



Workflow Activity Cloud

Collection of Workflow Activities

Technical Whitepaper / MVP 1.0

Contents

Overview	3
Workflow Activities	3
Installation	3
Customizing-Installer	3
Certificates	3
Installed Assemblies	4
Initial configuration and manual steps	4
Available Workflow Activities	5
Category "Utility Package"	6
Category "SchemaTransfer"	10
Category "Service Desk"	13
Category "Active Directory"	14



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Overview

Workflow Activities

To provide a convenient way to include additional functionality in customer workflows, a collection of Activities is offered to extend the library that is available in the Workflow Studio.

The features included in the Workflow Activities are described in the following sections. The implementation of these Activities may be subject to change as feedback from customers who operate clients becomes available. This document will be adapted accordingly.

Installation

Customizing-Installer

The Customizing Package containing the Workflow Activity Cloud is shipped as a zipped archive that contains all necessary components.

The archive can be unpacked into any empty directory on the Service-Store application server. Among the unpacked files exists the executable application **Customizing-Installer** (CustomizingInstaller.exe) that performs the setup.

When running the Customizing-Installer a dialog will appear to guide the user through the installation.

The Customizing-Installer will determine the path in which the Service Store application exists and will subsequently copy the files necessary for the new feature into the right directories. The Customizing-Installer will also add new schema information to the Service Store installation.

At the end of the Customizing-Installer run, a dialog will pop up to configure the IIS of the target machine. On some customer systems insufficient rights may lead to the failure of this step and the Webservices must be configured manually in the IIS.

Certificates

To successfully use the Activities, a certificate is needed. A certificate can be obtained from Matrix42 AG.

The certificate needed is **M42CDEVActivityCloud**

The certificate file must then be placed into the certificates directory:

<Installation-path>\Certificates\

Example

C:\Program Files (x86)\Matrix42\Matrix42 Service Store\Certificates\

Installed Assemblies

The installation of the Workflow Activities will add or update the following files in the Service-Store installation:

- Matrix42.CUSTUtility.Core.dll
- Matrix42.CUSTUtility.WorkflowActivities.dll
- Matrix42.CUSTSchemaTransfer.Core.dll
- Matrix42.CUSTSchemaTransfer.WfActivities.dll

These can be found in the folders

```
<Installation-path>\bin\  
<Installation-path>\svc\bin\  
<Installation-path>\Web\bin\
```

Also, for each of these files a respective *.pdb file is deployed, which contain information to give meaningful error messages as feedback to developers, such as code line-numbers.

Please mind that **Matrix42.CUSTUtility.*** files may also be used by other applications provided by Matrix42 Marketplace Product-Line. Although strict backward compatibility of these files is kept, please only install versions that are newer or of the same version as your particular application.

Initial configuration and manual steps

For the availability of the new functionality no further configuration is necessary. For the configuration of the functionality itself, please read the following sections.

Available Workflow Activities

Utility Package

- Add Journal
- Assign HTML
- Assign String
- Assign Text
- Exception Info
- Object Link
- Password Hasher
- Read User Profile
- Run Compliance Rule
- Validate Email
- Workflow Log Writer
- Generate Password

SchemaTransfer

- Create Export-Collection
- Add Configuration-Item by ID
- Add Configuration-Item by Name
- Add Data-Definition by ID
- Add Data-Definition by Name
- Add Object
- Save Zip File
- Create Import-Collection
- Apply Import-Collection

Service Desk

- Calculate SLA Escalation
- Calculate Calendar Target
- SLA Time Query


Active Directory


- Add Active Directory Object To Group
- Create Active Directory Group
- Create Active Directory User
- Delete Active Directory Object
- Get Active Directory Group
- Get Active Directory User
- Move Active Directory Object
- Remove Active Directory Object From Group
- Update Active Directory User


Soon to come


- Cascading Deletion
- DB-Logging


Category "Utility Package"


 Assign String			
Input Argument	Input String	Resource	Variable or formatted Text from Editor
Output Argument	Output String	String	


 Assign Text			
Input Argument	Input Text	Resource	Variable or formatted Text from Editor
Output Argument	Output Text	String	


 Exception Info			
Input Argument	Exception	Exception	
Output Arguments	All Text	String	Full Text of the passed exception
	Message	String	Message of the passed exception
	Stack Trace	String	Stack-Trace of the passed exception
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Add Journal			
Input Arguments	Type-ID	GUID	optional
	Object-ID	GUID	
	User Fragment-ID	GUID	
	Journal Type	Pickup	
	Solution HTML	Resource	
Output Arguments	Journal Fragment-ID	GUID	
	Journal HTML	SString	


 Assign HTML			
Input Argument	Input HTML	Resource	Variable or formatted Text from Editor
	Output HTML	String	


