

Harbor

Harbor management pack.

<http://as.zabedu.ru/linux/cont/vro-harbor>

1. Add or update Harbor operations

Add or update REST operations for Harbor host

1.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

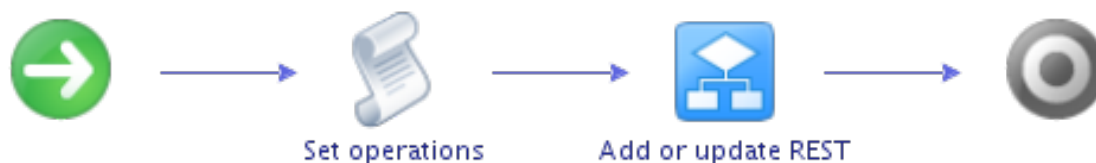
1.2. Attributes

Name	Type	Description
restHost	REST:RESTHost	
restOpsTemplates	Array/CompositeType (name:string,urlTem plate:string,method :string):restOperat ions	List of all REST-operation templates

1.3. Parameter presentation

Parameter	Description	Parameter Info
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1.4. Workflow schema



1.5. Workflow items

Name	Type	Next item	Description
Set operations	WorkflowItemTask	Add or update REST operations	Create operations array
	WorkflowItemEnd		
Add or update REST operations	WorkflowItemLink		Add or update REST operations

1.6. Source code for the used actions

1.6.1. Set operations

```
restOpsTemplates =
    [{name:"getProjectList", urlTemplate:"/projects", method:"GET"},
     {name:"getProjectById", urlTemplate:"/projects/{project_id}", method:"GET"},
     {name:"newProject", urlTemplate:"/projects", method:"POST"},
     {name:"getProjectMembers", urlTemplate:"/projects/{project_id}/members",
method:"GET"},
     {name:"newProjectMember", urlTemplate:"/projects/{project_id}/members",
method:"POST"},
     {name:"getUserByName", urlTemplate:"/users?username={username}", method:"GET"},
     {name:"newUser", urlTemplate:"/users", method:"POST"},
     {name:"getRepositoryByProjectId", urlTemplate:"/repositories?project_id={project_id}",
method:"GET"},
     {name:"getTags", urlTemplate:"/repositories/{repo_name}/tags", method:"GET"},
     {name:"getTag", urlTemplate:"/repositories/{repo_name}/tags/{tag}", method:"GET"},
     {name:"getVulnerability",
urlTemplate:"/repositories/{repo_name}/tags/{tag}/vulnerability/details", method:"GET"},
     {name:"getCert", urlTemplate:"/systeminfo/getcert", method:"GET"},
     {name:"getGroupByDn", urlTemplate:"/usergroups", method:"GET"}];
```

2. Add or update REST operations

Add or update REST operations

2.1. Versions

Version	Date	User	Comment

Add or update REST operations

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

2.2. Inputs

Name	Type	Description
restHost	REST:REStHost	REST-host
restOpsTemplates	Array/CompositeType (name:string,urlTemplate:string,method:string):restOperations	List of all REST-operation templates

2.3. Attributes

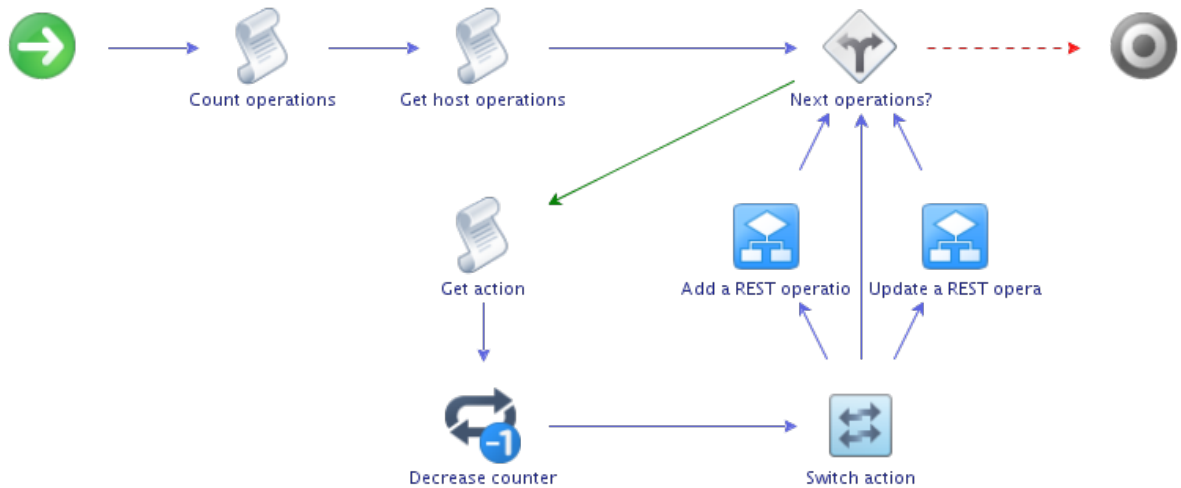
Name	Type	Description
contentType	string	Content type for REST-operation
opsResult	REST:REStOperation	Result of adding or update operation
restHostOps	Array/string	List of REST-operations on REST-host
countOps	number	Count of operations
opsAction	string	Action for current operation
restOpsTemplate	CompositeType(name:string,urlTemplate:string,method:string):restOperations	One REST-operation template
opsUpdate	REST:REStOperation	REST-operation on REST-host

