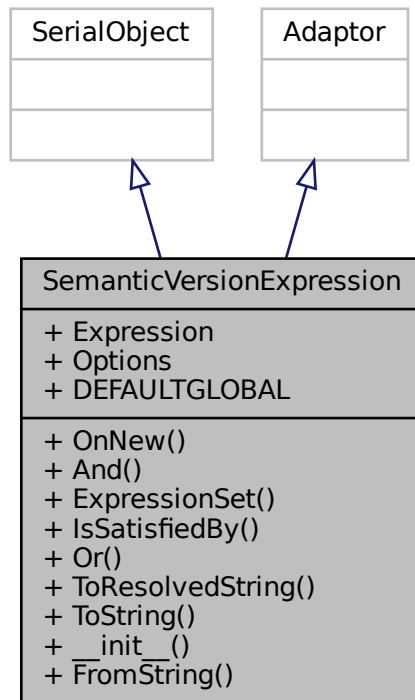
It is used for code readability when SemVerPostRelease is enabled.

6.130.2.6 Prerelease

Prerelease

6.131 SemanticVersionExpression Class Reference

Inheritance diagram for SemanticVersionExpression:



Public Attributes

- [Expression](#)
- [Options](#)

6.131.1 Member Data Documentation

6.131.1.1 Expression

`Expression`

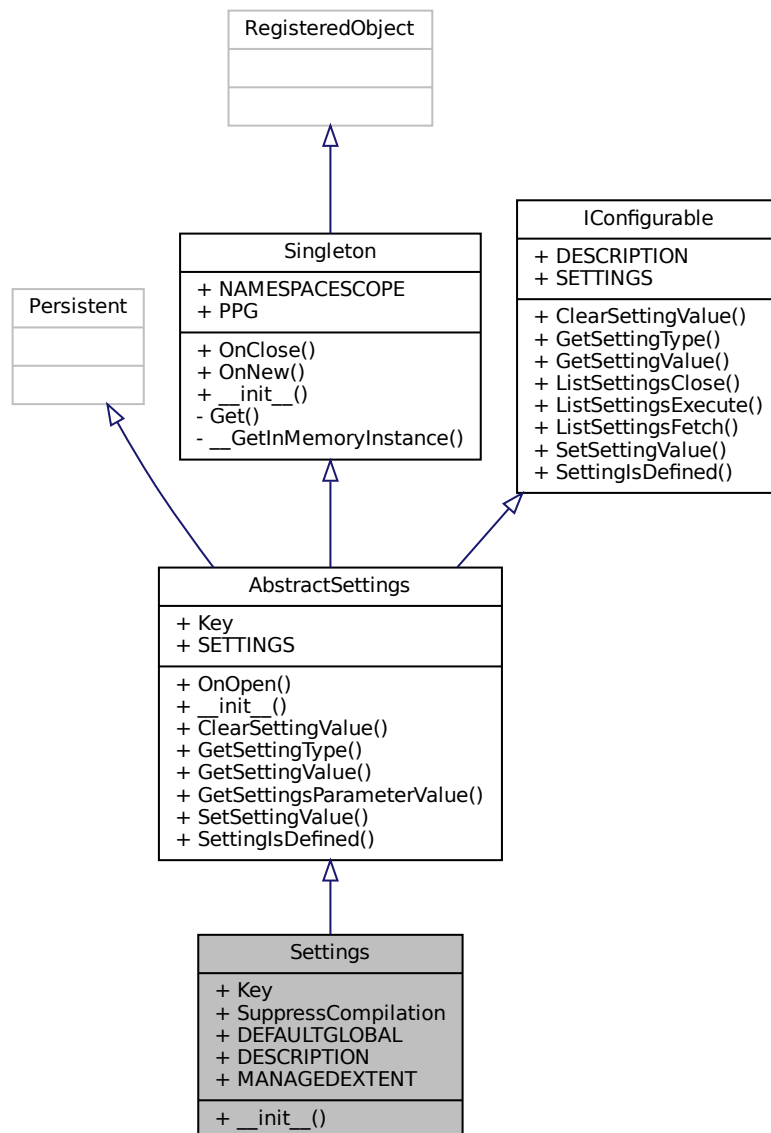
6.131.1.2 Options

Options

6.132 Settings Class Reference

This class contains general package manager settings that are configurable via the Package Manager > Configuration section of the Studio extension.

Inheritance diagram for Settings:



Public Attributes

- [Key](#)
- [SuppressCompilation](#)
Whether to suppress compilation upon clicking the 'Compile' icon.

Static Public Attributes

- [DESCRIPTION](#) = None
A string to show in the grouping of settings for this class.
- [MANAGEEXTENT](#) = None
The MANAGEEXTENT parameter can be set to 0 (zero) to cause the Extent Manager.

Additional Inherited Members

6.132.1 Detailed Description

This class contains general package manager settings that are configurable via the Package Manager > Configuration section of the Studio extension.

6.132.2 Member Data Documentation

6.132.2.1 MANAGEEXTENT

```
MANAGEEXTENT = None [static]
```

The *MANAGEEXTENT* parameter can be set to 0 (zero) to cause the Extent Manager.

to ignore this class. If set to 1 then the Extent Manager will register globals used by the class and detect collisions. Unmanaged extents (*MANAGEEXTENT* = 0) are not checked. Currently, only classes using default storage (*Storage.Persistent*) can be managed.

6.132.2.2 Key

Key

6.132.2.3 SuppressCompilation

SuppressCompilation

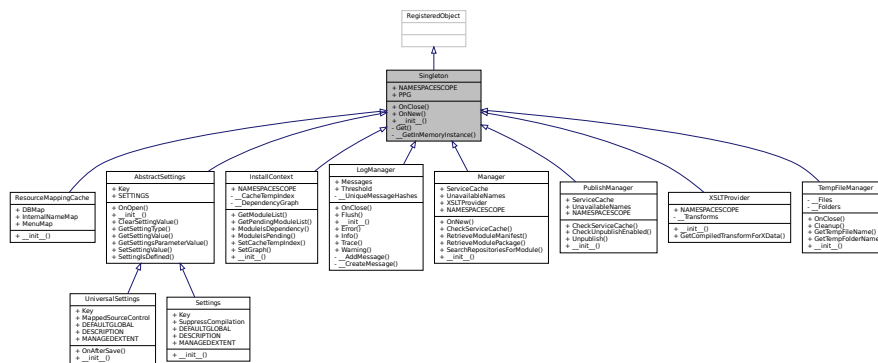
Whether to suppress compilation upon clicking the 'Compile' icon.