 Object Link			
Input Argument	Object-ID	GUID	Object identifier
	Object Type-ID	GUID	Object type identifier
	Display Text	String	URL display text
	HTML Link Target	String	Link target for <a> tag
Output Argument	URL	String	raw URL
	HTML Link	String	<a> tag
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Password Hasher			
Input Argument	Password	String	Password to hash
Output Argument	Password Salt	String	Password Salt value
	Password Hash	String	Password Hashed value
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Read User Profile			
Input Argument	User Fragment-ID	GUID	
Output Arguments	Grid Page Size	Integer	
	Console-Language ID	GUID	
	Console-Language LCID	Integer	
	Mail-Language ID	GUID	
	Mail-Language LCID	Integer	
	Portal-Language ID	GUID	
	Portal-Language LCID	Integer	
	User Currency	String	
	Working-day Start	String	
Working-day End	String		

 Run Compliance Rule			
Input Argument	ObjectID	GUID	The ObjectID of the Compliance Rule that is to be triggered. (Mandatory)
	Context ObjectID	GUID	The ObjectID of the context object that is evaluated by the Compliance Rule. (Optional. When provided, Context-ObjectTypeID must also be set!)
	Context TypeID	GUID	The TypeID of the context object that is evaluated by the Compliance Rule. (Optional. When provided, Context-ObjectID must also be set!)
Output Arguments	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Validate Email			
Input Argument	E-Mail Address	String	E-Mail address to check
	Black-list	StringCollection	List of invalid hosts and addresses
Input/Output	User Display-Name	String	Display-name for the E-Mail address
Output Argument\$	Blacklisted	Boolean	Is it Blacklisted
	Resolved Address	String	Parsed e-mail address
	Mail Host	String	Host part of the e-mail address
	Mail User	String	User part of the e-mail address
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception
Example	Stefan Gies <stefan.gies@matrix42.com> → User Display-Name = "Stefan Gies" → Resolved Address = "stefan.gies@matrix42.com" → Mail Host = "matrix42.com" → Mail User = "stefan.gies"		


 Workflow Log Writer			
Input Argument	Root Object-ID	GUID	Workflow Root Object identifier
	Log Level	Enum	Log Level Values: - DEBUG - INFO - WARN - ERROR
	Message	String	Message to log
	Exception	Exception	Exception to log
Output Argument	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Generate Password			
Input Arguments	Length	Integer	The number of characters in the generated password. The length must be between 1 and 128 characters
	Number Of Non Alphanumeric Characters	Integer	The minimum number of non-alphanumeric characters (such as @, #, !, %, &, and so on) in the generated password
Output Arguments	Random Password	String	A random password of the specified length
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Send Email With Attachment			
Input Arguments	Sender Address	String	
	Recipient Addresses (TO)	List<String>	
	Recipient Addresses (CC)	List<String>	
	Recipient Addresses (BCC)	List<String>	
	Subject	String	
	Body	String	
	Priority	Enum	Mail Priority Values: - Normal - Low - High
	Attachments	List<String>	
Output Arguments	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


Category "SchemaTransfer"


	Create Export-Collection		
Input Arguments	Connect-String	String	
	Temporary Disk-Path	String	
Output Arguments	Export-Collection	ExportCollection	
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Add Configuration-Item by ID		
Input Arguments	Export-Collection	ExportCollection	
	Configuration-Item ID	GUID	
	Include Dialog-Pages	Boolean	
Output Arguments	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Add Configuration-Item by Name		
Input Argument(s)	Export-Collection	ExportCollection	
	Configuration-Item Name	String	
	Include Dialog-Pages	Boolean	
Output Arguments	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Add Data-Definition by ID		
Input Argument(s)	Export-Collection	ExportCollection	
	Data-Definition ID	GUID	
Output Arguments	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

	Add Data-Definition by Name		
Input Argument(s)	Export-Collection	ExportCollection	
	Data-Definition Name	String	
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Add Object		
Input Argument(s)	Export-Collection	ExportCollection	
	Type-ID	GUID	
	Object-ID	GUID	
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Save Zip File		
Input Argument(s)	Export-Collection	ExportCollection	
	Full File-Path	String	
	Major Version	Integer	
	Minor Version	Integer	
	Build Version	Integer	
	Project Title	String	
	Project Prefix	String	
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Create Import-Collection		
Input Argument(s)	Full File-Path	String	
	Load at once	Boolean	
	SQL Chunk-size	Integer	Default is 30000
Output Argument(s)	Import-Collection	ImportCollection	
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

 Apply Import-Collection			
Input Argument(s)	Import-Collection	ImportCollection	
	Skip Model Import	Boolean	
	Skip Data Import	Boolean	
	Skip Update Info	Boolean	
	SQL-Dump Path	String	
Output Argument(s)	Major Version	Integer	
	Minor Version	Integer	
	Build Version	Integer	
	Project Title	String	
	Project Prefix	String	
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


Category "Service Desk"