2.4. Parameter presentation

Parameter	Description	Parameter Info

Parameter	Description	Parameter Info
restHost	REST-host	
restOpsTemplates	List of all REST-operation templates	

2.5. Workflow schema



2.6. Workflow items

Name	Type	Next item	Description
Count operations	WorkflowItemTask	Get host operations	Get count of input operations
Get host operations	WorkflowItemTask	Next operations?	Get all REST-operations from REST-host
Next operations?	WorkflowItemGenericCondition	Get action	Work with next operations?
	WorkflowItemEnd		
Get action	WorkflowItemTask	Decrease counter	Get action for current operation "create", "update" or "null" for nothing
Decrease counter	WorkflowItemTask	Switch action	Decrement a counter by one

Name	Type	Next item	Description
Switch action	WorkflowItemSwitch		Select workflow for current operation
Add a REST operation	WorkflowItemLink	Next operations?	Adds an operation to a REST host.
Update a REST operation	WorkflowItemLink	Next operations?	Updates an operation on a REST host.

2.7. Source code for the used actions

2.7.1. Count operations

```
countOps = restOpsTemplates.length;
```

2.7.2. Get host operations

```
restHostOps = restHost.getOperations();
```

2.7.3. Next operations?

```
//Generated by the system, cannot be edited  
return (countOps > 0.0) ;
```

2.7.4. Get action

```
var opsTemplate = restOpsTemplates[countOps - 1];  
opsAction = "create";  
for each (opsId in restHostOps) {  
    var ops = restHost.getOperation(opsId);  
    if (opsTemplate.name == ops.name) {  
        if (opsTemplate.urlTemplate == ops.urlTemplate && opsTemplate.method == ops.method) {  
            opsAction = "null";  
            System.log("Operation: " + ops.name + ": -//-");  
        } else {  
            opsAction = "update";  
            opsUpdate = ops;  
            System.log("Operation: " + ops.name + ": to " + opsAction);  
        }  
    }  
}
```

Get all projects

```
}  
restOpsTemplate = opsTemplate;
```

2.7.5. Decrease counter

```
//Auto-generated script  
counter = counter-1;
```

2.7.6. Switch action

```
//Generated by the system, cannot be edited  
if (opsAction == "null") {  
    return "item6";  
} else if (opsAction == "create") {  
    return "item5";  
} else if (opsAction == "update") {  
    return "item8";  
} else if (true) {  
    return "item6";  
}  
}
```

3. Get all projects

List projects

3.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

3.2. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

3.3. Attributes

Name	Type	Description
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Get all projects

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

3.4. Parameter presentation

Parameter	Description	Parameter Info
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3.5. Workflow schema



3.6. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

3.7. Source code for the used actions

3.7.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

3.7.2. Set output

```
result = contentAsString;
var resultObj = JSON.parse(contentAsString);
System.log("Found " + resultObj.length + " projects");
```

4. Get group by DN

Get registered user of Harbor by name

4.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

4.2. Inputs

Name	Type	Description
groupDn*	string	Group DN for filtering results

*Parameter is mandatory

4.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

4.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

4.5. Parameter presentation

Parameter	Description	Parameter Info
groupDn	Username for filtering results	Mandatory input: true

4.6. Workflow schema



4.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)

Name	Type	Next item	Description
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

4.8. Source code for the used actions

4.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

4.8.2. Set output

```
var resultObj = JSON.parse(contentAsString);

for (var i = 0; i < resultObj.length; i++) {
  if (resultObj[i].ldap_group_dn == groupDn.toLowerCase()) {
    var group = resultObj[i];
    System.log("Found group " + groupDn + ", his ID is " + group.id);
    System.log(JSON.stringify(group));
    result = JSON.stringify(group);
    break;
  }
}
if (!group) {
  System.log("Group " + groupDn + " not found");
}
```

5. Get project by ID

Return specific project detail information

5.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

5.2. Inputs

Name	Type	Description
project_id*	string	Project ID to get project information

*Parameter is mandatory

5.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

5.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

5.5. Parameter presentation

Parameter	Description	Parameter Info
project_id	Project ID to get project information	Mandatory input: true

5.6. Workflow schema



5.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

5.8. Source code for the used actions

5.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

5.8.2. Set output

```
result = contentAsString;
var resultObj = JSON.parse(contentAsString);
System.log("Found project " + resultObj.name);
```

6. Get project by name

Get project by name

6.1. Versions

Version	Date	User	Comment

Get project by name

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

6.2. Inputs

Name	Type	Description
project_name*	string	Project name

*Parameter is mandatory

6.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

6.4. Attributes

Name	Type	Description
result_int	string	Result of the operation
statusCode_int	number	Response status code

6.5. Parameter presentation

Parameter	Description	Parameter Info
project_name	Project name	Mandatory input: true

