

Deployit Generic Model Plugin Manual

Version 3.8.4

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Preface

This document describes the functionality provided by the Generic Model plugin.

See the **Deployit Reference Manual** for background information on Deployit and deployment concepts.

Overview

Deployit supports a number of middleware platforms. Sometimes, though, it is necessary to extend Deployit with new middleware support. The Generic Model plugin provides a way to do this, without having to write Java code. Instead, using Deployit's flexible type system and the base CIs from the Generic Model plugin, new CIs can be defined by writing XML and providing scripts for functionality.

Several of Deployit's standard plugins are also built on top of the Generic Model plugin.

Features

- Define custom containers
 - Stop, start, restart capabilities
- Define and copy custom artifacts to a custom container
- Define, copy and execute custom scripts and folders on a custom container
- Define resources to be processed by a template and copied to a custom container
- Define and execute control tasks on containers and deployments
- Flexible templating engine

Requirements

The plugin requires:

- **Deployit:** version 3.5+

Plugin Concepts

The Generic Model plugin provides several CIs that can be used as base classes for creating Deployit extensions. There are base CIs for each of Deployit's CI types (deployables, deployments and containers). A typical usage scenario is to create custom, synthetic CIs (based on one of the provided CIs) and using it to invoke the required behavior (scripts) in a deployment plan.

Note: since Deployit version 3.6, the deployments in the Generic Model Plugin can target containers that implement the [HostContainer](#) interface. In addition to the [Container](#) and derived CIs, this means they can also be targeted to CIs derived from [Host](#).

Container

A [Container](#) is a topology CI and models middleware in your infrastructure. This would typically be used to model middleware for Deployit does not have out of the box support or that is custom to your environment. The other CIs in the plugin can be deployed to (subclasses of) the container. The behavior of the container in a deployment is configured by specifying scripts to be executed when it is started, stopped or restarted. Deployit will invoke these scripts as needed.

NestedContainer

A [Nested Container](#) is a topology CI and models middleware in your infrastructure. The nested container allows for the modelling of abstract middleware concepts as containers to which items can be deployed.

Copied Artifact

A [CopiedArtifact](#) is an artifact as copied over to a [Container](#). It manages the copying of any generic artifact ([File](#), [Folder](#), [Archive](#), [Resource](#)) in the deployment package to the container. It is possible to indicate that this copied artifact requires a container restart.

Executed Script

An [ExecutedScript](#) encapsulates a script that is executed on a [Container](#). The script is

processed by the templating engine (see below) before being copied to the target container. The behavior of the script is configured by specifying scripts to be executed when it is deployed, upgraded or undeployed.

Manual Process

A [ManualProcess](#) entails a script containing manual instructions for the operator to perform before the deployment can continue. The script is processed by the templating engine (see below) and is displayed to the operator in the step logs. Once the instructions have been carried out, the operator can continue the deployment. The instructions can also be automatically emailed.

Executed Folder

An [ExecutedFolder](#) encapsulates a folder containing installation and rollback scripts that are executed on a [Container](#). Installation scripts are executed when the folder is deployed or updated, rollback scripts are executed when it is undeployed. Execution of the scripts happens in order. Scripts are processed by the templating engine (see below) before being copied to the target container.

Processed Template

A [ProcessedTemplate](#) is a [Freemarker](#) template that is processed by the templating engine (see below), then copied to a [Container](#).

Templating

When defining and using CIs with the Generic Model plugin, the need arises to use variables in certain CI properties and scripts. The most obvious use is to include properties from the deployment itself, such as the names or locations of files in the deployment package. Deployit uses the [Freemarker](#) templating engine for this.

When performing a deployment using the Generic Model plugin, all CIs and scripts are processed in Freemarker. This means that placeholders can be used in CI properties and scripts to make them more flexible. Freemarker resolves placeholders using a *context*, a set of objects defining the template's environment. This context depends on the type of CI being deployed.

