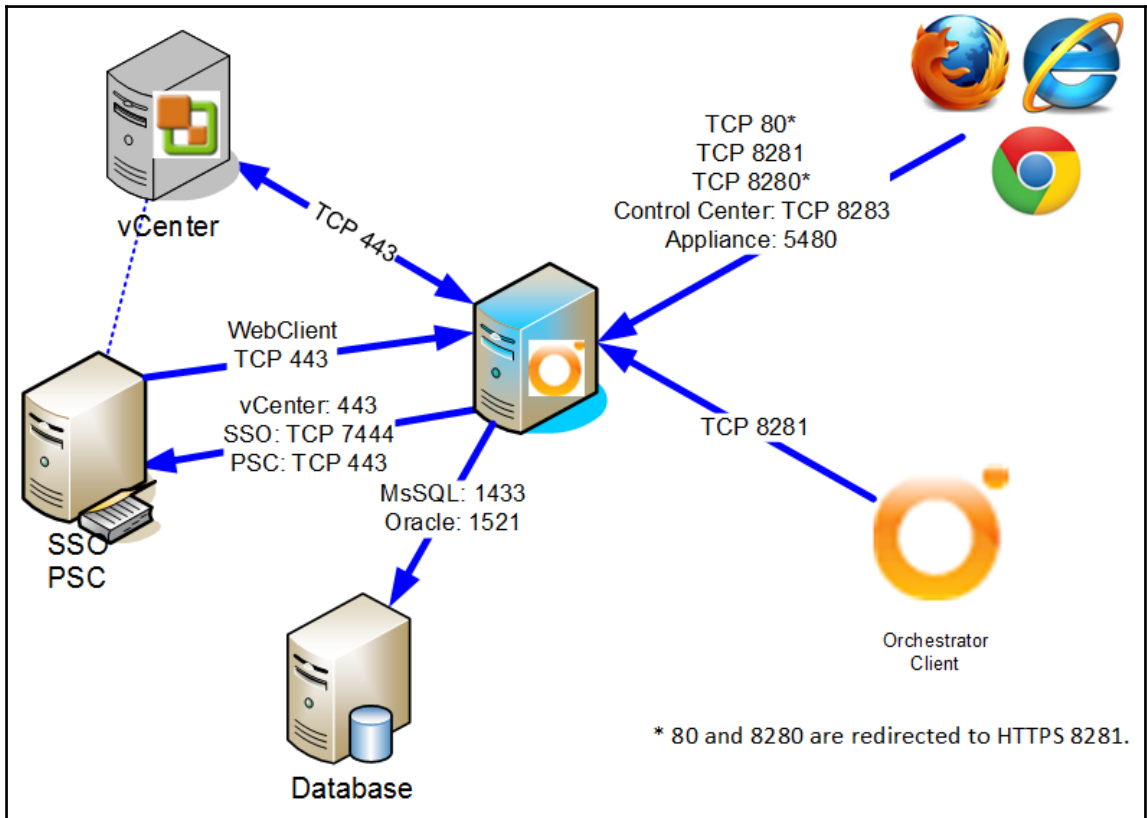


# Chapter 1: Installing and Configuring Orchestrator



Deploy OVF Template
?

**1 Source**

- ✓ 1a Select source
- ✓ 1b Review details
- ✓ 1c Accept License Agreements

**2 Destination**

- ✓ 2a Select name and folder
- ✓ 2b Select storage
- ✓ 2c Setup networks
- ✓ 2d **Customize template**
- ✓ 3 Ready to complete

### Customize template

Customize the deployment properties of this software solution

**All properties have valid values** [Show next...](#) [Collapse all...](#)

Application	4 settings
Initial root password	<p>This will be used as an initial password for the root user account. You can change the password later (by using the passwd command or from the appliance Web console).</p> <p>Enter password <input type="password" value="*****"/></p> <p>Confirm password <input type="password" value="*****"/></p>
Enable SSH service in the appliance	<p>This will be used as an initial status of the SSH service in the appliance. You can change it later from the appliance Web console.</p> <p><input checked="" type="checkbox"/> <b>10</b></p>
Customer Experience Improvement Program	<p>Customer Experience Improvement Program provides us with information that helps us improve our products and services.</p> <p><input type="checkbox"/> <b>11</b></p>
Hostname	<p>The host name for this virtual machine. Provide the full host name if you use a static IP. Leave blank to try to reverse look up the IP address if you use DHCP.</p> <p><input type="text" value="vro"/> <b>12</b></p>
Networking Properties	6 settings
Default Gateway	<p>The default gateway address for this VM. Leave blank if DHCP is desired.</p> <p><input type="text" value="192.168.220.2"/></p>
Domain Name	<p>The domain name of this VM. Leave blank if DHCP is desired.</p> <p><input type="text" value="mylab.local"/></p>
Domain Search Path	<p>The domain search path (comma or space separated domain names) for this VM. Leave blank if DHCP is desired.</p> <p><input type="text" value="mylab.local"/></p>
Domain Name Servers	<p>The domain name server IP Addresses for this VM (comma separated). Leave blank if DHCP is desired.</p> <p><input type="text" value="mylab.local"/></p>
Network 1 IP Address	<p>The IP address for this interface. Leave blank if DHCP is desired.</p> <p><input type="text" value="192.168.220.12"/></p>
Network 1 Netmask	<p>The netmask or prefix for this interface. Leave blank if DHCP is desired.</p> <p><input type="text" value="255.255.255.0"/></p>

Back Next Finish Cancel

13

VMware vRealize Orchestrator Appliance - 7.1.0.19044 Build 4276164

To manage your appliance browse to <http://192.168.220.12/>

Welcome to VMware vRealize Orchestrator Appliance

Quickstart Guide: Use the following URLs to use the appliance:

- 1 - <http://192.168.220.12> - Orchestrator Appliance Home Page
- 2 - <https://192.168.220.12:8283/vco-controlcenter> - Orchestrator Control Center
- 3 - <https://192.168.220.12:8281/vco> - Orchestrator Server
- 4 - <https://192.168.220.12:5480> - Appliance Configuration

\*Login  
Set Timezone (Current:UTC)

Use Arrow Keys to navigate  
and <ENTER> to select your choice.

## VMware vRealize™ Orchestrator™

### Getting Started with vRealize Orchestrator

To create and modify workflows, or to perform administrative tasks, start the Orchestrator client by using Java Web Start:

- [Start Orchestrator Client](#)

2

To use the Orchestrator client on your local machine, install the Orchestrator client. After you complete the installation, start the Orchestrator client and connect to the Orchestrator server.

- [Download Orchestrator Client Installable](#)

### Configure the Orchestrator Server

To make additional configuration changes to the Orchestrator server, use the Orchestrator configuration interface:

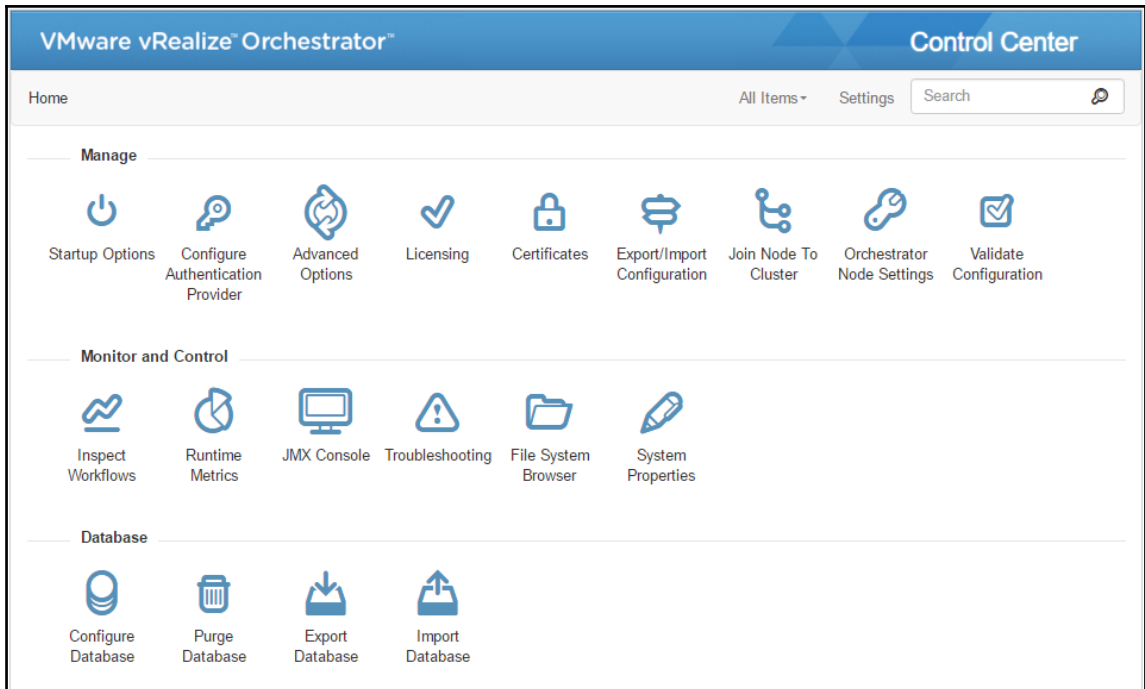
- [Orchestrator Control Center](#)

### vRealize Orchestrator Resources

- [Product Information](#)
- [Orchestrator Blog](#)
- [Community](#)
- [Support](#)
- [Plug-ins](#)

### VMware Quick Links

- [VMware Communities](#)
- [VMware Forums](#)
- [VMware Site](#)



```

Successfully removed /var/adm/autoinstall
+ RES=0
+ log '/etc/bootstrap/firstboot.d/04-cleanup-autoinstall-logs done, status: 0'
++ date '+%Y-%m-%d %H:%M:%S'
+ echo '2016-03-20 10:23:46 /etc/bootstrap/firstboot.d/04-cleanup-autoinstall-logs done, status: 0'
2016-03-20 10:23:46 /etc/bootstrap/firstboot.d/04-cleanup-autoinstall-logs done, status: 0
+ for script in "${BOOTSTRAP_DIR}"/.*
+ echo

+ '[' ! ' -e /etc/bootstrap/firstboot.d/05-init-password ']'
+ '[' ! ' -x /etc/bootstrap/firstboot.d/05-init-password ']'
+ log '/etc/bootstrap/firstboot.d/05-init-password starting'
++ date '+%Y-%m-%d %H:%M:%S'
+ echo '2016-03-20 10:23:46 /etc/bootstrap/firstboot.d/05-init-password starting'
2016-03-20 10:23:46 /etc/bootstrap/firstboot.d/05-init-password starting
+ /etc/bootstrap/firstboot.d/05-init-password
Unable to find the ovf environment.
SET INITIAL PASSWORD: Enter an initial password for the root user. You can change the password later by using the passwd command or from the appliance Web console.
New password:
Retype new password: _

```

---

### Startup Options



Control the Orchestrator server service.

**Current Status:** RUNNING

2

Start

Stop

Restart

3

```
Starting tcServer
Tomcat started.
Status:          RUNNING as PID=5013
```

```
Version: 7.0.0
Build number: 3310137
Build date: 20151208-0008
Database version: 1.71
Install path: /var/lib/vco
```

2

## Certificates



Manage the certificates used by the Orchestrator server.

Trusted Certificates

Orchestrator Server SSL Certificate

Package Signing Certificate

2

Packages exported from an Orchestrator server are digitally signed. Import a certificate or generate a new one to be used for signing packages.

### Current package signing certificate

Organization: **VMware**

Name: **vCO test 874ff314-cf60-4bfd-8387-3bed5c17c5ab**

Serial number: 00:00:00:00:00:00:00:00:00:00:00:00:00:00:01:53:6a:80:35:6f

Fingerprint (MD5): 4f:42:1d:71:0d:2c:45:5d:3d:f9:50:07:e7:4f:89:a3

Fingerprint (SHA-1): 11:45:9b:70:b0:28:94:54:43:3b:69:90:98:c1:b5:9c:f2:96:6a:66

Valid from: Mar 12, 2016

Valid until: Mar 10, 2026

### Generate a new Package Signing Certificate

Common Name

Daniel Langenhan

Organization

3

vleet GmbH

Organizational Unit

Architecture

Country Code


DE

Cancel

Generate

4

### Configure Database

 Database is one of the most important dependencies of the Orchestrator server. Reliable access to the database is crucial for the efficient and predictable operation of the Orchestrator server. Provide the database configuration properties.

---

**Database type** 3

**Server address**  :

**Use SSL**

**Database name**

**User name** 4

**Password**

**Instance (if any)**


**Domain**

**Use Windows authentication (NTLMv2)**

5

---

### Export Database

 Creates an archived, full backup of the server database. Exporting the database is available only if Orchestrator server's database is PostgreSQL.

---

**Export workflow runs** [△](#)

**Export server logs, events, and messages** [△](#)

### Purge Database



Logs, events, and workflow runs compile the majority of the Orchestrator content and can sometimes be deleted safely. Perform purge only when the server is stopped, otherwise the behavior is undefined.

**Purge all scheduled tasks** [⚠](#)

**Purge server logs, events, and messages** [⚠](#)

**Purge workflow runs** [⚠](#)

Purge database

### Configure Authentication Provider



Configure the authentication parameters.

**Warning:** Required parameters are missing: username and/or password

Authentication mode



vSphere

Host address



vcenter.mylab.local

URL

https://vcenter.mylab.local/cm

Identity service

User name



administrator@vsphere.local

Password

.....

Configure licences



Default tenant



vsphere.local

Register

Cancel

Save Changes



**Configure Authentication Provider**

Configure the authentication parameters.

**Warning:** Required parameters are missing: username and/or password

**Authentication mode** 2

**Admin URL** 3

**STS URL**

**Identity service**

**User name**

**Password** 7

**Default tenant**

8

### Configure Authentication Provider



Configure the authentication parameters.

Authentication mode

LDAP ▾

LDAP client

2

Active Directory ▾

Primary LDAP host

3

mylab.local

: 389

Secondary LDAP host

(Optional)

: 389

Root

4

dc=mylab,dc=local

Use SSL

URL

ldap://mylab.local:12389/dc=mylab,dc=local

User name

cn=vroAdmin,cn=Users,dc=mylab,dc=local

Password

5

.....

User lookup base

dc=mylab,dc=local

Group lookup base

6

dc=mylab,dc=local

Admin group

7

cn=vroAdmins,cn=Users,dc=mylab,dc=local

Request timeout (ms)

2000

Dereference links

Filter attributes

Host reachable timeout (ms)

50000

Cancel

Save Changes

---

## Configure Authentication Provider



Configure the authentication parameters and test your login credentials.

Authentication Provider

Test Login

After configuring your authentication provider, you can test if a user has administrative rights in the Orchestrator.

**Info:** The user has administrative rights in vRealize Orchestrator.

**User name**

vroadmin@mylab.local

**Password**

(Required)

Test

### Configure Authentication Provider

Configure the authentication parameters.

**Authentication mode**

**Admin URL**

**STS URL**  2

**Identity service**

To delete registration data from the identity server enter your credentials. (Optional)

**User name**

**Password**  3

**Admin group**

**Default tenant** vsphere.local

### Start Workflow: Add a vCenter Server instance

1 Set the vCenter Server i...  
2 Set the connection prope...

Do you want to use a session per user method to manage user access to the vCenter Server system? If you select No, Orchestrator will create only one connection to vCenter Server (the method is share a unique session).

Yes  No 6

\* User name of the user that Orchestrator will use to connect to the vCenter Server instance.

7

\* Password of the user that Orchestrator will use to connect to the vCenter Server instance.

---

IP or host name of the vCenter Server instance to add

3

\* HTTPS port of the vCenter Server instance

\* Location of the SDK that you use to connect to the vCenter Server instance

Will you orchestrate this instance?

Yes  No 4

Do you want to ignore certificate warnings? If you select Yes, the vCenter Server instance certificate is accepted silently and the certificate is added to the trusted store

Yes  No

Select ( VC:SdkConn Start Workflow : Register vCenter Orchestrator as a vCenter Server extension 13

**Common parameters**

\* The vCenter Server instance to register Orchestrator with. 11

External address to advertise this Orchestrator.

Cancel Submit

12

**Common parameters**

Name https://vcenter.mylab.local:443/sdk

StateAndName https://vcenter.mylab.local:443/sdk

Instance UUID 057fe616-6b87-40e1-a855-889bb2476c88

Cancel Select

VMware vRealize™ Orchestrator™ Control Center

Home

**Manage Plug-Ins**

Install a new plug-in or manage already installed plug-ins. The preferred plug-in installation file format is .VMOAPP, but plug-ins can also be installed as .DAR files.

[Install plug-in](#)

Browse...  [Install](#)

Plug-In	Enable debug logging	Enable plug-in
<b>AD 2.0.7.3423847</b> Active Directory <a href="#">🔗</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>AMQP 1.0.4.3217705</b> AMQP Plug-in <a href="#">🔗</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Configurator 7.0.1.3533702</b> Configuration plug-in for vRealize Orchestrator <a href="#">🔗</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>DynamicTypes 1.1.0.3209451</b> Dynamic Types plug-in for vCenter Orchestrator <a href="#">🔗</a>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Plug-In	Logging level	Enable plug-in
<b>AD</b> 3.0.2.4209033 Active Directory <a href="#">🔗</a>	DEFAULT ▾	<input checked="" type="checkbox"/>
<b>AMQP</b> 1.0.4.4102187 AMQP Plug-in <a href="#">🔗</a>	DEFAULT ▾	<input checked="" type="checkbox"/>
<b>Configurator</b> 7.1.0.4262825 Configuration plug-in for vRealize Orchestrator <a href="#">🔗</a>	DEFAULT ▾	<input checked="" type="checkbox"/>
<b>DynamicTypes</b> 1.2.0.4262821 Dynamic Types plug-in for vCenter Orchestrator <a href="#">🔗</a>	DEFAULT ALL TRACE DEBUG INFO WARN ERROR FATAL OFF	
<b>Enums</b> 7.0.1.3767915 Common enumerated types <a href="#">🔗</a>		
<b>Library</b> 7.0.1.3767915 vCO Library <a href="#">🔗</a>		
<b>Mail</b> 7.0.1.3767915 Mail Plug-in <a href="#">🔗</a>		
<b>Net</b> 7.0.1.3767915 Wrapper to Jakarta Apache Commons Net library <a href="#">🔗</a>		

[Help](#) | [Logout user root](#)

System
Network
Update
Admin

Status
Settings

### Update Status

Vendor: **VMware Inc.**  
Appliance Name: **VMware vRealize Orchestrator Appliance**  
Appliance Version: 7.0.0.16989 Build 3310032 ( [Details...](#) )

**Available Updates**  
Appliance Version: 7.0.1.17606 Build 3571217 ( [Details...](#) )

**Actions**

Last Check: Saturday, 2016 March 19 20:10:27 UTC+1

---

### Update Repository

Use Default Repository

RepositoryURL

**<https://app-updates.vmware.com/vai-catalog/valm/vmw/00642c69-abe2-4b0c-a9e3-77a6e54bfd9/7.0.1.17606.latest>**

Use CDROM Updates

Use Specified Repository

Repository URL

6

Username (Optional)

Password (Optional)

## Export/Import Configuration



Export, Import and Migrate Orchestrator server configurations.

[Export Configuration](#)

[Import Configuration](#)

[Migrate Configuration](#)

Import a configuration created by the Orchestrator server migration tool. The Orchestrator server migration tool can be downloaded from [here](#). You can find instructions on the usage of the tool in the readme.txt file, located in the downloaded archive. The supported Orchestrator versions from the Orchestrator server migration tool are between 5.5.x and 6.0.x.

Before migrating the configuration you must stop the source and destination Orchestrator servers. After the migration is successful start the destination Orchestrator server from the [Startup Options](#) page.

If you exported the configuration with a password, use the same password when importing.

### Configuration snapshot information:

Exported from: VC55

Version/build: 5.5.2/1946710

Database version: 1.63

Exported on: Mar 29, 2016

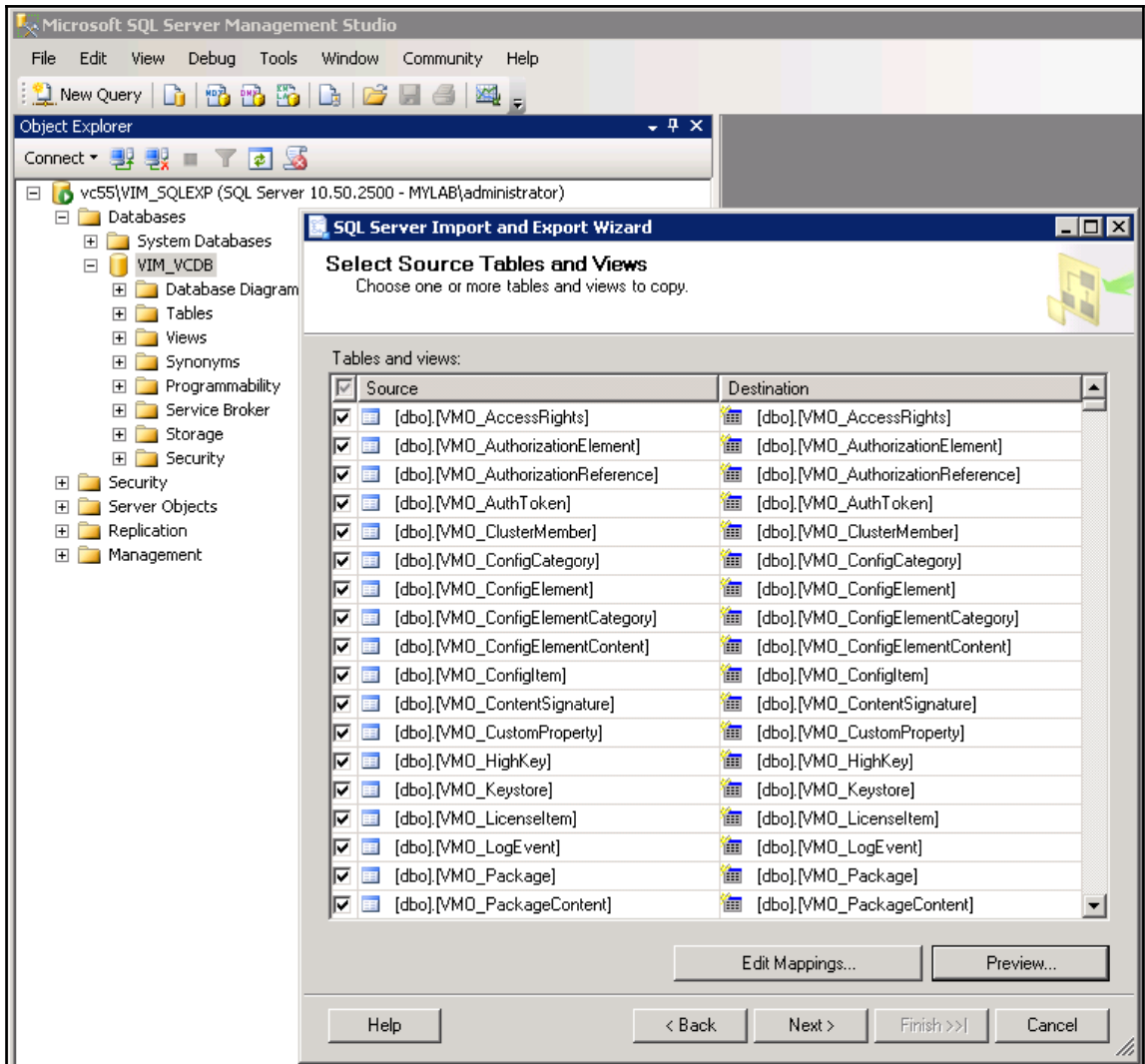
### Migrate Options

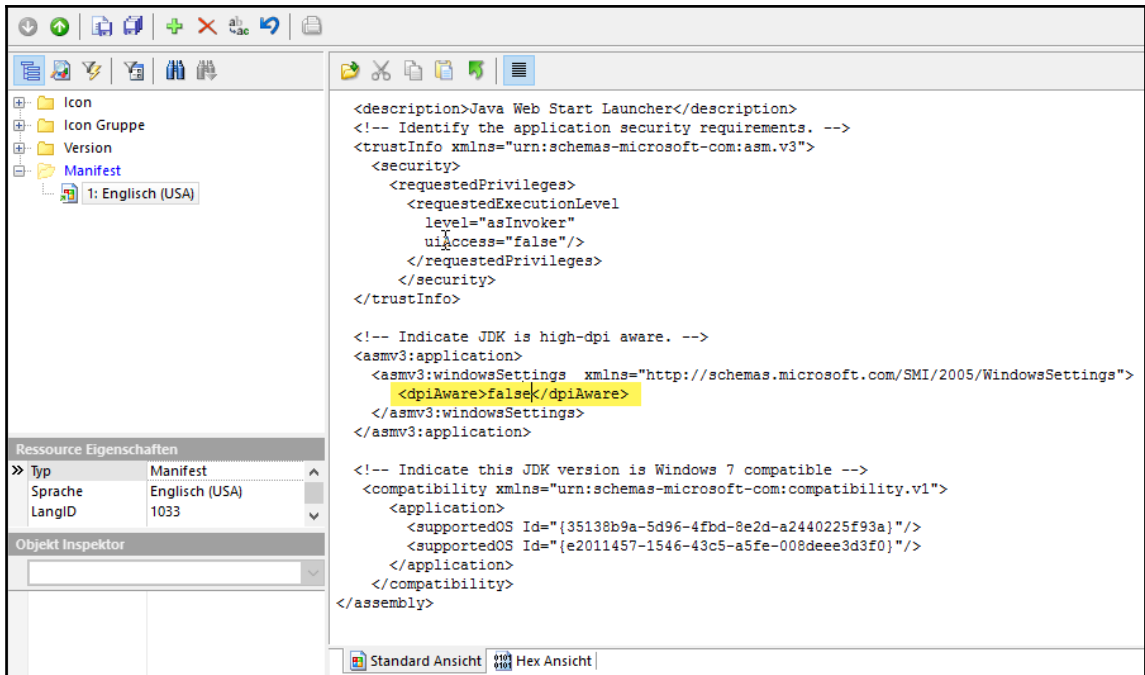
- |   |                                     |
|---|-------------------------------------|
| <b>Migrate Database configuration</b>             | <input checked="" type="checkbox"/> |
| <b>Migrate Plugins</b>                            | <input checked="" type="checkbox"/> |
| <b>Migrate Plugin configurations (filesystem)</b> | <input checked="" type="checkbox"/> |
| <b>Migrate Server certificate</b>                 | <input checked="" type="checkbox"/> |
| <b>Migrate trusted certificates</b>               | <input checked="" type="checkbox"/> |

[Cancel](#)

[Finish Migration](#)







# Chapter 2: Optimizing Orchestrator Configuration

The screenshot shows the VMware vRealize Orchestrator Appliance Administration Settings page. The page has a blue header with the VMware logo and the text "VMware vRealize Orchestrator Appliance". Below the header are navigation tabs for "System", "Network", "Update", and "Admin". The "Admin" tab is selected, and it has sub-tabs for "Admin", "Time Settings", and "Logs". The "Admin" sub-tab is active, showing "Administration Settings".

**Administration Settings**

Current administrator password:   
New administrator password:   
Retype new administrator password:   
Administrator password expires: Mar 21, 2017  
SSH service enabled:   
Administrator SSH login enabled:   
SSH Status: Running

**Actions**

Save Settings

---

**Runtime Metrics**

Monitor workflows in real time.

General REST API Finders API Scripting API Generic

A list of JVM metrics about memory usage, buffer pools, thread state and garbage collection.

Property	Value
ConcurrentMarkSweep.count	29
ConcurrentMarkSweep.time	576
ParNew.count	193
ParNew.time	963

## Live Stream



Monitor the log stream from the Orchestrator server in real time. Search and filter the log output using the Search field.

3

 Case sensitive Filter (grep)

4

```
2016-06-27 08:12:24.304+0000 [http-nio-0.0.0.0-8281-exec-10] ERROR {} [DefaultVerifier] User LDAP-USER-['Administrator'] - VSPHERE.LOCAL\Administrator doesn't have necessary rights 'View', required to execute operation on (WorkflowToken, 40285c8c557dbd6b01557dc098c00005).
```

```
2016-06-27 08:12:24.305+0000 [http-nio-0.0.0.0-8281-exec-10] ERROR {} [DefaultVerifier] User LDAP-USER-['Administrator'] - VSPHERE.LOCAL\Administrator doesn't have necessary rights 'View', required to execute operation on (WorkflowToken, 40285c8c557dbd6b01557dc110410010).
```

```
2016-06-27 08:13:25.351+0000 [http-nio-0.0.0.0-8281-exec-4] INFO {} [Sam1TokenImp1] SAML token for SubjectNameId [value=Administrator@VSPHERE.LOCAL, format=http://schemas.xmlsoap.org/claims/UPN] successfully parsed from XML
```

```
2016-06-27 08:13:25.361+0000 [http-nio-0.0.0.0-8281-exec-4] ERROR {} [DefaultVerifier] User LDAP-USER-['Administrator'] - VSPHERE.LOCAL\Administrator doesn't have necessary rights 'View', required to execute operation on (WorkflowToken, 40285c8c557dbd6b01557dc098c00005).
```

```
2016-06-27 08:13:25.363+0000 [http-nio-0.0.0.0-8281-exec-4] ERROR {} [DefaultVerifier] User LDAP-USER-['Administrator'] - VSPHERE.LOCAL\Administrator doesn't have necessary rights 'View', required to execute operation on (WorkflowToken, 40285c8c557dbd6b01557dc110410010).
```

View full screen

5

Home

Configure Logs



Configure the amount of server log data retained on the disk by configuring the log rotation parameters.

Log level

INFO

3

Max file count

4

4

Max file size (MB)

5

5

Required disk space

20 MB

6

Save

POWERED BY | VMware vRealize Orchestrator

vmware

vmware Log Insight

Dashboards

Interactive Analytics

admin

Content Pack Marketplace

Marketplace

Updates

Installed Content Packs

General

VMware - Orchestrator

VMware - vSphere

Custom Content

My Content

Shared Content



VMware - EVO SDDC Suite

Version: 1.0  
Author: VMware, Inc.



VMware - Horizon

Version: 3.0  
Author: VMware, Inc.



VMware - NSX-vSphere

Version: 3.3  
Author: VMware Inc.



VMware - Orchestrator

Version: 1.1  
Author: VMware, Inc.  
Installed



VMware - vCAC 6.0

Version: 1.0  
Author: VMware, Inc.




VMware - vCloud Director

Version: 8.3  
Author: VMware

- Administration
- Content Packs
- Help
- About

---

### Logging Integration

 Orchestrator can send log messages to [vRealize Log Insight](#) or any remote [Syslog](#) server. Orchestrator uses a specific, easy-to-analyze message format.

Enable logging to a remote log server

Use Log Insight Agent [△](#)

Use Log4j Syslog Appender (Deprecated) [△](#) **4**

Host [△](#) **5**  :


Facility [△](#) **6**

Threshold [△](#) **7**

Network Protocol [△](#) **8**

---

### Logging Integration

 Orchestrator can send log messages to [vRealize Log Insight](#) or any remote [Syslog](#) server. Orchestrator uses a specific, easy-to-analyze message format.