6.6. Workflow schema



6.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Set output	WorkflowItemTask		Set output values (JSON-string)
Get all projects	WorkflowItemLink	Set output	List projects

6.8. Source code for the used actions

6.8.1. Set output

```

var resultObj = JSON.parse(contentAsString);
statusCode = statusCode_int;

for (var i = 0; i < resultObj.length; i++) {
  if (resultObj[i].name == project_name) {
    var project = resultObj[i];
    System.log("Found project " + project_name + ", his ID is " + project.project_id);
    result = JSON.stringify(project);
    break;
  }
}
if (!project) {
  System.log("User " + project_name + " not found");
  statusCode = 400;
}

```

7. Get project members

Get all project members information

7.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

7.2. Inputs

Name	Type	Description
project_id*	string	Project ID to get project information

*Parameter is mandatory

7.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

7.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

7.5. Parameter presentation

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Get project members

Parameter	Description	Parameter Info
project_id	Project ID to get project information	Mandatory input: true

7.6. Workflow schema



7.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

7.8. Source code for the used actions

7.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

7.8.2. Set output

```
result = contentAsString;
var resultObj = JSON.parse(contentAsString);
System.log("Found " + resultObj.length + " members");
```


8. Get repositories by project ID

Get repositories by project ID

8.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

8.2. Inputs

Name	Type	Description
project_id*	string	Project ID to get project information

*Parameter is mandatory

8.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

8.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

8.5. Parameter presentation

Parameter	Description	Parameter Info
project_id	Project ID to get project information	Mandatory input: true

8.6. Workflow schema



8.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

8.8. Source code for the used actions

8.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

8.8.2. Set output

Get root certificate

```
result = contentAsString;  
var resultObj = JSON.parse(contentAsString);  
System.log("Found " + resultObj.length + " repositories");
```

9. Get root certificate

Get default root certificate

9.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

9.2. Outputs

Name	Type	Description
statusCode	number	Response status code
cert	string	Certificate content as string

9.3. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentLength	number	Length of the request response
headers	Properties	Response headers

9.4. Parameter presentation

Parameter	Description	Parameter Info
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9.5. Workflow schema



9.6. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Invoke a REST operation	WorkflowItemLink		Invokes a REST operation.

9.7. Source code for the used actions

9.7.1. Get operation

```

//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperatio
nName) ;
  
```

10. Get tag by name

Get the tag of the repository

10.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

10.2. Inputs

Name	Type	Description
repo_name*	string	Relevant repository name
tag	string	Tag of the repository

*Parameter is mandatory

10.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

10.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

10.5. Parameter presentation

Parameter	Description	Parameter Info
repo_name	Relevant repository name	Mandatory input: true

Get tag by name

Parameter	Description	Parameter Info
tag	Tag of the repository	

10.6. Workflow schema



10.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

10.8. Source code for the used actions

10.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

10.8.2. Set output

```
result = contentAsString;
var resultObj = JSON.parse(contentAsString);
System.log("Found tag " + resultObj.name);
```

11. Get tags from repository

Get tags of a relevant repository

11.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

11.2. Inputs

Name	Type	Description
repo_name*	string	Relevant repository name

*Parameter is mandatory

11.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

11.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

11.5. Parameter presentation

Parameter	Description	Parameter Info
repo_name	Relevant repository name	Mandatory input: true

11.6. Workflow schema



11.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

11.8. Source code for the used actions

11.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

11.8.2. Set output

Get user by name

```
result = contentAsString;  
var resultObj = JSON.parse(contentAsString);  
System.log("Found " + resultObj.length + " tags");
```

12. Get user by name

Get registered user of Harbor by name

12.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

12.2. Inputs

Name	Type	Description
username*	string	Username for filtering results

*Parameter is mandatory

12.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

12.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string

Get user by name

Name	Type	Description
contentLength	number	Length of the request response
headers	Properties	Response headers

12.5. Parameter presentation

Parameter	Description	Parameter Info
username	Username for filtering results	Mandatory input: true

12.6. Workflow schema



12.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

12.8. Source code for the used actions

12.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost, restOperatio
```

Get vulnerability details

```
nName) ;
```

12.8.2. Set output

```
var resultObj = JSON.parse(contentAsString);

for (var i = 0; i < resultObj.length; i++) {
  if (resultObj[i].username == username) {
    var user = resultObj[i];
    System.log("Found user " + username + ", his ID is " + user.user_id);
    delete user.password;
    //System.log(JSON.stringify(user));
    result = JSON.stringify(user);
    break;
  }
}
if (!user) {
  System.log("User " + username + " not found");
}
```

13. Get vulnerability details

Get vulnerability details of the image

13.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

13.2. Inputs

Name	Type	Description
repo_name*	string	Relevant repository name
tag	string	Tag of the repository

*Parameter is mandatory

13.3. Outputs

Name	Type	Description
------	------	-------------

Get vulnerability details

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

13.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentLength	number	Length of the request response
headers	Properties	Response headers

13.5. Parameter presentation

Parameter	Description	Parameter Info
repo_name	Relevant repository name	Mandatory input: true
tag	Tag of the repository	

13.6. Workflow schema



13.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.

13.8. Source code for the used actions

13.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

13.8.2. Set output