For deployed CIs, the context *deployed* refers to the current CI instance. For example:

```
<type type="tc.DeployedDataSource" extends="generic.ProcessedTemplate" deployable-type="tc.DataSource"
  container-type="tc.Server">
  ...
  <property name="targetFile" default="${deployed.name}-ds.xml" hidden="true"/>
  ...
</type>
```

For container CIs, the context *container* refers to the current container instance. For example:

```
<type type="tc.Server" extends="generic.Container">
  <property name="home" default="/tmp/tomcat"/>
  <property name="targetDirectory" default="${container.home}/webapps" hidden="true"/>
</type>
```

A special case is when referring to an artifact in the placeholder. For example, when deploying a CI representing a WAR file, the following placeholder can be used to refer to that file (assuming there is a *file* property on the deployable):

```
${deployed.deployable.file}
```

In this case, Deployit will copy the referred artifact to the target container so that the file is available to the executing script. A script containing a command like the following would therefore copy the file represented by the deployable to its installation path on the remote machine:

```
cp ${deployed.deployable.file} /install/path
```

Control Tasks

CIs based on the [Container](#), [CopiedArtifact](#), [ExecutedScript](#) or [ProcessedTemplate](#) can also

define control tasks to manage them. Control tasks are implemented using scripts that will be loaded and executed on the target middleware when executed.

This is an example of defining a control task:

```
<type type="tc.DeployedDataSource" extends="generic.ProcessedTemplate" deployable-type="tc.DataSource"
  container-type="tc.Server">
  <generate-deployable type="tc.DataSource" extends="generic.Resource"/>
  ...
  <property name="pingScript" default="tc/ping.sh" hidden="true"/>
  <method name="ping" description="Test whether the datasource is available"/>
</type>
```

The *method* XML fragment defines that control task *ping* is available on the CI. The *pingScript* property indicates the script that must be executed when it is invoked. The script will be resolved from the classpath. The same mechanism applies to a container.

Using the deployables and deployed

Deployable vs. Container Table

The following table describes which deployable / container combinations are possible.

Deployable	Containers	Generated deployed
generic.File generic.Archive	overthere.HostContainer	generic.CopiedArtifact
any deployable	overthere.HostContainer	generic.ExecutedScript
any deployable	overthere.HostContainer	generic.ManualProcess
any folder deployable	overthere.HostContainer	generic.ExecutedFolder
any deployable	overthere.HostContainer	generic.ProcessedTemplate

Deployed Actions Table

The following table describes the effect a deployed has on its container.

Deployed	Create	Destroy	Modify
generic.CopiedArtifact	<ul style="list-style-type: none"> Create target path on host, if needed Copy file to target path on host 	<ul style="list-style-type: none"> Delete file from host (if the <code>preserveExistingFiles</code> property if set to false) 	<ul style="list-style-type: none"> Delete old file from host (if the <code>preserveExistingFiles</code> property if set to false) Copy modified file to target path on host
generic.ExecutedScript	<ul style="list-style-type: none"> Run script through template engine Copy create script to container Execute script 	<ul style="list-style-type: none"> Run script through template engine Copy destroy script to container Execute script 	<ul style="list-style-type: none"> Run script through template engine Copy modify script to container Execute script
generic.ManualProcess	<ul style="list-style-type: none"> Run instructions script through template engine Mail instructions if mail properties set and target container has a <code>mail.SMTPServer</code> Display in step logs Pause step When operator retries step, step continues as successful 	<ul style="list-style-type: none"> Same as Create 	<ul style="list-style-type: none"> Same as Create
generic.ExecutedFolder	<p>For each installation script in the folder (ordered alphabetically by name, ascending):</p> <ul style="list-style-type: none"> Run script through template engine Copy create script to container Execute script 	<p>For each rollback script in the folder (ordered alphabetically by name, descending):</p> <ul style="list-style-type: none"> Run script through template engine Copy destroy script to container Execute script 	<p>For each installation script in the folder that was not part of the deployment being upgraded (ordered alphabetically by name, ascending):</p> <ul style="list-style-type: none"> Run script through template engine Copy modify script to container Execute script
generic.ProcessedTemplate	<ul style="list-style-type: none"> Run script through template engine Copy template to container 	<ul style="list-style-type: none"> Run script through template engine Delete template from container 	<ul style="list-style-type: none"> Run script through template engine Delete template from container Copy new template to container

Sample Usage Scenario - Deploying a new middleware platform

This section describes an example of using the Generic Model plugin to implement support for a simple middleware platform. Deployment to this platform is done by simply copying a WAR archive to the right directory on the container. Resources are created by copying configuration files into the container's configuration directory. The Tomcat application server works in a very similar manner.

By defining a container and several other CIs based on CIs from the Generic Model plugin, it is possible to add support for deploying to this platform to Deployit.