Enable logging to a remote log server

Use Log Insight Agent [△](#) **4**

Use Log4j Syslog Appender (Deprecated) [△](#)

Host [△](#) **5**  :

Protocol [△](#) **6**

---

## Export/Import Configuration



Export, Import and Migrate Orchestrator server configurations.

Export Configuration

Import Configuration

Migrate Configuration

2

Export the current Orchestrator server configuration.

- Export server configuration**  Export configuration files, certificates, encryption key, etc.
- Export license**  Export license.
- Bundle plug-ins**  3
- Export plug-in configurations**

Protect the exported file with a password as it contains sensitive information (certificates, passwords, encryption keys, etc.). Use the same password when importing the configuration.

Password 

4

(Optional)

Export

5

Import an Orchestrator server configuration created by the Orchestrator Control Center. If you exported the configuration with a password, use the same password when importing.

Configuration snapshot information:

Exported from: 192.168.220.12  
Version/build: 7.0.1/3533702  
Database version: 1.71  
Exported on: Apr 14, 2016

## Import Options

### Server Configuration

- Import server configuration properties files
- Change "localhost" in DB connection string to
- Import custom properties (vmo-managed.properties)
- Import trusted certificates
- Import server certificate

### License

- Import License

### Plugins

- Import plug-ins
- Force import plug-ins

### Plugin Configurations

- Import plug-in configurations (database)
- Import plug-in configurations (filesystem)



## Inspect Workflows



Browse a list of currently running or already finished workflow runs.

Running Workflows

Finished Workflows

<input checked="" type="checkbox"/>	Workflow name	Workflow ID	Token ID	Running for	
<input checked="" type="checkbox"/>	06.04.01 Sleep	adfa680e-4d49-47ed-b...	40285c8c5590c4b4015...	2 mins	

Cancel all selected

Refresh Grid

View full screen

Running Workflows
Finished Workflows

See failed workflow tokens.  
 See completed workflow tokens. 6  
 See canceled workflow tokens.

Select date range

to

7

Apply

Workflow name	Workflow ID	Token ID <span style="border: 1px solid yellow; border-radius: 50%; padding: 2px 5px; font-weight: bold;">8</span>	State	Start Date	End Date	
<input type="text"/>	<input type="text"/>	<input type="text"/>				
Add a vCenter S...	f246b7b5-fe89-4...	40285c8c557db...	COMPLETED	6/23/2016, 4:5...	6/23/2016, 4:5...	
Register vCente...	b9c6000b-3c54-...	40285c8c557db...	COMPLETED <span style="border: 1px solid yellow; border-radius: 50%; padding: 2px 5px; font-weight: bold;">9</span>	6/23/2016, 4:5...	6/23/2016, 4:5...	
06.04.01 Sleep	adfa680e-4d49-...	40285c8c5590c...	CANCELED	6/27/2016, 4:3...	6/27/2016, 4:4...	

**System Properties**

Many aspects of the Orchestrator server and plug-ins are controlled by system properties. Add or remove custom system properties. After any modification, the server must be restarted for the changes to take effect.

Property
Remove

**New property**

Key △

Value △ 3

Description △

Cancel

Add

4

**Change Credentials**

By default Control Center is accessed with the Virtual Appliance Management Infrastructure (VAMI) credentials. You can create a new user and assign a password to the user. The password must be at least 8 characters long, contain at least one number, a special symbol, and an uppercase letter.

Old password

New user name

New password

Confirm new password

**File system browser**

Browse and download logs, plug-in files, and temporary files separately.

**File system**

- app-server-logs
- plugins
- controlcenter-logs
- controlcenter-tmp

**File system**

/controlcenter-logs

- ..
- catalina.out
- localhost\_access\_log..2016-03-20.txt
- controlcenter.log
- vco\_database.log
- localhost\_access\_log..2016-04-14.txt
- catalina.log
- tcsrvr.pid
- localhost.log

Home

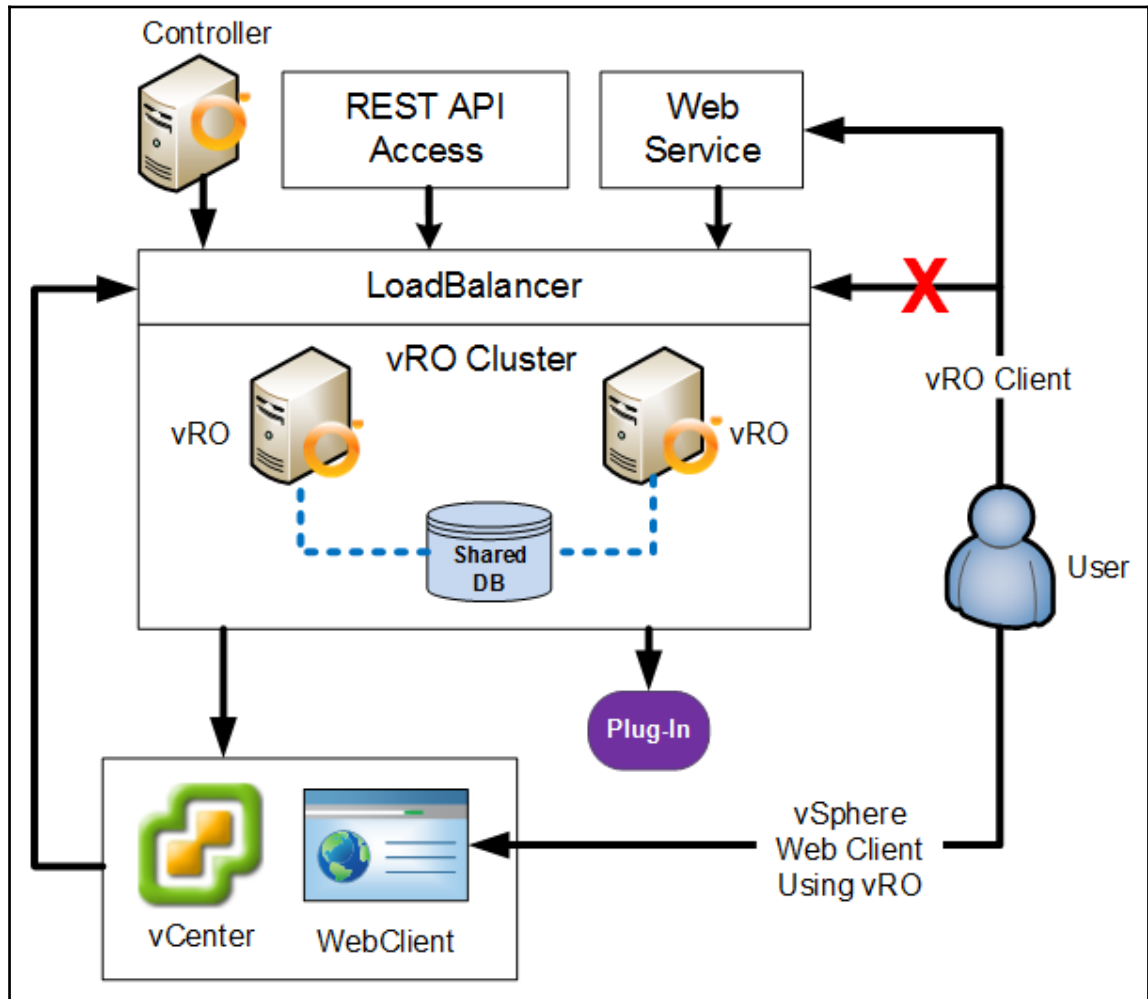
## Advanced Options

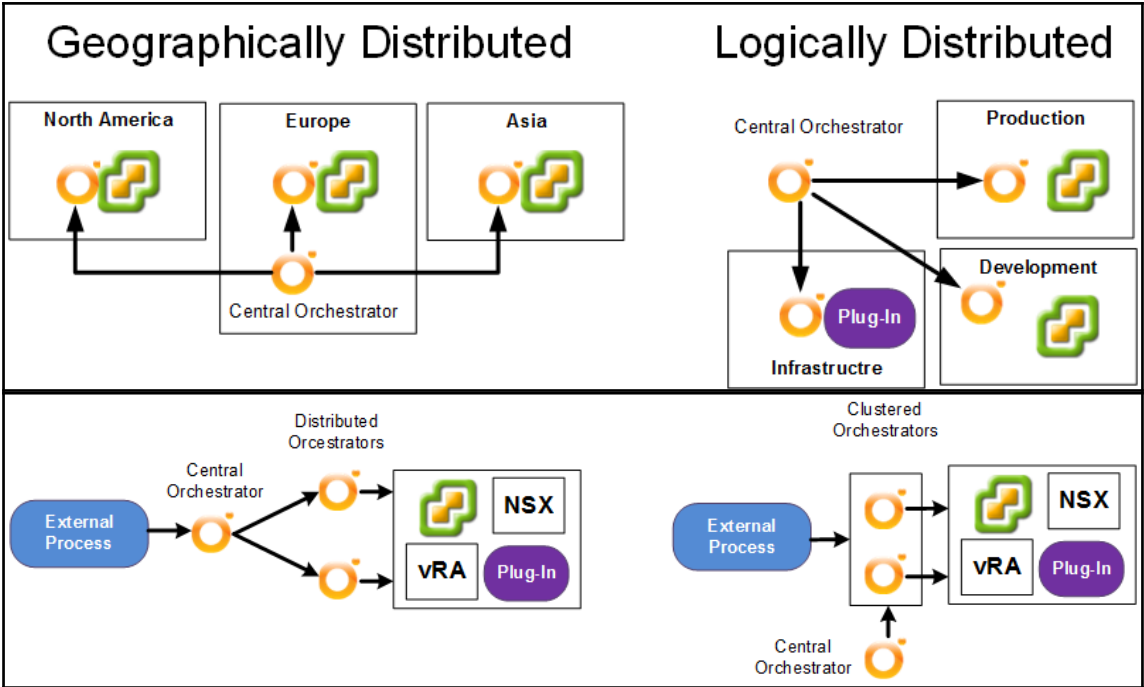


Configure the workflow run properties.

Enable safe mode [△](#)Number of concurrent running workflows [△](#)Maximum amount of running workflows in the queue [△](#)Maximum number of preserved runs per workflow [△](#)Log events expiration days [△](#)

## Chapter 3: Distributed Design





## Orchestrator Cluster Management



### Orchestrator Cluster Management

Orchestrator Node Settings

[Join Node To Cluster](#)

Configure the settings of an Orchestrator node. The configured settings apply to all Orchestrator nodes, that are joined together in a cluster. The configuration synchronization states of the cluster nodes are evaluated from the view point of the local node.

Number of active nodes

Heartbeat interval (in seconds)

Number of failover heartbeats

Save

Set Defaults

Cancel

Nodes	Local Node	Configuration Synchronization State
Hostname: vro.mylab.local Node Id: f3a4b0a1-d478-4cad-8a56-aa21eb7885af Instance Id: a614bf88-956f-4aa6-9259-74fe0b4fd333 Host IP Addresses: 192.168.220.12 State: <b>RUNNING</b> Active Configuration Fingerprint: 2f360396a34e22ea4ebc63464b8dbb004c Pending Configuration Fingerprint: 2f360396a34e22ea4ebc63464b8dbb004c		Synchronized

Refresh

## Orchestrator Cluster Management



Orchestrator Cluster Management

Orchestrator Node Settings

Join Node To Cluster

Join the Orchestrator server to another Orchestrator server to form or expand a cluster. The current server automatically replicates the configuration of the remote server.

### Remote Orchestrator Server

Hostname

3

vro1.mylab.local

: 8283

### Remote Control Center credentials

User name

4

root

Password

.....

Join

Nodes	Local Node	Configuration Synchronization State
<p>Hostname: <b>vrocluster1</b> Node Id: <b>29c9ee98-71f4-4c79-8cac-f78fc0ebcebf</b> Instance Id: <b>3634dd4e-d43c-4057-b93f-a3281890c8eb</b> Host IP Addresses: <b>192.168.220.91</b> State: <b>RUNNING</b> Active Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b> Pending Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b></p>		<p>Synchronized</p>
<p>Hostname: <b>vrocluster2</b> Node Id: <b>4052e92a-a38b-4c35-a008-e4cbe1a09e84</b> Instance Id: <b>ecfad98e-140a-4c10-b49a-88983d2e1154</b> Host IP Addresses: <b>192.168.220.92</b> State: <b>STANDBY</b> Active Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b> Pending Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b></p>		<p>Synchronized</p>

Refresh


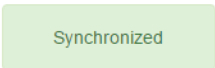
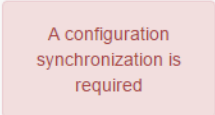
Push Configuration ▾



## Nodes

Hostname: **vro2**  
Host IP Addresses: **192.168.220.21**  
Instance Id: 340647e9-a5e8-4370-baac-9fcee1943b8e  
State: **RUNNING**

Hostname: **vro1**  
Host IP Addresses: **192.168.220.20**  
Instance Id: 3cd5caa7-82b9-4f15-bf89-1be2ffa1b397  
State: **NOT RESPONDING**

Nodes	Local Node	Configuration Synchronization State
Hostname: <b>vrocluster2</b> Node Id: <b>4052e92a-a38b-4c35-a008-e4cbe1a09e84</b> Instance Id: <b>27532323-cb88-4515-ad11-3731b71f8de3</b> Host IP Addresses: <b>192.168.220.92</b> State: <b>RUNNING</b> Active Configuration Fingerprint: <b>27554b03397e97e4635f6708a0097c814b</b> Pending Configuration Fingerprint: <b>27554b03397e97e4635f6708a0097c814b</b>		
Hostname: <b>vrocluster1</b> Node Id: <b>29c9ee98-71f4-4c79-8cac-f78fc0ebcebf</b> Instance Id: <b>d431b2d0-c4ff-4077-aa5d-7f7ce263f2b6</b> Host IP Addresses: <b>192.168.220.91</b> State: <b>STANDBY</b> Active Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b> Pending Configuration Fingerprint: <b>2736e99cd30fea4245d4769450770665a1</b>		

Add NSX Edge Interface
?

vNIC#: 0

Name: \* vrofront

Type:  Internal  Uplink

Connected To: 220Net Change Remove

Connectivity Status:  Connected  Disconnected

+
✎
✖

Q Filter

Primary IP Address	Secondary IP Address	Subnet Prefix Length
192.168.220.22 <span style="float: right; border: 1px solid gray; border-radius: 50%; padding: 0 2px;">✖</span>		24 <span style="float: right; border: 1px solid gray; border-radius: 50%; padding: 0 2px;">✖</span>

MAC Addresses:

You can specify a MAC address or leave it blank for auto generation. In case of HA, two different MAC addresses are required.

MTU:

Options:  Enable Proxy ARP  Send ICMP Redirect

Reverse Path Filter  ▼

Fence Parameters:

Example: ethernet0.filter1.param1=1

**New Profile** ?

Name: vro **2**

Type: HTTPS

Enable SSL Passthrough **3**

HTTP Redirect URL:

Persistence: None

Cookie Name:

Mode:

Expires in (Seconds):

Insert X-Forwarded-For HTTP header

Enable Pool Side SSL

Virtual Server Certificates Pool Certificates

Service Certificates CA Certificates CRL

Configure Service Certificate

Common Name	Issuer	Validity

Cipher:

Client Authentication: Ignore

OK Cancel

**New Service Monitor** ?

Name: \* vroCheck **A**

Interval: 3 (seconds)

Timeout: 8 (seconds)

Max Retries: 3

Type: HTTPS

Expected:

Method: GET

URL: /vco/api/healthstatus

Send:

Receive: RUNNING

Extension:

OK Cancel

**New Pool**

Name: \* vro  
Description:  
Algorithm: ROUND-ROBIN  
Algorithm Parameters:  
Monitors: vroCheck  
Members:

Enabled	Name	IP Address / VC Container	Weight	Monitor Port	Port	Max Connections	Min Conn
✓	vro1	192.168...	1	8281	8281	0	0

Transparent

**New Member**

Enable Member  
Name: \* vro2  
IP Address / VC Container: \* 192.168.220.21 Select  
Port: 8281  
Monitor Port: 8281  
Weight: 1  
Max Connections:  
Min Connections:

OK Cancel

**New Virtual Server** ?

**General**    Advanced

Enable Virtual Server

Enable Acceleration

Application Profile: \* vro

Name: \* vroCluster

Description:

IP Address: \* 192.168.220.22 ✕ Select IP Address

Protocol: HTTPS

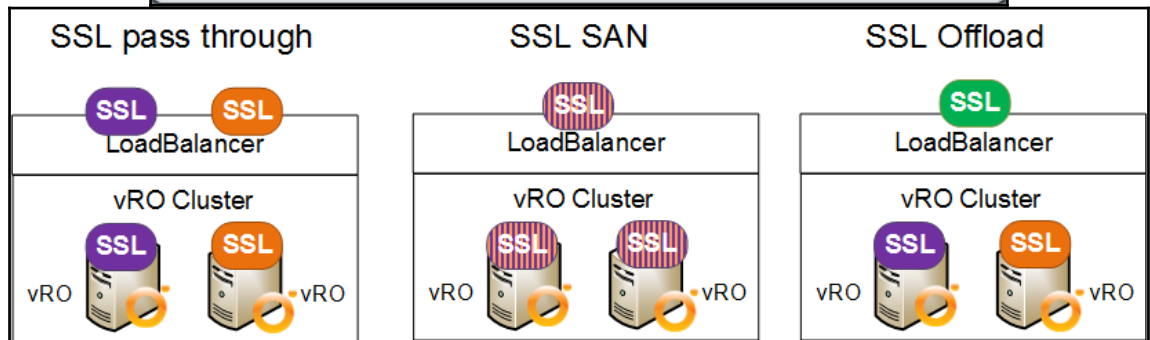
Port: \* 8281

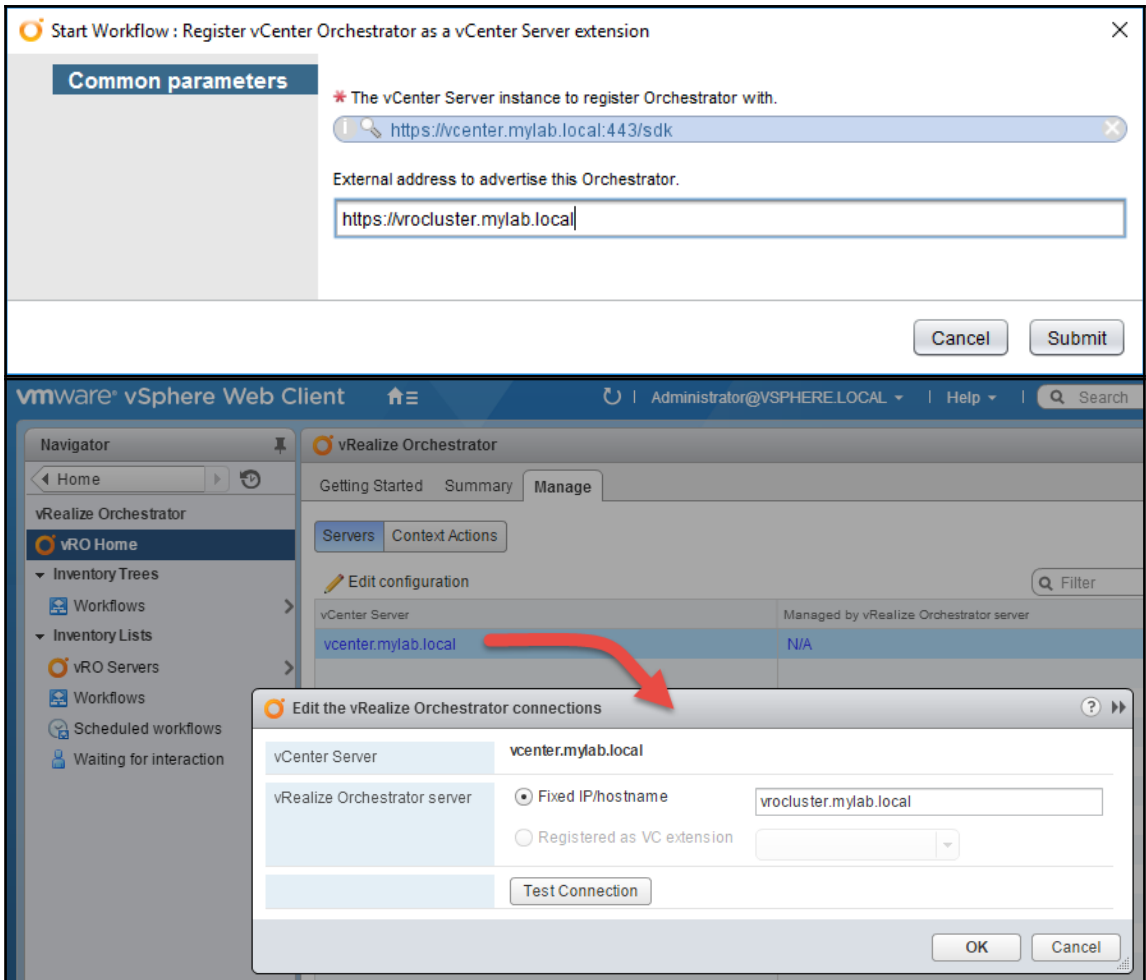
Default Pool: vro

Connection Limit:

Connection Rate Limit: (CPS)

OK    Cancel





Start Workflow: Add an Orchestrator server

**1 Add an Orchestrator server**

1a Server details  
1b Connection settings  
1c Connection mode

Provide the host address and the port of the remote Orchestrator server.

\* Orchestrator server's host address  
vrocluster.mylab.local

\* Port  
8281

If set to true, the certificate is accepted silently and added to the trusted store.  
 Yes  No

Generate proxy workflows for remote Orchestrator server  
 Yes  No

Specify the connection settings.

Connection timeout (seconds)  
30.0

Socket timeout (seconds)  
60.0

\* Retry timeout (minutes). Specifies the time proxy workflows wait to receive a notification from the remote Orchestrator server in the event of no connectivity.  
60.0

Select whether the connection is shared or not. Provide credentials if the connection is shared. If the connection is not shared, the current user's credentials are used.  
Note: When configuring user per session with SSO authentication both the local and remote Orchestrator servers must use the same SSO server for authentication.

Shared?  
 Yes  No

\* Username:  
vroremote@mylab.local

\* Password:  
[REDACTED]

Cancel Back Next Submit

```

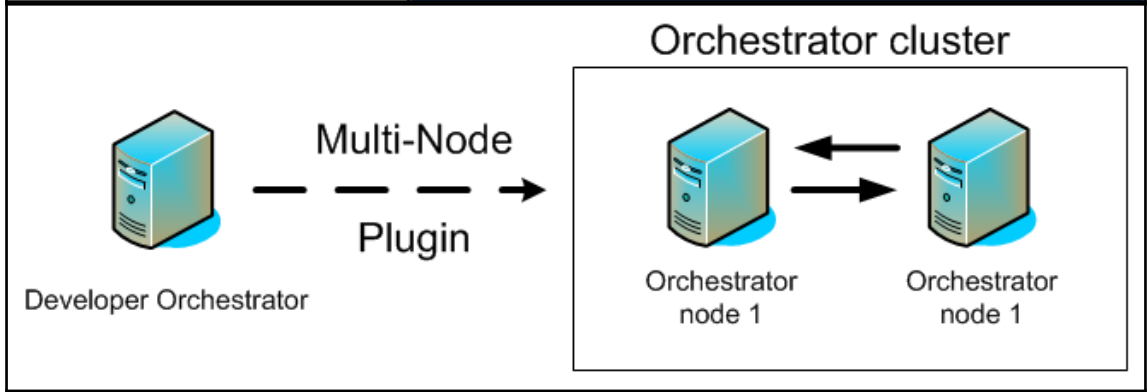
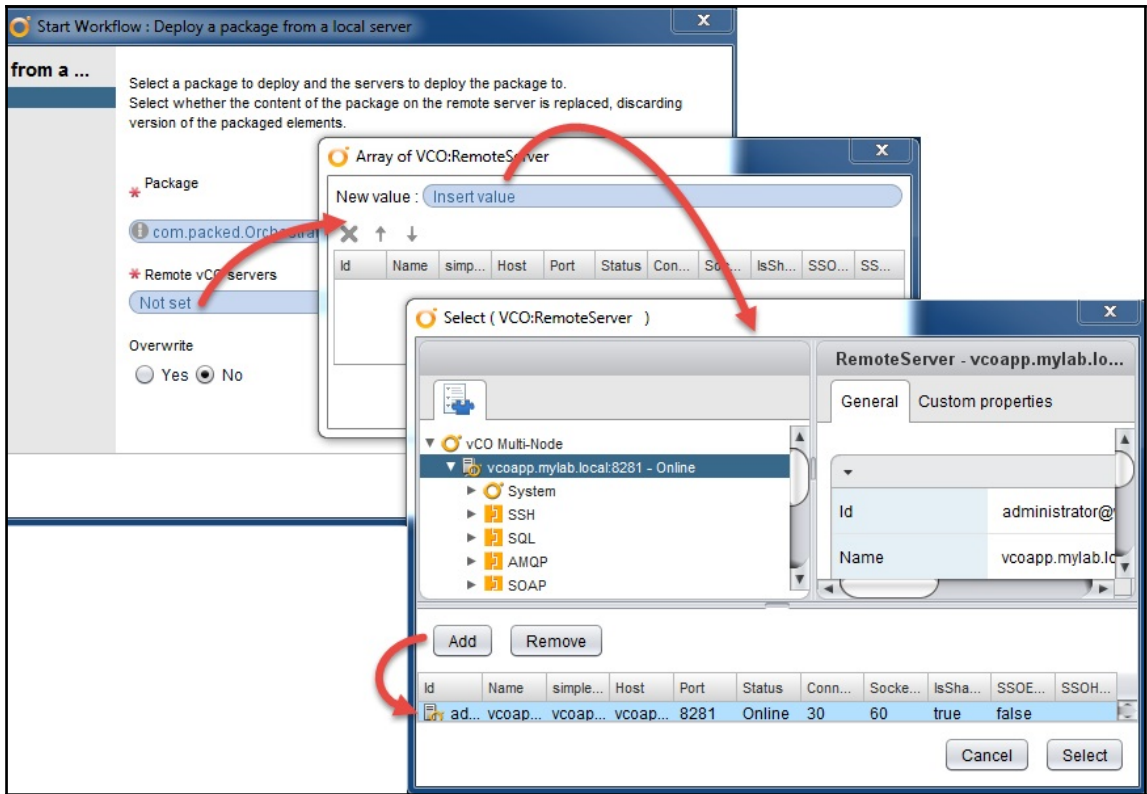
var connectionId = "93d29783-05bd-494f-9106-d33060e9d80d";
var workflowId = "e8222d1a-4aed-4626-9085-9e0f4bbeabf1";
var parameters = new Properties();
parameters.put("input", input);
var result = VCOProxyWorkflowManager.executeSynchronousProxy(connectionId, workflowId, parameters);
var trigger = result.get("trigger");
remoteToken = result.get("remoteToken");

remoteTokenExitState = remoteToken.getState();
msg = "Remote workflow did not complete."
if (remoteTokenExitState == "failed") {
    errMsg = remoteToken.getException();
    if ( errMsg != null ) {
        msg = errMsg
    }
    throw (msg);
} else if (remoteTokenExitState != "completed") {
    throw (msg);
}

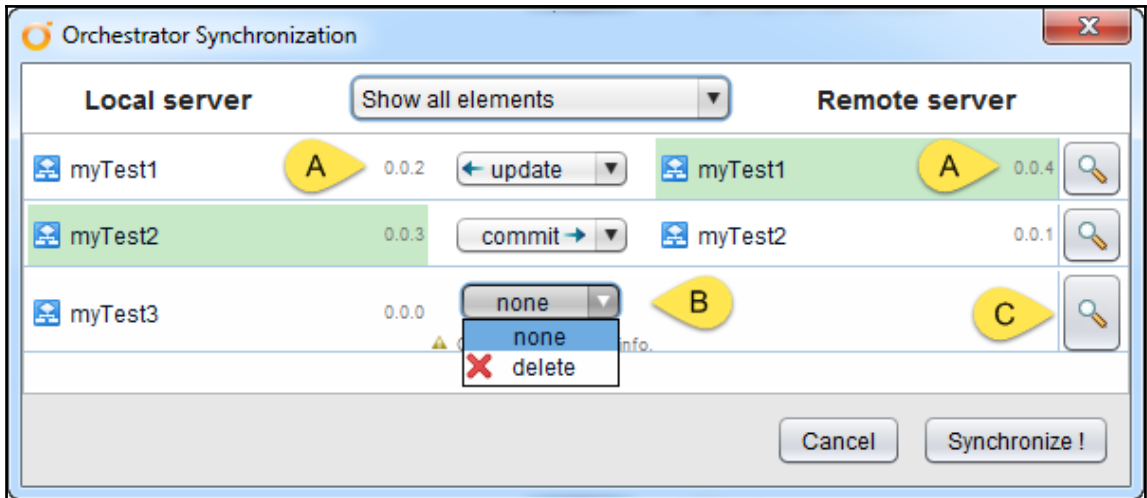
var result = remoteToken.getOutputParameters();
output = result.get("output");

```

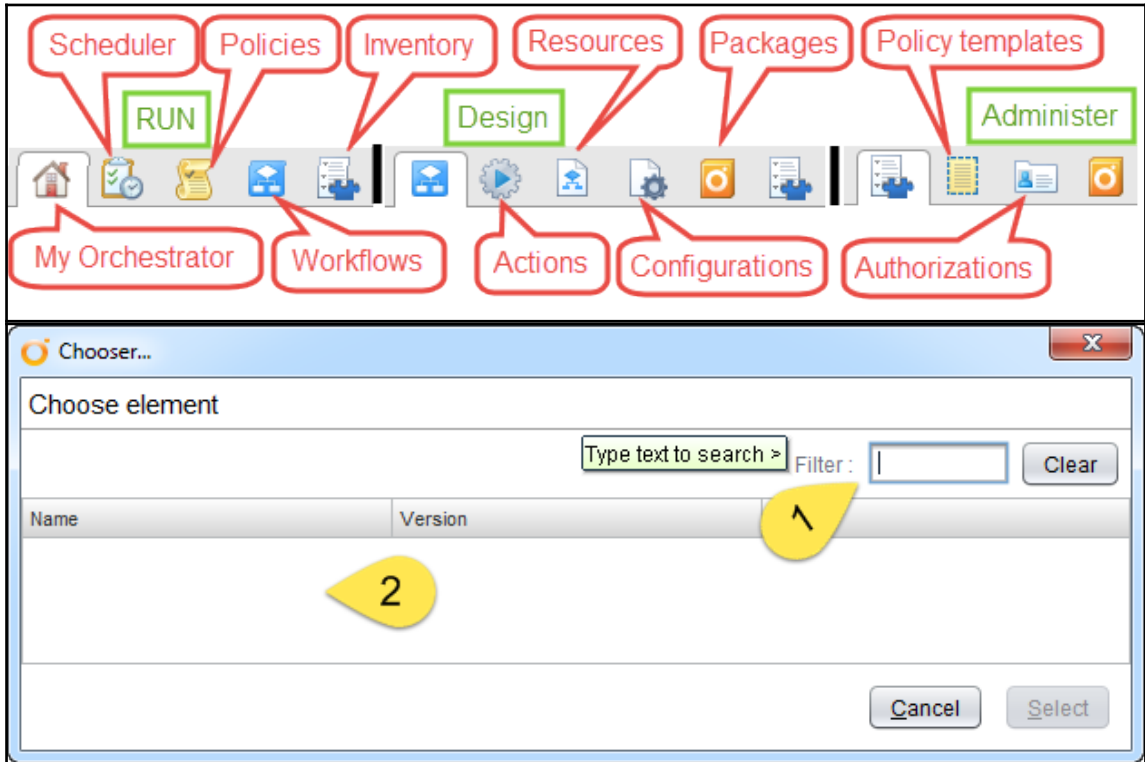
Name	Type	Value	Description
remoteVCOServer	VCO:RemoteServer	vcoapp.mylab.local:8281 - Online	Remote VCO server.
trigger	Trigger	Not set	Remote workflow completion trigger.
remoteToken	VCO:RemoteWorkflowToken	Not set	Remote workflow execution token.
remoteTokenExitState	string		Exit state of the remote token.
errorMessage	string		Error message (if any).