```
result = contentAsString;
var resultObj = JSON.parse(contentAsString);
System.log("Found " + resultObj.length + " vulnerabilities");
```

14. Get vulnerability report (project)

Create a project vulnerability report

14.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

14.2. Inputs

Name	Type	Description

Get vulnerability report (project)

Name	Type	Description
project_name*	string	Project name

*Parameter is mandatory

14.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

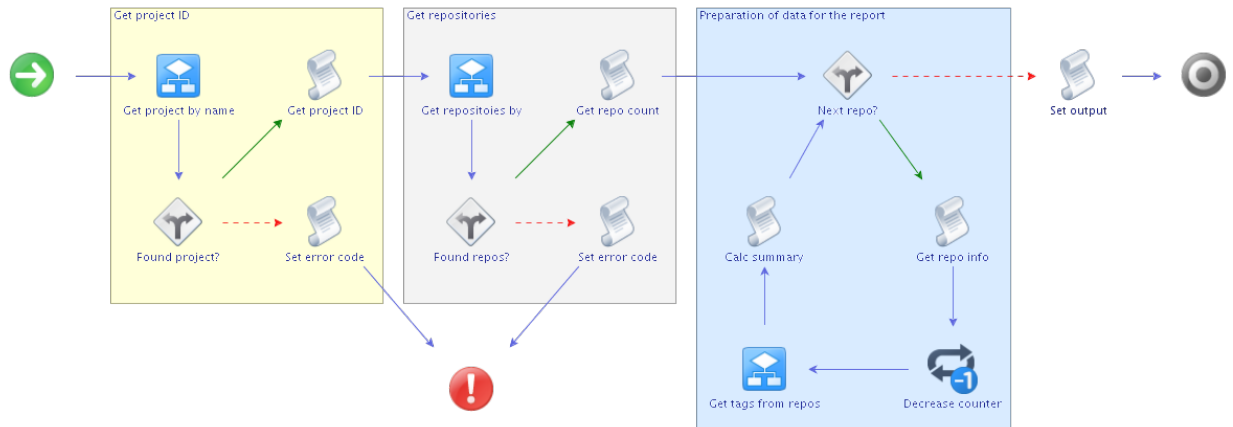
14.4. Attributes

Name	Type	Description
errorCode	string	Error code
statusCode_int	number	Response status code
result_int	string	Intermediate result
project_id	string	Project ID
repository_count	number	Count of project repositories
repo_name	string	Repository name
repos_info	string	Repositories info
repos_obj	Any	Repositories info for summary result

14.5. Parameter presentation

Parameter	Description	Parameter Info
project_name	Project name	Mandatory input: true

14.6. Workflow schema



14.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Set output	WorkflowItemTask		Set output values (JSON-string)
Found project?	WorkflowItemGenericCondition	Get project ID	Check "Get project" workflow result
	WorkflowItemEnd		
Set error code	WorkflowItemTask		Set error code for "Get project" workflow
Get project by name	WorkflowItemLink	Found project?	Get project by name
Get project ID	WorkflowItemTask	Get repositories by project ID	Get project ID from JSON
Get repositories by project ID	WorkflowItemLink	Found repos?	Get repositories by project ID
Get repo count	WorkflowItemTask	Next repo?	Get count of repositories
Found repos?	WorkflowItemGenericCondition	Get repo count	Check "Get repositories" workflow result

Name	Type	Next item	Description
Set error code	WorkflowItemTask		Set error code for "Get repositories" workflow
Next repo?	WorkflowItemGenericCondition	Get repo info	Go to the next repository?
Get repo info	WorkflowItemTask	Decrease counter	Get information about current repository
Decrease counter	WorkflowItemTask	Get tags from repository	Decrement a counter by one
Get tags from repository	WorkflowItemLink	Calc summary	Get tags of a relevant repository
Calc summary	WorkflowItemTask	Next repo?	Calculate dat for current repository

14.8. Source code for the used actions

14.8.1. Set output

```
result = JSON.stringify(repos_obj);
statusCode = 200;
System.log(result);
```

14.8.2. Found project?

```
//Generated by the system, cannot be edited
return (statusCode_int == 200.0) ;
```

14.8.3. Set error code

```
System.log(statusCode_int);
System.log(result_int);
errorCode = "Project not found"
```

14.8.4. Get project ID

Get vulnerability report (project)

```
var projectObj = JSON.parse(result_int);
project_id = projectObj.project_id.toString();
```

14.8.5. Get repo count

```
var reposObj = JSON.parse(result_int);
repository_count = reposObj.length;
repos_info = result_int;
repos_obj = new Array();
```

14.8.6. Found repos?

```
//Generated by the system, cannot be edited
return (statusCode_int == 200.0) ;
```

14.8.7. Set error code

```
errorCode = "Get repositories error"
```

14.8.8. Next repo?