Defining the Container

To use any of the CIs in the Generic Model plugin, they need to be targeted to a [Container](#). This snippet shows how to define a generic container as a synthetic type:

```
<type type="tc.Server" extends="generic.Container">
  <property name="home" default="/tmp/tomcat"/>
</type>

<type type="tc.UnmanagedServer" extends="tc.Server">
  <property name="startScript" default="tc/start.sh" hidden="true"/>
  <property name="stopScript" default="tc/stop.sh" hidden="true"/>
  <property name="restartScript" default="tc/restart.sh" hidden="true"/>
</type>
```

Note that the *tc.UnmanagedServer* CI defines a start, stop and restart script. Deployit Server reads these scripts from the classpath. When targetting a deployment to the *tc.UnmanagedServer*, Deployit will include steps executing the start, stop and restart scripts in appropriate places in the deployment plan.

Defining a Configuration File

The following snippet defines a CI based on the [CopiedArtifact](#). The *tc.DeployedFile* CI can be targeted to the *tc.Server*. The target directory is specified as a hidden property. Note the placeholder syntax used here.

```
<type type="tc.DeployedFile" extends="generic.CopiedArtifact" deployable-type="tc.File"
  container-type="tc.Server">
  <generate-deployable type="tc.File" extends="generic.File"/>
  <property name="targetDirectory" default="${deployed.container.home}/conf" hidden="true"/>
</type>
```

Using the above snippet, it is possible to create a package with a *tc.File* deployable and deploy it to an environment containing a *tc.UnmanagedServer*. This will result in a *tc.DeployedFile* deployed.

Defining a WAR

To deploy a WAR file to the *tc.Server*, one possibility is to define a *tc.DeployedWar* CI that extends the [ExecutedScript](#). The *tc.DeployedWar* CI is generated when deploying a *jee.War* to the *tc.Server* CI. This is what the XML looks like:

```
<type type="tc.DeployedWar" extends="generic.ExecutedScript" deployable-type="jee.War"
  container-type="tc.Server">
  <generate-deployable type="tc.War" extends="jee.War"/>
  <property name="createScript" default="tc/install-war" hidden="true"/>
  <property name="modifyScript" default="tc/reinstall-war" hidden="true" required="false"/>
  <property name="destroyScript" default="tc/uninstall-war" hidden="true"/>
</type>
```

When performing an initial deployment, the create script, *tc/install-war* is executed on the target container. Inside the script, a reference to the *file* property is replaced by the actual archive. Note that the script files do not have an extension. Depending on the target platform, the extension *sh* (Unix) or *bat* (Windows) is used.

The WAR file is referenced from the script as follows:

```
echo Installing WAR ${deployed.deployable.file} in ${deployed.container.home}
```

Defining a Datasource

Configuration files can be deployed by creating a CI based on the [ProcessedTemplate](#). By including a [Resource](#) in the package that is a Freemarker template, a configuration file can be generated during the deployment and copied to the container. This snippet defines such a CI, *tc.DeployedDataSource*:

```
<type type="tc.DeployedDataSource" extends="generic.ProcessedTemplate" deployable-type="tc.DataSource"
  container-type="tc.Server">
  <generate-deployable type="tc.DataSource" extends="generic.Resource"/>

  <property name="jdbcUrl"/>
  <property name="port" kind="integer"/>
  <property name="targetDirectory" default="${deployed.container.home}/webapps" hidden="true"/>
  <property name="targetFile" default="${deployed.name}-ds.xml" hidden="true"/>
  <property name="template" default="tc/datasource.ftl" hidden="true"/>
</type>
```

The `template` property specifies the Freemarker template file that Deployit Server reads from the classpath. The `targetDirectory` controls where the template is copied to. Inside the template, properties like `jdbcUrl` on the datasource can be used to produce a proper configuration file.

Discovery

The Generic Model plugin supports discovery in any subtype of [Container](#), [Nested Container](#) and [Deployed](#). Extenders of the plugin provide shell scripts that interact with the discovery mechanism, via the standard out, with specially formatted output representing the inspected property or discovered configuration item.

```
<!-- Sample of extending Generic Mode plugin -->
<type type="sample.TomcatServer" extends="generic.Container">
  ...
  <property name="inspectScript" default="inspect/inspect-server" hidden="true"/>
</type>

<type type="sample.VirtualHost" extends="sample.NestedContainer">
  <property name="server" kind="ci" as-containment="true" referenced-type="sample.TomcatServer"/>
  ...
  <property name="inspectScript" default="inspect/inspect-virtualhost" hidden="true"/>
</type>

<type type="sample.DataSource" extends="generic.ProcessedTemplate" deployable-type="sample.DataSourceSpec"
  container-type="sample.Server">
  <generate-deployable type="sample.DataSourceSpec" extends="generic.Resource"/>
  <property name="inspectScript" default="inspect/inspect-ds" hidden="true"/>
  ...
</type>
```

Encoding

The discovery mechanism uses URL encoding as described in [RFC3986](#) to interpret the value of an inspected property. It is the responsibility of the plugin extender to perform said encoding in the inspect shell scripts.