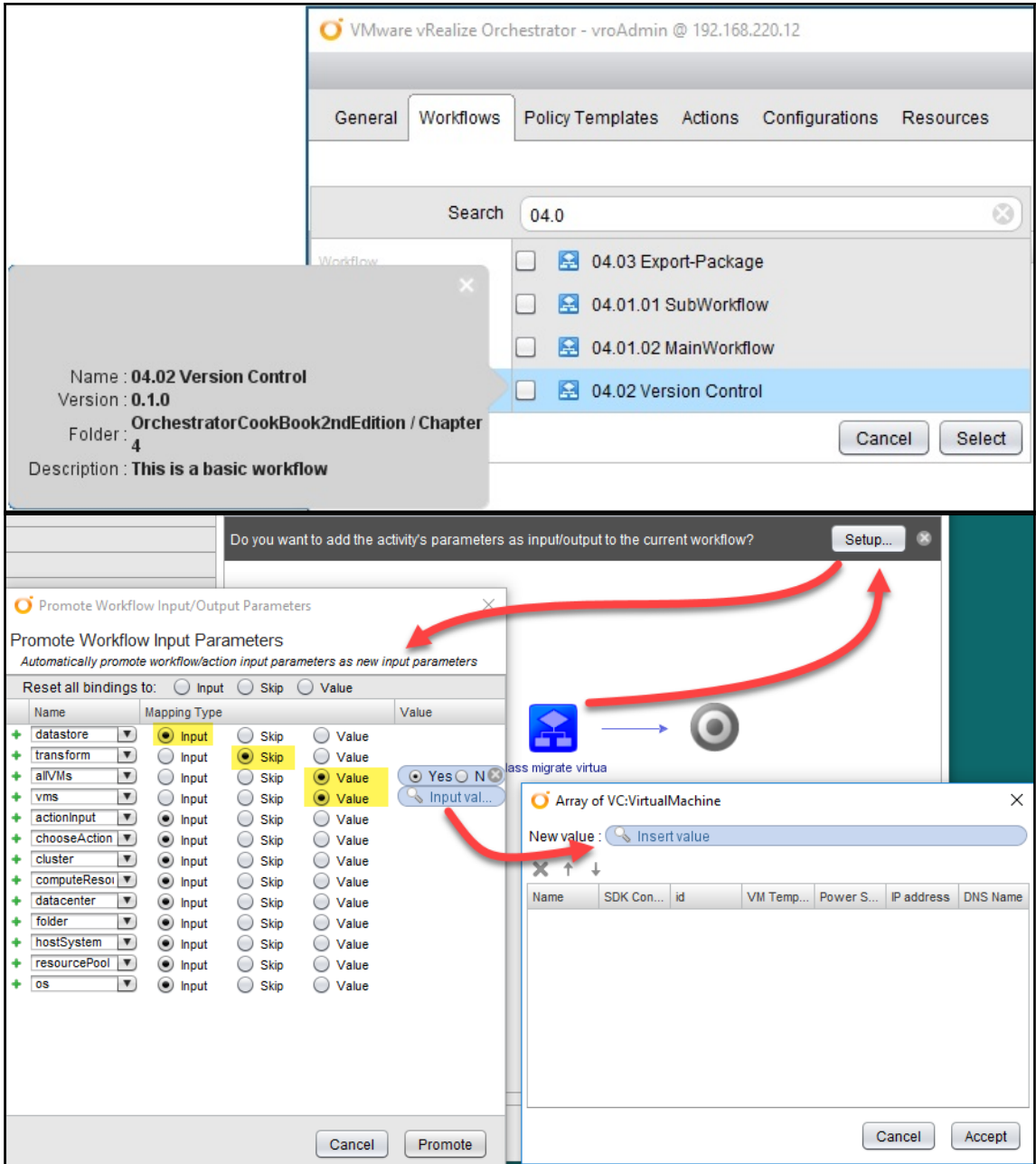


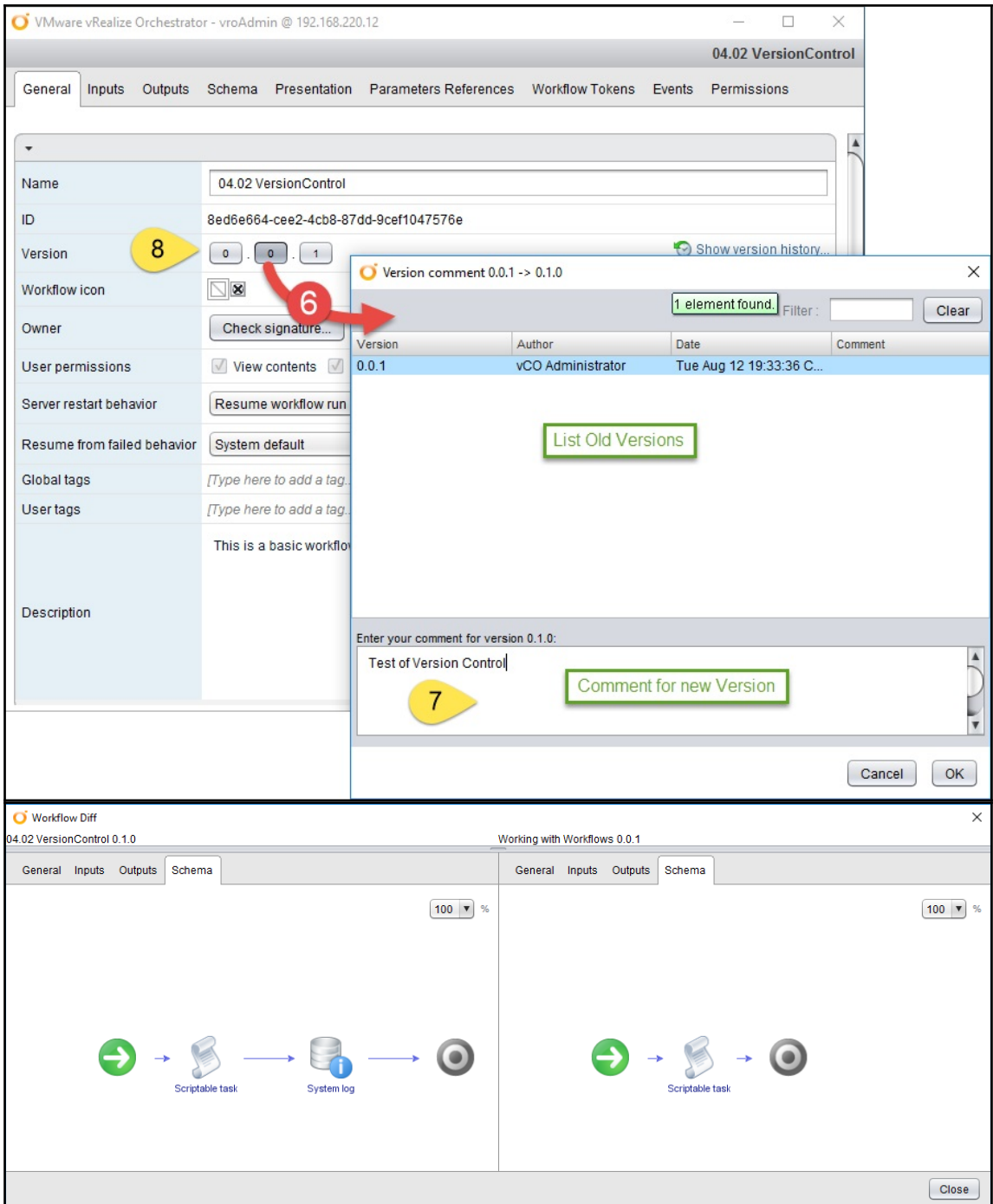




## Chapter 4: Programming Skills







VMware vRealize Orchestrator

Info IN OUT Exception Visual Binding

Label - 04.01.01 SubWorkflow

Next element - End workflow

Business Status -

Description - This is a basic workflow

Target workflow - OrchestratorCookBook2ndEdition / Chapter 4 / 04.01.01 SubWorkflow

Synchronize parameters - Synchronize parameters

Change workflow - Change workflow

Close

Operation Successful

**Parameters synchronized**

Workflow link parameters synchronized with current workflow.

Continue

Detailed description: This screenshot shows the configuration window for a sub-workflow in VMware vRealize Orchestrator. The 'Info' tab is active, displaying the workflow's label as '04.01.01 SubWorkflow' and its next element as 'End workflow'. A description field contains the text 'This is a basic workflow'. Below this, there are options for 'Target workflow', 'Synchronize parameters' (which is selected), and 'Change workflow'. A 'Close' button is at the bottom right. An 'Operation Successful' dialog box is overlaid on the window, with a green checkmark and the title 'Parameters synchronized'. The message inside the dialog states 'Workflow link parameters synchronized with current workflow.' and includes a 'Continue' button. Red arrows point from the description field to the dialog and from the 'Synchronize parameters' option to the dialog.

reNameMe 04.01.01 SubWorkflo

VMware vRealize Orchestrator

Info IN OUT Exception Visual Binding Scripting

IN (number) number , (Array/string) array

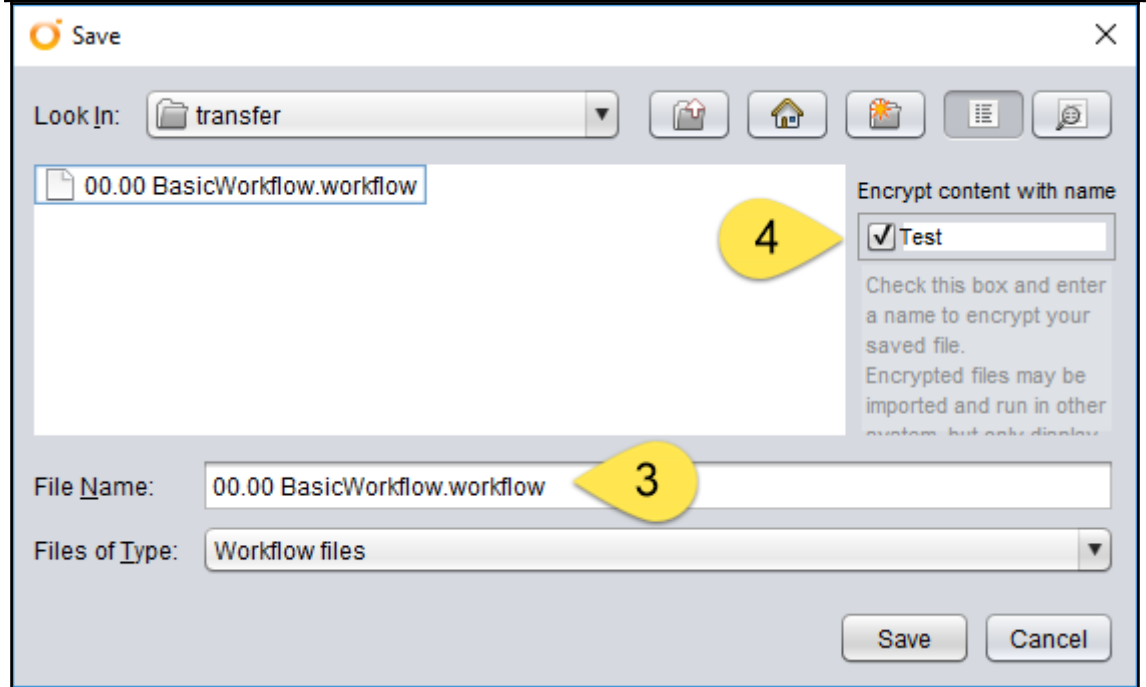
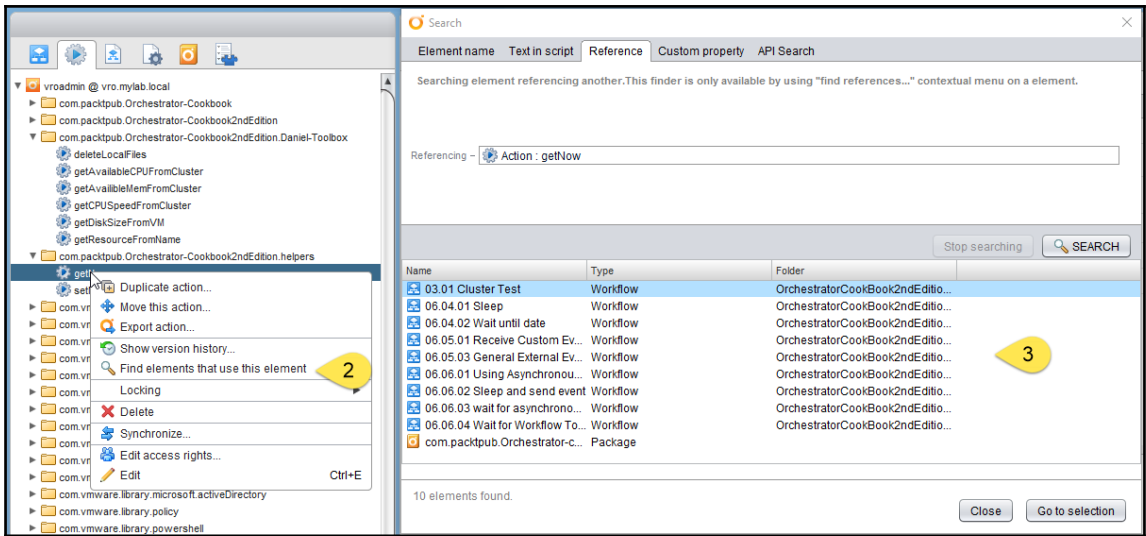
OUT (string) actionResult

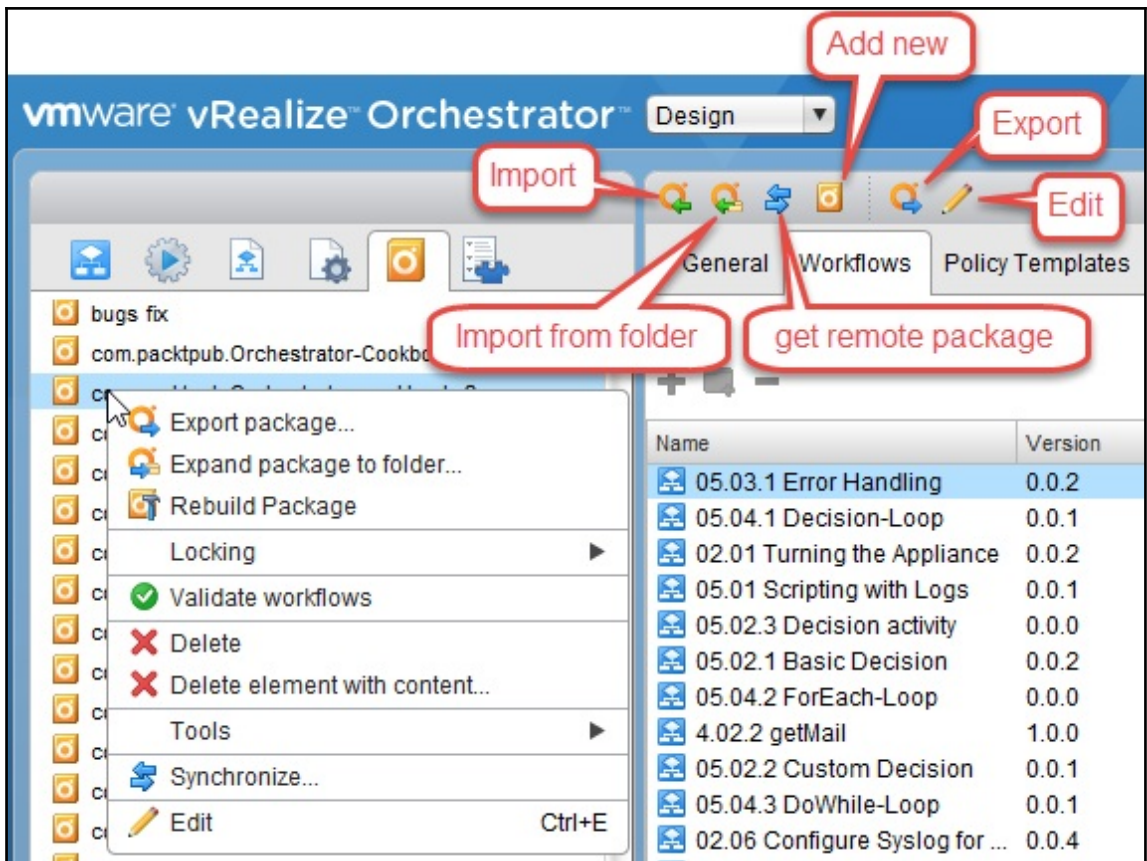
```
//Auto generated script, cannot be modified /  
actionResult = System.getModule("com.packtpub.Orchestrator-Cookbook2ndEdition").reNameMe(number, array) ;
```

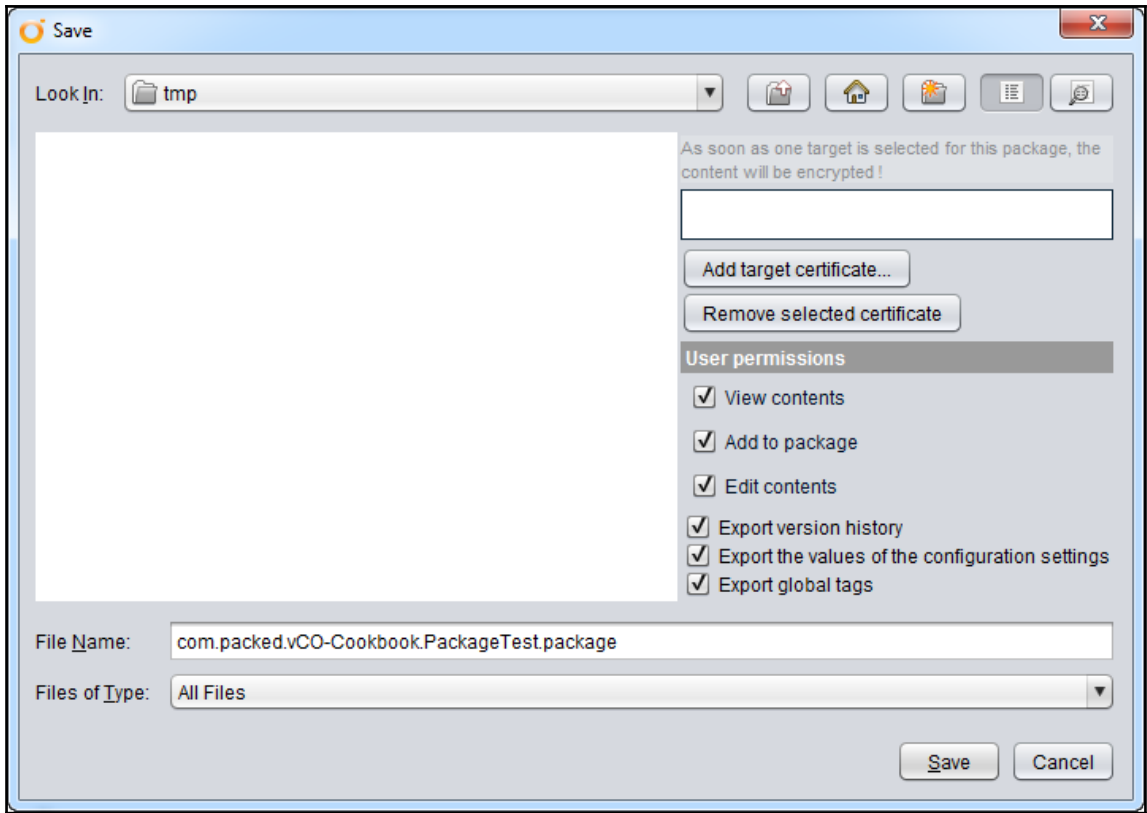
0 : 45

Close

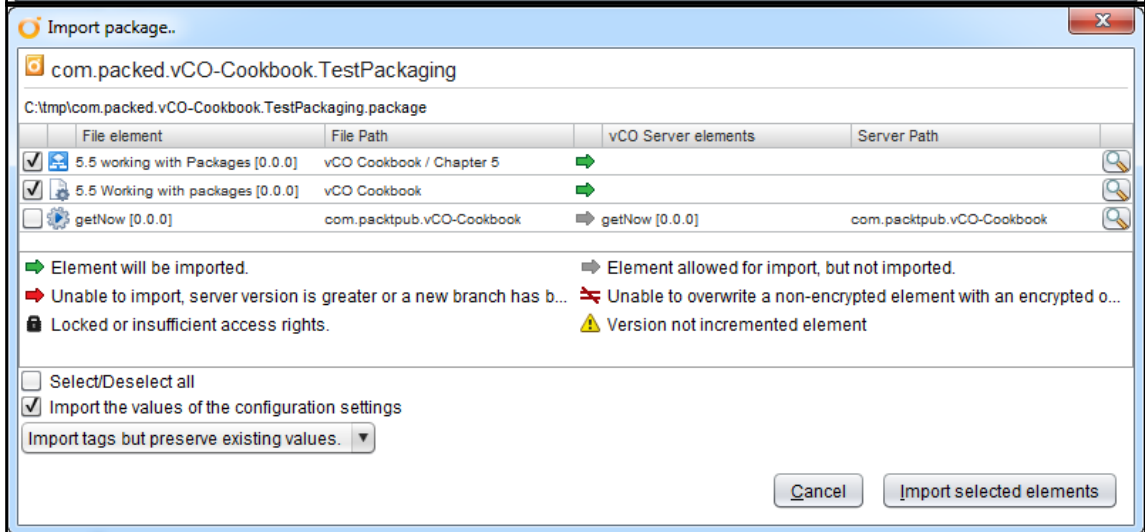
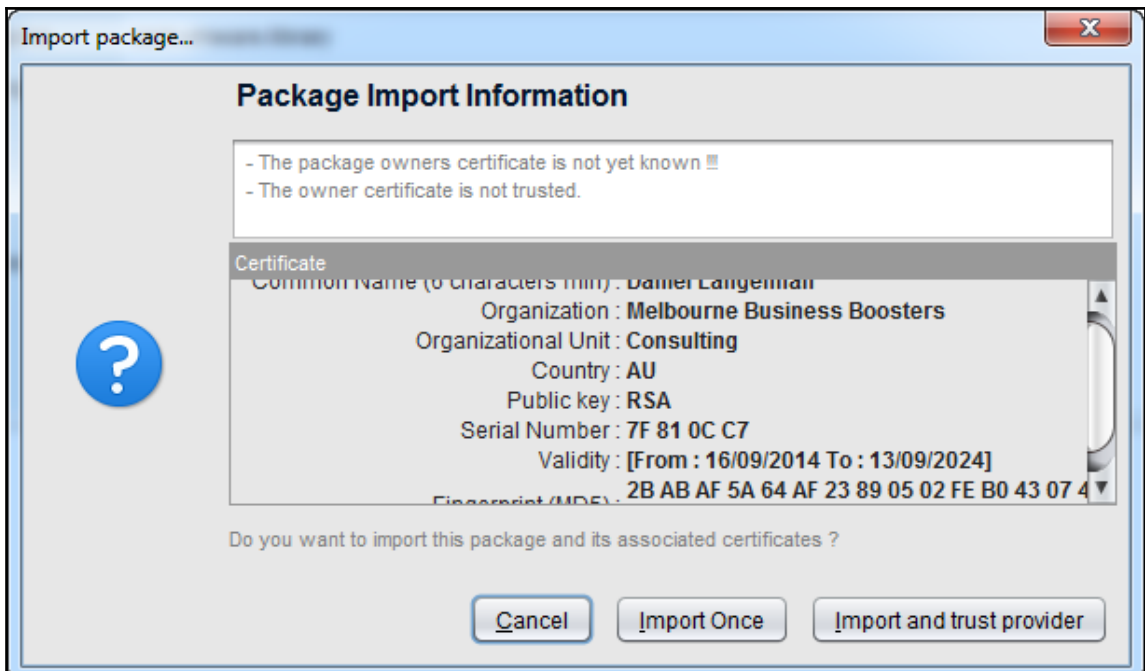
Detailed description: This screenshot shows a workflow diagram at the top with a green arrow icon, a blue gear icon labeled 'reNameMe', and a blue folder icon labeled '04.01.01 SubWorkflo'. Below the diagram is a 'Scripting' window in VMware vRealize Orchestrator. The window has tabs for 'Info', 'IN', 'OUT', 'Exception', 'Visual Binding', and 'Scripting', with 'Scripting' selected. It shows input parameters: 'IN (number) number , (Array/string) array' and output parameters: 'OUT (string) actionResult'. The script area contains the following code: '//Auto generated script, cannot be modified /' followed by 'actionResult = System.getModule("com.packtpub.Orchestrator-Cookbook2ndEdition").reNameMe(number, array) ;'. A timer at the bottom left shows '0 : 45'. A 'Close' button is at the bottom right. A red arrow points from the 'reNameMe' icon in the diagram to the 'Scripting' window.

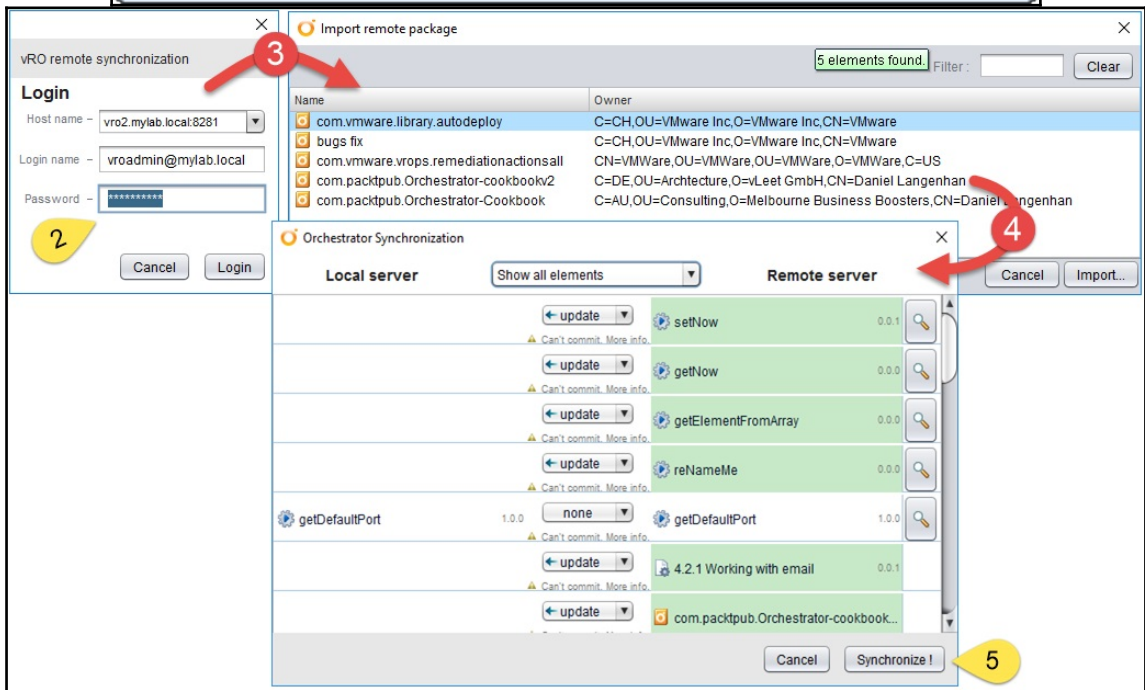
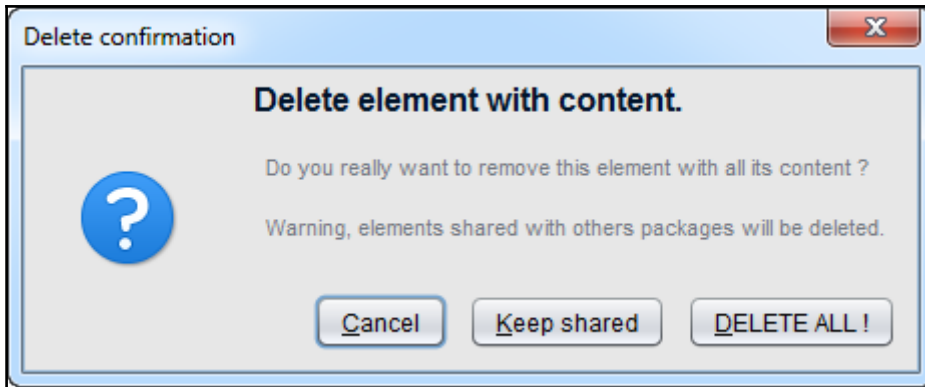












VMware vCenter Orchestrator - vCO Administrator @ 192.168.220.12

vmware vCenter Orchestrator Run [Refresh] [Home] [Back] [Forward] | Tools Help Search

Today Workflow Tokens Waiting for Input Task

- 1 Tasks scheduled in the system.
- 0 Workflows waiting for interaction.
- 0 Running policies.

**Welcome, vCO Administrator**  
 You are in Server mode  
 vCenter Orchestrator plug-in marketplace: solutionexchange.vmware.com

Search... F3  
 API Explorer...  
 User preferences...  
 Certificate manager...

---

vCO Certificates Manager : 192.168.220.12:8281

### Your vCO Server Certificate

**Daniel Langenhan** [from 16/09/2014 to 13/09/2024]

Common Name (6 characters min) : Daniel Langenhan  
 Organization : Melbourne Business Boosters  
 Organizational Unit : Consulting  
 Country : AU  
 Public key : RSA  
 Serial Number : 7F 81 0C C7  
 Validity : [From : 16/09/2014 To : 13/09/2024]  
 Fingerprint (MD5) : 2B AB AF 5A 64 AF 23 89 05 02 FE B0 43 07 41 14

Export self certificate...