```
//Generated by the system, cannot be edited
return (repository_count > 0.0) ;
```

14.8.9. Get repo info

```
var reposObj = JSON.parse(repos_info);
repo_name = reposObj[repository_count - 1].name;
```

14.8.10. Decrease counter

```
//Auto-generated script
counter = counter-1;
```

14.8.11. Calc summary

```
// new array for vulnerability summary
// [{"severity":1,"count":0}, ..., {"severity":5,"count":0}]
var repo_scan_summary = new Array();
for (i = 0; i <= 4; i++) {
    repo_scan_summary[i] = new Object();
    repo_scan_summary[i]["severity"] = i + 1;
    repo_scan_summary[i]["count"] = 0;
```

Get vulnerability report (server)

```
}

// calculate summary values
var tagsObj = JSON.parse(result_int);
for (i = 0; i <= tagsObj.length-1; i++) {
  var tag = tagsObj[i];
  if (tag.scan_overview) {
    for (j = 0; j <= tag.scan_overview.components.summary.length-1; j++) {
      var severity = tag.scan_overview.components.summary[j].severity;
      repo_scan_summary[severity - 1]["count"] +=
tag.scan_overview.components.summary[j].count;
    }
  }
}

// add scan results to output repo data
var reposObj = JSON.parse(repos_info);
reposObj[repository_count]["scan_summary"] = repo_scan_summary;
repos_obj.push(reposObj[repository_count]);
//System.log(JSON.stringify(reposObj));
```

15. Get vulnerability report (server)

Create a vulnerability report for the entire Harbor-server

15.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

15.2. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

15.3. Attributes

Name	Type	Description
errorCode	string	Error code

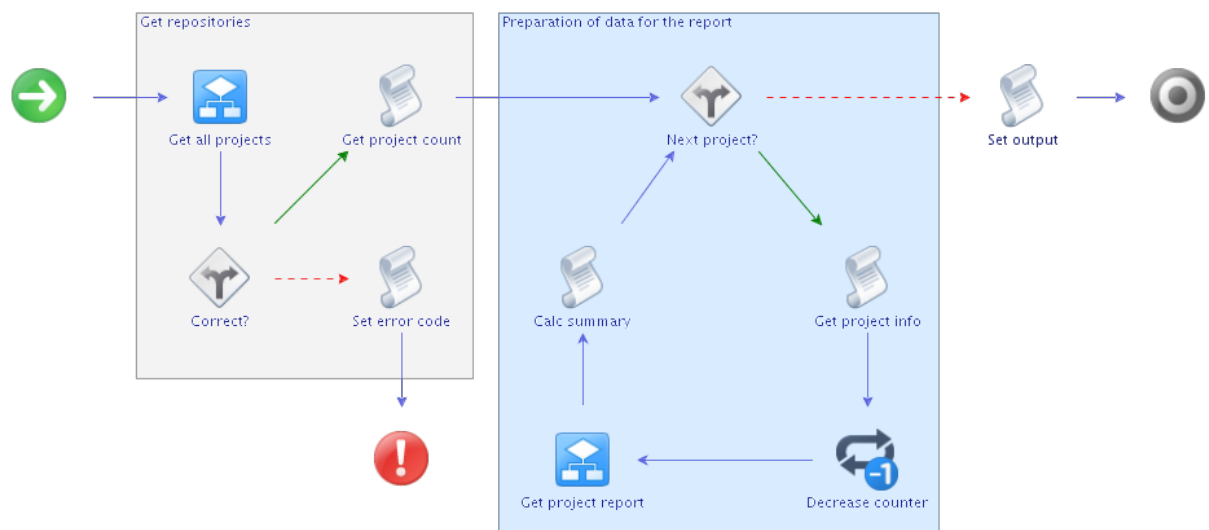
Get vulnerability report (server)

Name	Type	Description
statusCode_int	number	Response status code
result_int	string	Intermediate result
project_count	number	Count of projects
project_name	string	Repository name
projects_info	string	Repositories info
projects_obj	Any	Repositories info for summary result

15.4. Parameter presentation

Parameter	Description	Parameter Info
-----------	-------------	----------------

15.5. Workflow schema



15.6. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Set output	WorkflowItemTask		Set output values (JSON-string)
Get all projects	WorkflowItemLink	Correct?	List projects

Get vulnerability report (server)

Name	Type	Next item	Description
Get project count	WorkflowItemTask	Next project?	Get projects count from JSON
Correct?	WorkflowItemGenericCondition	Get project count	Check "Get projects" workflow result
Set error code	WorkflowItemTask		Set error code for "Get projects" workflow
	WorkflowItemEnd		
Next project?	WorkflowItemGenericCondition	Get project info	Go to the next project?
Get project info	WorkflowItemTask	Decrease counter	Get current project information
Decrease counter	WorkflowItemTask	Get project report	Decrement a counter by one
Calc summary	WorkflowItemTask	Next project?	Calculate summary data for current project
Get project report	WorkflowItemLink	Calc summary	Create a project vulnerability report

15.7. Source code for the used actions

15.7.1. Set output

```
result = JSON.stringify(projects_obj);
statusCode = 200;
System.log(result);
```

15.7.2. Get project count

```
projects_obj = JSON.parse(result_int);
project_count = projects_obj.length;
projects_info = result_int;
```

15.7.3. Correct?

Get vulnerability report (server)

```
//Generated by the system, cannot be edited
return (statusCode_int == 200.0) ;
```

15.7.4. Set error code

```
errorCode = "Get projects error"
```

15.7.5. Next project?