Sample of encoding in a BASH shell script

```
function encode()
{
  local myresult=$(printf "%b" "$1" | perl -pe 's/([^-_.A-Za-z0-9])/sprintf("%%%02X", ord($1))/seg')
  echo "$myresult"
}

myString='This is a string spanning many lines and with funky characters like !@#%^&*() and \|\|'";<>.[\{\}'
myEncodedString = $(encode "$myString")
echo $myEncodedString
```

Property Inspection

The discovery mechanism identifies an inspected property when output with the following format is sent to the standard out.

```
INSPECTED:propertyName=value
```

The output must be prefixed with *INSPECTED:* followed by the name of the inspected property, an = sign and then the encoded value of the property.

Sample :

```
echo INSPECTED:stringField=A,value,with,commas
echo INSPECTED:intField=1999
echo INSPECTED:boolField=true
```

Inspecting Set properties

When an inspected property is a set of strings, the value must be comma separated

```
INSPECTED:propertyName=value1,value2,value3
```

Sample :

```
echo INSPECTED:stringSetField=$(encode 'Jac,q,ues'),de,Molay
# will result in the following output
# INSPECTED:stringSetField=Jac%2Cq%2Cues,de,Molay
```

Inspecting Map properties

When an inspected property is a map of strings, entries must be comma separated and key values must be colon separated

```
INSPECTED:propertyName=key1:value1,key2:value2,key3:value3
```

Sample :

```
echo INSPECTED:mapField=first:$(encode 'Jac,q,ues:'),second:2
# will result in the following output
# INSPECTED:mapField=first:Jac%2Cq%2Cues,second:2
```

Configuration Item Discovery

The discovery mechanism identifies a discovered configuration item when output with the following format is sent to the standard out.

```
DISCOVERED:configurationItemId=type
```

The output must be prefixed with DISCOVERED:_ followed by the id of the configuration item as stored in the Deployit repository, an = sign and the type of the configuration item

Sample :

```
echo DISCOVERED:Infrastructure/tomcat/defaultContext=sample.VirtualHost
```

Mail Server setup

The generic plugin also adds support to Deployit for mail servers. A Mail server is a configuration item `mail.SmtpServer` defined under the `/Configuration` root node. A `udm.Environment` environment configuration item can have a reference to a mail server. If it does not have a reference, a default mail server named 'defaultSmtpServer' will be used to send configured mails. Using the mail server, configuration items such as the `generic.ManualProcess` can send mails notifying you of manual actions that need to be taken.

Here's a CLI snippet showing you how to create a mail server CI:

```
mailServer = factory.configurationItem("Configuration/MailServer", "mail.SmtpServer")
mailServer.host = "smtp.mycompany.com"
mailServer.username = "mymailuser"
mailServer.password = "secret"
mailServer.fromAddress = "noreply@mycompany.com"
repository.create(mailServer)
```

The `mail.SmtpServer` uses Java Mail to send emails. You can specify additional Java Mail properties in the `smtpProperties` attribute. Refer to the [Javadoc for JavaMail](#) for a list of all properties.

Configuring TLS

To configure the mail server to send emails using TLS, set the following property in the SMTP properties:

```
mailServer.smtpProperties = {}
mailServer.smtpProperties["mail.smtp.starttls.enable"] = "true"
repository.update(mailServer)
```

CI Reference

Configuration Item Overview

Deployables

CI	Description
generic.Archive	A generic, compressed binary artifact
generic.File	A generic binary artifact
generic.Folder	A generic folder artifact
generic.Resource	A generic resource specification

Deployeds

CI	Description
generic.AbstractDeployed	Abstract deployed that can target any deployable to a generic container
generic.AbstractDeployedArtifact	Abstract deployed that can target any artifact to a generic container
generic.CopiedArtifact	An artifact deployed on a generic container
generic.ExecutedFolder	Scripts in the folder are executed against a Container based on a naming convention
generic.ExecutedScript	A script executed on a generic container
generic.ExecutedScriptWithDerivedArtifact	A script executed on a generic container whose deployable artifact supports placeholder replacement
generic.ManualProcess	A manual process that needs to be performed on a generic container
generic.ProcessedTemplate	A template deployed to a generic container