### Known certificates

Common name	Valid from	Valid until	Organization
VMWare	16/09/2014	13/09/2024	VMWare
localhost.localdom	06/08/2014	04/08/2024	VMware

Common Name (6 characters min) : VMWare  
 Organization : VMWare  
 Organizational Unit : VMWare  
 Country : US  
 Public key : RSA  
 Serial Number : 51 84 D8 A2  
 Validity : [From : 16/09/2014 To : 13/09/2024]  
 Fingerprint (MD5) : CF 62 64 02 0E FF A8 A8 AD 0E D3 71 5D 93 9E EB

Import certificate... Remove selected certificate

The screenshot displays a workflow management interface with the following components:

- Workflow Diagram:** A sequence of four nodes: a green arrow icon, a 'System log' node (represented by a database icon), an 'Error Handling' node (represented by a blue diamond icon), and a grey circle icon. A red dashed arrow points from the 'Error Handling' node to a red exclamation mark icon, indicating an error.
- Configuration Panel (Top Right):** Contains tabs for 'General', 'Inputs', 'Outputs', 'Schema', and 'Presentation'. Under the 'General' tab, there are settings for 'Server restart behavior' (set to 'Resume workflow run') and 'Resume from failed behavior' (set to 'Enabled').
- Left Navigation Panel:** A tree view showing categories like 'Decisions', 'Error Handling', 'Loops', and 'Resume failed Workflow'. The 'Resume failed Workflow' category is expanded, showing sub-items like 'Resume failed Workflow [20:33:52]', 'Version Control', 'Workflows basics', 'Working with Logs', and 'Working with Presentation'.
- Messages Panel (Middle Right):** Shows a 'Messages' section with a single entry: '[2014-08-18 20:33:53.602] [!] Begining'.
- Error Dialog (Bottom Right):** A modal window titled 'Workflow interaction form - Resume failed Workflow : Workflow Error System'. It contains:
  - A red exclamation mark icon.
  - The text: '1 Error in workflow'.
  - The text: '2 Parameters'.
  - The text: 'Workflow execution has stopped on error'.
  - The text: 'Choose action to continue'.
  - A list of three buttons: 'Resume', 'Cancel', and 'Resume'.

Run Debug Validate 100 %

Workflows basics Error Handling

Debugger Breakpoints

Debugging Workflows

Workflows basics

General Variables Logs

Name	Type	Value
errorCode	string	
Input	string	testinput
Number	number	5.0
output	string	

Exception

General Variables Logs

Name	Type	Value
VM	VC:VirtualMachine	TestVM
Array	Array/string	Array [ Mom , Dad , Sister , Brother ]

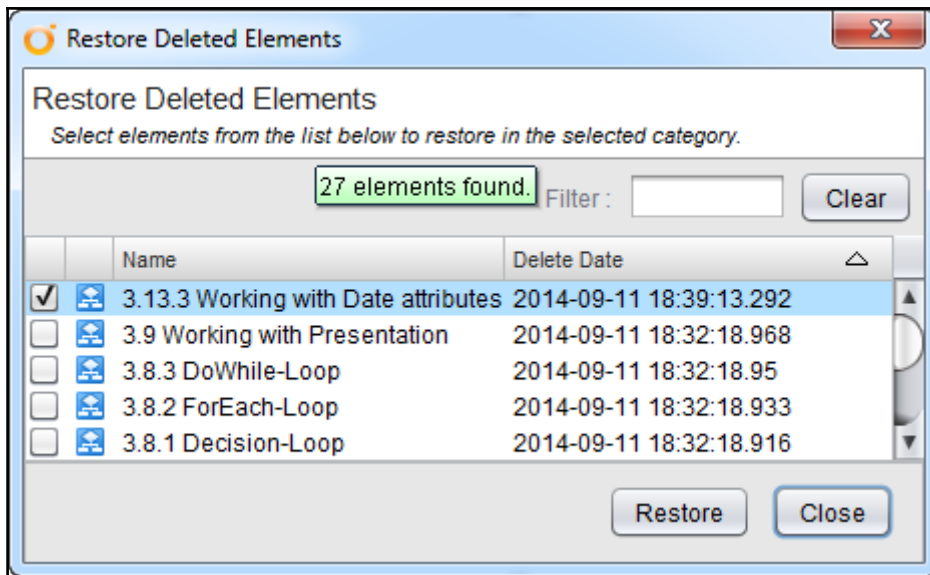
Array of string VC:VirtualMachine

Size : 4 elements

Elements :

- Mom
- Dad
- Sister
- Brother

dunesId : vcenter.mylab.local/vm-102  
 id : vm-102  
 vimHost : https://vcenter.mylab.local:443/sdk  
 name : TestVM  
 state : poweredOff  
 isTemplate : false  
 connectionState : connected  
 displayName : TestVM



Start Workflow : 5.8 Shedule me

### Schedule information

Specify the schedule information, start date, recurrence, and end date for this run. Only run date is mandatory.

\* Task name  
5.8 Schedule me **2**

\* Start of operation  
18/09/2014 5:34:12 PM **3**

Start if scheduled in the past  
 Yes  No **4**

Recurrence  
 Every month **5**  
 + Add entry  
 18 - 12 PM h 00 m 00 s

Recurrence end date  
 Not set **6**

Cancel Submit

Sun  Mon  Tue  Wed  Thu  Fri  Sat

vmware vCenter Orchestrator Run Tools Help Search for

---

5.8 Shedule me 18:16:44 R

Suspend task
Resume

Cancel/Delete
Edit Ctrl+E

General
Recurrence
Workflow Runs
Permissions

Name: 5.8 Shedule me

Start of operation: Thursday, 18 September 2014 6:16:44 PM CEST

Start behavior: Start if scheduled in the past

Last run: Thursday, 18 September 2014 6:19:00 PM CEST

Next run: Thursday, 18 September 2014 6:20:00 PM CEST

Startup user: vcoadmin

Workflow: 5.8 Shedule me

Parameters

Name	Type	Value
TestEntry	string	MyTest

---

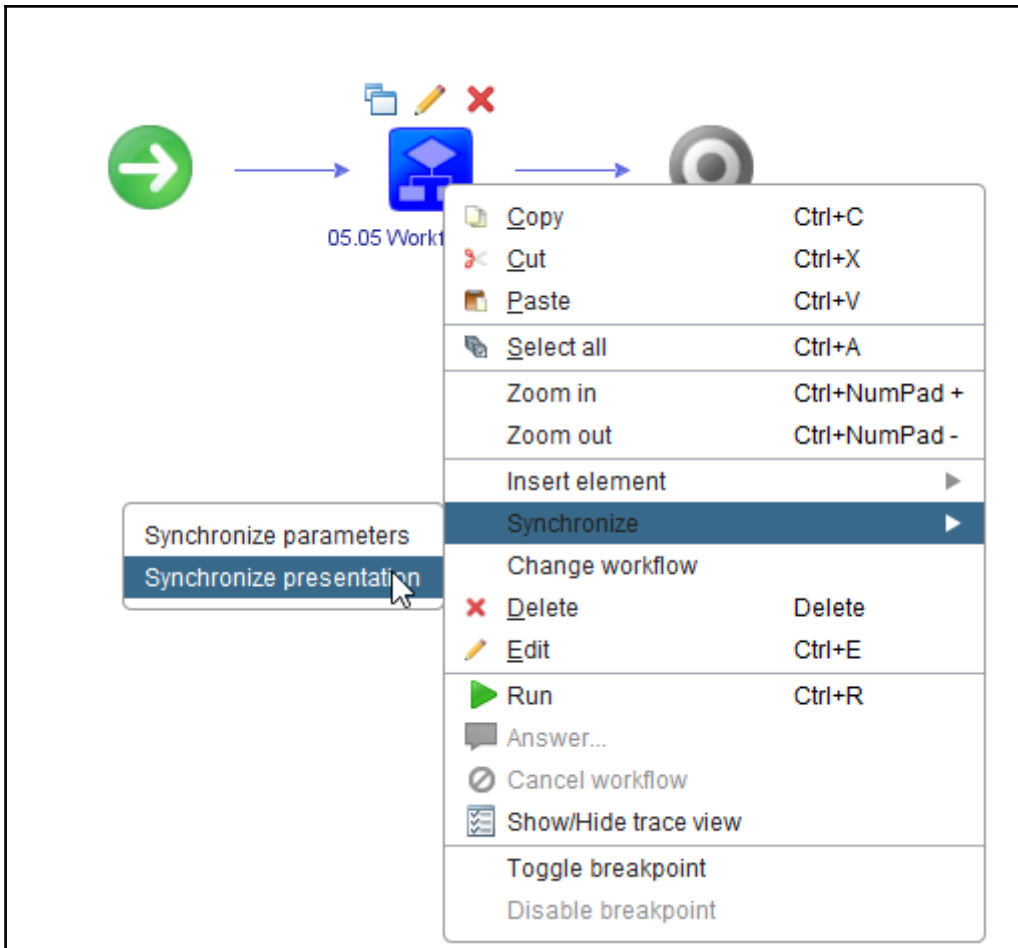
5.8 Shedule me

General
Recurrence
Workflow Runs
Permissions

4 elements found.
Filter: 
Clear

Name	State	Start date	End date	Current item ...	User Owner	Business state
✓ 5.8 Shed...	[completed]	18:22:00	18:22:00		vcoadmin	
✓ 5.8 Shed...	[completed]	18:19:00	18:19:04		vcoadmin	
✓ 5.8 Shed...	[completed]	18:20:01	18:20:01		vcoadmin	
✓ 5.8 Shed...	[completed]	18:21:00	18:21:01		vcoadmin	
















---

## Chapter 5: Visual Programming

**Attributes** General - Attributes









    


	Name	Type	Value		Description
<input type="checkbox"/>	atribute	string	Initial Value	 	This is a Attribute and can be changed
<input checked="" type="checkbox"/>	constant	string	Value dosnt change	 	This is a Constant and will not change

Lock the initial value

---








**Parameters** Inputs


       

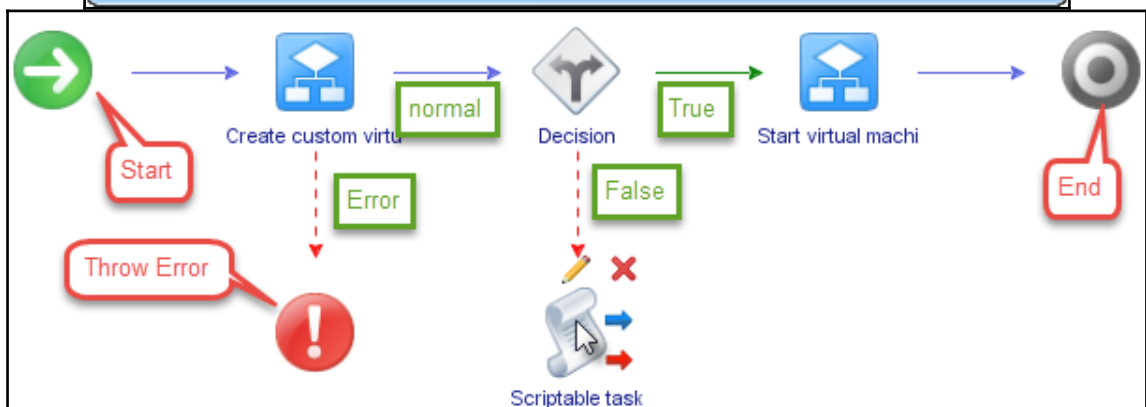
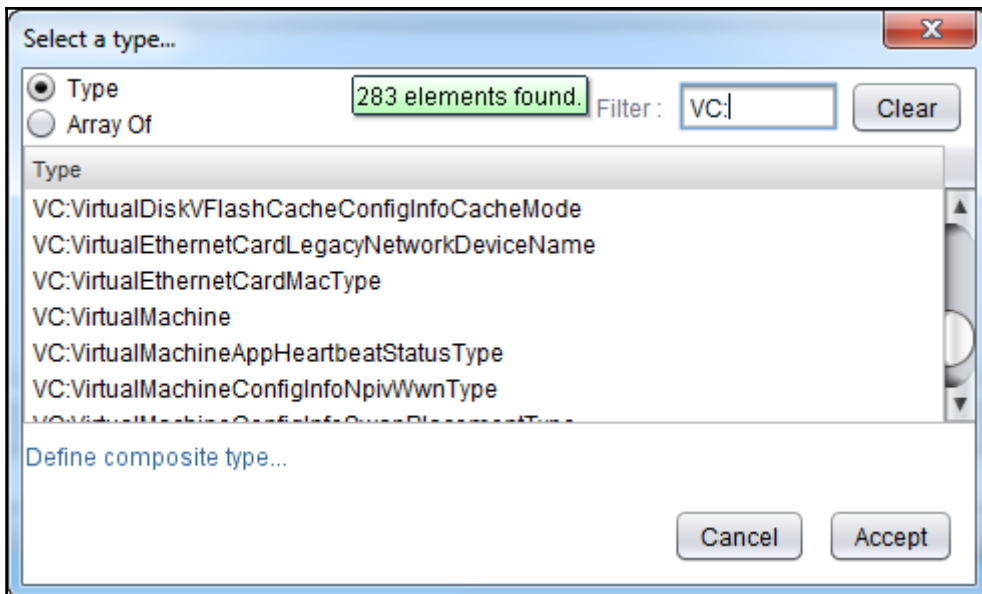
#	Name	Type	Description
	inparameter	string	When the workflow starts the user is propted to enter a value here.

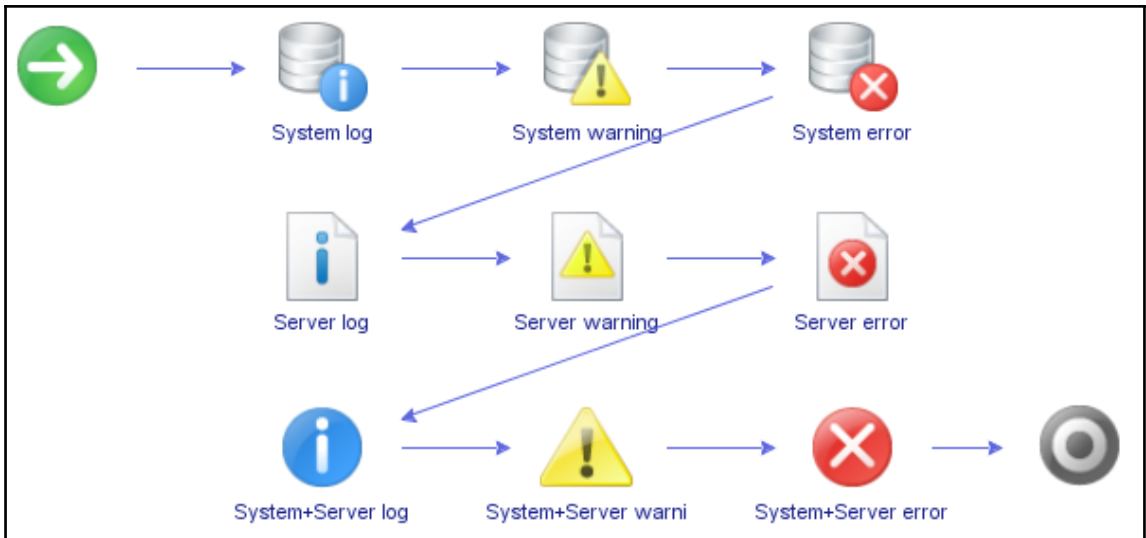
---

**Parameters** Outputs

#	Name	Type	Description
	outparameter	string	The value of this variable will be accessible to other workflows





Schema		Events		
Description	Type	Time	User	Origin
Workflow '05.01 Working with Logs' has started	Info	23:38:03	Administrator	439711601
LogText	Info	23:38:04	Administrator	439711601
LogText	Warning	23:38:04	Administrator	439711601
LogText	Error	23:38:04	Administrator	439711601
LogText	Info	23:38:04	Administrator	439711601
LogText	Warning	23:38:04	Administrator	439711601
LogText	Error	23:38:04	Administrator	439711601
Workflow '05.01 Working with Logs' has completed	Info	23:38:04	Administrator	439711601

General Variables **Logs**

Copy the log files

Create a Mark

Clear the logs

Switch between different pages of logfiles

Filter by Criticality

Mark

Messages

```
[2016-04-22 23:38:03.944] [I] LogText
[2016-04-22 23:38:04.060] [W] LogText
[2016-04-22 23:38:04.070] [E] LogText
[2016-04-22 23:38:04.140] [I] LogText - LogObject
[2016-04-22 23:38:04.156] [W] LogText - LogObject
[2016-04-22 23:38:04.170] [E] LogText - LogObject
[2016-04-22 22:14:57.183] [D] .....
```

VMware vCenter Orchestrator

Info Decision **Scripting**

string varString equals test

Scripting dropdown menu:

- equals
- contains
- match
- is defined

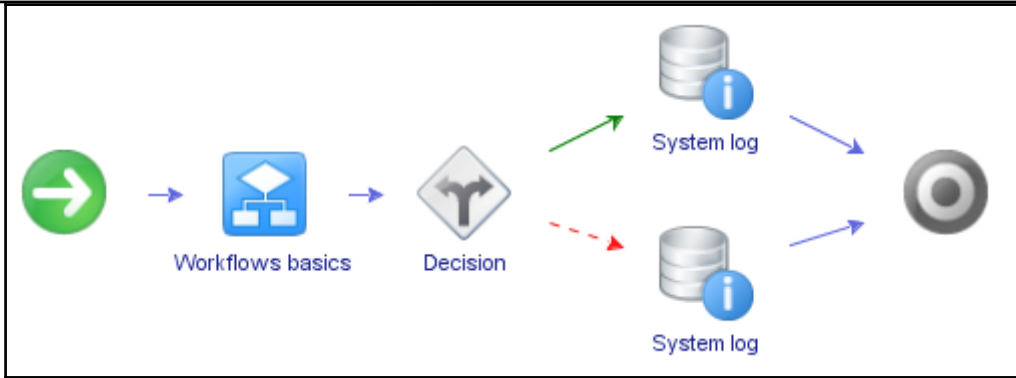
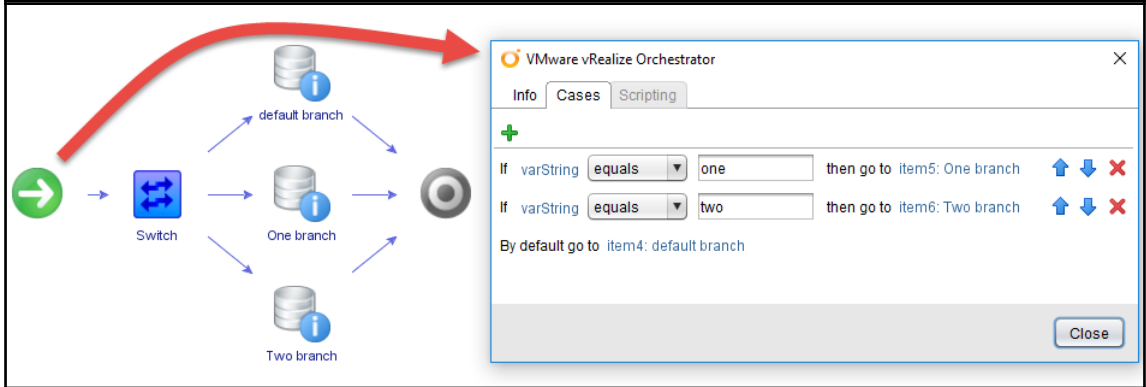
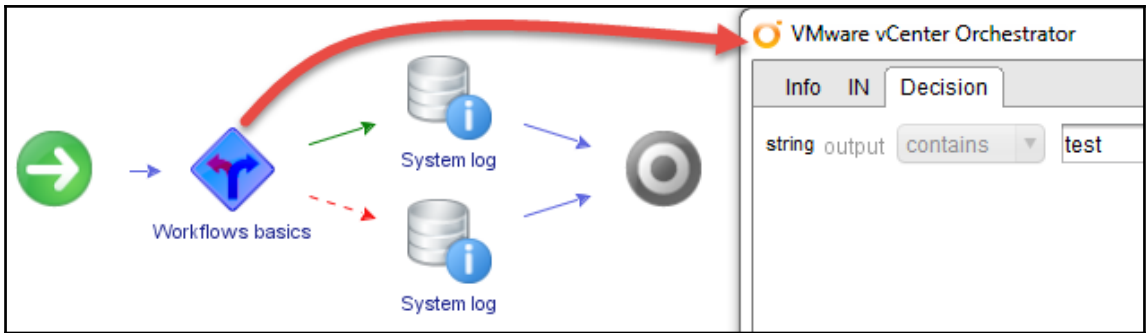
VMware vCenter Orchestrator

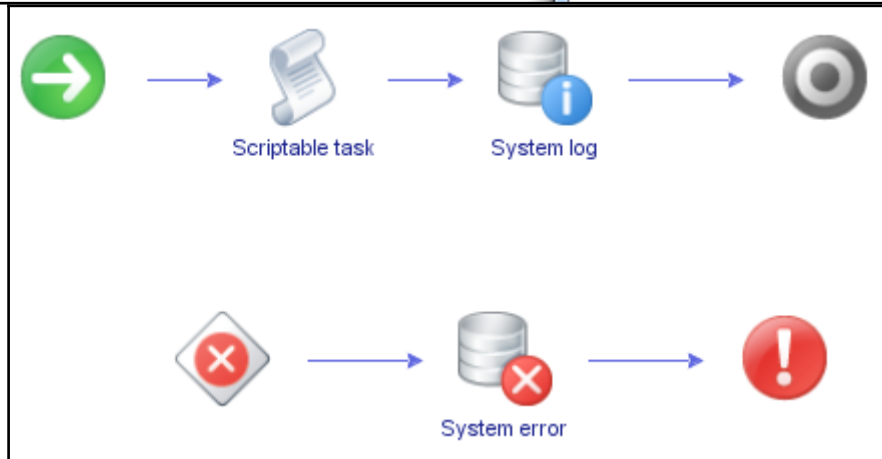
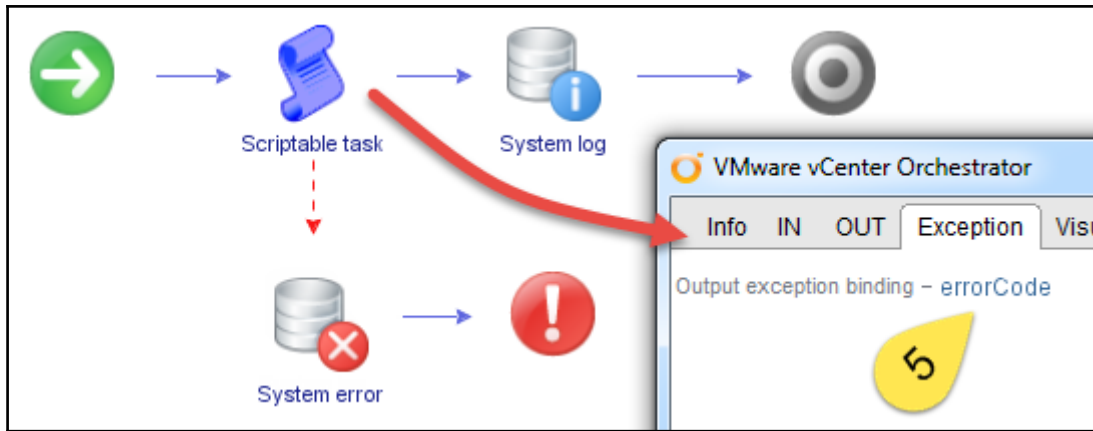
Info **IN** Scripting

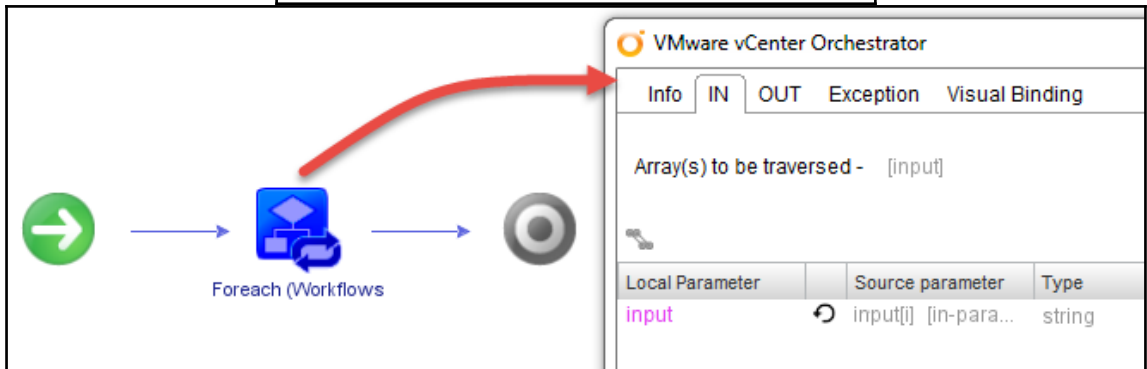
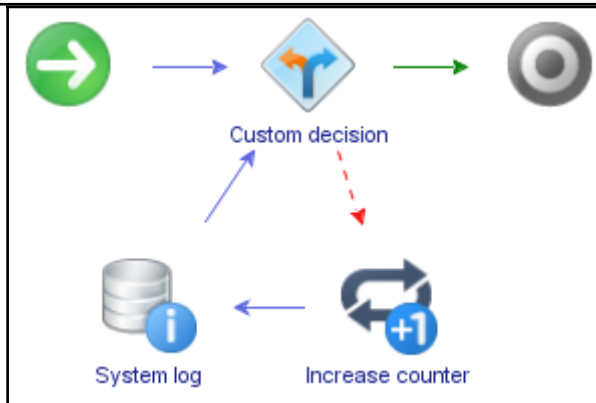
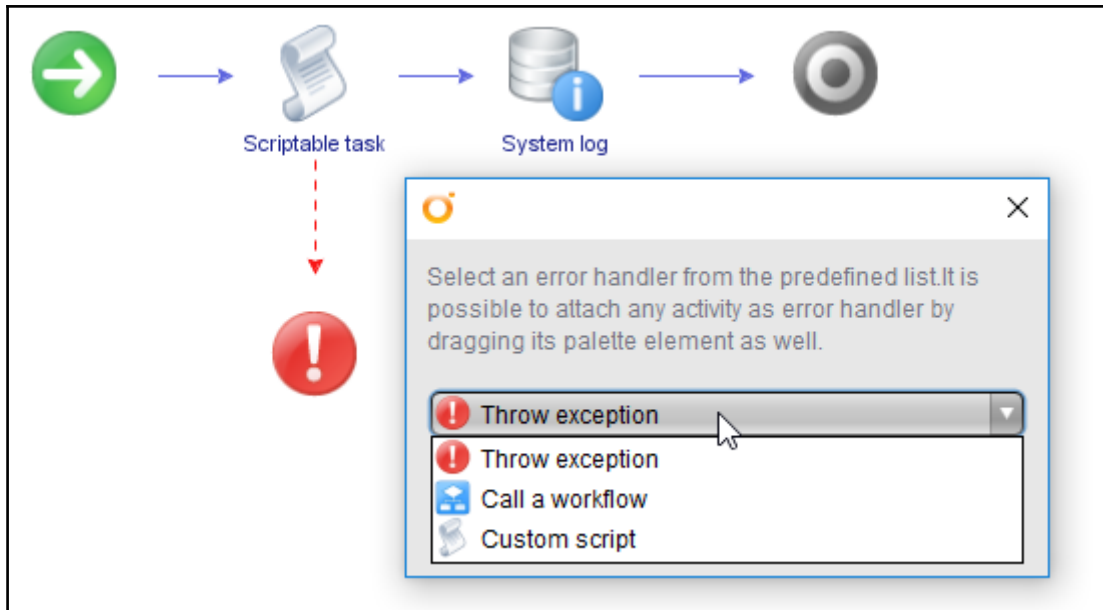
Scripting dropdown menu:

- ✗

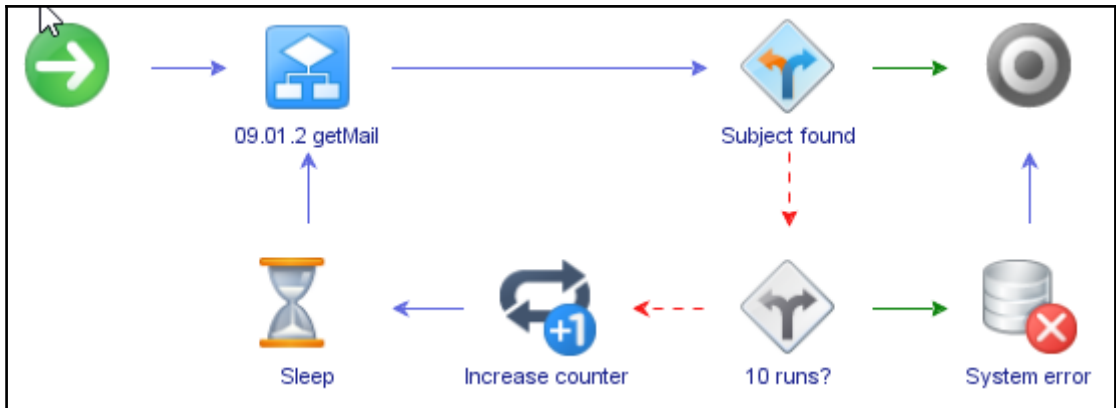
Local Parameter	Source parameter	Type
varString	varString [attribute]	string
varNumb	varNumb [attribute]	number











VMware vCenter Orchestrator

Info IN OUT Exception Visual Binding

Array(s) to be traversed - [Array2, Array1]

Local Parameter | Source parameter | Type

Input	↻	not set	string
Text	↻	not set	string

Input parameter 'Input'  
No description

Create parameter/attribute in workflow

Name	Result type	Source
NULL	Any	
Test	string	in-parameter
Array2	string	attribute
Array1	string	in-parameter

VMware vCenter Orchestrator

Info IN OUT Exception Visual Binding

Output exception binding - errorCode

Catch any exception and continue with the next iteration

(string) errorCode , (number) \$index , (Array/number) number

```

System.log ("ForEach : "+errorCode);
System.log ("ForEach : "+$index);
System.log ("ForEach : "+number);

```

**Number**

Property name	Value
Mandatory input	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Number format (#####)	##
Maximum number value	100
Minimum number value	0
Default value	10.0
Predefined answers	Array [ 10.0 , 20.0 , 30.0 , 40.0 , 50.0 ]

**String**

Property name	Value
Predefined answers	Array [ Test 1 , Test 2 , Test 3 ]
Minimum string length	0
Maximum string length	15
Mandatory input	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Default value	A single Value