```
//Generated by the system, cannot be edited
return (project_count > 0.0) ;
```

15.7.6. Get project info

```
project_name = projects_obj[project_count - 1].name;
```

15.7.7. Decrease counter

```
//Auto-generated script
counter = counter-1;
```

15.7.8. Calc summary

```
// new array for vulnerability summary
// [{"severity":1,"count":0}, ..., {"severity":5,"count":0}]
var project_scan_summary = new Array();
for (i = 0; i <= 4; i++) {
    project_scan_summary[i] = new Object();
    project_scan_summary[i]["severity"] = i + 1;
    project_scan_summary[i]["count"] = 0;
}

// calculate summary values
var reposObj = JSON.parse(result_int);
for (i = 0; i <= reposObj.length-1; i++) {
    var repo = reposObj[i];
    for (j = 0; j <= repo.scan_summary.length-1; j++) {
        var severity = repo.scan_summary[j].severity;
        project_scan_summary[severity - 1]["count"] += repo.scan_summary[j].count;
    }
}

// add scan results to output projects data
```

```
projects_obj[project_count]["scan_summary"] = project_scan_summary;
```

```
//System.log(JSON.stringify(reposObj));
```

16. New project

Create a new project

16.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

16.2. Inputs

Name	Type	Description
project_name*	string	Project Name
public_project	boolean	Public project
enable_content_trust	boolean	Allow only verified images to be deployed
prevent_vul	boolean	Prevent vulnerable images from running
severity	string	Prevent images with vulnerability severity specified level from being deployed
auto_scan	boolean	Automatically scan images when they are pushed to the project registry

*Parameter is mandatory

16.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

16.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentType	string	Default content type
contentLength	number	Length of the request response
headers	Properties	Response headers
content	string	Input content
acceptHeaders	Array/string	Accept headers

16.5. Parameter presentation

Parameter	Description	Parameter Info
project_name	Project Name	Mandatory input: true
public_project	Public project	Default value: __NULL__
enable_content_trust	Allow only verified images to be deployed	Default value: __NULL__
prevent_vul	Prevent vulnerable images from running	Default value: __NULL__
severity	Prevent images with vulnerability severity specified level from being deployed	Default value: low

Parameter	Description	Parameter Info
auto_scan	Automatically scan images when they are pushed to the project registry	Default value: true

16.6. Workflow schema



16.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Create request	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (Header "Location")
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.
Create request	WorkflowItemTask	Invoke a REST operation	Preparing data for the REST-operation

16.8. Source code for the used actions

16.8.1. Get operation

```

//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
  
```


16.8.2. Set output

```
// return ID of new project (string)
// Header "Location" returned as "/api/projects/{id}"
result = headers["Location"].split("/")[3];
```

16.8.3. Create request

```
var inParameters = workflow.currentWorkflow.inParameters;
for each (param in inParameters) {
    var searchParam = "{" + param.name + "}";
    content = content.replace(searchParam, eval(param.name));
}
System.log(content);
```

17. New project member

Create project member

17.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administra tor	Created integration package for VMware Harbor

Current version:1.0.0

17.2. Inputs

Name	Type	Description
project_id*	string	Project ID to add new member
memberName*	string	Name of the new member (Username or Ldap Group DN)
memberRole*	string	Member role

*Parameter is mandatory

17.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

17.4. Attributes

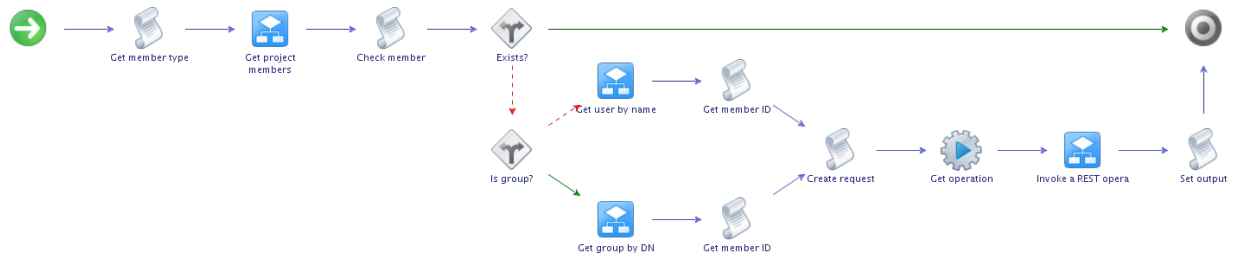
Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentType	string	Default content type
contentLength	number	Length of the request response
headers	Properties	Response headers
acceptHeaders	Array/string	Headers
membersStatusCode	number	Response status code (Get project members)
membersJson	string	result (Get project members)
content	string	Input content
memberType	string	Member type: "g" - group, "u" - user
memberExists	boolean	Member is already exists
memberId	string	Member ID in Harbor

17.5. Parameter presentation

Parameter	Description	Parameter Info
project_id	Project ID to add new member	Mandatory input: true
memberName	Username or Ldap Group DN	Mandatory input: true

Parameter	Description	Parameter Info
memberRole	Member role	Mandatory input: true

17.6. Workflow schema



17.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Set output	WorkflowItemTask		Set output values (JSON-string)
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.
Create request	WorkflowItemTask	Get operation	Create request data for REST-operation
Get project members	WorkflowItemLink	Check member	Get all project member information
Check member	WorkflowItemTask	Exists?	Find member in project members
Get operation	WorkflowItemTask	Invoke a REST operation	Get REST-operation by name
Get member type	WorkflowItemTask	Get project members	Check member type, "group" or "user"
Exists?	WorkflowItemGenericCondition		Project member found?
Is group?	WorkflowItemGenericCondition	Get group by DN	Add group or user?

Name	Type	Next item	Description
Get user by name	WorkflowItemLink	Get member ID	Get registered user of Harbor by name
Get group by DN	WorkflowItemLink	Get member ID	Get registered user of Harbor by name
Get member ID	WorkflowItemTask	Create request	Get current user ID to add in project
Get member ID	WorkflowItemTask	Create request	Get current group ID to add in project

17.8. Source code for the used actions

17.8.1. Set output