Containers

CI	Description
generic.Container	A container to which generic CIs can be deployed
generic.NestedContainer	A container that is nested with another container

Other Configuration Items

CI	Description
generic.AbstractDeployed	Abstract deployed that can target any deployable to a generic container
generic.AbstractDeployedArtifact	Abstract deployed that can target any artifact to a generic container
generic.Archive	A generic, compressed binary artifact
generic.Container	A container to which generic CIs can be deployed
generic.CopiedArtifact	An artifact deployed on a generic container
generic.ExecutedFolder	Scripts in the folder are executed against a Container based on a naming convention
generic.ExecutedScript	A script executed on a generic container
generic.ExecutedScriptWithDerivedArtifact	A script executed on a generic container whose deployable artifact supports placeholder replacement
generic.File	A generic binary artifact
generic.Folder	A generic folder artifact
generic.ManualProcess	A manual process that needs to be performed on a generic container
generic.NestedContainer	A container that is nested with another container
generic.ProcessedTemplate	A template deployed to a generic container
generic.Resource	A generic resource specification
mail.SmtServer	SMTP Mail Server Configuration

Configuration Item Details

generic.AbstractDeployed

Virtual Type
Type Hierarchy `udm.BaseDeployed >> udm.BaseConfigurationItem`
Interfaces `udm.Deployed, udm.ConfigurationItem`

Abstract deployed that can target any deployable to a generic container

Parent	
* container : <code>CI<udm.Container></code>	The container on which this deployed runs.
Public Properties	
deployable : <code>CI<udm.Deployable></code>	The deployable that this deployed is derived from.
Hidden Properties	
* createOrder : <code>INTEGER = 50</code>	The order of the step in the step list for the create operation.
* createVerb : <code>STRING = Create</code>	Create Verb
* destroyOrder : <code>INTEGER = 40</code>	The order of the step in the step list for the destroy operation.
* destroyVerb : <code>STRING = Destroy</code>	Destroy Verb
* modifyOrder : <code>INTEGER = 50</code>	The order of the step in the step list for the modify operation.
* modifyVerb : <code>STRING = Modify</code>	Modify Verb
* noopOrder : <code>INTEGER = 50</code>	The order of the step in the step list for the noop operation.
* noopVerb : <code>STRING = Modify</code>	Noop Verb
inspectClasspathResources : <code>SET_OF_STRING</code>	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : <code>STRING</code>	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : <code>SET_OF_STRING</code>	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
restartRequired : <code>BOOLEAN = false</code>	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : <code>BOOLEAN = false</code>	The generic container requires a restart for the NOOP action performed by this deployed.

generic.AbstractDeployedArtifact

Virtual Type
Type Hierarchy `generic.AbstractDeployed >> udm.BaseDeployed >> udm.BaseConfigurationItem`
Interfaces `udm.Deployed, udm.ConfigurationItem`

Abstract deployed that can target any artifact to a generic container

Parent	
* container : <code>CI<udm.Container></code>	The container on which this deployed runs.

Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
* targetDirectory : STRING	Path to which artifact must be copied to on the generic server.
createTargetDirectory : BOOLEAN = false	Create the target directory on the generic server if it does not exist.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
targetDirectoryShared : BOOLEAN = true	Is the target directory shared by others on the generic server. When true, the target directory is not deleted during a destroy operation; only the artifacts copied to it.

generic.Archive

Virtual Type

Type Hierarchy udm.BaseDeployableArchiveArtifact >> udm.BaseDeployableFileArtifact >> udm.BaseDeployableArtifact >> udm.BaseDeployable >> udm.BaseConfigurationItem

Interfaces udm.Taggable, udm.Deployable, udm.SourceArtifact, udm.ArchiveArtifact, udm.Artifact, udm.DeployableArtifact, udm.ConfigurationItem, udm.FileArtifact

A generic, compressed binary artifact

Public Properties	
excludeFileNamesRegex : STRING	Regular expression that matches file names that must be excluded from scanning
placeholders : SET_OF_STRING	Placeholders detected in this artifact
scanPlaceholders : BOOLEAN = false	Whether to scan this artifact for placeholders when it is imported
tags : SET_OF_STRING	If set, this deployable will only be mapped automatically to containers with the same tag.