When compilation is suppressed, clicking the icon will save the file rather than compile it.

6.133 Singleton Class Reference

General class to extend to add a "singleton" interface to any registered or persistent class.

Inheritance diagram for Singleton:



Public Member Functions

- `__Library.Status OnClose ()`
Removes the OREF of this instance from PPG.
- `__Library.Status OnNew ()`
Tracks the OREF of this instance in a PPG for later reference.

Static Public Attributes

- `NAMESPACESCOPE = None`
If set to 1, calls to Get must return an instance of this class created in the current namespace; a new instance will be created if none exists.
- `PPG = None`
PPG in which to track references to the instance of this class.

Static Private Member Functions

- `__IPM.General.Singleton Get (__Library.Status pSC)`
Return the single per-process/namespace instance of this class, or create a new one.
- `__IPM.General.Singleton __GetInMemoryInstance ()`
This method finds the existing instance of an object of a current class (created in the namespace if `..NAMESPACESCOPE` is 1) if it exists in the current process.

6.133.1 Detailed Description

[General](#) class to extend to add a "singleton" interface to any registered or persistent class.

For persistent classes, requires that the class has a unique index defined on a read-only property with an Initial↵ Expression.

6.133.2 Member Function Documentation

6.133.2.1 Get()

```
..IPM.General.Singleton Get (
    ..Library.Status pSC ) [static], [private]
```

Return the single per-process/namespace instance of this class, or create a new one.

For persistent classes, may open the existing single record by its unique index.

6.133.2.2 OnClose()

```
..Library.Status OnClose ( )
```

Removes the OREF of this instance from PPG.

Subclasses of [IPM.General.Singleton](#) that override this method *MUST* call `##super()`.

Reimplemented in [TempFileManager](#), and [LogManager](#).

6.133.2.3 OnNew()

```
..Library.Status OnNew ( )
```

Tracks the OREF of this instance in a PPG for later reference.

Subclasses of [IPM.General.Singleton](#) that override this method *MUST* call `##super()`.

Reimplemented in [Manager](#).

6.133.2.4 __GetInMemoryInstance()

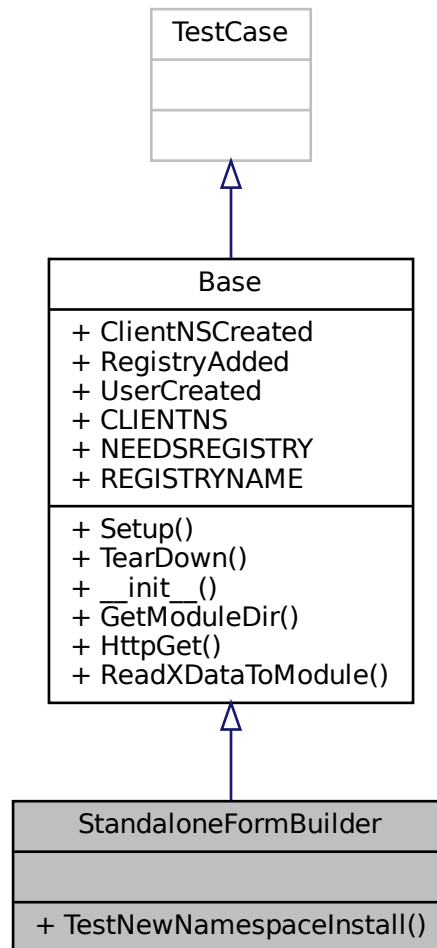
```
..IPM.General.Singleton __GetInMemoryInstance ( ) [static], [private]
```

This method finds the existing instance of an object of a current class (created in the namespace if `..NAMESPACESCOPE is 1`) if it exists in the current process.

Exceptions are caught by calling code.

6.134 StandaloneFormBuilder Class Reference

Inheritance diagram for StandaloneFormBuilder:

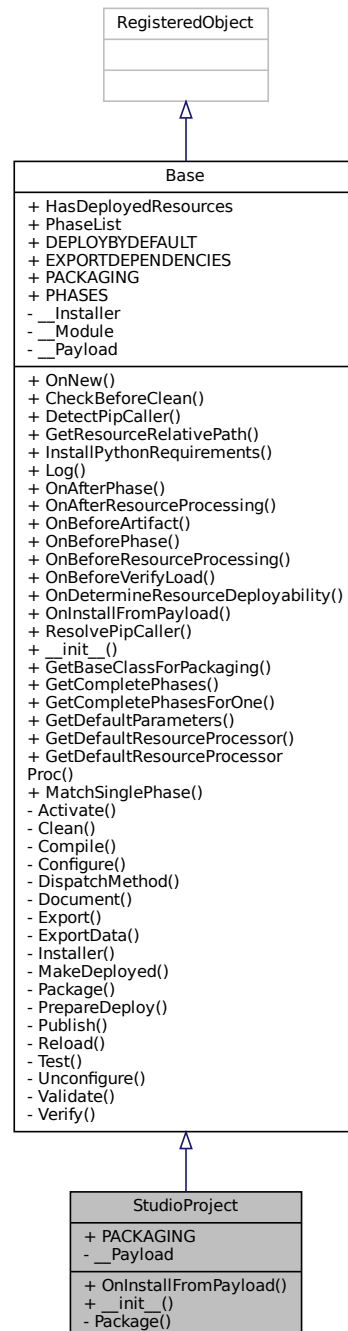


Additional Inherited Members

6.135 StudioProject Class Reference

Supports packaging and installing modules from Studio projects.

Inheritance diagram for StudioProject:



Public Member Functions

- `__Library.Status OnInstallFromPayload` (pParams)

Callback from the Verify phase to install the module payload in a different namespace.

Private Member Functions

- `__Library.Status Package` (pParams)

Packages all of the resources in a module (possibly including its dependencies, possibly including the package manager, possibly deploying by default)

Private Attributes

- `__Payload`

Additional Inherited Members

6.135.1 Detailed Description

Supports packaging and installing modules from Studio projects.