**Start Workflow : Working with Presentation**

**1 Step 1**

- ✓ 1a Group 1 YesNo
- ✓ 1b Group 2  Yes  No

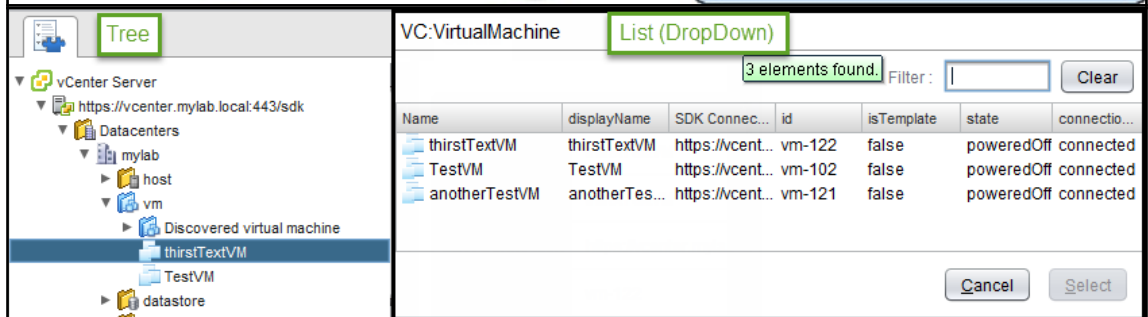
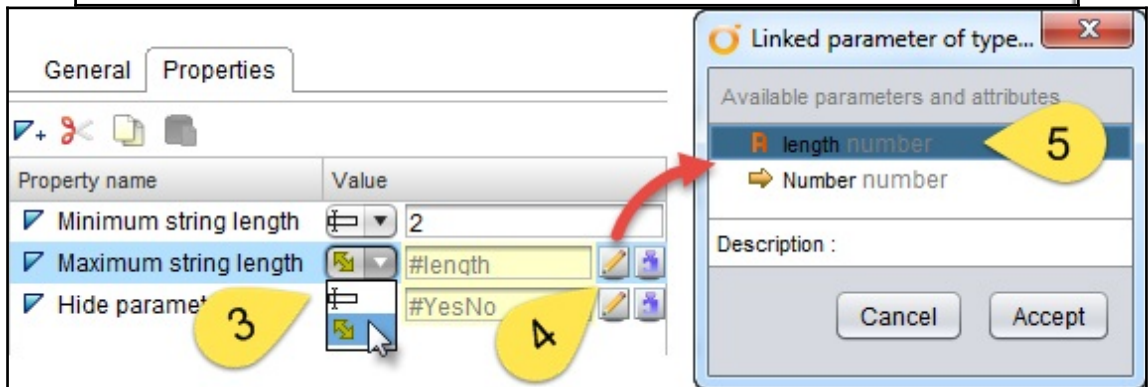
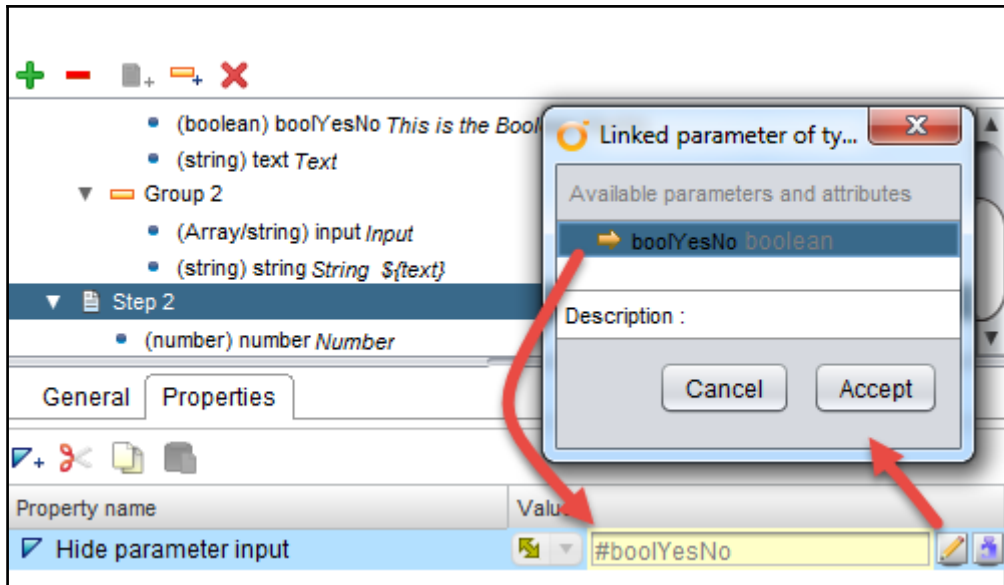
**2 Step 2**

Text

Cancel Back Next Submit

**Step** **Group**

- Presentation
  - Step 1
    - Group 1
      - (boolean) boolYesNo This is th
      - (string) text Text
    - Group 2
      - (Array/string) input Input
      - (string) string String \${text}
  - Step 2
    - (number) number Number



The screenshot displays the VMware vSphere interface with a workflow configuration for a cluster. The workflow consists of three steps: System log, Change credential, and System log. A search dialog is open, showing the 'getElementFromArray' action with 1 element found. The dialog has fields for 'number' and 'array'. The workflow configuration shows a 'Data binding' property with a call to the 'getElementFromArray' action. The logs section shows messages from Administrator@VSPHERE.LOCAL and vcouser@mylab.local.

vm  
 Not set  
 cluster  
 MyCluster

(VC:VirtualMachine) vm vm  
 (VC:ClusterComputeResource) cluster cluster

General Properties

Property name Value  
 Specify a root object to be shown in the chooser. Root object is pr... #cluster

Search action with result : string  
 Show actions with result: 1 element found. Filter: ntFromArray Clear  
 Name Version Result type Module  
 getElementFromArray 0.0.0 string com.packtpub.vCO-Coo...  
 1) number: #number number  
 2) array: #array Array/string  
 Cancel Apply

General Inputs Outputs Schema Presenta  
 + - + - X  
 Presentation  
 (number) number Number selected \${String}  
 (string) string String  
 9

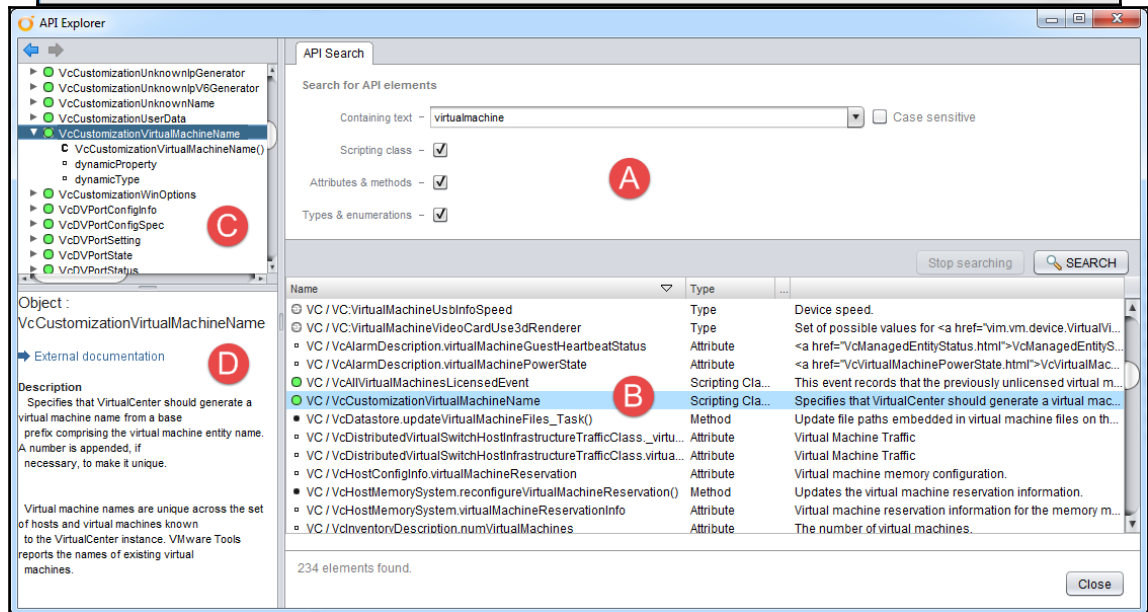
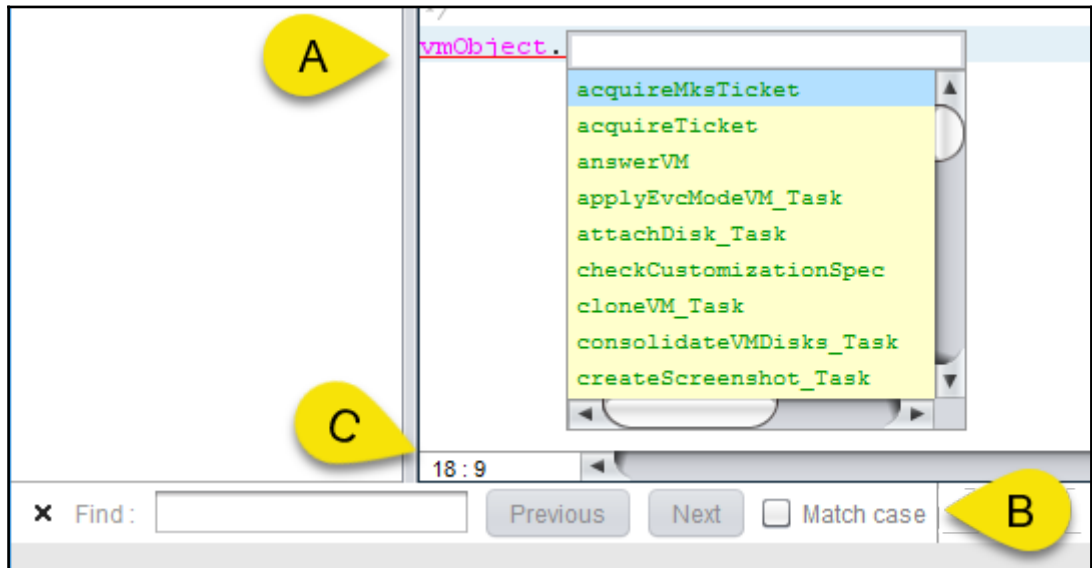
General Properties  
 Data binding GetAction("com.packtpub.vCO-Cookbook","getElementFromArray").call( #number , #array )  
 5

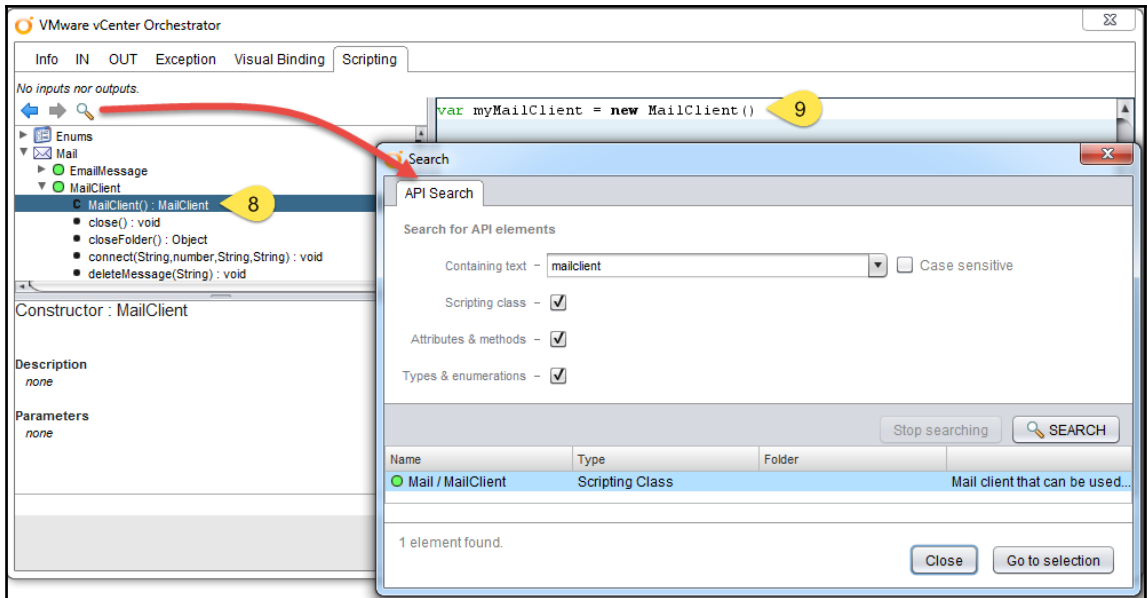
System log Change credential System log

General Variables Logs

Messages  
 [2014-09-11 17:14:32.216] [I] Administrator@VSPHERE.LOCAL  
 [2014-09-11 17:14:34.056] [I] vcouser@mylab.local

# Chapter 6: Advanced Programming





com.packtpub.vCO-Cookbook / getElementFromArray

General Scripting Events Permissions

Return type : string **7**

↑ ↓ ↗ ✕ 📄 📄

#	Name	Type	Description
➔	number	number	
➔	array	Array/string	

**6**

```
string getElementFromArray(number number, Array/string array)
```

← → 🔍

- ▶ Attribute
- ▶ AuthorizationElement
- ▶ AuthorizationReference

Type : Action

```
return array[number];
```

**8**

1 : 0

Cancel Revert Save Save and close

Start Workflow : 3.13.2 Wait until date

Common parameters

Wait date

Not set

Cancel Submit

2014

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Time - 10 PM h 35 m 35 s

Cancel Ok



vmware vCenter Orchestrator Design

3.15 Using Asynchrono

Schema Events

3.15 Using Asynchrono...

General Variables Logs

Messages

[2014-09-09 20:03:55.973] [!] Wed Sep 10 2014 04:03:55 GMT+1000 (EST)

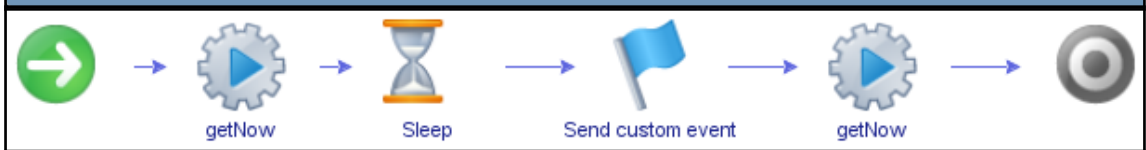
[2014-09-09 20:03:57.392] [!] Wed Sep 10 2014 04:03:57 GMT+1000 (EST)

A

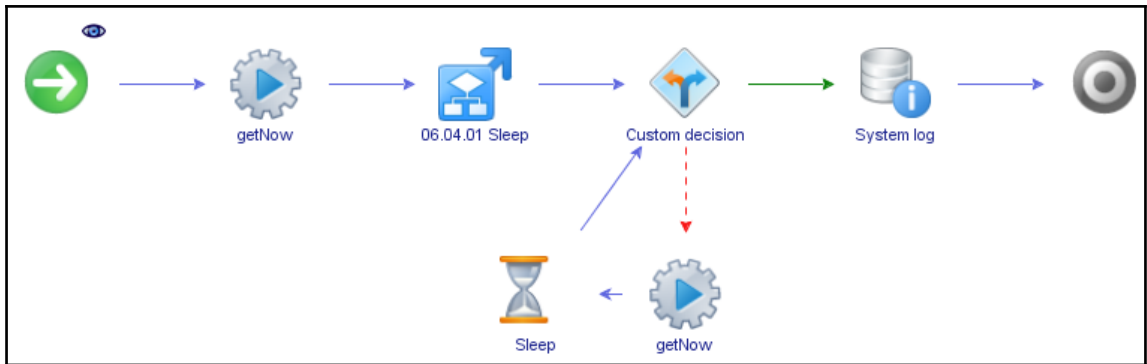
B

Administrator @ 192.168.220.11

- Library
  - vCO Cookbook
    - Chapter 3
      - test
        - 3.13.1 Sleep task
          - 3.13.1 Sleep task [20:03:57]
          - 3.15 Using Asynchronous Workflows
            - 3.15 Using Asynchronous Workflows [20:03:55]







VMware vRealize Orchestrator

Info Attributes External inputs Exception Presentation

Local Parameter	Source parameter	Type
security.group	LDAPGroup [attribute]	LdapGroup
security.assignees	NULL	Array/LdapUser
security.assignee.groups	NULL	Array/LdapGroup
timeout.date	Date [attribute]	Date

Info Attributes External inputs Exception Presentation

Local Parameter	Source parameter	Type	Description
userString	userString [attribute]	string	

Info Attributes External inputs Exception Presentation

+ - + - X

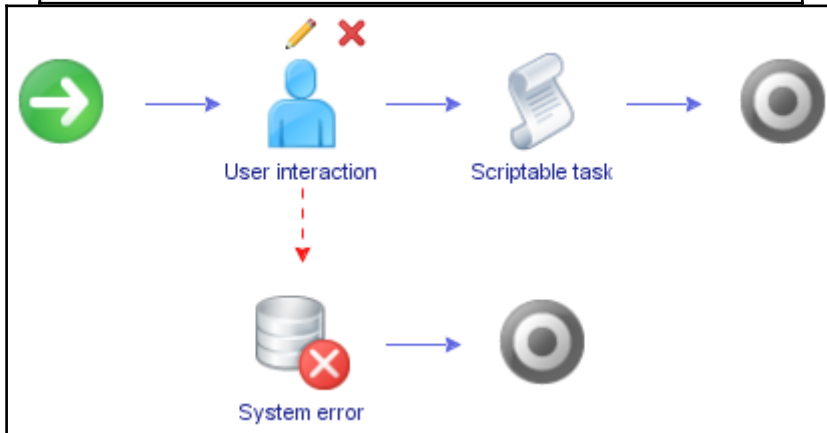
▼ Presentation

- (string) userString userString

General Properties

Property name Value

Default value



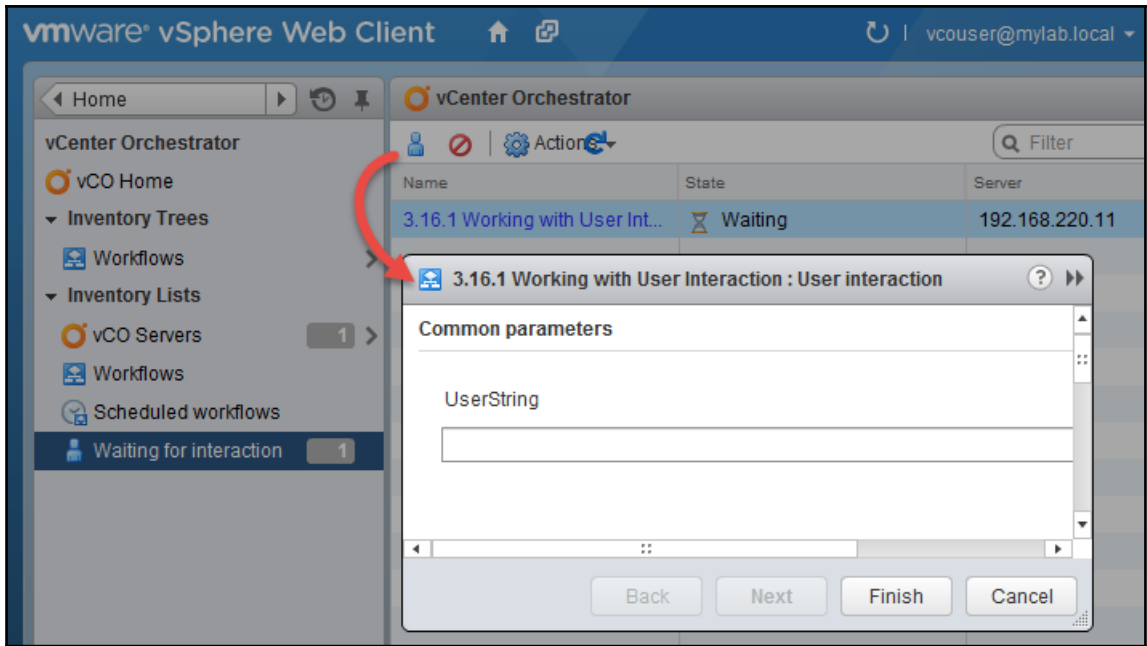
vmware vRealize Orchestrator Run Tools Help Search for

vroadmin @ 192.168.220.12

Today Workflow Tokens Waiting for Input Tasks Permissions

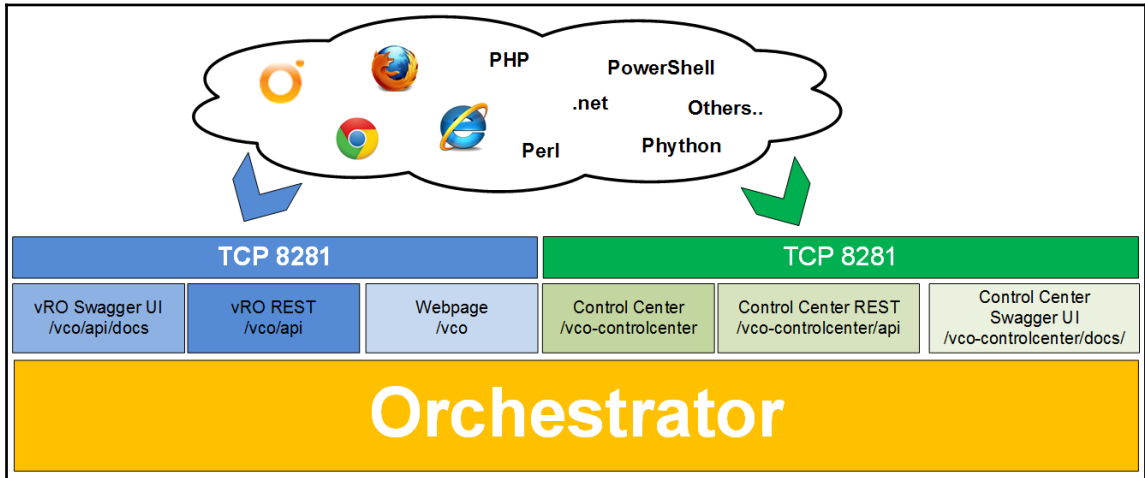
6 1 element found. Filter: Clear

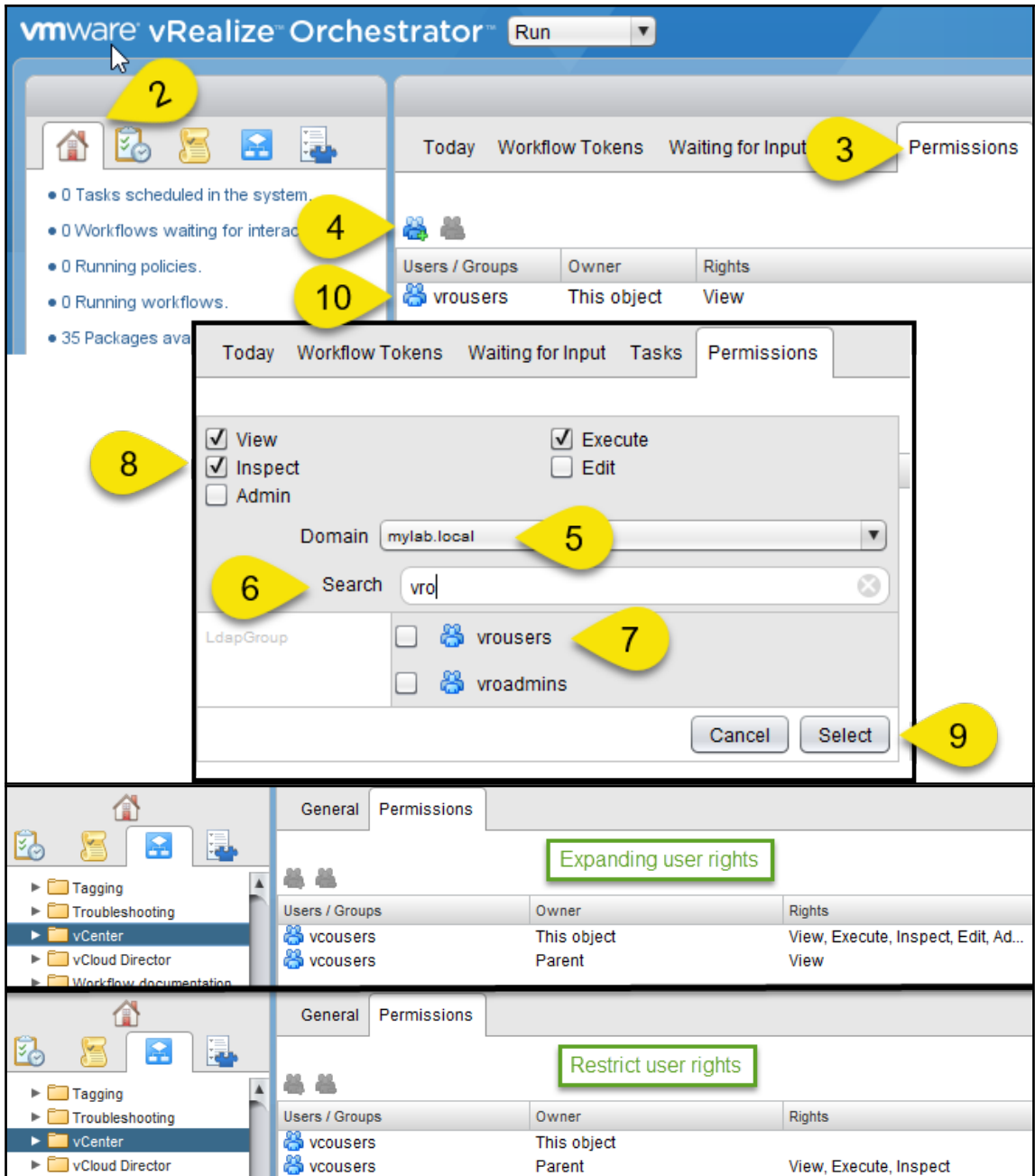
Name	Business state	Credential	Creation date	Description
06.08 Working with User Interaction...		vroadmins	13:02:25	



---

## Chapter 7: Interacting with Orchestrator





Today		Workflow Tokens	Waiting for Input	Tasks	Permissions
Users / Groups	Owner				Rights
vrouers	This object				View, Execute, Inspect, Edit, Admin
Administrators	This object				View, Execute, Inspect, Edit, Admin
Administrators	This object				View, Execute, Inspect, Edit, Admin

VMware vCenter Orchestrator - vCO Administrator @ 192.168.220.12

vmware vCenter Orchestrator Run Refresh Home Back Forward Tools Help Search

- 1 Tasks scheduled in the system.
- 0 Workflows waiting for interaction.
- 0 Running policies.