Hidden Properties

- * **textFileNamesRegex** : **STRING** = `.*\.(cfg | conf | config | ini | properties | props | txt | asp | aspx | htm | html | jsf | jsp | xht | xhtml | sql | xml | xsd | xsl | xslt)`
Regular expression that matches file names of text files

generic.Container**Virtual Type**

Type Hierarchy `udm.BaseContainer >> udm.BaseConfigurationItem`

Interfaces `udm.Taggable, udm.ConfigurationItem, udm.Container, generic.GenericContainer, overthere.HostContainer`

A container to which generic CIs can be deployed. Start, stop and restart behavior of this container can be controlled using the corresponding script properties.

Parent

- * **host** : **CI**`<overthere.Host>`
Host upon which the container resides

Public Properties

envVars : **MAP_STRING_STRING**
Environment variables for container

tags : **SET_OF_STRING**
If set, only deployables with the same tag will be automatically mapped to this container.

Hidden Properties

- * **restartOrder** : **INTEGER** = 90
The order of the restart container step in the step list.
- * **startOrder** : **INTEGER** = 90
The order of the start container step in the step list.
- * **startWaitTime** : **INTEGER** = 0
The time to wait in seconds for a container start action.
- * **stopOrder** : **INTEGER** = 10
The order of the stop container step in the step list.
- * **stopWaitTime** : **INTEGER** = 0
The time to wait in seconds for a container stop action.
- inspectClasspathResources** : **SET_OF_STRING**
Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
- inspectScript** : **STRING**
Classpath to the script used to inspect the generic container.
- inspectTemplateClasspathResources** : **SET_OF_STRING**
Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
- restartScript** : **STRING**
Classpath to the script used to restart the generic container.
- restartWaitTime** : **INTEGER** = 0
The time to wait in seconds for a container restart action.
- startScript** : **STRING**
Classpath to the script used to start the generic container.
- stopScript** : **STRING**
Classpath to the script used to stop the generic container.

generic.CopiedArtifact**Virtual Type**

Type Hierarchy `generic.AbstractDeployedArtifact >> generic.AbstractDeployed >> udm.BaseDeployed >> udm.BaseConfigurationItem`

Interfaces `udm.Artifact, udm.Deployed, udm.ConfigurationItem, udm.DerivedArtifact`

An artifact deployed on a generic container

Parent

- * **container** : **CI**`<udm.Container>`
The container on which this deployed runs.

Public Properties	
deployable : CI<udm.Deployable>	The deployable that this deployed is derived from.
placeholders : MAP_STRING_STRING	A Map containing all the placeholders mapped to their values. Special values are <ignore> or <empty>
targetFile : STRING	Name of the artifact on the generic server.
Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
* targetDirectory : STRING	Path to which artifact must be copied to on the generic server.
createTargetDirectory : BOOLEAN = false	Create the target directory on the generic server if it does not exist.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
preserveExistingFiles : BOOLEAN = false	if true, preserve the existing files on the remote host (do not delete the copied files during the destroy operation).
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
targetDirectoryShared : BOOLEAN = true	Is the target directory shared by others on the generic server. When true, the target directory is not deleted during a destroy operation; only the artifacts copied to it.

generic.ExecutedFolder

Virtual Type

Type Hierarchy [generic.AbstractDeployed](#) >> [udm.BaseDeployed](#) >> [udm.BaseConfigurationItem](#)

Interfaces [udm.Artifact](#), [udm.Deployed](#), [udm.ConfigurationItem](#), [udm.DerivedArtifact](#)

Scripts in the folder are executed against a Container based on a naming convention

Parent	
* container : CI<udm.Container>	The container on which this deployed runs.

Public Properties	
* executorScript : STRING	Name of the executor script that will be executed for each script found in the folder.
* rollbackScriptPostfix : STRING	A script's associated rollback script is derived by using the 1st group identified by the scriptRecognitionRegex and then appending this postfix to it. e.g give name '01-myscript.sql', regex '([0-9]*-*)\.sql' and rollback script postfix '-rollback.sql', we can derive the name of the associated rollback script to be '01-myscript-rollback.sql'
* rollbackScriptRecognitionRegex : STRING	Regular expression used to identify a rollback script in the folder. A successful match should returns a single group, ie the logical script name. e.g. [0-9]*-*.rollback\.sql
* scriptRecognitionRegex : STRING	Regular expression used to identify a script in the folder. A successful match should returns a single group to which the rollbackScriptPostfix can be appended to inorder to find the associated rollback script or the script's dependent subfolder. e.g.([0-9]*-*)\.sql
deployable : CI<udm.Deployable>	The deployable that this deployed is derived from.
placeholders : MAP_STRING_STRING	A key/value pair mapping of placeholders in the deployed artifact to their values. Special values are and
Hidden Properties	
* commonScriptFolderName : STRING = common	Common folder that should be uploaded to the working directory.
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
classpathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the script.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
templateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.