Additional command line flags:

- **-DPackage.WithDependencies=1**: includes dependencies in the module package
- **-DPackage.Manager=1**: includes package manager itself in the module package, to be bootstrapped in if it is not already installed
- **-DPackage.Target=C:\path\to\file.xml**: exports the package to the specified file
- **-DPackage.Deploy=1**: deploys all resources that are not explicitly listed with "Deploy=false"

6.135.2 Member Function Documentation

6.135.2.1 Package()

```
__Library.Status Package (  
    pParams ) [private]
```

Packages all of the resources in a module (possibly including its dependencies, possibly including the package manager, possibly deploying by default)

into a Studio project with a set of subordinate Studio projects.

Reimplemented from [Base](#).

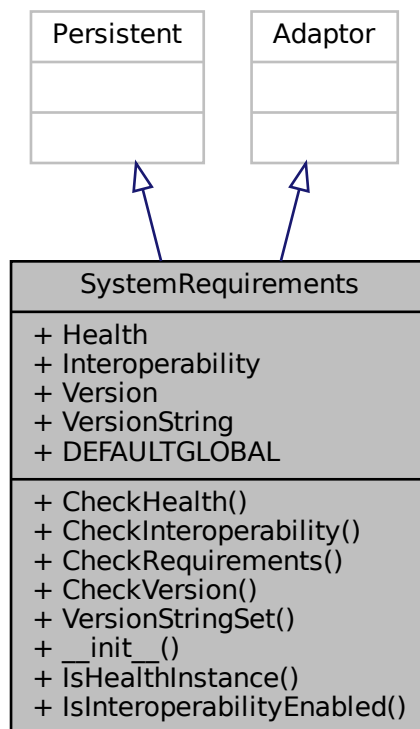
6.135.3 Member Data Documentation

6.135.3.1 __Payload

```
__Payload [private]
```

6.136 SystemRequirements Class Reference

Inheritance diagram for SystemRequirements:



Public Member Functions

- `_.Library.Status CheckInteroperability ()`
Checks if Interoperability specification is satisfied.

Public Attributes

- [Health](#)
- [Interoperability](#)
- [Version](#)
- [VersionString](#)

6.136.1 Member Function Documentation

6.136.1.1 CheckInteroperability()

```
_.Library.Status CheckInteroperability ( )
```

Checks if Interoperability specification is satisfied.

Health="true" implies Interoperability="enabled"

6.136.2 Member Data Documentation

6.136.2.1 Health

```
Health
```

6.136.2.2 Interoperability

```
Interoperability
```

6.136.2.3 Version

Version

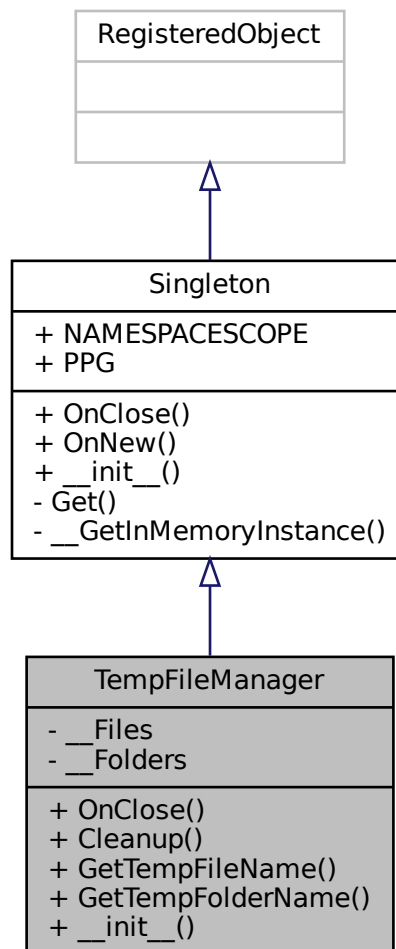
6.136.2.4 VersionString

VersionString

6.137 TempFileManager Class Reference

Helper class to ensure temp files/folders are cleaned up @API.Object @Modifier Availability InterSystems @↔ API.Object.Instantiable @Modifier Availability Forbidden.

Inheritance diagram for TempFileManager:



Public Member Functions

- `_.Library.Status OnClose ()`
Helper class to ensure temp files/folders are cleaned up @API.Object @Modifier Availability InterSystems @↔ API.Object.Instantiable @Modifier Availability Forbidden.
- `_.Library.String GetTempFileName (_.Library.String pExtension)`
Gets a temporary file name.
- `_.Library.String GetTempFolderName ()`
Gets a temporary folder name (and creates a folder with that name)

Private Attributes

- `__Files`
- `__Folders`

Additional Inherited Members

6.137.1 Detailed Description

Helper class to ensure temp files/folders are cleaned up @API.Object @Modifier Availability InterSystems @↔ API.Object.Instantiable @Modifier Availability Forbidden.

6.137.2 Member Function Documentation

6.137.2.1 GetTempFileName()

```
_.Library.String GetTempFileName (
    _.Library.String pExtension )
```

Gets a temporary file name.

@API.Method @Modifier Availability InterSystems

6.137.2.2 GetTempFolderName()

```
_.Library.String GetTempFolderName ( )
```

Gets a temporary folder name (and creates a folder with that name)

@API.Method @Modifier Availability InterSystems

6.137.3 Member Data Documentation

6.137.3.1 __Files

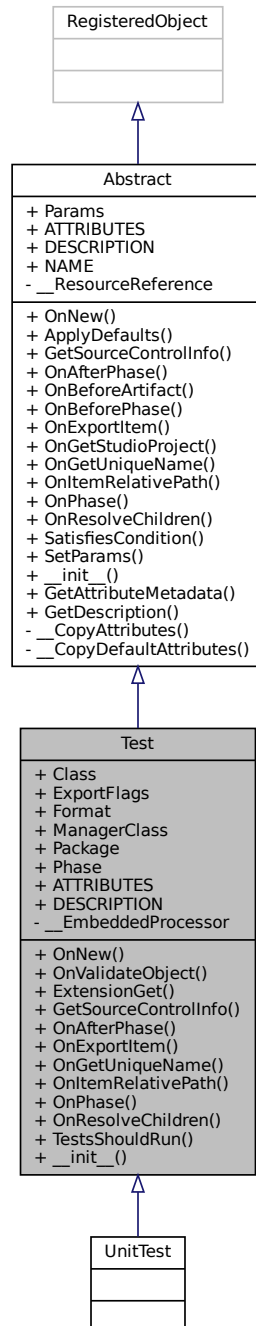
```
__Files [private]
```

6.137.3.2 __Folders

```
__Folders [private]
```

6.138 Test Class Reference

Inheritance diagram for Test:



Public Member Functions

- [OnGetUniqueName](#) (pUniqueName)
Returns a unique name for this resource.