Today Workflow Tokens Waiting for Input Tas

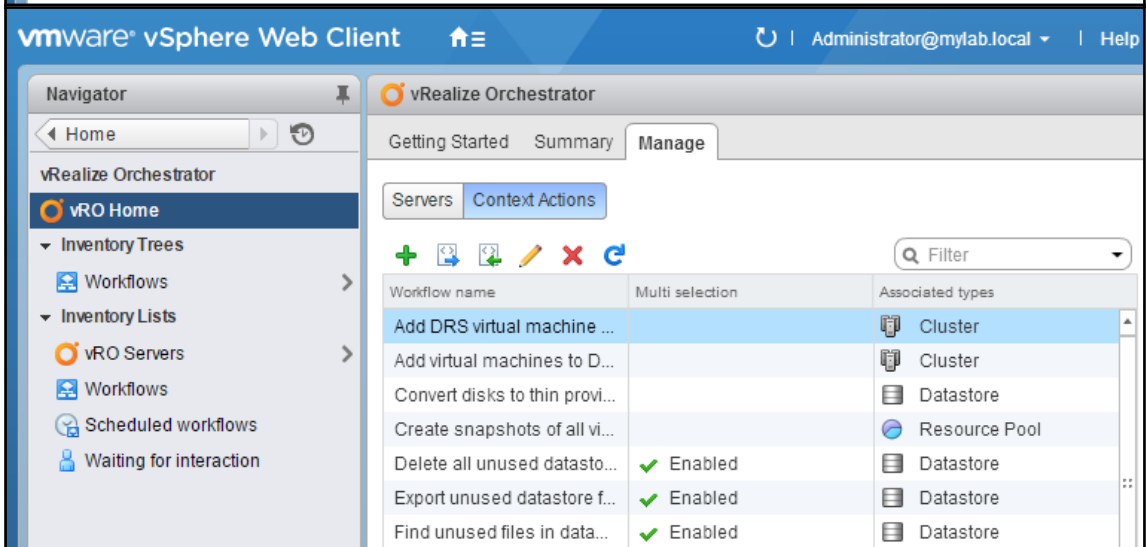
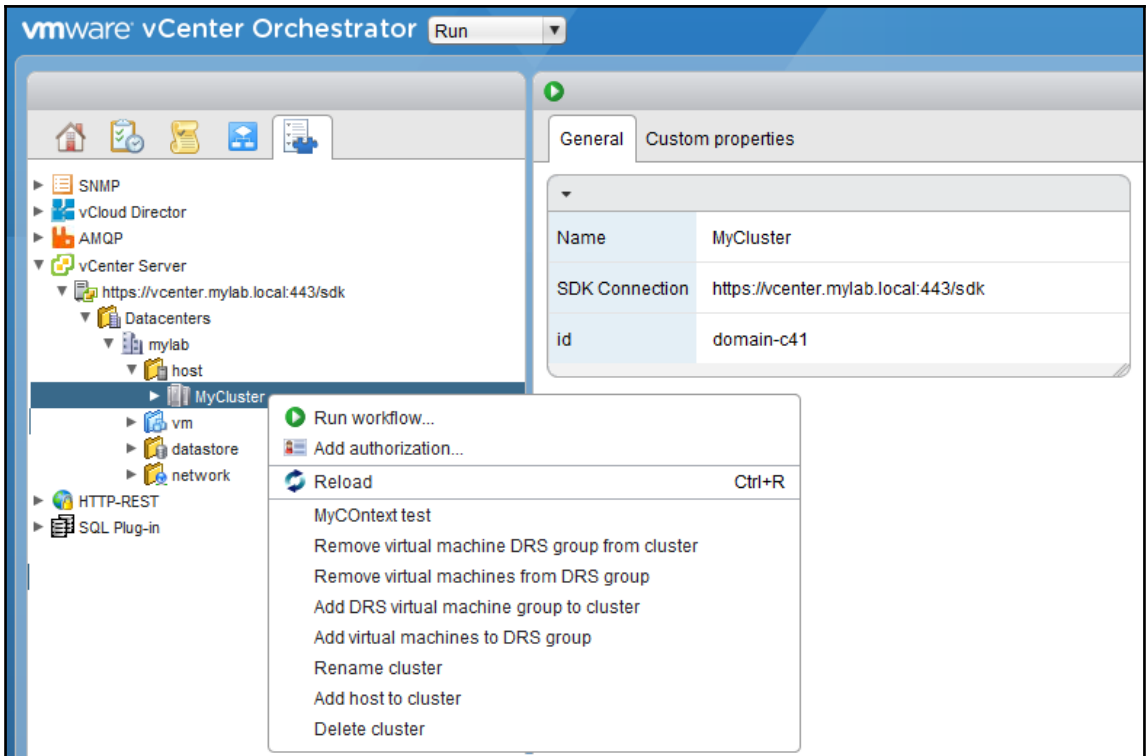
**Welcome, vCO Administrator**

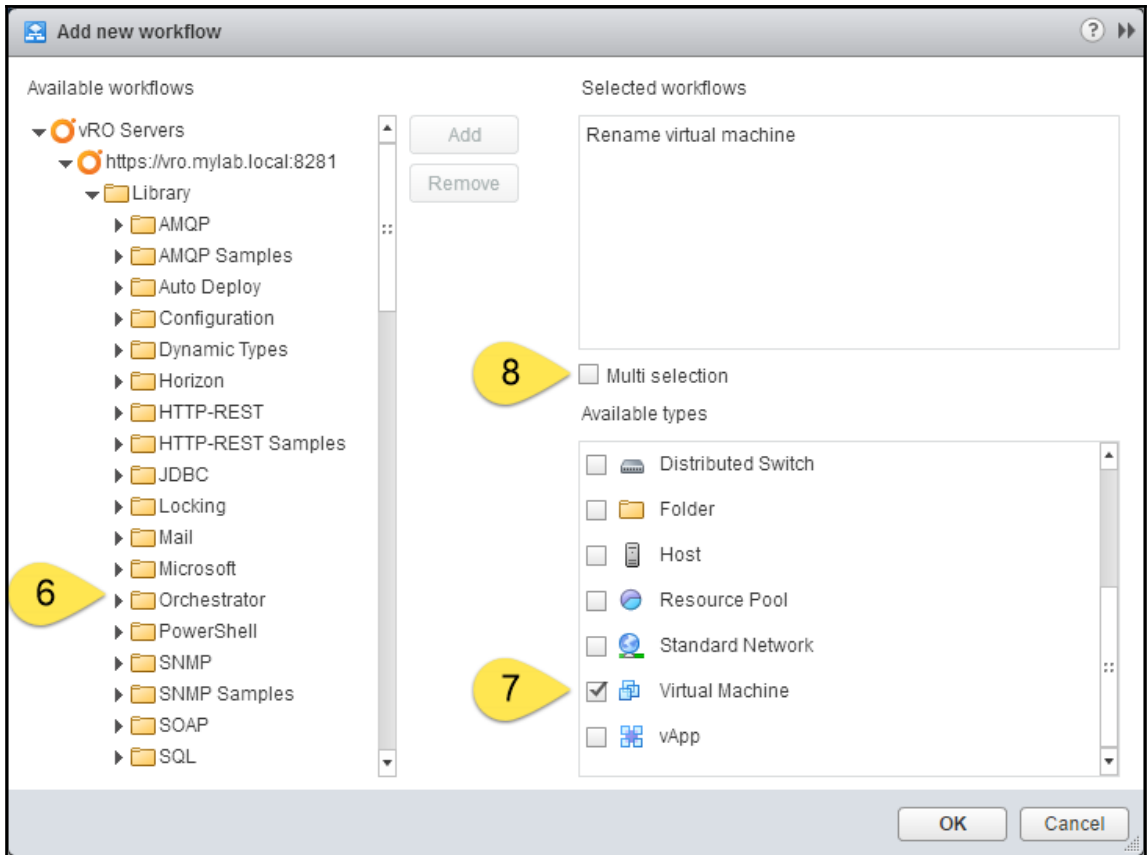
You are in Server mode

vCenter Orchestrator plug-in marketplace: [solutionexchange.vmware.com](http://solutionexchange.vmware.com)

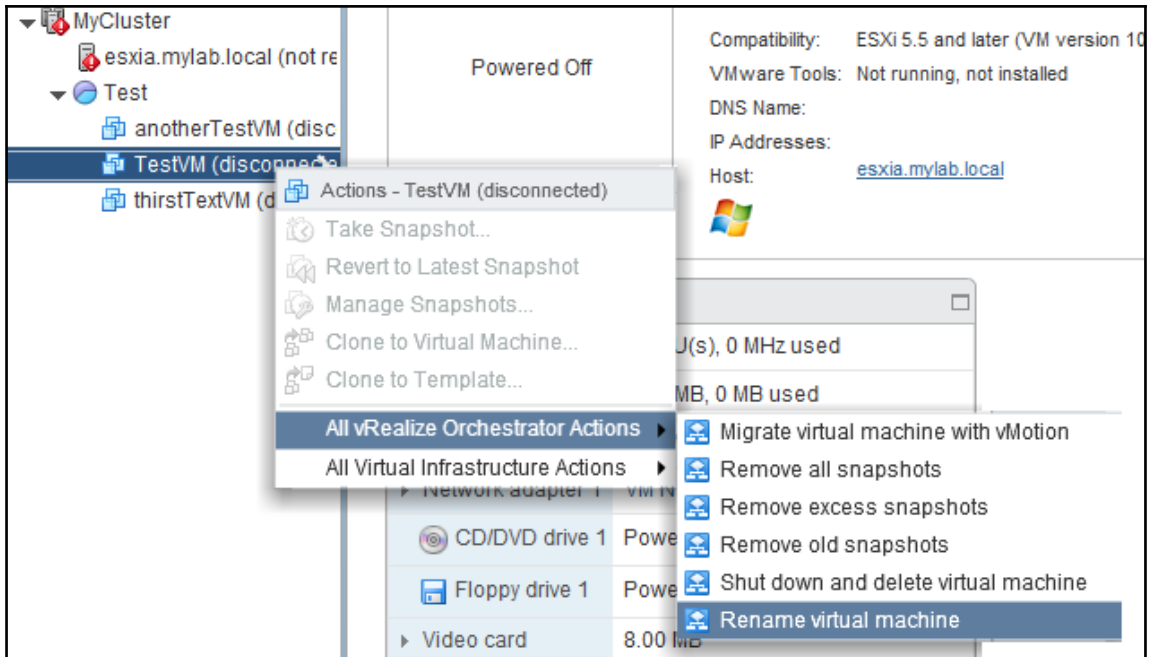
Search... F3

- API Explorer...
- User preferences...
- Certificate manager...









**service-descriptor-service : Service Descriptor Service** Show/Hide List Operations Expand Operations Raw

GET	/api/	Enumerate services
GET	/api/about	Get about info
GET	/api/docs	Redirect docs to docs/index.html
GET	/api/healthstatus	Get health status
GET	/api/schema	Get REST XSD schema file
GET	/api/schema/{name}	Get REST XSD schema file
GET	/api/status	Get vRA registration state
GET	/api/versions	List supported API versions

Try it out! [Hide Response](#)

**Request URL**

```
https://192.168.220.12:8281/vco/api/about
```

**Response Body**

```
{
  "version": "7.0.1.3533702",
  "build-number": "3533702",
  "build-date": "2016-02-09T12:19:45Z",
  "api-version": "5.5.2"
}
```

**Response Code**

```
200
```

**Response Headers**

```
{
  "server": "Apache-Coyote/1.1",
  "cache-control": "private",
  "expires": "Thu, 01 Jan 1970 01:00:00 CET",
  "content-type": "application/json; v=5.1.1;charset=UTF-8",
  "transfer-encoding": "chunked",
  "date": "Mon, 23 May 2016 22:14:02 GMT"
}
```

POST /api/workflows/{workflowId}/executions Start workflow execution

**Implementation Notes**

Creates a new instance of a workflow's run, by using the passed parameters. The workflow run is an asynchronous, so the call does not return a response body.

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
workflowId	<input type="text" value="bb7bcb76-515e-4fdb-80e3-63227ad0cfd0"/>	workflowId	path	string
body	<pre>{   "parameters": [     {       "value": {"string":{"value":"VMware"}},       "name": "vnName",       "type": "string",       "description": "",       "scope": "local",       "updated": false     }   ] }</pre>	executionContext	body	Model   Model Schema

Parameter content type:

Click to set as parameter value

### Request URL

https://192.168.220.12:8281/vco/api/workflows/bb7bcb76-515e-4fdb-80e3-63227ad0cfd0/executions

### Response Body

no content

### Response Code

202

### Response Headers

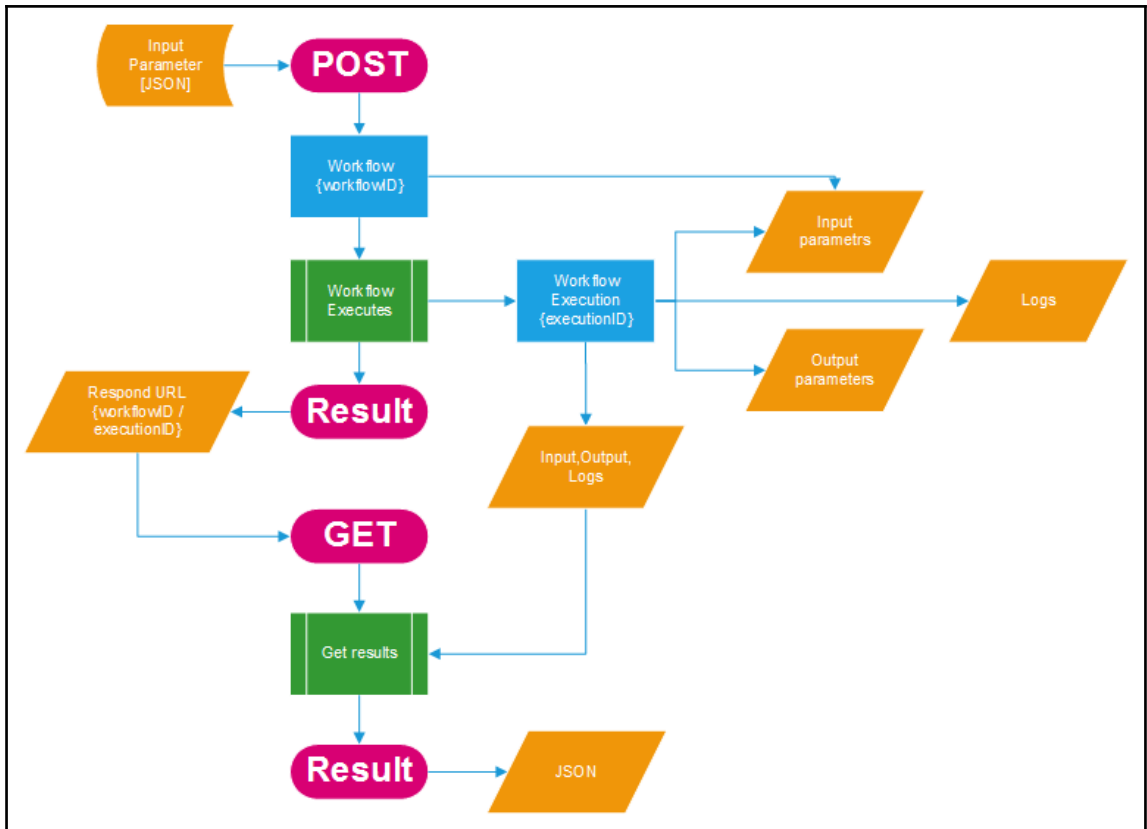
```
: "Apache-Coyote/1.1",
Content-Control: "no-cache, no-store, max-age=0, must-revalidate",
Content-Type: "no-cache",
Date: "0",
transport-security: "max-age=31536000 ; includeSubDomains",
Cache-Control: "no-cache",
Expires: "0",
Pragma: "no-cache",
Server: "Apache/2.4.18 (Ubuntu)",
Vary: "Accept-Encoding",
X-Content-Type-Options: "nosniff",
X-Frame-Options: "DENY",
X-XSS-Protection: "1; mode=block",
X-VCO-Workflow-ID: "bb7bcb76-515e-4fdb-80e3-63227ad0cfd0",
X-VCO-Execution-ID: "40285c8c54df15b50154e25e5d35028f/",
X-VCO-Response-URL: "https://192.168.220.12:8281/vco/api/workflows/bb7bcb76-515e-4fdb-80e3-63227ad0cfd0/executions/40285c8c54df15b50154e25e5d35028f/"
```

Workflow ID

Execution ID

Response URL

```
"output-parameters": [
  {
    "value": {
      "string": {
        "value": "NSX Manager,4,16 - vro2,2,4 - vROCluster-0,1,0.5 - VMware vRealize Appliance,4,18 - vro1,2,4"
      }
    },
    "type": "string",
    "name": "info",
    "scope": "local"
  }
]
```



---

## vRealize Orchestrator Control Center API

Controls and configures vRealize Orchestrator

<b>authentication-controller : Authentication Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>certificates-controller : Certificates Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>cluster-controller : Cluster Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>database-controller : Database Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>feature-controller : Feature Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>file-system-controller : File System Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>license-controller : License Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>logs-controller : Logs Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>metrics-controller : Metrics Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>password-controller : Password Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>plugin-controller : Plugin Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>properties-controller : Properties Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>server-controller : Server Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>ssl-certificate-controller : Ssl Certificate Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>support-assistant-controller : Support Assistant Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>trust-controller : Trust Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>
<b>workflow-tokens-controller : Workflow Tokens Controller</b>	<a href="#">Show/Hide</a>   <a href="#">List Operations</a>   <a href="#">Expand Operations</a>   <a href="#">Raw</a>

GET /api/server/status status

Implementation Notes

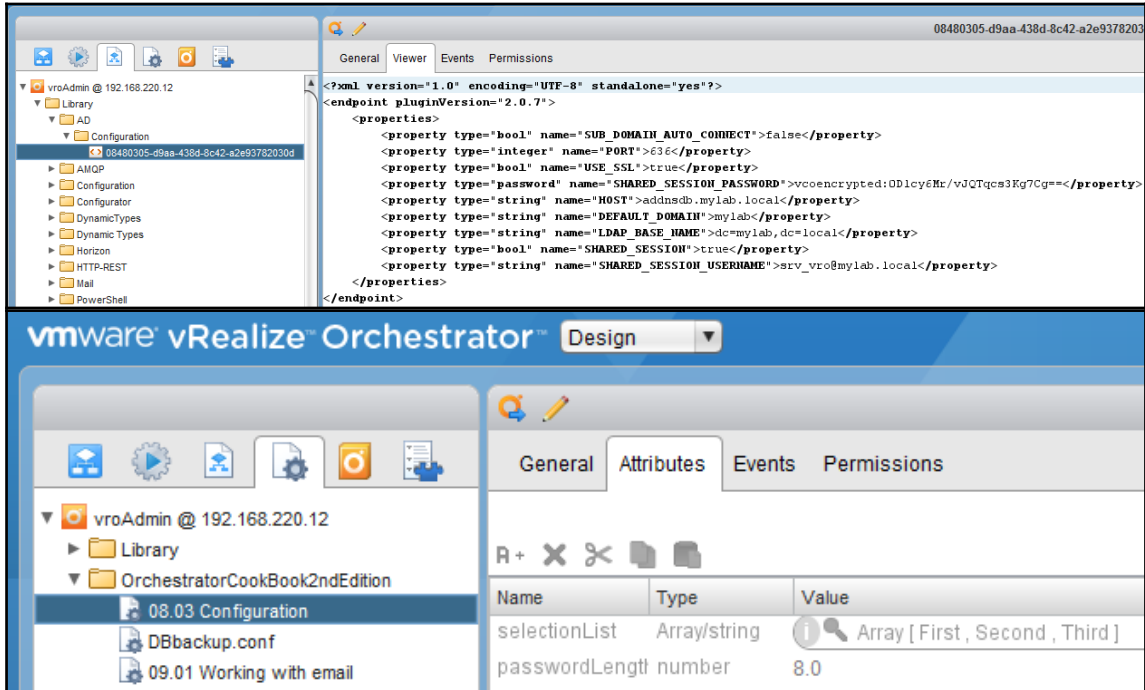
status

Response Content Type

Response Messages

HTTP Status Code	Reason	Response Model
200	OK	<p>Model   Model Schema</p> <pre>{   "id": "",   "error": "",   "warning": "",   "requestedStatus": "",   "initialStatus": "",   "currentStatus": "",   "progress": "",   "finished": false }</pre>
401	Unauthorized	
403	Forbidden	
404	Not Found	

# Chapter 8: Better Workflows and Optimized Working



Attributes

Name	Type	Value	Description
<input type="checkbox"/> selection	Array/string	08.03 Configuration : selectionList	08.03 Configuration : selectionList
<input type="checkbox"/> length	number	08.03 Configuration : passwordLen	08.03 Configuration : passwordLength

Link configuration for type : Array/string

14 elements found. Filter:  Clear

Name	Version	Folder
view-08Configuration	1.0.000	Library / View
DA-configuration	1.0.688	Library / View
09.01 Working with email	0.0.0	OrchestratorCookBook2ndEdition
DBbackup.conf	0.0.0	OrchestratorCookBook2ndEdition
08.03 Configuration	0.0.0	OrchestratorCookBook2ndEdition

Create new

Choose existing

2 elements found. Filter:  Clear

Name	Result type	Description
selectionList	Array/string	
passwordLength	number	

Cancel Select



General	Inputs	Outputs	Schema	Presentation	Parameters	References	Workflow Tokens
▼							
Name	Test						
ID	4e949b84-88d8-4c85-a192-74c6856d6fa8						
Version	0 . 0 . 3						
Workflow icon							
Owner	Check signature...						
User permissions	<input checked="" type="checkbox"/> View contents <input checked="" type="checkbox"/> Add to package <input checked="" type="checkbox"/> Edit contents						
Server restart behavior	Resume workflow run						
Resume from failed behavior	System default						
Global tags	author: Daniel ✖         glbTest ✖ <i>[Type here to add a tag...]</i>						
User tags	usrTest ✖ <i>[Type here to add a tag...]</i>						

Start Workflow : Tag workflow

**Common parameters**

\* Tagged workflow  
05.01 Scripting with Logs

\* Tag  
testTag

Value  
testValue

Global tag  
 Yes  No

Cancel Submit

General Variables Logs

Info

Messages

```
[2016-05-31 21:28:08.832] [I] -- Private tags -----  
[2016-05-31 21:28:08.834] [I] usrTest =  
[2016-05-31 21:28:08.836] [I] -- Global tags -----  
[2016-05-31 21:28:08.838] [I] glbTest =  
[2016-05-31 21:28:08.839] [I] author = Daniel
```

Start Workflow : Find objects by tag ✕

**1 Tag filters**

- 1a Filter 1
- 1b Filter 2

Advanced  
 Yes  No

Tag name

Tag value

Search in global tags  
 Yes  No

vmware vRealize Orchestrator™ Design ↻

vroAdmin @ 192.168.220.12

- ▶ Library
- ▶ OrchestratorCookBook2ndEdition
  - ▶ Chapter 07
  - ▶ Chapter 09
  - ▼ Basic Helper
    - ▼ 00.00 BasicWorkflow
      - zh\_CN.properties
      - ja\_JP.properties
      - ko\_KR.properties
      - zh\_TW.properties
      - fr\_FR.properties
      - en\_US.properties
      - de\_DE.properties

General Viewer Events Permissions

#Wed Jun 01 14:26:28 CEST 2016

```
# Do not change next line
# wid = 312b7be1-abd2-47b6-9bc9-9e44c80ad168

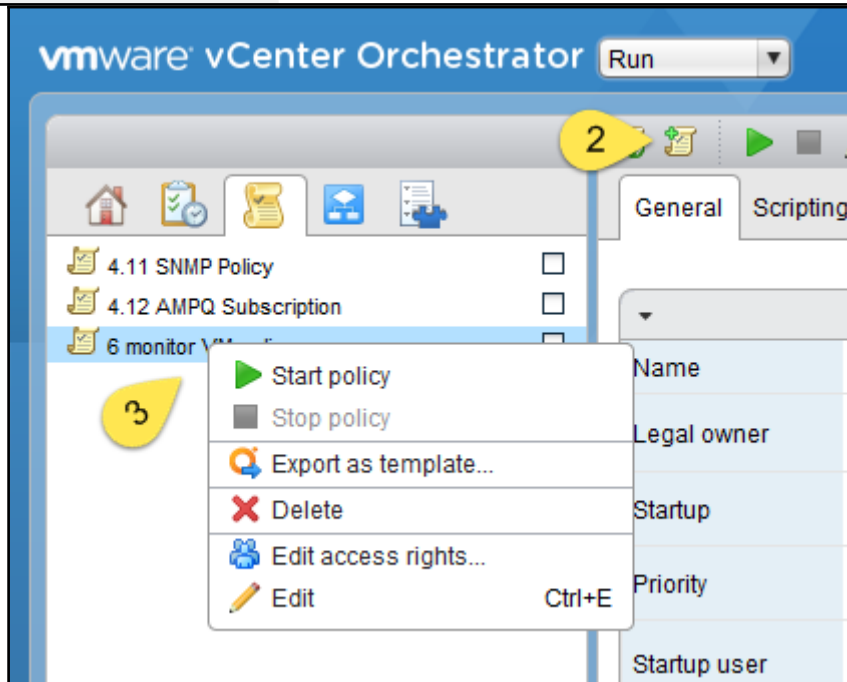
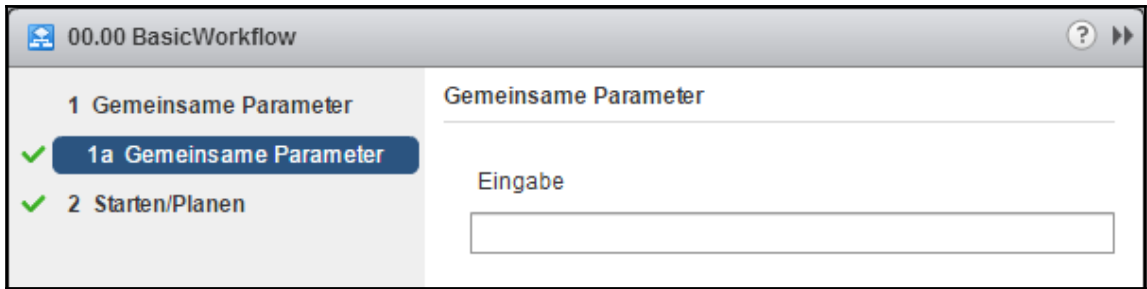
workflow.description = This is a basic workflow

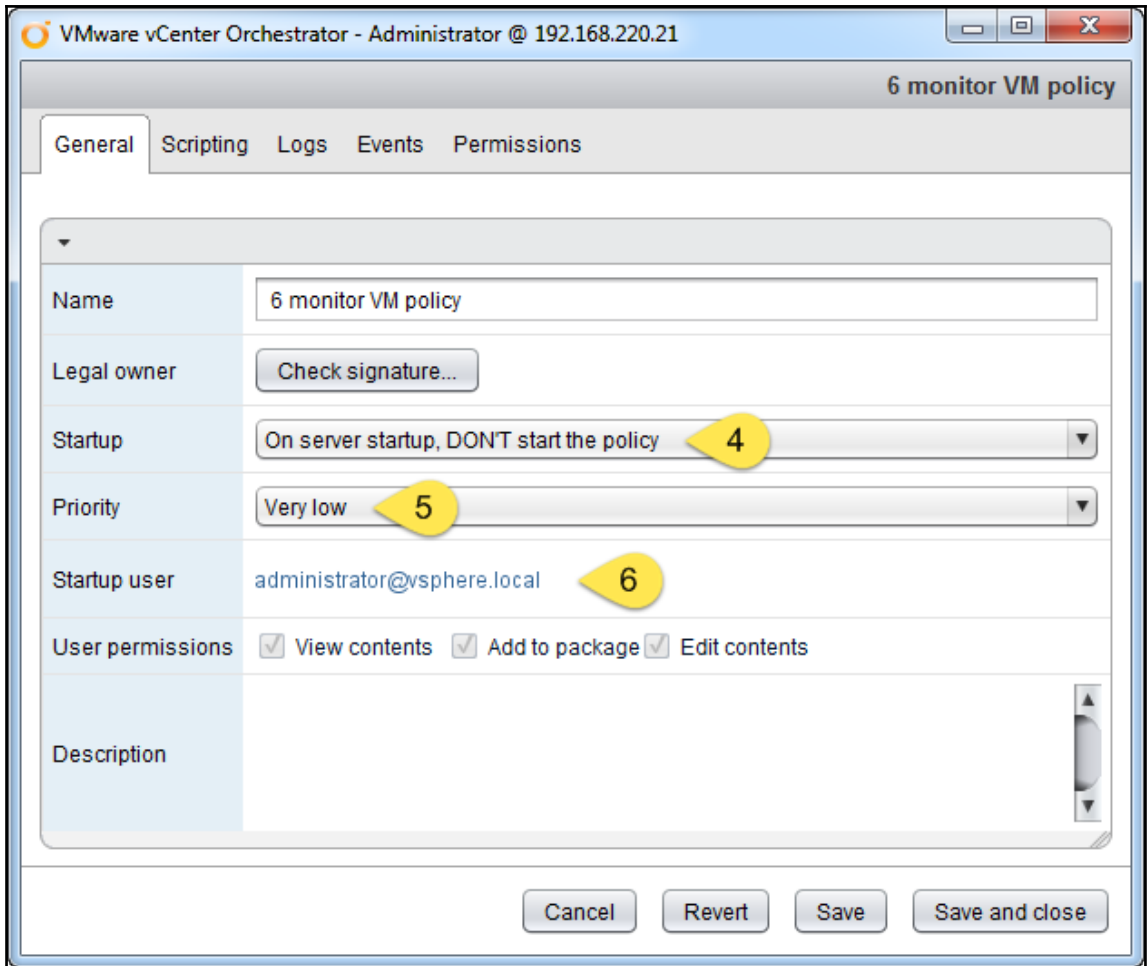
inputParameter.input.description = Please enter a word

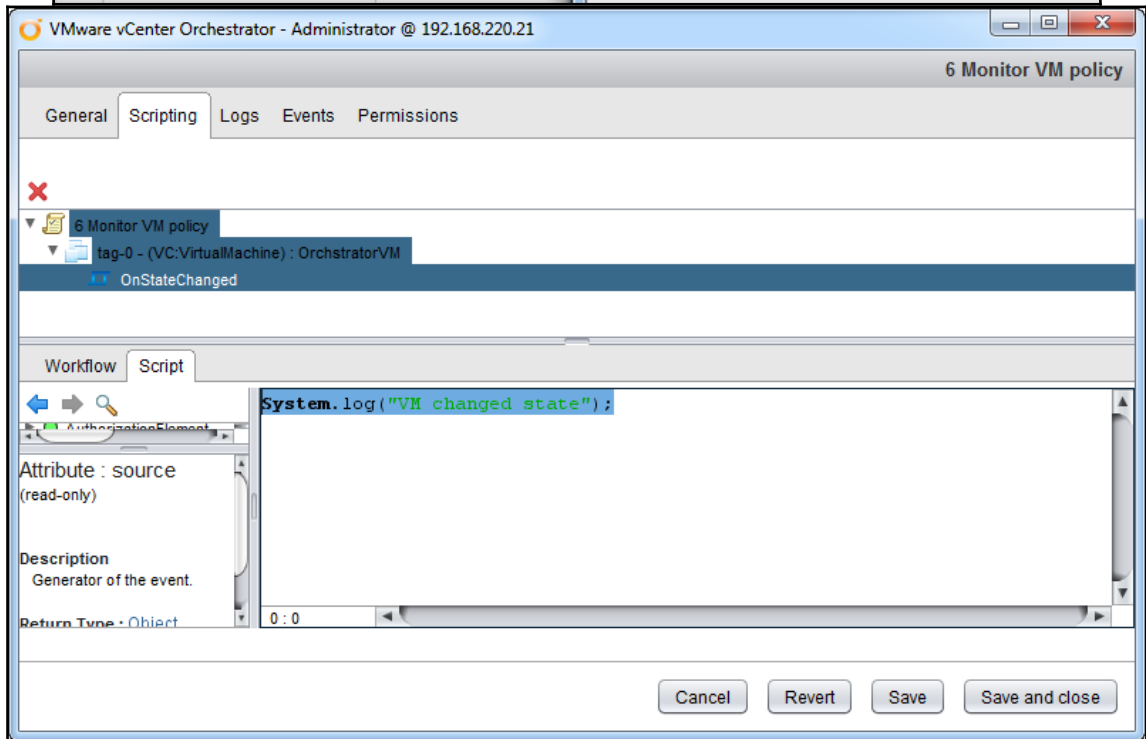
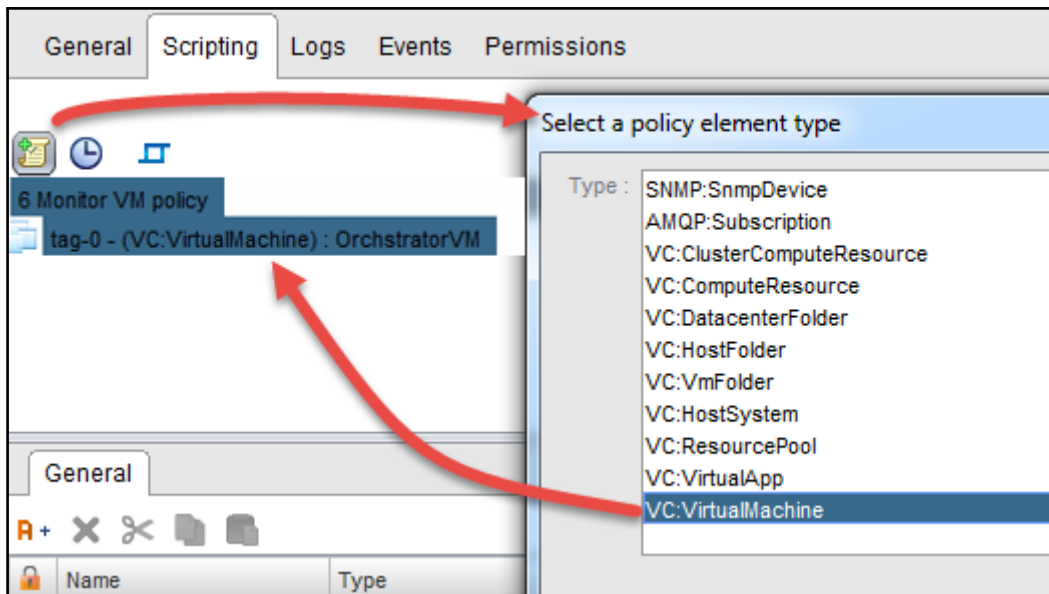
outputParameter.output.description = Thats teh output

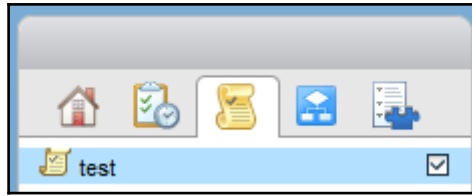
attribute.text.description = Just another word

input.description = Imput
```

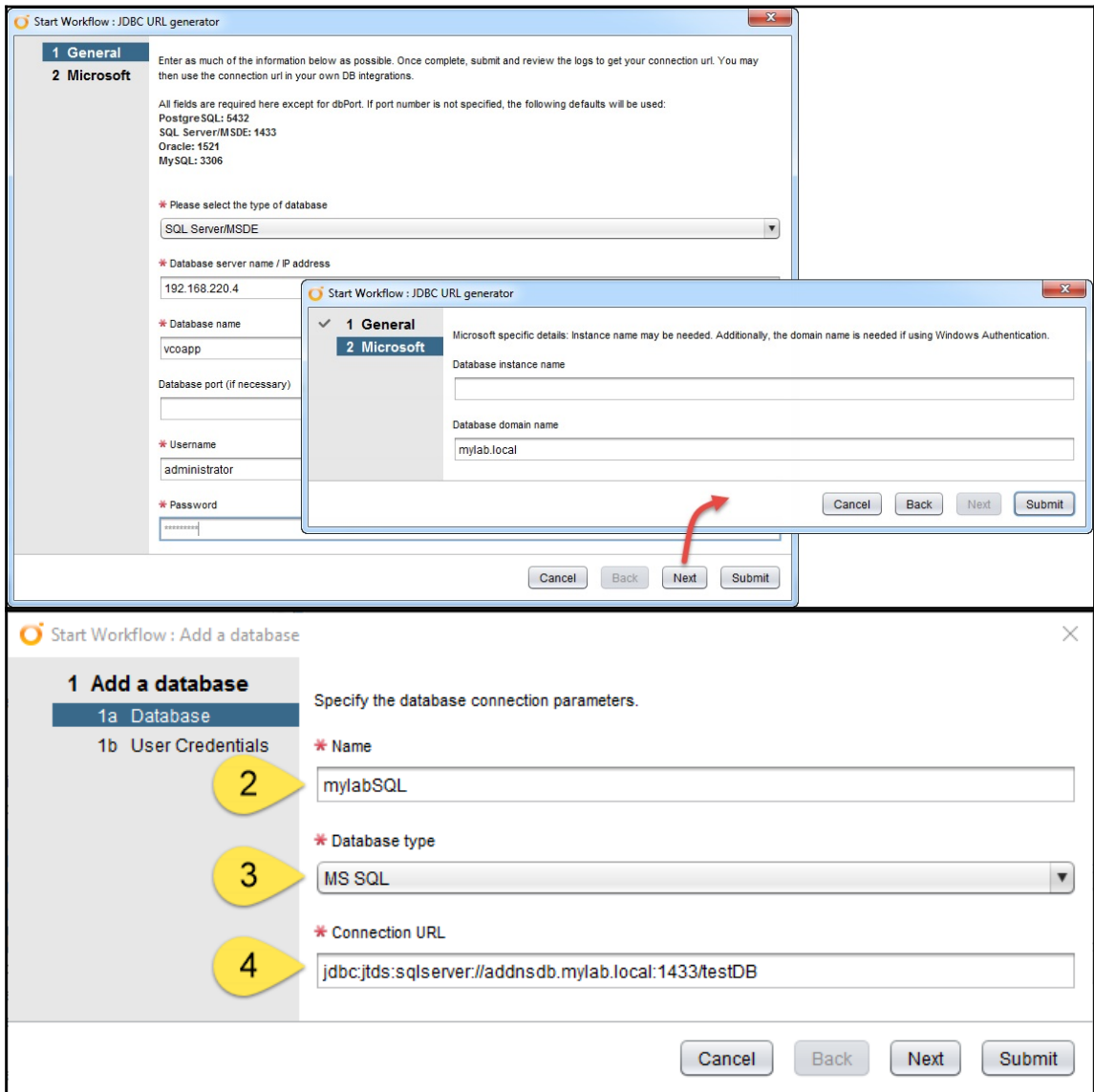




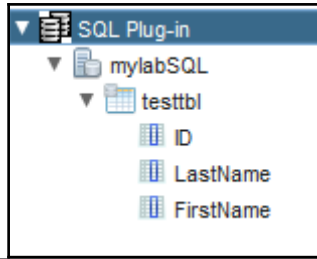




# Chapter 10: Built-in Plugins







Start Workflow : Add a PowerShell host

### 1 Add a PowerShell host

- ✓ 1a PowerShell Host
- ✓ 1b Host Type
- ✓ 1c User Credentials

Specify PowerShell host connection

\* Name  
winvco

\* Host / IP  
script.mylab.local

Port  
5985

Specify the PowerShell host type.