generic.ExecutedScript

Virtual Type
Type Hierarchy [generic.AbstractDeployed](#) >> udm.BaseDeployed >>
udm.BaseConfigurationItem
Interfaces udm.Deployed, udm.ConfigurationItem

A script executed on a generic container

Parent
<div><div><div>*</div><div>container</div></div><div>: CI<udm.Container></div><div>The container on which this deployed runs.</div></div>
Public Properties
<div><div><div></div><div>deployable</div></div><div>: CI<udm.Deployable></div><div>The deployable that this deployed is derived from.</div></div>

Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
classpathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the script.
destroyScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the destroy operation.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
modifyScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the modify operation.
noopScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the noop operation.
remoteWorkingDirectoryPath : STRING	Name of working directory on target host. Default is to create a temporary directory which is deleted when connection is closed.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
retainRemoteWorkingDirectory : BOOLEAN = false	Retain the specified working directory on target host after completion.
templateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.

generic.ExecutedScriptWithDerivedArtifact

Virtual Type

Type Hierarchy [generic.ExecutedScript](#) >> [generic.AbstractDeployed](#) >>
[udm.BaseDeployed](#) >> [udm.BaseConfigurationItem](#)

Interfaces [udm.Artifact](#), [udm.Deployed](#), [udm.ConfigurationItem](#), [udm.DerivedArtifact](#)

A script executed on a generic container whose deployable artifact supports placeholder

replacement

Parent
* container : CI<udm.Container> The container on which this deployed runs.
Public Properties
deployable : CI<udm.Deployable> The deployable that this deployed is derived from.
placeholders : MAP_STRING_STRING A key/value pair mapping of placeholders in the deployed artifact to their values. Special values are and

Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
classpathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the script.
destroyScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the destroy operation.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
modifyScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the modify operation.
noopScript : STRING	Classpath to the script that is uploaded and executed on the generic container for the noop operation.
remoteWorkingDirectoryPath : STRING	Name of working directory on target host. Default is to create a temporary directory which is deleted when connection is closed.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
retainRemoteWorkingDirectory : BOOLEAN = false	Retain the specified working directory on target host after completion.
templateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.

generic.File

Virtual Type

Type Hierarchy udm.BaseDeployableFileArtifact >> udm.BaseDeployableArtifact >> udm.BaseDeployable >> udm.BaseConfigurationItem

Interfaces udm.Taggable, udm.Deployable, udm.SourceArtifact, udm.Artifact, udm.DeployableArtifact, udm.ConfigurationItem, udm.FileArtifact

A generic binary artifact

Public Properties	
excludeFileNamesRegex :	STRING Regular expression that matches file names that must be excluded from scanning
placeholders :	SET_OF_STRING Placeholders detected in this artifact
scanPlaceholders :	BOOLEAN = true Whether to scan this artifact for placeholders when it is imported
tags :	SET_OF_STRING If set, this deployable will only be mapped automatically to containers with the same tag.
Hidden Properties	
* textFileNamesRegex :	STRING = .+\.(\.cfg conf config ini properties props txt asp aspx htm html jsf jsp xht xhtml sql xml xsd xsl xslt) Regular expression that matches file names of text files

generic.Folder

Virtual Type

Type Hierarchy `udm.BaseDeployableFolderArtifact >> udm.BaseDeployableArtifact >> udm.BaseDeployable >> udm.BaseConfigurationItem`

Interfaces `udm.Taggable, udm.Deployable, udm.SourceArtifact, udm.Artifact, udm.DeployableArtifact, udm.ConfigurationItem, udm.FolderArtifact`

A generic folder artifact

Public Properties	
excludeFileNamesRegex :	STRING Regular expression that matches file names that must be excluded from scanning
placeholders :	SET_OF_STRING Placeholders detected in this artifact
scanPlaceholders :	BOOLEAN = true Whether to scan this artifact for placeholders when it is imported
tags :	SET_OF_STRING If set, this deployable will only be mapped automatically to containers with the same tag.
Hidden Properties	
* textFileNamesRegex :	STRING = .+\.(\.cfg conf config ini properties props txt asp aspx htm html jsf jsp xht xhtml sql xml xsd xsl xslt) Regular expression that matches file names of text files

generic.ManualProcess

Virtual Type

Type Hierarchy `generic.AbstractDeployed >> udm.BaseDeployed >> udm.BaseConfigurationItem`

Interfaces `udm.Deployed, udm.ConfigurationItem`

A manual process that needs to be performed on a generic container

Parent	
* container :	CI<udm.Container> The container on which this deployed runs.

Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createScript : STRING	Classpath to the script that generates the instructions for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
destroyScript : STRING	Classpath to the script that generates the instructions for the destroy operation.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
modifyScript : STRING	Classpath to the script that generates the instructions for the modify operation.
noopScript : STRING	Classpath to the script that generates the instructions for the noop operation.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.

generic.NestedContainer

Virtual Type

Type Hierarchy udm.BaseContainer >> udm.BaseConfigurationItem

Interfaces udm.Taggable, udm.ConfigurationItem, udm.Container, generic.GenericContainer, overthere.HostContainer

A container that is nested with another container

Public Properties	
envVars : MAP_STRING_STRING	Environment variables for container
tags : SET_OF_STRING	If set, only deployables with the same tag will be automatically mapped to this container.

Hidden Properties
inspectClasspathResources : SET_OF_STRING Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.

generic.ProcessedTemplate

Virtual Type

Type Hierarchy [generic.AbstractDeployedArtifact](#) >> [generic.AbstractDeployed](#) >> [udm.BaseDeployed](#) >> [udm.BaseConfigurationItem](#)

Interfaces [udm.Deployed](#), [udm.ConfigurationItem](#)

A template deployed to a generic container

Parent
* container : CI<udm.Container> The container on which this deployed runs.
Public Properties
deployable : CI<udm.Deployable> The deployable that this deployed is derived from.
targetFile : STRING Name of the artifact on the generic server.

Hidden Properties	
* createOrder : INTEGER = 50	The order of the step in the step list for the create operation.
* createVerb : STRING = Create	Create Verb
* destroyOrder : INTEGER = 40	The order of the step in the step list for the destroy operation.
* destroyVerb : STRING = Destroy	Destroy Verb
* modifyOrder : INTEGER = 50	The order of the step in the step list for the modify operation.
* modifyVerb : STRING = Modify	Modify Verb
* noopOrder : INTEGER = 50	The order of the step in the step list for the noop operation.
* noopVerb : STRING = Modify	Noop Verb
* targetDirectory : STRING	Path to which artifact must be copied to on the generic server.
* template : STRING	Classpath to the freemarker template used to generate the content of the final text base artifact.
createTargetDirectory : BOOLEAN = false	Create the target directory on the generic server if it does not exist.
inspectClasspathResources : SET_OF_STRING	Additional classpath resources that should be uploaded to the working directory before executing the inspect script.
inspectScript : STRING	Classpath to the script used to inspect the generic container.
inspectTemplateClasspathResources : SET_OF_STRING	Additional template classpath resources that should be uploaded to the working directory before executing the inspect script. The template is first rendered and the rendered content copied to a file, with the same name as the template, in the working directory.
restartRequired : BOOLEAN = false	The generic container requires a restart for the action performed by this deployed.
restartRequiredForNoop : BOOLEAN = false	The generic container requires a restart for the NOOP action performed by this deployed.
targetDirectoryShared : BOOLEAN = true	Is the target directory shared by others on the generic server. When true, the target directory is not deleted during a destroy operation; only the artifacts copied to it.

generic.Resource

Virtual Type

Type Hierarchy udm.BaseDeployable >> udm.BaseConfigurationItem

Interfaces udm.Taggable, udm.Deployable, udm.ConfigurationItem

A generic resource specification

Public Properties	
tags : SET_OF_STRING	If set, this deployable will only be mapped automatically to containers with the same tag.

mail.SmtpServer

Type Hierarchy udm.BaseConfigurationItem

Interfaces udm.ConfigurationItem

SMTP Mail Server Configuration

Public Properties		
*	fromAddress : STRING	Default from address to use for messages sent with this server.
*	host : STRING	SMTP host
*	port : INTEGER = 25	SMTP port
	password : STRING	Password to authenticate with host
	smtpProperties : MAP_STRING_STRING	Refer to http://javamail.kenai.com/nonav/javadocs/com/sun/mail/smtp/package-summary.html for all properties that can be used.
	testAddress : STRING	The address to which a test mail is sent when using the 'Send Test Mail' control task.
	username : STRING	Username to authenticate with host
Control Tasks		
	sendTestMail	no description