- `_.Library.String OnItemRelativePath (_.Library.String pItemName)`
Returns the path relative to the module root for item pItemName within this resource.
- `_.Library.Status OnPhase (_.Library.String pPhase, pParams, _.Library.Boolean pResourceHandled)`
Called as phase pPhase is executed for the resource.

Public Attributes

- [Class](#)
Class containing unit tests - this will be mapped properly on development systems, and unit tests won't be deleted in the "test" phase.
- [ExportFlags](#)
Flags/qualifiers to export items with.
- [Format](#)
Export format.
- [ManagerClass](#)
Class extending `UnitTest.Manager` to use to run unit tests.
- [Package](#)
Package containing unit tests - this will be mapped properly on development systems, and unit tests won't be deleted in the "test" phase if any classes in it exist.
- [Phase](#)
Phase in which the unit tests run - "test" (dev namespace), "verify" (separate, clean namespace), or "test,verify" (to run in both cases).

Static Public Attributes

- `ATTRIBUTES = None`
Comma-separated list of resource attribute names that this processor uses.
- `DESCRIPTION = None`
Description of resource processor class (shown in UI)

Private Attributes

- `__EmbeddedProcessor`
Embedded processor to handle unit test resources as a package.

6.138.1 Member Function Documentation

6.138.1.1 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

Default implementation, leaving `pUniqueName` undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Abstract](#).

6.138.1.2 OnPhase()

```
_.Library.Status OnPhase (  
    _.Library.String pPhase,  
    pParams,  
    _.Library.Boolean pResourceHandled )
```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase. Currently, this is only used in the Verify phase, because of different handling of intermediate error statuses. TODO: Implement for standard database resources (.INC, .CLS, etc.)

Reimplemented from [Abstract](#).

6.138.2 Member Data Documentation

6.138.2.1 Class

Class

Class containing unit tests - this will be mapped properly on development systems, and unit tests won't be deleted in the "test" phase.

6.138.2.2 __EmbeddedProcessor

```
__EmbeddedProcessor [private]
```

Embedded processor to handle unit test resources as a package.

6.138.2.3 ExportFlags

ExportFlags

Flags/qualifiers to export items with.

6.138.2.4 Format

Format

Export format.

6.138.2.5 ManagerClass

ManagerClass

Class extending `UnitTest.Manager` to use to run unit tests.

6.138.2.6 Package

Package

Package containing unit tests - this will be mapped properly on development systems, and unit tests won't be deleted in the "test" phase if any classes in it exist.

6.138.2.7 Phase

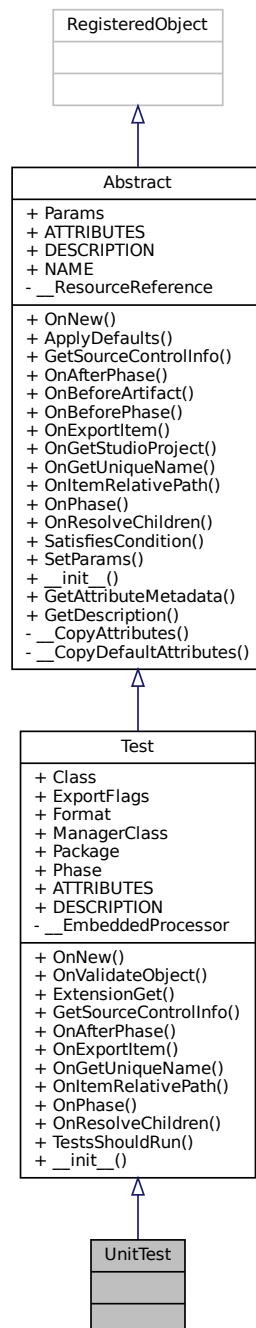
Phase

Phase in which the unit tests run - "test" (dev namespace), "verify" (separate, clean namespace), or "test,verify" (to run in both cases).

6.139 UnitTest Class Reference

Deprecated.

Inheritance diagram for UnitTest:



Additional Inherited Members

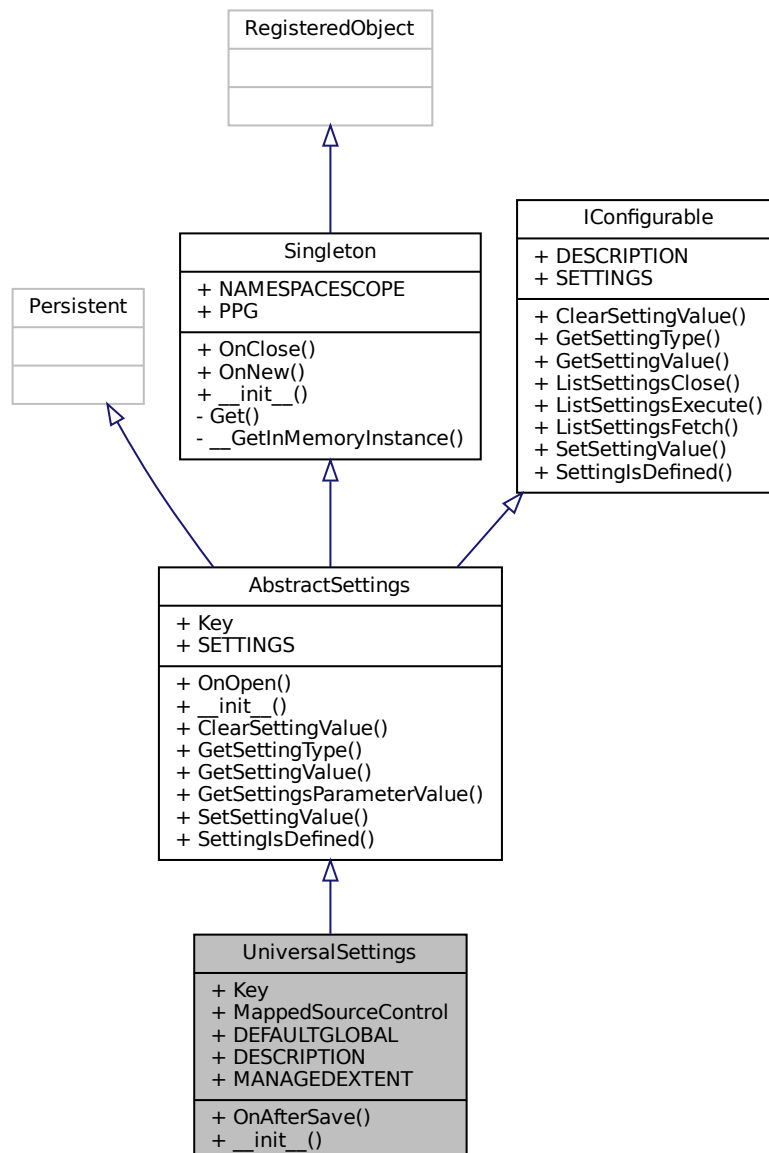
6.139.1 Detailed Description

Deprecated.

Included to support backward compatibility for unittest tag

6.140 UniversalSettings Class Reference

Inheritance diagram for UniversalSettings:



Public Member Functions

- `_.Library.Status OnAfterSave` (`_.Library.Boolean insert`)
Updates an additional \wedge SYS flag to enforce mapped source control.

Public Attributes

- `Key`
An inherited IDKey index on this property means that the default value is.
- `MappedSourceControl`
If enabled, source control behavior (including menu item enable/disable) follows mapped resources.

Static Public Attributes

- `DESCRIPTION` = None
A string to show in the grouping of settings for this class.
- `MANAGEDEXTENT` = None
Other classes may reasonably also map to this global, so don't complain about it.

Additional Inherited Members

6.140.1 Member Data Documentation

6.140.1.1 Key

`Key`

An inherited IDKey index on this property means that the default value is.

used as a subscript under `<DataLocation>` in the storage definition.

6.140.1.2 MappedSourceControl

`MappedSourceControl`

If enabled, source control behavior (including menu item enable/disable) follows mapped resources.

That is, if a class is mapped from the default routine database of another namespace that has source control enabled, the source control behavior from that namespace will be used rather than that of the current namespace.

6.141 UniversalSettings Class Reference

IPM settings are placed in ^IPM.settings global in SYS namespace Use this class to set or get settings.

Inheritance diagram for UniversalSettings:



Static Public Member Functions

- `_.Library.Status GetAll (configArray)`
Returns `configArray`, that includes all configurable settings.
- `_.Library.String GetValue (_.Library.String indx)`
Gets value from global array.
- `PrintList ()`
Writes in terminal key : value pairs for all configurable settings.

Static Public Attributes

- `ColorScheme` = None
Possible values: yes, none.
- `PipCaller` = None
A path pointing either to a python executable or a pip executable, controlled by `<parameter>UseStandalonePip</parameter>`
- `SemVerPostRelease` = None
Possible values: 0, 1.
- `TerminalPrompt` = None
Possible values: green, red, magenta, blue, yellow, cyan, none.
- `UseStandalonePip` = None
Possible values: "", 0, 1.

6.141.1 Detailed Description

IPM settings are placed in `^IPM.settings` global in SYS namespace Use this class to set or get settings.

Available settings `default_registry` (string) - default registry url `analytics_tracking_id` `analytics_available` (boolean) - if 1 - send usage statistics

6.141.2 Member Function Documentation

6.141.2.1 GetValue()

```
_.Library.String GetValue (
    _.Library.String indx ) [static]
```

Gets value from global array.

`indx` - global subscript

6.141.3 Member Data Documentation

6.141.3.1 PipCaller

```
PipCaller = None [static]
```

A path pointing either to a python executable or a pip executable, controlled by `<parameter>UseStandalonePip</parameter>`

In the special case where the path is empty, the script tries to resolve the path in the following order:

1. Where available (typically 2024.2+) - Use `PythonRuntimeLibrary` in `iris.cpf` to find the directory containing the python executable
2. On Windows, try to find `<iris-root>/bin/irispip.exe`
3. Unless `<parameter>UseStandalonePip</parameter>` is explicitly set to 1, try to find whichever `python3/python` is first available in `$PATH`
4. Unless `<parameter>UseStandalonePip</parameter>` is explicitly set to 0, try to find whichever `pip3/pip` is first available in `$PATH`

6.141.3.2 SemVerPostRelease

```
SemVerPostRelease = None [static]
```

Possible values: 0, 1.

Indicates whether the SemVer comparison treats the version 1.0.0-1.m1 as a post-release of 1.0.0, hence 1.0.0-1.m1 > 1.0.0 Default value is 0, where 1.0.0-anystring is considered a pre-release of 1.0.0, hence 1.0.0-anystring < 1.0.0

6.141.3.3 UseStandalonePip

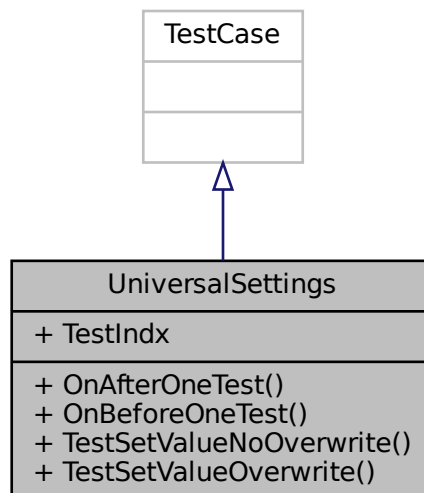
```
UseStandalonePip = None [static]
```

Possible values: "", 0, 1.

Indicates whether `<parameter>PipCaller</parameter>` is a pip executable instead of python

6.142 UniversalSettings Class Reference

Inheritance diagram for UniversalSettings:



Public Member Functions

- `_.Library.Status OnAfterOneTest (_.Library.String testname)`
Run by **RunTest** immediately after each test method in the test class is run.
- `_.Library.Status OnBeforeOneTest (_.Library.String testname)`
Run by **RunTest** immediately before each test method in the test class is run.