```
// return ID of new project member (string)
// Header "Location" returned as "/api/projects/{project_id}/members/{member_id}"
result = headers["Location"].split("/")[5];
System.log("New member ID is: " + result);
```

17.8.2. Create request

```
switch (memberRole) {
  case "Project Admin":
    var role_id = 1;
    break;
  case "Developer":
    var role_id = 2;
    break;
  case "Guest":
    var role_id = 3;
}

content = content.replace("{role_id}", role_id);
content = content.replace(new RegExp("{id}", 'g'), memberId);
content = content.replace(new RegExp("{memberName}", 'g'), memberName);

var contentObj = JSON.parse(content);
if (memberType == "g") {
  delete contentObj.member_user;
  if (memberId > 0) {
```

```
        delete contentObj.member_group.ldap_group_dn;
    } else {
        delete contentObj.member_group.id;
    }
} else {
    delete contentObj.member_group;
    if (memberId > 0) {
        delete contentObj.member_user.username;
    } else {
        delete contentObj.member_user.user_id;
    }
}
content = JSON.stringify(contentObj);
```

```
System.log(content);
```

17.8.3. Check member

```
if (membersStatusCode == 200) {
    memberExists = false;
    var members = JSON.parse(membersJson);
    for (var i = 0; i < members.length; i++) {
        var member = members[i];
        switch (member.entity_type) {
            case "u":
                memberExists = memberExists || (member.entity_name == memberName);
                break;
            case "g":
                var groupName = memberName.split(",")[0].split("=")[1];
                memberExists = memberExists || (member.entity_name == groupName);
                break;
        }
    }
    if (memberExists) {
        System.log("Member " + memberName + " is already exists in this project");
    }
}
```

17.8.4. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperatio
nName) ;
```

17.8.5. Get member type

```
var isGroup = memberName.toLowerCase().indexOf("dc=") > 0;
if (isGroup) {
    memberType = "g";
} else {
    memberType = "u";
}
```

17.8.6. Exists?

```
//Generated by the system, cannot be edited
return (memberExists == true) ;
```

17.8.7. Is group?

```
//Generated by the system, cannot be edited
return (memberType == "g") ;
```

17.8.8. Get member ID

```
if (membersJson != null) {
    var member = JSON.parse(membersJson);
    memberId = member.user_id;
}
```

17.8.9. Get member ID

```
if (membersJson != null) {
    var member = JSON.parse(membersJson);
    memberId = member.id;
}
```

18. New user

Creates a new user account

18.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

18.2. Inputs

Name	Type	Description
username	string	Username of the new user
email	string	The email of the new user
realname	string	The real name of the new user

18.3. Outputs

Name	Type	Description
statusCode	number	Response status code
result	string	Result of the operation

18.4. Attributes

Name	Type	Description
errorCode	string	Error code
restOperation	REST:RESTOperation	REST operation to be used for the call
restOperationName	string	REST operation name
restHost	REST:RESTHost	
contentAsString	string	Response content as string
contentType	string	Default content type
contentLength	number	Length of the request response
headers	Properties	Response headers
content	string	Input content
acceptHeaders	Array/string	Headers
password	SecureString	Default password for new users

18.5. Parameter presentation

Parameter	Description	Parameter Info
username	Username of the new user	
email	The email of the new user	
realname	The real name of the new user	

18.6. Workflow schema



18.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
Get operation	WorkflowItemTask	Create request	Get REST-operation by name
Set output	WorkflowItemTask		Set output values (Header "Location")
Invoke a REST operation	WorkflowItemLink	Set output	Invokes a REST operation.
Create request	WorkflowItemTask	Invoke a REST operation	Preparing data for the REST-operation

18.8. Source code for the used actions

Send root certificate

18.8.1. Get operation

```
//Auto generated script, cannot be modified !
actionResult =
System.getModule("com.vmware.vra.pks.harbor").getRestOperationByName(restHost,restOperationName) ;
```

18.8.2. Set output

```
// return ID of new project (string)
// Header "Location" returned as "/api/projects/{id}"
result = headers["Location"].split("/")[3];
```