\* PowerShell remote host type  
WinRM

\* Transport protocol  
HTTP

\* Authentication  
Basic

If Shared Session is selected, are used. If Per User Session credentials are retrieved from the user.

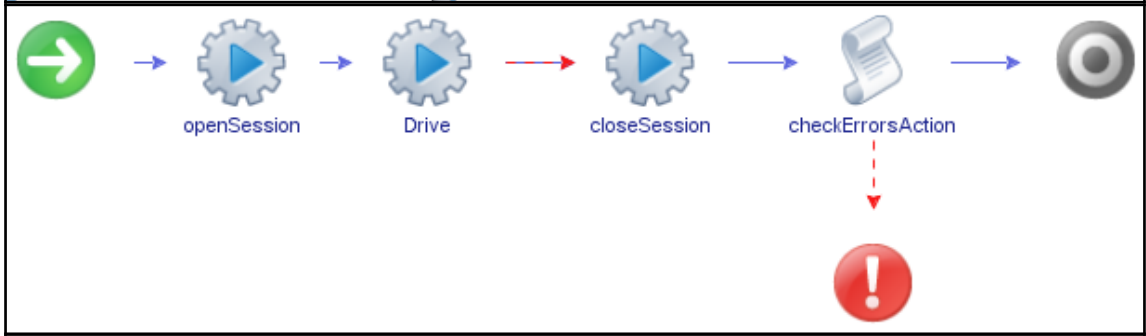
\* Session mode  
Shared Session

\* User name  
administrator

\* Password  
\*\*\*\*\*

Cancel Back Next Submit

Name	Add-VMHost
Definition	Add-VMHost [-Name] <String> [[-Location] <VContainer>] [-Port <Int32>] [-Credential <PSCredential>] [-User <String>] [-Password <String>] [-Force] [-RunAsync] [-Server <VServer>] [-Verbose] [-Debug] [-ErrorAction <ActionPreference>] [-WarningAction <ActionPreference>] [-ErrorVariable <String>] [-WarningVariable <String>] [-OutVariable <String>] [-OutBuffer <Int32>] [-WhatIf] [-Confirm]_x000D_x000A_
PSSnapin	VMware.VimAutomation.Core
CommandType	Cmdlet



General Scripting Events Permissions

Return type : PowerShell:PowerShellRemotePSObject

#	Name	Type	Description
➤	host	PowerShell:PowerShellHost	
➤	sessionId	string	
➤	Drive	String	

```

PowerShell:PowerShellRemotePSObject Drive(PowerShell:PowerShellHost host,string sessionId,String Drive)
var psScript = ''
psScript += 'Get-PSDrive -Name ' + Drive + '\n';
return System.getModule("com.vmware.library.powershell").invokeScript( host,psScript,sessionId) ;
  
```

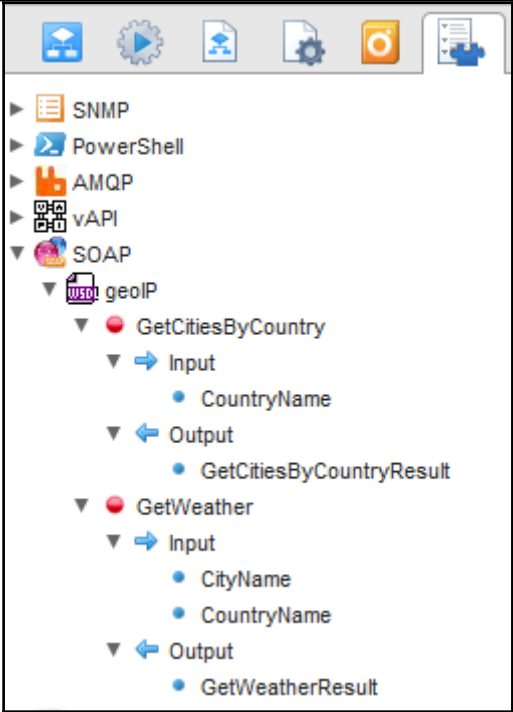
```

<?xml version="1.0"?>
- <Objs xmlns="http://schemas.microsoft.com/powershell/2004/04" Version="1.1.0.1">
  - <Obj RefId="0">
    - <TN RefId="0">
      <T>System.Globalization.CultureInfo</T>
      <T>System.Object</T>
    </TN>
    <ToString>en-AU</ToString>
    - <Props>
      <I32 N="LCID">3081</I32>
      <S N="Name">en-AU</S>
      <S N="DisplayName">English (Australia)</S>
      <S N="IetfLanguageTag">en-AU</S>
      <S N="ThreeLetterISOLanguageName">eng</S>
      <S N="ThreeLetterWindowsLanguageName">ENA</S>
      <S N="TwoLetterISOLanguageName">en</S>
    </Props>
  </Obj>
</Objs>

```

PS C:\Users\Daniel> Get-Culture

LCID	Name	DisplayName
3081	en-AU	English (Australia)



The image shows two sequential screenshots of a workflow configuration interface for invoking a SOAP operation.


**Top Screenshot:** The workflow is titled "Start Workflow : Invoke a SOAP operation". The first step is "1 Invoke a SOAP operation", with sub-steps "1a Operation" and "1b Inputs". The "Name of the SOAP operation to be invoked." field contains "GetCitiesByCountry" (highlighted with a red callout '2'). The right-hand pane shows a tree view of SOAP operations under "SOAP" and "geoIP", with "GetCitiesByCountry" selected. Below the main area are buttons for "Cancel", "Back", "Next", and "Submit".

**Bottom Screenshot:** The workflow is the same, but the sub-step "1b Inputs" is active. The "Input parameters used by the SOAP operatik" section shows a "parameter1" field with the value "Germany" (highlighted with a yellow callout '3'). The right-hand pane displays the XML output of the "GetCitiesByCountry" operation, showing a list of cities for Germany (highlighted with a red callout '4'). Below the main area are buttons for "Cancel", "Back", "Next", and "Submit".

**SOAP Tree View (Top Screenshot):**


- SOAP
  - geoIP
    - GetCitiesByCountry
      - Input
        - CountryName
      - Output
        - GetCitiesByCountryResult
    - GetWeather
      - Input
        - CityName
        - CountryName
      - Output
        - GetWeatherResult


**Add Roles Wizard** [X]


 **Confirm Installation Selections**

Before You Begin  
Server Roles  
AD CS  
    Role Services  
    Setup Type  
    CA Type  
    Private Key  
        Cryptography  
        CA Name  
        Validity Period  
    Certificate Database  
**Confirmation**  
Progress  
Results


To install the following roles, role services, or features, click Install.

 1 warning, 1 informational messages below

 This server might need to be restarted after the installation completes.

 **Active Directory Certificate Services**

**Certification Authority**

 The name and domain settings of this computer cannot be changed after Certification Authority has been installed.

CA Type :	Enterprise Root
CSP :	RSA#Microsoft Software Key Storage Provider
Hash Algorithm :	SHA1
Key Length :	2048
Allow CSP Interaction :	Disabled
Certificate Validity Period :	8/11/2019 4:43 AM
Distinguished name :	CN=MyLab-ADDNS-CA,DC=MyLab,DC=local
Certificate Database Location :	C:\Windows\system32\CertLog
Certificate Database Log Location :	C:\Windows\system32\CertLog

[Print, e-mail, or save this information](#)

< Previous    Next >    **Install**    Cancel

Start Workflow : Add an Active Directory server

**1 General**

- 1a Connection
- 1b Authentication
- 1c Options

Configuration name: MyLab AD **2**

\* Host: central.mylab.local **3**

\* Port (default: 389): 636 **4**

\* Base: dc=mylab,dc=local **5**

Use SSL:  Yes  No

Do not ask for confirmation when importing an SSL certificate:  Yes  No

Default domain: @mylab.local **7**

**6**

Cancel Back Next Submit

Start Workflow : Add a broker

**1 Add a broker**

- ✓ 1a AMQP broker properties
- 1b AMQP connection proper...

Fill in the broker connection properties.

\* Host

Port

\* Virtual host

Use SSL  
 Yes  No

\* User name

\* Password

Cancel Back Next Submit

VMware vCenter Orchestrator - Administrator @ 192.168.220.21

4.12 AMPQ Subscription

General Scripting Logs Events Permissions

✗

4.12 AMPQ Subscription

subscription - (AMQP:Subscription) : 4.12 AMPQ subscription to vco [vco]

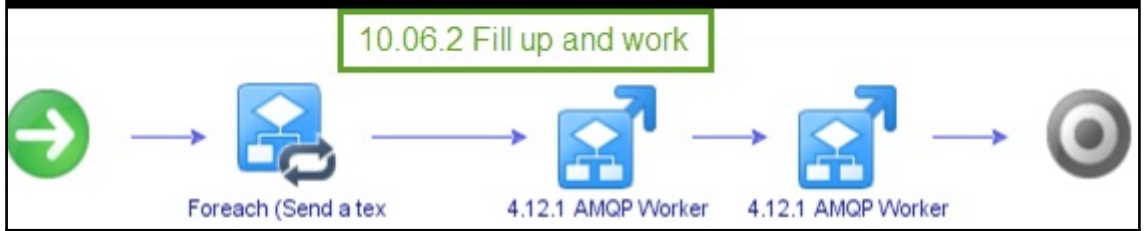
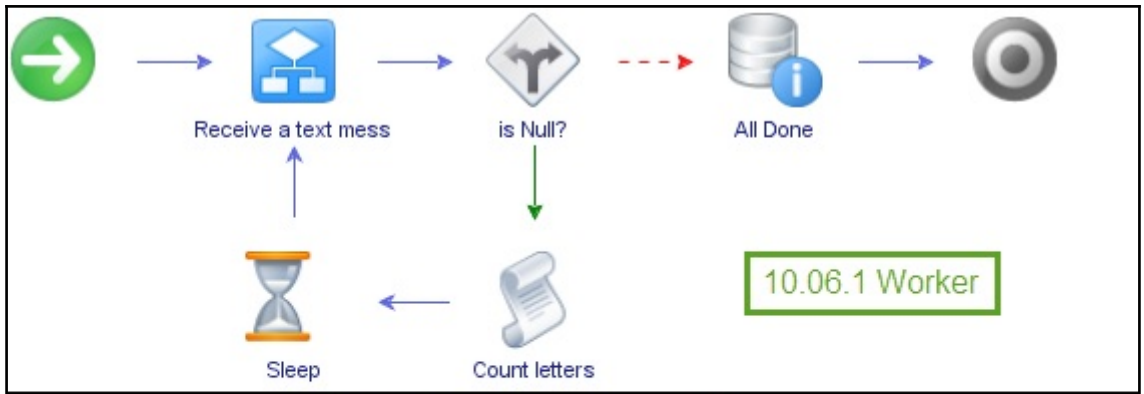
7 OnMessage

Workflow Script

4.12.1 AMQP Worker 🔍 ✗

8

Cancel Revert Save Save and close





## Users

**Users**

Virtual Hosts

Policies

▼ All users

Filter:   Regex (?) 2 items (show at most )

Name	Tags	Can access virtual hosts	Has password
guest	administrator	/	•
testuser	Admin	No access	•

(?)



▼ Add a user

Username:  \*

Password:  \*  \*



(confirm)

Tags:  (?)

Set Admin | Monitoring | Policymaker | Management | None

Add user

---

# Chapter 11: Additional Plugins

Start Workflow : Create NSX endpoint ×

**Common parameters**

2 \* Endpoint name  
NSX mylab

\* NSX username  
admin

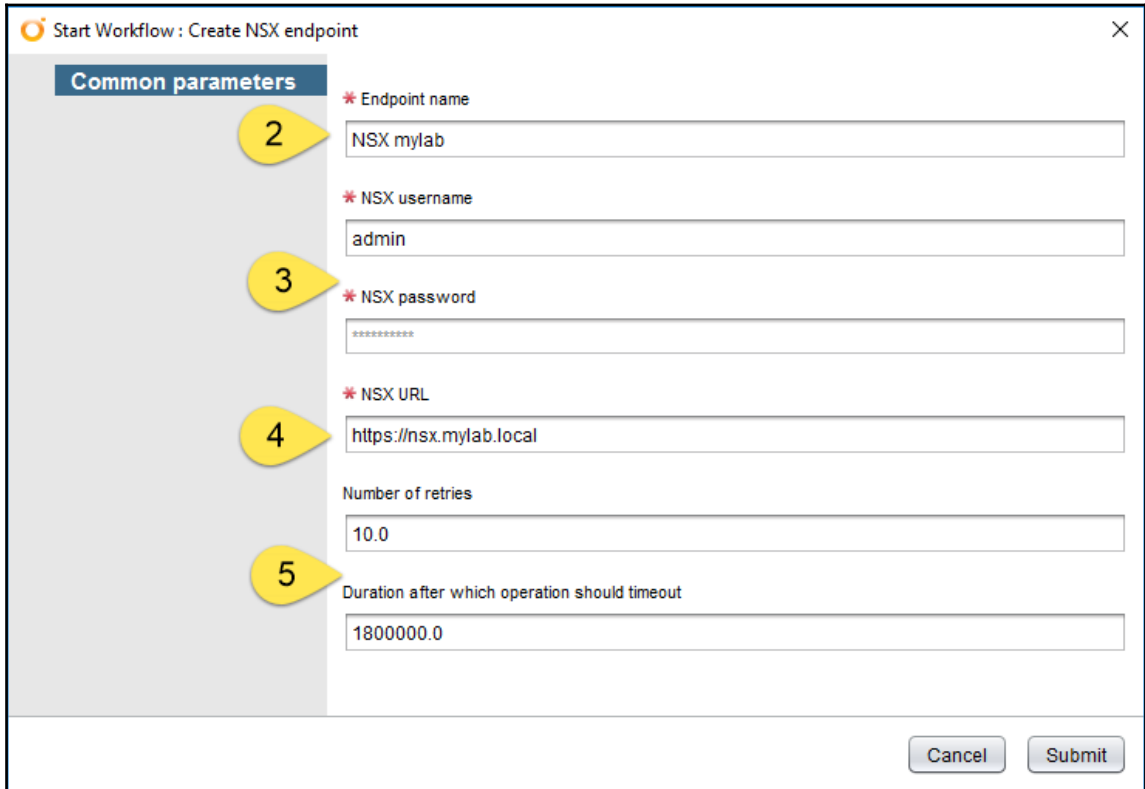
3 \* NSX password  
\*\*\*\*\*

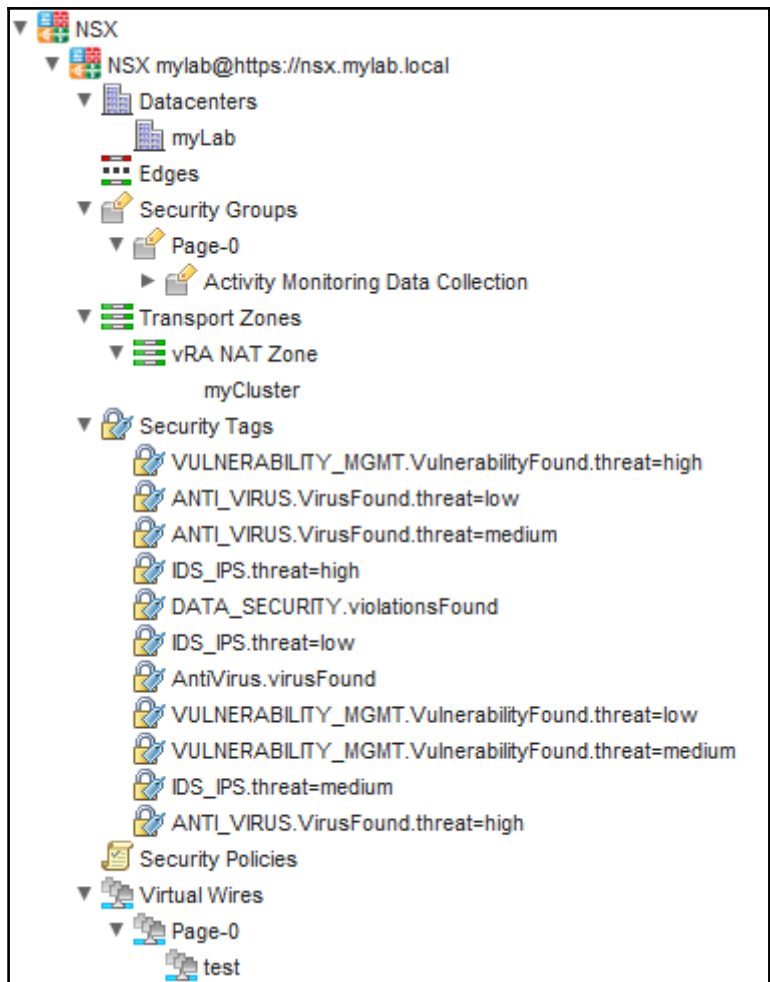
4 \* NSX URL  
https://nsx.mylab.local

Number of retries  
10.0

5 Duration after which operation should timeout  
1800000.0

Cancel Submit





<ul style="list-style-type: none"> <li>Security Groups               <ul style="list-style-type: none"> <li>Page-0                   <ul style="list-style-type: none"> <li>Activity Monitoring Data Collection</li> </ul> </li> </ul> </li> <li>Transport Zones               <ul style="list-style-type: none"> <li>vRA NAT Zone                   <ul style="list-style-type: none"> <li>myCluster</li> </ul> </li> </ul> </li> </ul>	objectId	vdnscope-1	2
	objectTypeName	VdnScope	
	revision	0	

Start Workflow : Create logical switch

**Common parameters**

5 \* NSX endpoint  
NSX mylab@https://nsx.mylab.local

6 \* Transport zone id  
vDNSscope-1

7 \* Logical switch name  
Internal vRO

Description

8 Tenant id

Cancel Submit

**Navigator**

Home

**Networking & Security**

- NSX Home
- Dashboard
- Installation
- Logical Switches**

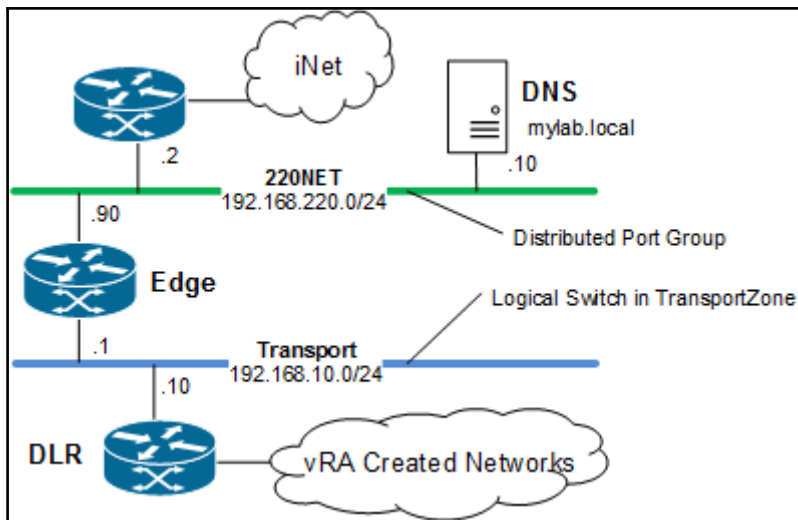
**Logical Switches**

NSX Manager: 192.168.220.13

+ | | X | | | Actions

Segment ID	Name	Status	Transport Zone
5001	Internal vRO	Normal	vRA NAT Zone
5000	test	Normal	vRA NAT Zone

- Add IP pools to DHCP
- Add load balancer to edge
- Add NAT rules
- Add secondary IP addresses to edge vNIC
- Add static routes
- Add VMs and IPSet to security group
- Add VMs to existing load balancer pools
- Add VMs to security group
- Apply security policy on security group
- Apply security tags on VM
- Configure firewall rules between interfaces
- Connect logical switch to router
- Create edge
- Create logical switch
- Create security group
- Delete edge
- Delete logical switch
- Delete NAT rules
- Delete security group
- Delete static routes from edge
- Disconnect router interface
- Remove secondary IP addresses assigned to edge vNIC
- Remove VMs from load balancer pools
- Set default route



General Resources **Network** Properties Alerts

**\* Network:** Map a network path to a network profile ⓘ

Network Path	Network Profile
<input checked="" type="checkbox"/> 220Net	220Net
<input type="checkbox"/> DSwitch-DVUplinks-41	
<input type="checkbox"/> DvPG-220	
<input type="checkbox"/> iNet	
<input checked="" type="checkbox"/> vxw-dvs-41-virtualwire-13-sid-5000-transport-192.168.10.0%2...	transfer
<input type="checkbox"/> vxw-vmknicPg-dvs-41-0-c8abaaf0-b596-4222-a7a1-9223bcf6...	

External network Profile

**Advanced Settings**

Transport zone: vRA NAT Zone

Security groups:  Activity Monitoring Data Collection

NSX DLR

Logical Network

External Network Profile

**Routed gateways:**

Name	Network Path	Network Profile
<input checked="" type="checkbox"/> vRADLR	transfer-192.168...	transfer

Start Workflow : Add View Pod In Configuration

**Common parameters**

2 Specify Alias for Horizon View Pod:  
mylab

3 \* Horizon View Connection Server FQDN:  
connection1.mylab.local

\* View Connection Server Administrator User name:  
administrator

4 \* View Connection Server Administrator Password:  
\*\*\*\*\*

\* Domain:  
mylab

Cancel Submit

Start Workflow : Add Delegated Administrator Configuration

**Common parameters**

Specify the Delegated Administrator who is allowed to manage the selected desktop and application pools.

\* Horizon View Pod:  
mylab

Set this pod as default:  
 Yes  No

Add all desktop pools in this Horizon View Pod?  
 Yes  No

Add all application pools in this Horizon View Pod?  
 Yes  No

\* Add Delegated Administrator user or group:  
User

\* Delegated Administrator User name:  
Administrator

Cancel Submit

*Annotations: 7, 8, 9*

Start Workflow : Manage Self Service Pool Configuration

**Common parameters**

Specify the desktop and application pools that can be accessed by self service workflow

\* Horizon View Pod:  
mylab

All desktop pools in this Horizon View Pod?  
 Yes  No

All application pools in this Horizon View Pod?  
 Yes  No

Cancel Submit

*Annotation: 12*



Start Workflow : Add User(s) to Desktop Pool

**Common parameters**

Delegated Administrator: mylab.localadministrator

\* Horizon View Pod: mylab

\* Desktop Pool ID: test

\* Enter the User Names. Specify with username@domain.com syntax, separate multiple users with commas. ie. janes@domain.com, joes@domain.com

viewuser1@mylab.local

Cancel Submit

### VMware Horizon 7 Administrator

Updated 8/7/2016 8:10 PM

Sessions 0  
 Problem vCenter VMs 0  
 Problem RDS Hosts 0  
 Events 0  
 System Health 6 1 1 0

**Inventory**

- Dashboard
- Users and Groups
- Catalog
  - Desktop Pools

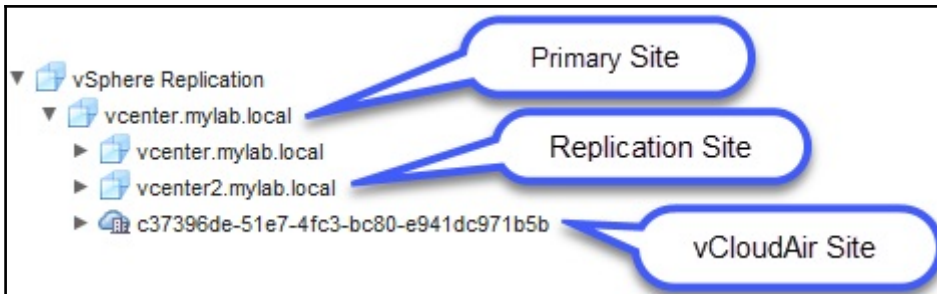
test

Summary Inventory Sessions Entitlements Events Policies

Add entitlement... Remove entitlement

Name
ViewUser1@mylab.local (ViewUser1)
Administrator@mylab.local (Administrator)

- Add Managed Machines to Pool
- Add Unmanaged Machines to Pool
- Add User(s) to App Pool
- Add User(s) to App Pools
- Add User(s) to Desktop Pool
- Advanced Desktop Allocation
- Application Entitlement
- Assign User
- Desktop Allocation
- Desktop Allocation for Users
- Desktop Assignment
- Desktop Entitlement
- Desktop Recycle
- Desktop Refresh
- Global Entitlement Management
- Recompose Pool
- Recompose Pools
- Register Machines to Pool
- Remove Users From Application Pool
- Remove Users From Desktop Pool
- Session Management
- Set Maintenance Mode
- Unassign User
- Update App Pool Display Name
- Update Desktop Pool Display Name
- Update Desktop Pool Min Size
- Update Desktop Pool Spare Size



Start Workflow : Register VC Site

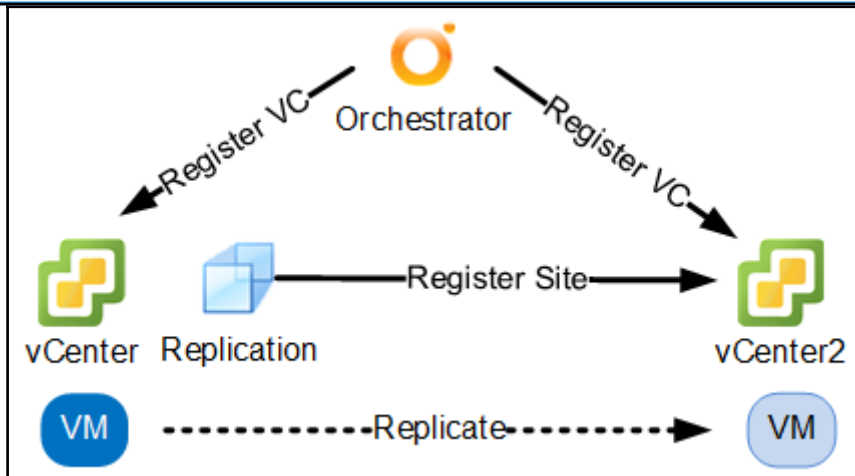
**Site**

\* Site

\* Username

\* Password

Cancel Submit



- ▼ Configure Replication
  - ▶ Configure Replication
  - ▶ Configure Replication from Cloud
  - ▶ Configure Replication to Cloud
  - ▶ Protect multiple VMs
  - ▶ Reverse a Cloud Replication
- ▼ Recover from Cloud
  - ▶ Run Planned Migration from Cloud
  - ▶ Run Real Recovery from Cloud
  - ▶ Run Test Cleanup from Cloud
  - ▶ Run Test Recovery from Cloud
- ▼ Recover to Cloud
  - ▶ Run Planned Migration to Cloud
  - ▶ Run Real Recovery to Cloud
  - ▶ Run Test Cleanup at the Cloud Site
  - ▶ Run Test Cleanup to Cloud
  - ▶ Run Test Recovery at the Cloud Site
  - ▶ Run Test Recovery to Cloud
- ▼ Remote Site Management
  - ▶ Register Cloud Site
  - ▶ Register Standalone Org
  - ▶ Register VC Site
  - ▶ Unregister Cloud Site
  - ▶ Unregister Standalone Org
  - ▶ Unregister VC Site
- ▼ Stop Replication
  - ▶ Stop Replication
  - ▶ Stop Replication from Cloud
  - ▶ Stop Replication to Cloud

vm vCloud Air

Services Student304 HOL

Home > Disaster Recovery to the Cloud > All > Virtual Machines

Disaster Recovery to the Cloud in UK Slough 16

Virtual Data Centers + Resource Usage Virtual Machines Replication Status Gateways Networks

All

VDC1 10

Status	Name	Recov...	Recovery T...	Owner
☐	Stu...	Repl...	-	system

vCloud Director API Endpoint

API URL  
https://uk-slough-1-6.vchs.vmware.com/api/cc

Organization Name  
c37396de-51e7-4fc3-bc80-e941dc971b5b

Connect to a Cloud Provider

1 Connection settings

2 Virtual datacenters

3 Ready to complete

Connection settings

Enter the address and credentials of the cloud provider. This information will be used to discover the available virtual datacenters.