6.142.1 Member Function Documentation

6.142.1.1 OnAfterOneTest()

```
_.Library.Status OnAfterOneTest (
    _.Library.String testname )
```

Run by **RunTest** immediately after each test method in the test class is run.

testname Name of the test to be run. Required.

6.142.1.2 OnBeforeOneTest()

```
_.Library.Status OnBeforeOneTest (
    _.Library.String testname )
```

Run by **RunTest** immediately before each test method in the test class is run.

testname Name of the test to be run. Required.

6.143 Utils Class Reference

Static Public Member Functions

- `_.Library.String CorrectInternalNames (_.Library.String pInternalNames)`
Corrects internal names for routines with slashes instead of dots, as a workaround for PL 145107.

6.144 Utils Class Reference

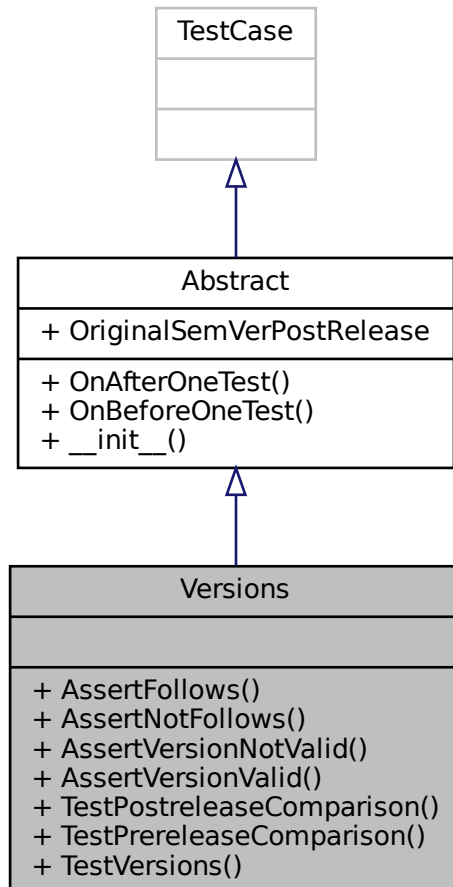
Static Public Member Functions

- `_.Library.Status RetrieveModuleManifest (_.IPM.Storage.QualifiedModuleInfo pQualifiedReference, Stream.Object pManifestStream)`
Loads the module reference.
- `_.Library.Status RetrieveModulePackage (_.IPM.Storage.QualifiedModuleInfo pQualifiedReference, Stream.Object pPackageStream)`
Loads the module reference.
- `_.Library.Status SearchRepositoriesForModule (_.IPM.Repo.SearchCriteria pSearchCriteria, _.Library.ListOfObjects pResults, _.Library.Boolean pForceRemoteRepo)`
Returns a list of all resolved module references matching the search criteria from configured repositories.

6.145 Utils Class Reference

6.146 Versions Class Reference

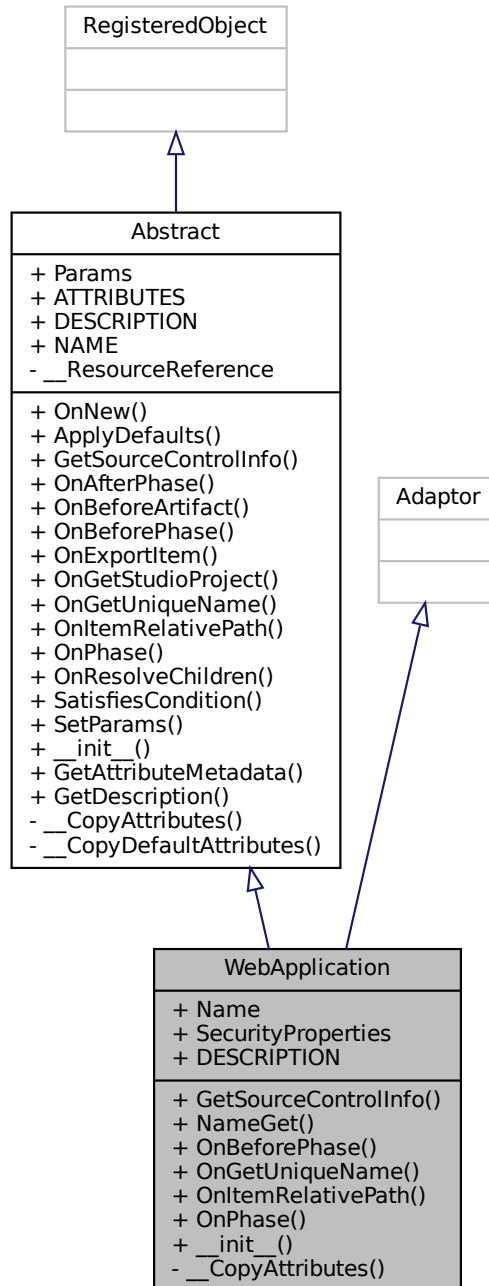
Inheritance diagram for Versions:



Additional Inherited Members

6.147 WebApplication Class Reference

Inheritance diagram for WebApplication:



Public Member Functions

- [OnGetUniqueName](#) (pUniqueName)

- Returns a unique name for this resource.*

 - `_.Library.String OnItemRelativePath (_.Library.String pItemName)`

Returns the path relative to the module root for item pItemName within this resource.
 - `_.Library.Status OnPhase (_.Library.String pPhase, pParams, _.Library.Boolean pResourceHandled)`

Called as phase pPhase is executed for the resource.

Public Attributes

- [Name](#)

Name of the web application.
- [SecurityProperties](#)

Keeps track of all application properties.

Static Public Attributes

- `DESCRIPTION = None`

Description of resource processor class (shown in UI)

6.147.1 Member Function Documentation

6.147.1.1 OnGetUniqueName()

```
OnGetUniqueName (
    pUniqueName )
```

Returns a unique name for this resource.

Default implementation, leaving *pUniqueName* undefined, reverts to default behavior. An empty string indicates guaranteed uniqueness (useful for folders relative to module root)

Reimplemented from [Abstract](#).