18.8.3. Create request

```
var inParameters = workflow.currentWorkflow.inParameters;
for each (param in inParameters) {
    var searchParam = "{" + param.name + "}";
    content = content.replace(searchParam, eval(param.name));
}
content = content.replace("{password}", password);
System.log(content);
```

19. Send root certificate

Get default root certificate and send emails

19.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

19.2. Inputs

Name	Type	Description
toAddressesArray	Array/string	E-Mails to send the certificate

19.3. Outputs

Name	Type	Description
------	------	-------------

Send root certificate

Name	Type	Description
statusCode	number	Response status code

19.4. Attributes

Name	Type	Description
cert	string	Certificate content as string
attachment	MimeAttachment	Attachment for email
toAddress	string	Destination address
content	string	Email content (text or HTML)
subject	string	Email subject

19.5. Parameter presentation

Parameter	Description	Parameter Info
toAddressesArray	E-Mails to send the certificate	

19.6. Workflow schema



19.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		
E-mail notification with attachment	WorkflowItemLink		Sends an email with specified content to given email address

Name	Type	Next item	Description
E-Mail config	WorkflowItemTask	E-mail notification with attachment	Preparation of message parameters
Get root certificate	WorkflowItemLink	E-Mail config	Get default root certificate

19.8. Source code for the used actions

19.8.1. E-Mail config

```
var caZip = new ZipWriter("/var/run/vco/harbor_ca.zip");
caZip.addContent("ca.crt", cert);
caZip.writeZip();
```

```
var file = new File("/var/run/vco/harbor_ca.zip");
attachment = new MimeAttachment(file);
content = "<h3>vRA notification</h3><br>CA Harbor registry certificate";
toAddress = toAddressesArray.join(",");
```

20. Send vulnerability report

Get vulnerability report for project and send by e-mails

20.1. Versions

Version	Date	User	Comment
1.0.0	Apr 15, 2019	administrator	Created integration package for VMware Harbor

Current version:1.0.0

20.2. Inputs

Name	Type	Description
toAddressesArray*	Array/string	E-Mails to send the report
projectName*	string	Project name

*Parameter is mandatory

20.3. Outputs

Name	Type	Description
statusCode	number	Response status code

20.4. Attributes

Name	Type	Description
toAddress	string	Destination address
content	string	Email content (text or HTML)
subject	string	Email subject
reportJson	string	Report in JSON format

20.5. Parameter presentation

Parameter	Description	Parameter Info
toAddressesArray	E-Mails to send the certificate	Mandatory input: true
projectName	project_name	Mandatory input: true

20.6. Workflow schema



20.7. Workflow items

Name	Type	Next item	Description
	WorkflowItemEnd		

Name	Type	Next item	Description
E-mail notification	WorkflowItemLink		Sends an email with specified content to given email address. Uses the default settings from the Orchestrator Configuration interface for the following optional input parameters: SMTP host, SMTP port, username, password, from Address and from Name. You can override these values by providing input parameters.
E-Mail config	WorkflowItemTask	E-mail notification	Preparation of message parameters
Get vulnerability report (project)	WorkflowItemLink	Create report	Create a project vulnerability report
Create report	WorkflowItemTask	E-Mail config	Create e-mail message body

20.8. Source code for the used actions

20.8.1. E-Mail config

```
toAddress = toAddressesArray.join(",");
subject = "vRA: Vulnerability report for project " + project_name;
```

20.8.2. Create report

```
var reposObj = JSON.parse(reportJson);
repository_count = reposObj.length;

content = "<h3>vRA notification</h3>Vulnerability report for project <strong>" +
project_name + "</strong><br>";
if (reposObj.length > 0) {
    content += "Project ID is " + reposObj[0].project_id + "<br><br>";
    content += "<ul>"
    for (i = 0; i < reposObj.length; i++) {
```

```
var repo = reposObj[i];
content += "<li>Repository name: " + repo.name + "<br>";
if (repo.description != "") {
    content += "Repository description: " + repo.description + "<br>";
}
if (repo.labels.length > 0) {
    content += "Repository labels: " + repo.labels.join(", ") + "<br>";
}
content += "Total pull count: " + repo.pull_count + "<br>";
content += "Total tags count: " + repo.tags_count + "<br>";
content += "Image scan result:";
content += "<ul>"
for (j = repo.scan_summary.length - 1; j >= 0; j--) {
    content += "<li>" + getSeverityString(repo.scan_summary[j].severity,
repo.scan_summary[j].count) + "</li>";
}
content += "</ul></li>"
}
content += "</ul>"
} else {
    content += "There are no repositories in this project";
}

function getSeverityString(severity, count) {
    var severity_levels = ["None", "Unknown", "Low", "Medium", "High"];
    if (severity == 1) {
        return "" + count + " " + severity_levels[severity - 1] + "<br><br>";
    } else {
        if (count <= 1) {
            return "" + count + " Package has " + severity_levels[severity - 1] + "
vulnerability";
        } else {
            return "" + count + " Packages have " + severity_levels[severity - 1] + "
vulnerabilities";
        }
    }
}
}
```