Cloud provider address: https://uk-slough-1-6.vchs.vmware.com/api/compute

Organization name: c37396de-51e7-4fc3-bc80-e941dc971b5b

Credentials:

User name: student304@vcahol.com

Password: \*\*\*\*\*

\* Local Site

vcenter.mylab.local

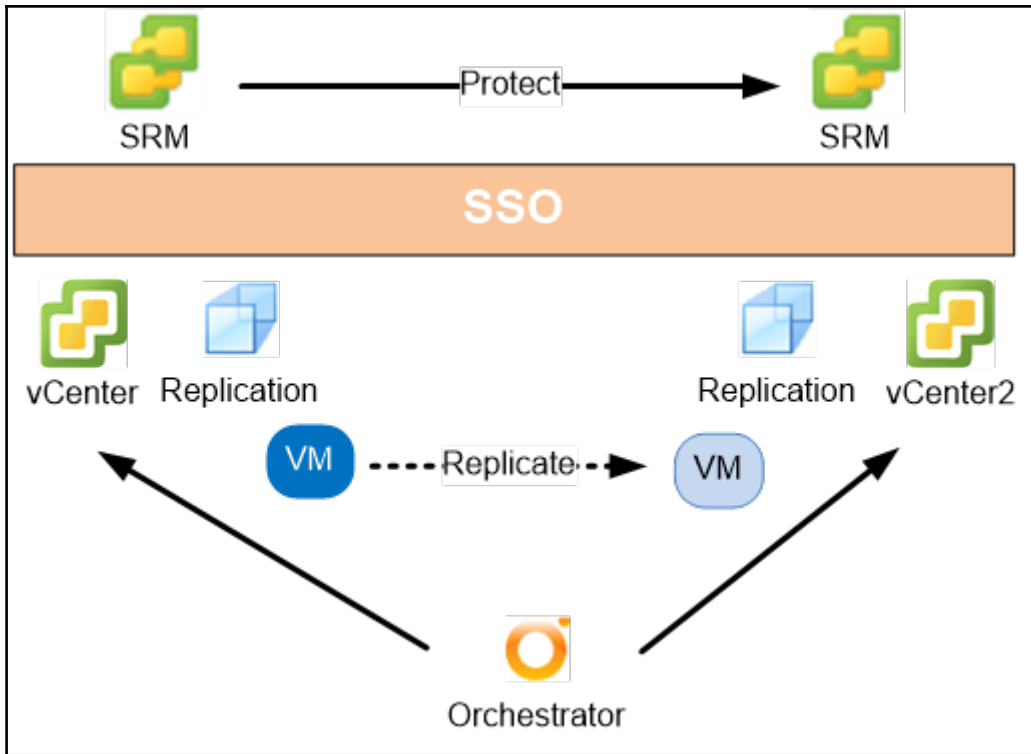
Ignore certificate warnings.  
If set to true, the certificate is accepted silently and the certificate is added to the trusted store

Yes  No

Select ( SRM:Site )

- SNMP
- PowerShell
- AMQP
- SRM
  - vcenter.mylab.local
    - Protection Groups
    - Recovery Plans

- Configuration
  - Configure Local Sites
  - Configure Remote Site
  - Login Remote Site
- Inventory Mappings
  - Add a Folder Mapping
  - Add a Network Mapping
  - Add a Resource Mapping
  - Get Datacenter Mappings
  - Get Network Mappings
  - Get Resource Mappings
- Protection Groups
  - Add Replicated VM to vSphere Replication Protection Group
  - Create Protection Group for Array Based Replication
  - Create Protection Group for vSphere Replication
  - Find ABR Protection Group By Datastore
  - Get Unassigned Replicated Datastores
  - List Protected Datastores
  - List Protection Groups
  - Protect All Unprotected Virtual Machines Associated with Protection Group
  - Protect Virtual Machine
- Recovery Plans
  - Add Protection Group to Recovery Plan
  - Get Recovery Plan State
  - Initiate Cancel Recovery Plan
  - Initiate Cleanup Recovery Plan
  - Initiate Failover Recovery Plan
  - Initiate Reprotect Recovery Plan
  - Initiate Test Recovery Plan
  - List Recovery Plans
  - Set VM Recovery Settings
- SRM Samples
  - Convert Multiple VMs to UnassignedReplicatedVMs
  - Convert VM to UnassignedReplicatedVM
  - Create ABR Group, Protect Existing VMs, Add To Recovery Plan
  - Create VM and Protect It
  - Post Provisioning SRM Configuration for VCAC Workflow
  - Set Recovery Settings from VCAC VM Properties



Manage Solution - vRealize Orchestrator Actions Adapter

Adapter Type	Description	Instances	Version	Provided by
vRealize Orchestrator Actions Adapter	Provides actions for running vRealize Orchestrat...	0	1.0.0	VMware, Inc.

Instance Settings

Display Name: MyLab vRO **10**

Description:

Basic Settings

vRealize Orchestrator Host: vro.mylab.local **11**

Credential: vRO Login **12**

**13** Test Connection **14**

Advanced Settings

Manage Credential

Credential name: vRO Login

User: srv\_vrops@mylab.local **12**

Password: .....

OK Cancel


Save Settings Close

Page 1 of 1

---

Edit Recommendation ? X

Enter recommendation text and optionally assign an action to this recommendation

 vROPS Test Alarm

Select the action to run as part of the recommendation. (Optional)

Actions:  X ▼

Alert Definition Workspace

- ✓ 1. Name and Description +
- ✓ 2. Base Object Type +
- ✓ 3. Alert Impact +
- ✓ 4. Add Symptom Definitions -

Defined On:

Filter by Object Type:  
 x

Symptom Definition Type:

+ >> All Filters power

Symptom ▲

Virtual machine is powered off

Alert Definition Summary

Name: vROPS test

Base Object Type: Virtual Machine

Impact: Health

Criticality: Symptom Based

Alert Type: Application : Performance

Symptoms

Self-Virtual Machine

**This symptom set is true when:**  
 Base object exhibits  of the following symptoms.

1. Virtual machine is powered off

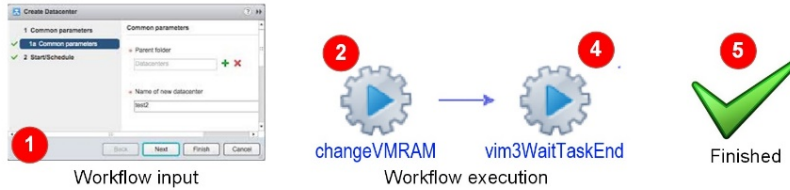
Recommendations

Priority	Description	Action
1	vROPS Test Alarm	VM: Power Operation

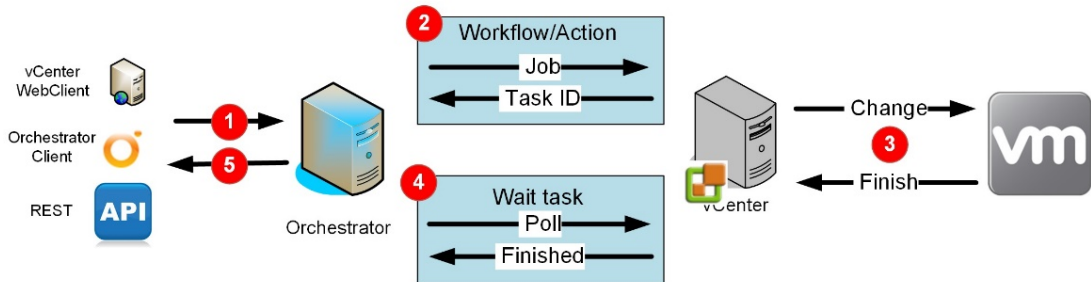


# Chapter 12: Working with vSphere

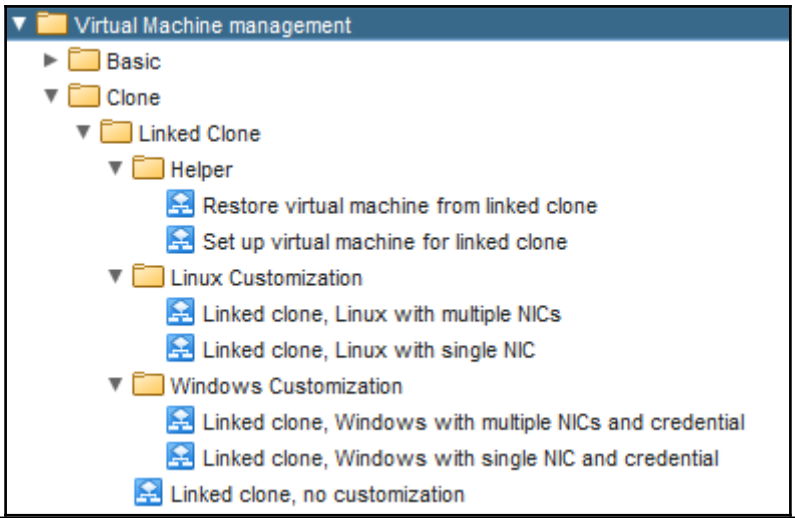
## How the user sees it



## How it works



```
Task
├── error
├── executionDate
├── executions
├── id
├── isRecurrent
├── name
├── operation
├── parameters
├── percentCompleted
├── restartInPast
├── state
├── workflow
├── addParameter(string, Object) : void
├── cancel() : void
├── resume() : void
├── suspend() : void
```



**Scripting Object - VcClusterDasVmConfigInfo**

Attribute of  
[VcClusterConfigInfo](#), [VcClusterConfigInfoEx](#), [VcClusterDasVmConfigSpec](#)

**Scripting Object Description**

The [VcClusterDasVmConfigInfo](#) data object contains the HA configuration for a single virtual machine.

All fields are optional. If you set the `modify` parameter to `true` when you call [VcComputeResource](#), an unset property has no effect on the existing property value in the cluster configuration on the Server. If you set the `modify` parameter to `false` when you reconfigure a cluster, the cluster configuration is reverted to the default values, then the new configuration values are applied.

**Attributes**

NAME	TYPE	DESCRIPTION
<b>dasSettings*</b>	<a href="#">VcClusterDasVmSettings</a>	HA settings that apply to this virtual machine. Values specified in this object override the cluster-wide defaults for virtual machines ( <a href="#">VcClusterDasConfigInfo</a> ).
<b>dynamicProperty*</b>	<a href="#">VcDynamicProperty []</a>	Set of dynamic properties. This property is optional because only the properties of an object that are unknown to a client will be part of this set. This property is not readonly just in case we want to send such properties from a client in the future.
<b>dynamicType*</b>	string	Reserved.
<b>key</b>	<a href="#">VcVirtualMachine</a>	Reference to the virtual machine.
<b>powerOffOnIsolation*</b>	boolean	<b>Deprecated.</b> Flag to indicate whether or not the virtual machine should be powered off if a host determines that it is isolated from the rest of the compute resource. If there is nothing specified here, then the defaults are picked up from <a href="#">VcClusterDasConfigInfo</a> .  As of VI API 2.5, use <a href="#">VcClusterDasVmConfigInfo</a> , <a href="#">VcClusterDasVmSettings</a> . If you specify both <a href="#">VcClusterDasVmConfigInfo</a> and <a href="#">VcClusterDasVmSettings</a> , the value in <a href="#">VcClusterDasVmSettings</a> has precedence.
<b>restartPriority*</b>	<a href="#">VcDasVmPriority</a>	<b>Deprecated.</b> Restart priority for a virtual machine. If there is nothing specified here, then the defaults are picked up from



VMware vCenter Orchestrator - Administrator @ 192.168.220.21

Search action with result : Array/VC:VirtualMachine

1 element found. Filter: cluster

Name	Version	Result type	Module
getAllVmsOfCluster	0.2.0	Array/VC:VirtualMachine	com.vmware.library.vc...

1) cluster : VC:ClusterComputeResource

Property name: Predefined list of elements

Value: m.vmware.library.vc.cluster."getAllVmsOfCluster").call( )

Linked parameter of type VC:ClusterComputeResource

Available parameters and attributes

- cluster VC:ClusterComputeResource

Description :



Start Workflow : Add vAPI endpoint

**Common parameters**

2 \* vAPI endpoint URL  
https://vcenter.mylab.local/api

3 Do you want to use secure protocol connection?  
 Yes  No

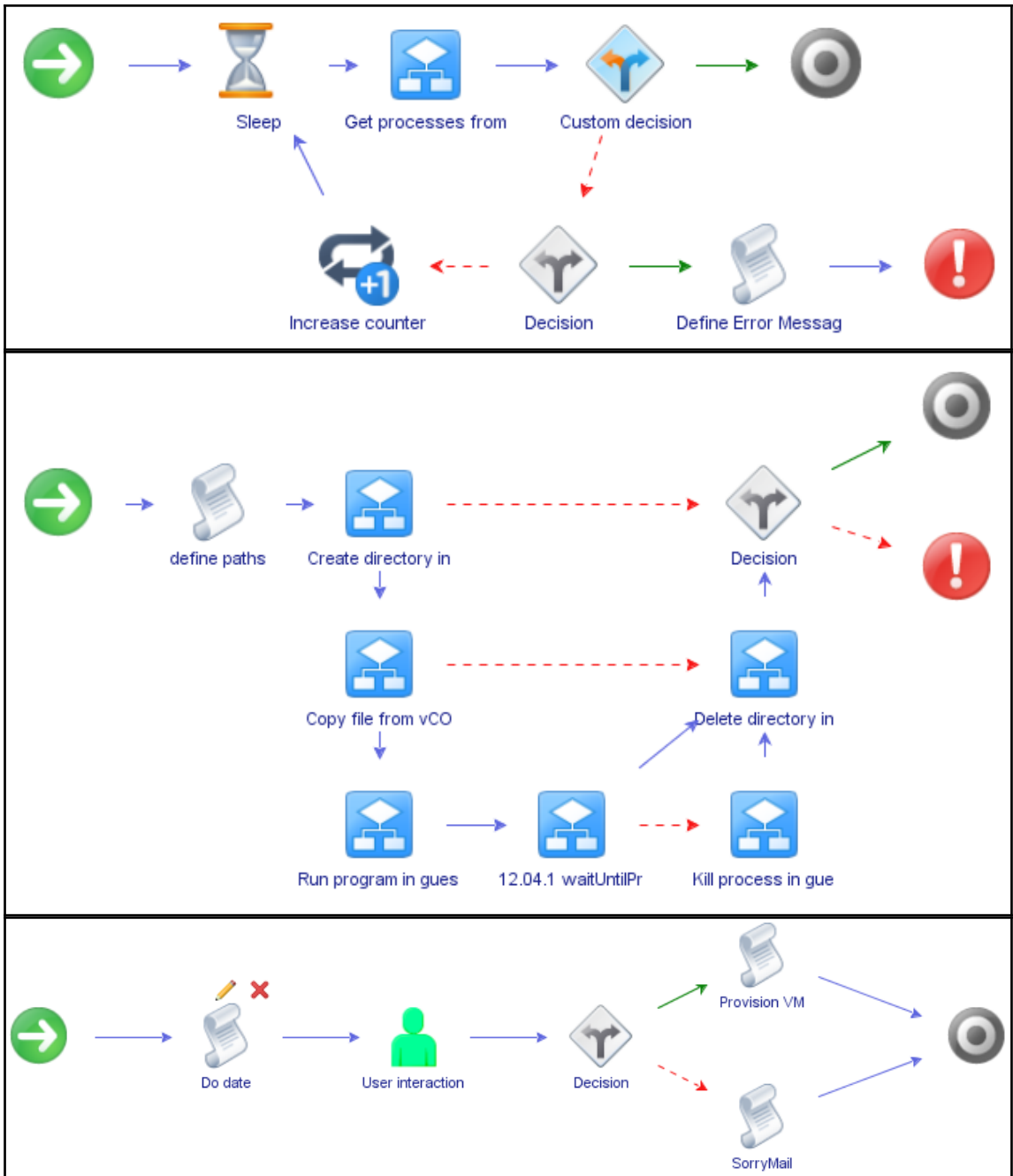
4 Do you want to ignore certificate warnings? If you select Yes, the vAPI endpoint certificate is accepted silently and the certificate is added to the trusted store  
 Yes  No

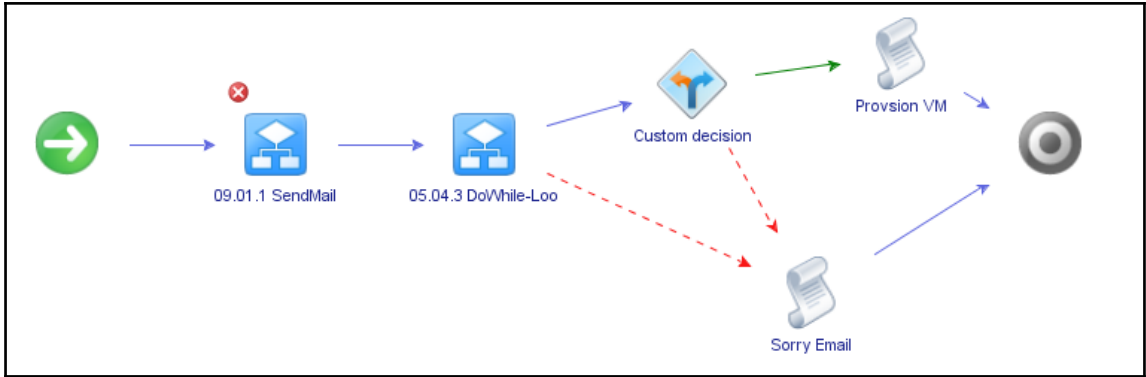
User name  
administrator@vsphere.local

5 Password  
\*\*\*\*\*

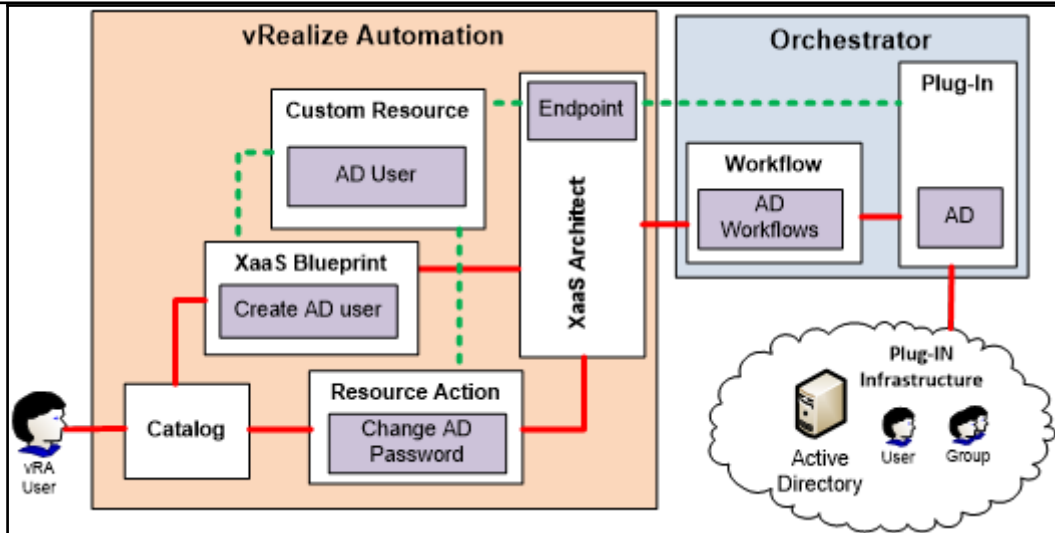
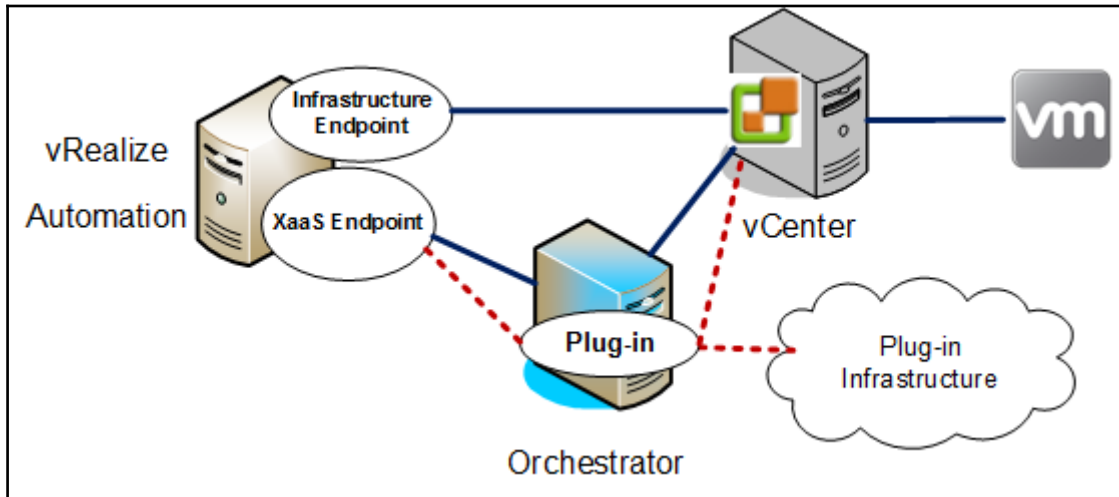
Cancel Submit







# Chapter 13: Working with vRealize Automation





Start Workflow : Create a Machine Prefix

**1 Select vCAC Host**  
**2 New Machine Prefix**

\* The vCloud Automation Center host instance

laaS host for vRA [https://iaas.mylab.local]

vRealize Automation Infrastructure

- laaS host for vRA [https://iaas.mylab.local]
  - ProvisioningGroups
  - VirtualMachines
  - Reservations
  - Hosts
  - Prefixes
  - PlatformTypes
  - Endpoints
  - Credentials
- Puppet
- vAPI
- SOAP
- vRealize Automation
  - vRA [https://vra.mylab.local] [vSphere.local]
    - Administration
    - Catalog
    - Items
    - Requests
    - Inbox

vmware vRealize Automation

Home Catalog Items Requests Inbox Design Administration Infrastructure Business Management

< Administration

Endpoints

Server Configuration

Server Configuration

Use the default Orchestrator server that was configured by the system administrator.  
 Use an external Orchestrator server.

\* Name External vRO Description external vRO Server

\* Host vro.mylab.local Authentication  Single Sign-On  Basic

\* Port 8281 \* User name

\* Password

## Edit Endpoint - vRealize Orchestrator

Manage a specific endpoint.

General

\* Name:  4

Description:

\* Address:  5

\* Credentials:  ... 6

Custom properties:

+ New Edit Delete

	* Name	Value	Encrypted
7	VMware.VCenterOrchestratorPriority	1	<input type="checkbox"/>

To avoid conflict with vRealize Automation properties, use a prefix such as a company or feature name followed by a dot for all custom property names.

OK Cancel

## vmware vRealize Automation

Welcome, configurationadmin. | Preferences | Help | Logout

Home Catalog Items Requests Inbox Design Administration Infrastructure Business Management

- < Administration
- Endpoints
- Server Configuration

### New Endpoint

Plug-in Endpoint Details

#### Active Directory server

\* Active Directory host IP/URL:

\* Port (default: 389):

\* Root:

\* Use SSL:

\* Default domain:

#### Shared Session

\* User name for shared session:

\* Password for shared session:

< Back Next > Finish Cancel

vmware vRealize Automation Welcome, configurationadmin. | Preferences | Help | Logout

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Custom Resources

Resource Mappings

**XaaS Blueprints**

Resource Actions

### New Blueprint

Workflow
General
Blueprint Form
Provisioned Resource

**Select a Workflow**

- Orchestrator
  - Library
  - OrchestratorCookBook2ndEdition
    - Basic Helper
      - 00.00 BasicWorkflow**
      - Chapter 02
      - Chapter 03
      - Chapter 04
      - Chapter 05
      - Chapter 06
      - Chapter 07
      - Chapter 08
      - Chapter 09
      - Chapter 10
      - Chapter 11
      - Chapter 12
      - Chapter 13
      - Daniels Toolbox
    - System

**Selected Workflow**

Name: 00.00 BasicWorkflow

Description: This is a basic workflow

Input parameters:

Name	Type
input	string

Displaying 1 - 1 of 1

Output parameters:

Name	Type
output	string

Displaying 1 - 1 of 1

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Configure Catalog Item


General Entitlements

Name: 00.00 BasicWorkflow  
 Source: XaaS  
 Resource type:

Description: This is a basic workflow

Icon:  Browse...  
 Recommended size: 100 x 100 pixels

Preview List view Catalog view Detail view



Status: Active  
 Quota: Unlimited  
 Service: vRA Configuration

New and noteworthy

OK Cancel


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Service Catalog

On behalf of: configurationadmin@vsphere.local

Browse the catalog for services you need.

vRA Configuration (2) Search

 00.00 BasicWorkflow  
 This is a basic workflow  
 Request

 vSphere Initial Setup  
 Publish VRA Catalog items based on vSphere endpoint virtual machine templates  
 Request

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### New Resource

Resource type Details Form

Select an orchestrator type and add the resource name and description.

\* Orchestrator Type  ✘

\* Name

Description

Version

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**XaaS Blueprints**

Resource Actions

### Create a user with a password in a group - Edit Blueprint

Workflow General Blueprint Form **Provisioned Resource**

Select an output parameter and an existing resource type to provision as the resource.

Resource type: AD User

Mapped to Orchestrator type: AD:User

Description:

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Services

Catalog Items

Actions

Entitlements

### Edit Entitlement

General Items & Approvals 9

Select the services, items, and actions to include in this entitlement. With the exception of actions and blueprint components, entitled items appear in the service catalog. Actions are available only after items are provisioned. To apply different levels of governance, you can configure individual services, items, and actions with different approval policies. You can change the approval policies associated with entitled items at any time.

Entitled Services + Entitled Items + Entitled Actions + 9

Search Search

Name	Approval Policy	Name	Approval Policy
vRA Configuration	(none)	No data selected	

Actions only apply to items defined in this entitlement

**Add Actions**

Type: All

Name: Search

Name	Type
Associate Floating IP	Machine
<input checked="" type="checkbox"/> Change a user password	AD User
Connect to Remote Console	Machine
Connect using Console Ticket	Machine
Connect using ICA	Machine
Connect using RDP	Machine
Connect using SSH	Machine
Connect using Virtual Desktop	Machine
Connect using VMRC	Machine

Apply this policy to selected items: (none)

OK Cancel

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< Items

AD User

Owned by: Me Search

Select an item type from the menu on the left to view your provisioned items. Use the Actions menu to manage your items.

View Details View Parent Details View Components Actions

Name	Description	Owner	Change a user password
vratest	vratest	configurationadmin@vsphere.io	8/20/16, 12:19 AM

Design Canvas

vSphere\_Machine\_1

General Build Information Machine Resources Storage Network Security Properties

Property Groups Custom Properties






+ New Edit Delete

Name	Value	Encrypted	Overridable	Show in Request
proptest	false	No	Yes	Yes
Extensibility.Lifecycle.Properties.VMPSMaster/Workflow32.MachineProvi...	*	No	Yes	No

To avoid conflict with vRealize Automation properties, use a prefix such as a company or feature name followed by a dot for all custom property names.

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General Variables Logs

     Info ▼

Messages

[2016-09-02 23:03:08.915] [I] lifecycleState : HashMap:1297293678  
[2016-09-02 23:03:08.916] [I] componentId : vSphere\_Machine\_1  
[2016-09-02 23:03:08.917] [I] blueprintName : test  
[2016-09-02 23:03:08.918] [I] componentTypeId : Infrastructure.CatalogItem.Machine.Virtual.vSphere  
[2016-09-02 23:03:08.919] [I] laaSTimeoutId : 648  
[2016-09-02 23:03:08.920] [I] endpointId : 398eb55d-a68e-4ff2-8f1b-07d4d4bafb93  
[2016-09-02 23:03:08.921] [I] machine : HashMap:1760420072  
[2016-09-02 23:03:08.922] [I] requestId : 02e6e771-f48e-4f74-9fc0-2ad6a911ccad  
[2016-09-02 23:03:08.923] [I] Life phase : PRE  
[2016-09-02 23:03:08.924] [I] Life state : VMPSMasterWorkflow32.MachineProvisioned  
[2016-09-02 23:03:08.925] [I] Machine externalReference : vm-607  
[2016-09-02 23:03:08.926] [I] Machine owner : configurationadmin@vsphere.local  
[2016-09-02 23:03:08.927] [I] Machine name : test21  
[2016-09-02 23:03:08.928] [I] Machine id : 35b17b78-6695-4a4d-b845-5b2036ab6a90  
[2016-09-02 23:03:08.929] [I] Machine type : 0  
[2016-09-02 23:03:08.930] [I] Machine properties : HashMap:525586808  
[2016-09-02 23:03:08.931] [I] Props VirtualMachine.Cafe.Blueprint.Id : test  
[2016-09-02 23:03:08.932] [I] Props VirtualMachine.Disk0.Name : Hard disk 1  
[2016-09-02 23:03:08.933] [I] Props \_\_InterfaceType : vSphere  
[2016-09-02 23:03:08.934] [I] Props VirtualMachine.Network0.PrimaryDns : 192.168.220.10  
[2016-09-02 23:03:08.935] [I] Props VirtualMachine.Network0.DnsSuffix : mylab.local  
[2016-09-02 23:03:08.936] [I] Props \_\_VirtualMachine.Allocation.InitialMachineState : SubmittingRequest  
[2016-09-02 23:03:08.937] [I] Props VirtualMachine.Cafe.Blueprint.Component.TypeId : Infrastructure.CatalogItem  
[2016-09-02 23:03:08.938] [I] Props VirtualMachine.Admin.UUID : 503c9de8-62f4-d194-0a0e-b7d73147dad8  
[2016-09-02 23:03:08.939] [I] Props \_\_api.request.id : 02e6e771-f48e-4f74-9fc0-2ad6a911ccad  
[2016-09-02 23:03:08.940] [I] Props VirtualMachine.Disk0.Size : 5  
[2016-09-02 23:03:08.941] [I] Props proptest : false

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