	Calculate SLA Escalation		
Input Argument(s)	Object-ID	Guid	SLA Object ID
	Priority	Integer	
	Start Date	DateTime	
Output Argument(s)	Reaction Point	DateTime	
	Solution Point	DateTime	
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	Calculate Calendar Target		
Input Argument(s)	Object-ID	Guid	SLA Object ID
	Priority	Integer	
	Start Date	DateTime	
	Work Runtime	TimeSpan	
Output Argument(s)	Calendar Target	DateTime	
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


	SLA Time Query		
Input Argument(s)	SLA Object-ID	Guid	SLA Object ID
	Priority	Integer	
	Start	DateTime	
	End	DateTime	
Output Argument(s)	Time	Int	Calculated SLA time in minutes
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


Category "Active Directory"


 Add Active Directory Object To Group			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Object Name To Add	String	Object name to add to the destination group
Output Argument(s)	Group Name	String	Group name where to object will be added
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Create Active Directory Group			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
Output Argument(s)	Group Name	String	Name of the group to create
	Group Guid	Guid	Created Group GUID
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Create Active Directory User			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Display Name	String	
	Domain	String	
	Enabled	Boolean	
	Expiration Date	DateTime	
	First Name	String	
	Last Name	String	
	User Mail	String	
	User Name	String	
User Password	SecureData		
Output Argument(s)	Group Guid	Guid	Created User GUID
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception


 Delete Active Directory Object			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Object Name	String	Name of the Object to delete
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

 Get Active Directory Group			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Group Name	String	Name of the group to search
Output Argument(s)	Common Name	String	Common Group Name
	GUID	Guid	Global Unique Identifier
	Member	List<string>	Members of the group
	Member Of	List<string>	Group that contains the group as a member
	Object Path	String	Directory Path
	SID	String	Security Identifier
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

 Get Active Directory User			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	User Name	String	Name of the user to search
Output Argument(s)	Last Name	String	
	First Name	String	
	Display Name	String	
	User Mail	String	
	User Description	String	
	Telephone Number	String	
	Street Address	String	
	Post Office Box	String	
	City	String	
	Province	String	
	Postal Code	String	
	Enabled	Boolean	
	Object GUID	Guid	Object Global Unique Identifier
	Object SID	Guid	Object Security Identifier
Result OK	Boolean	Result of the Activity operation	
Result Message	String	Activity operation message	
Result Exception	Exception	Activity operation exception	

 Move Active Directory Object			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Object Name	String	Name of the object to move
	Current Path	String	Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com'
Output Argument(s)	New Path	String	'OU=Test,DC=Lab,DC=Matrix42,DC=com'
	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

 Remove Active Directory Object From Group			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	Object Name	String	Name of the Object to remove
	Group Name	String	Name of the Group where the object will be removed
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

 Update Active Directory User			
Input Argument(s)	Server	String	Server Name or IP Address
	Path	String	Directory Path (Ex: 'OU=Test,DC=Lab,DC=Matrix42,DC=com')
	Server User Name	String	Sets the user to use when authenticating the client
	Server Password	SecureData	Sets the password to use when authenticating the client. Password value must be encrypted
	User Name	String	Name of the user to search
	User Password	SecureData	User Password
	Last Name	String	
	First Name	String	
	Display Name	String	
	User Mail	String	
	User Description	String	
	Telephone Number	String	
	Street Address	String	
	Post Office Box	String	
	City	String	
	Province	String	
	Postal Code	String	
Enabled	Boolean		
Expiration Date	DateTime		
Output Argument(s)	Result OK	Boolean	Result of the Activity operation
	Result Message	String	Activity operation message
	Result Exception	Exception	Activity operation exception

About Matrix42

Matrix42 is a top provider of workspace management software. The company offers forward-thinking solutions for modern work environments under its ‘Smarter workspace’ motto. More than 3,000 customers around the world, including BMW, Infineon, and Carl Zeiss, currently manage approximately 3 million workstations using workspace management solutions from Matrix42. Matrix42 operates successfully in seven countries – Germany, Austria, Switzerland, the Netherlands, the United Kingdom, Australia and the United States of America. The company’s headquarters are in Frankfurt am Main, Germany.

Matrix42’s products and solutions are designed to manage modern work environments simply and efficiently – across physical, virtual, and mobile workspaces.

Matrix42 focuses on user orientation, automation, and process optimization. The company’s solutions meet the requirements of modern employees who want to work from any location using a wide range of devices, while also addressing the needs of IT departments and businesses.

Matrix42 offers its solutions to organizations across different sectors who value forward-looking and efficient workspace management. The company also successfully collaborates with partners who provide on-site consultation to Matrix42 customers. Some of these leading partners include TAP.DE Solutions GmbH, Consulting4IT GmbH, and DSP IT Service GmbH. For further information, visit: www.matrix42.com

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