6.147.1.2 OnPhase()

```
_.Library.Status OnPhase (
    _.Library.String pPhase,
    pParams,
    _.Library.Boolean pResourceHandled )
```

Called as phase *pPhase* is executed for the resource.

If *pResourceHandled* is set to true,

then the default behavior for that resource will be bypassed in the current phase.

Reimplemented from [Abstract](#).

6.147.2 Member Data Documentation

6.147.2.1 Name

Name

Name of the web application.

6.147.2.2 SecurityProperties

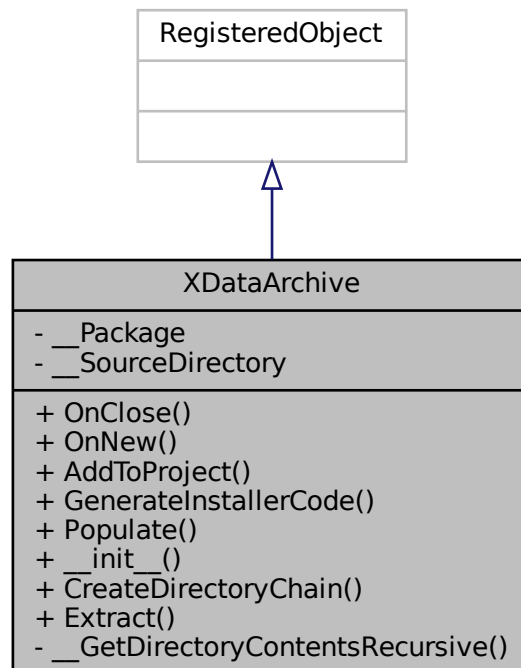
`SecurityProperties`

Keeps track of all application properties.

6.148 XDataArchive Class Reference

This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance.

Inheritance diagram for XDataArchive:



Public Member Functions

- `_.Library.Status OnClose ()`
This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance.
- `_.Library.Status OnNew (_.Library.String pDirectory)`
pDirectory is the directory to be packaged.
- `_.Library.Status AddToProject (_.Studio.Project pStudioProject, _.Library.Boolean pVerbose)`
Populates classes with the context of <property>SourceDirectory</property>, then adds the generated classes to pStudioProject.
- `_.Library.Status Populate (_.Library.Boolean pVerbose)`
Creates XData blocks with the contents of files in <property>SourceDirectory</property>

Static Public Member Functions

- `_.Library.Status CreateDirectoryChain (_.Library.String pName)`
Copied from IPM.Util.File to support use in classes cloned from this one.

Private Attributes

- `__Package`
- `__SourceDirectory`

6.148.1 Detailed Description

This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance.

6.148.2 Member Function Documentation

6.148.2.1 OnClose()

```
_.Library.Status OnClose ( )
```

This class helps with packaging a directory (containing files) in a format that is easy to import on a different instance.

This callback method is invoked by the `<METHOD>Close</METHOD>` method to

provide notification that the current object is being closed.

The return value of this method is ignored.

6.148.3 Member Data Documentation

6.148.3.1 `__Package`

`__Package` [private]

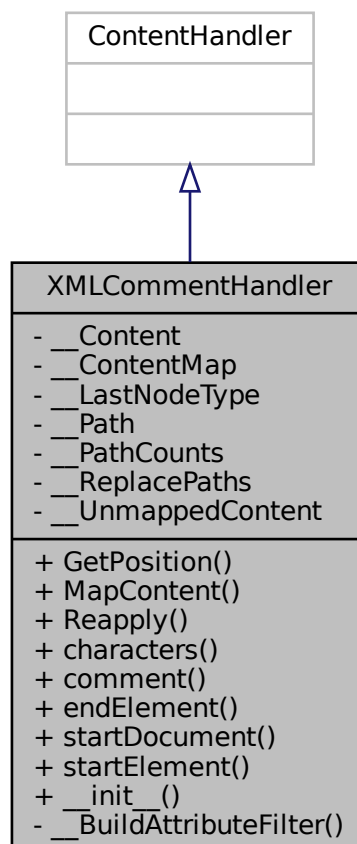
6.148.3.2 `__SourceDirectory`

`__SourceDirectory` [private]

6.149 XMLCommentHandler Class Reference

Use: Extracts XML comments from a document and allows them to be added back in later, assuming that the XPath paths to their previous locations are still valid.

Inheritance diagram for XMLCommentHandler:



Public Member Functions

- `_.Library.String GetPosition ()`
Returns current position in the XML document, as an XPath expression with information on the next non-comment node.
- `characters (_.Library.String chars, _.Library.Integer length)`
Receive notification of character data inside an element.
- `comment (_.Library.String chars, _.Library.Integer length)`
Receive notification of comments.
- `endElement (_.Library.String uri, _.Library.String localname, _.Library.String qname)`
Receive notification of the end of an element.
- `startDocument ()`
Receive notification of the beginning of the document.
- `startElement (_.Library.String uri, _.Library.String localname, _.Library.String qname, _.Library.List attrs)`
Receive notification of the start of an element.

Private Attributes

- `__Content`
..Content = <number of comment/whitespace items extracted from document>
- `__ContentMap`
..ContentMap(i) = <XPath expression for location of ..Content(i)>
- `__LastNodeType`
Last node type (document, element, comment)
- `__Path`
..Path = <depth of current path in document>
- `__PathCounts`
If no attributes are available to identify an element, then occurrences of element paths are counted and used instead (stored here)
- `__ReplacePaths`
In case a duplicate path is found later in processing, this is used to track what the replacement should be.
- `__UnmappedContent`
Content (comments/whitespace) that have been found but not yet mapped to their appropriate position in the document.

6.149.1 Detailed Description

Use: Extracts XML comments from a document and allows them to be added back in later, assuming that the XPath paths to their previous locations are still valid.

6.149.2 Member Function Documentation

6.149.2.1 characters()

```
characters (
    _.Library.String chars,
    _.Library.Integer length )
```

Receive notification of character data inside an element.

```
<p>
By default, do nothing. Application writers may override this
method to take specific actions for each chunk of character data
(such as adding the data to a node or buffer, or printing it to
a file).
</P>
<p>
<ul>
<li>chars: The characters.</li>
<li>length: The number of characters to use from the character
array.</li>
</ul>
```

6.149.2.2 comment()

```
comment (
    _.Library.String chars,
    _.Library.Integer length )
```

Receive notification of comments.

```
<p>The Parser will call this method to report each occurrence of
a comment in the XML document.</p>
<p>The application must not attempt to read from the array
outside of the specified range.</p>
<ul>
<li>chars: The characters from the XML document.</li>
<li>length: The number of characters to read from the array.</li>
</ul>
<p>
Exceptions thrown: SAXException - Any SAX exception, possibly
wrapping another exception.</p>
```

6.149.2.3 endElement()

```
endElement (
    _.Library.String uri,
    _.Library.String localname,
    _.Library.String qname )
```

Receive notification of the end of an element.

```
<p>
By default, do nothing. Application writers may override this
method in a subclass to take specific actions at the end of
each element (such as finalising a tree node or writing
output to a file).
</p>
```

```
<p>
<ul>
<li>uri: The URI of the associated namespace for this element</li>
<li>localname: The local part of the element name</li>
<li>qname: The QName of this element</li>
</ul>
</p>
```

6.149.2.4 startDocument()

```
startDocument ( )
```

Receive notification of the beginning of the document.

```
<p>
By default, do nothing. Application writers may override this
method in a subclass to take specific actions at the beginning
of a document (such as allocating the root node of a tree or
creating an output file)
</p>
```

6.149.2.5 startElement()

```
startElement (
    _.Library.String uri,
    _.Library.String localname,
    _.Library.String qname,
    _.Library.List attrs )
```

Receive notification of the start of an element.

```
<p>
By default, do nothing. Application writers may override this
method in a subclass to take specific actions at the start of
each element (such as allocating a new tree node or writin
output to a file).
</p>
<p>
<ul>
<li>uri: The URI of the associated namespace for this element</li>
<li>localname: the local part of the element name</li>
<li>qname: the QName of this element</li>
<li>attrs: a list in $List format consisting of a repeating group of attributes.</li>
</ul>
<p>
The format of the repeating group is as follows:
<ul>
<li>+0 - uri: The URI of the associated namespace for this attribute</li>
<li>+1 - localname: The local part of the name of this attribute</li>
<li>+2 - qname: The QName of this attribute</li>
<li>+3 - type: The type of this attribute ("CDATA", NMTOKEN", "ENTITY", etc.)</li>
<li>+4 - value: The value of this attribute</li>
</ul>
</p>
```

6.149.3 Member Data Documentation

6.149.3.1 `__Content`

`__Content` [private]

`..Content` = <number of comment/whitespace items extracted from document>

`..Content(i)` = `$lb((comment|characters),<text>)`

6.149.3.2 `__ContentMap`

`__ContentMap` [private]

`..ContentMap(i)` = <XPath expression for location of `..Content(i)`>

6.149.3.3 `__LastNodeType`

`__LastNodeType` [private]

Last node type (document, element, comment)

6.149.3.4 `__Path`

`__Path` [private]

`..Path` = <depth of current path in document>

`..Path(i)` = `$ListBuild(<containing element descriptor>,<previous element descriptor>,<previous padding characters>)`

6.149.3.5 `__PathCounts`

`__PathCounts` [private]

If no attributes are available to identify an element, then occurrences of element paths are counted and used instead (stored here)

`..PathCount($zrcrc(<path>,7))` = <count>

6.149.3.6 __ReplacePaths

`__ReplacePaths` [private]

In case a duplicate path is found later in processing, this is used to track what the replacement should be.

`..ReplacePaths($zrc(<original path>,7)) = <path to really use>`

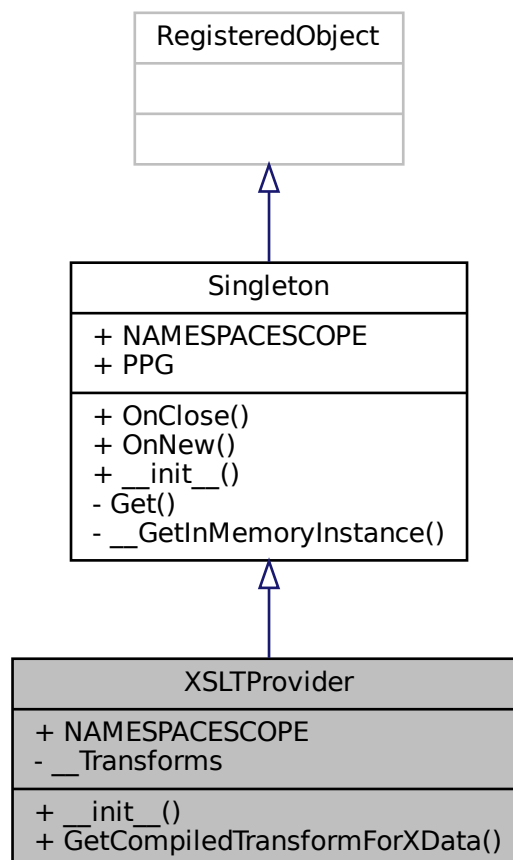
6.149.3.7 __UnmappedContent

`__UnmappedContent` [private]

Content (comments/whitespace) that have been found but not yet mapped to their appropriate position in the document.

6.150 XSLTProvider Class Reference

Inheritance diagram for XSLTProvider:



Static Public Member Functions

- `__XML.XSLT.CompiledStyleSheet` [GetCompiledTransformForXData](#) (`__Dictionary.Classname pClassName`, `__Dictionary.Identifier pXData`)
@API.Method

Static Public Attributes

- `NAMESPACESCOPE` = None
If set to 1, calls to Get must return an instance of this class created in the current namespace; a new instance will be created if none exists.

Private Attributes

- `__Transforms`

Additional Inherited Members

6.150.1 Member Function Documentation

6.150.1.1 GetCompiledTransformForXData()

```
__XML.XSLT.CompiledStyleSheet GetCompiledTransformForXData (
    __Dictionary.Classname pClassName,
    __Dictionary.Identifier pXData ) [static]
```

@API.Method

@Modifier Availability InterSystems

6.150.2 Member Data Documentation

6.150.2.1 __Transforms

```
__Transforms [private]
```

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