Virtuozzo

Virtuozzo Hybrid Infrastructure 4.5

MIGRATION GUIDE FOR VMWARE

Revision: 4.5 (Mar 10)

Table of contents

1 Deploying the VMware Agent from an OVF Template 3
1.1 Creating the VMware Agent Appliance 3
1.2 Configuring the VMware Agent 12
2 Deploying the VMware Agent from a QCOW2 Template 18
2.1 Configuring Networks in Virtuozzo Hybrid Infrastructure 19
2.2 Configuring User Accounts in Virtuozzo Hybrid Infrastructure 19
2.3 Creating the VMware Agent Appliance 20
2.4 Configuring the VMware Agent 23
3 Migrating Virtual Machines 28
3.1 Backing Up Virtual Machines 28
3.2 Recovering Virtual Machines 30

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1 Deploying the VMware Agent from an OVF Template

Before you proceed to deploy one or more agents, take note of the following:

- **Agent system requirements.**

  By default, a virtual appliance is assigned 4 GB of RAM and 2 vCPUs, which is optimal and sufficient for most operations. It is recommended, however, to let an agent have 8 GB of RAM and 4 vCPUs to improve backup performance if the backup traffic exceeds 100 MB/s (in 10 Gbps networks, for example).

  As for storage, appliance virtual disks occupy no more than 6 GB. Thick or thin disk format does not matter as it does not affect the appliance performance.
- **The number of agents.**

  Even though one virtual appliance can protect the entire vSphere environment, the best practice is to deploy one virtual appliance per vSphere cluster (or per host, if there are no clusters). This makes for faster backups because the appliance can attach the backed-up disks by using the HotAdd transport and therefore direct the backup traffic from one local disk to another.

  You can use both the virtual appliance and VMware Agent for Windows at the same time, as long as they are connected to the same vCenter Server or different ESXi hosts. Avoid connecting one agent to an ESXi directly and another to the vCenter Server which manages this ESXi.

  It is not recommended to use locally attached storage (i.e. storing backups on virtual disks added to the virtual appliance) if you have more than one agent.
- **Disable automatic DRS for the agents.**

  If the virtual appliance is deployed to a vSphere cluster, be sure to disable automatic vMotion for it. In the cluster DRS settings, enable individual virtual machine automation levels, and then set **Automation** level for the virtual appliance to **Disabled**.

1.1 Creating the VMware Agent Appliance

To create a VMware Agent appliance from an OVF template, do the following:

1. In Virtuozzo Cyber Cloud, click **All devices** > **Add** > **VMware ESXi** > **Virtual Appliance (OVF)**.

   The archived template will be downloaded to your machine.

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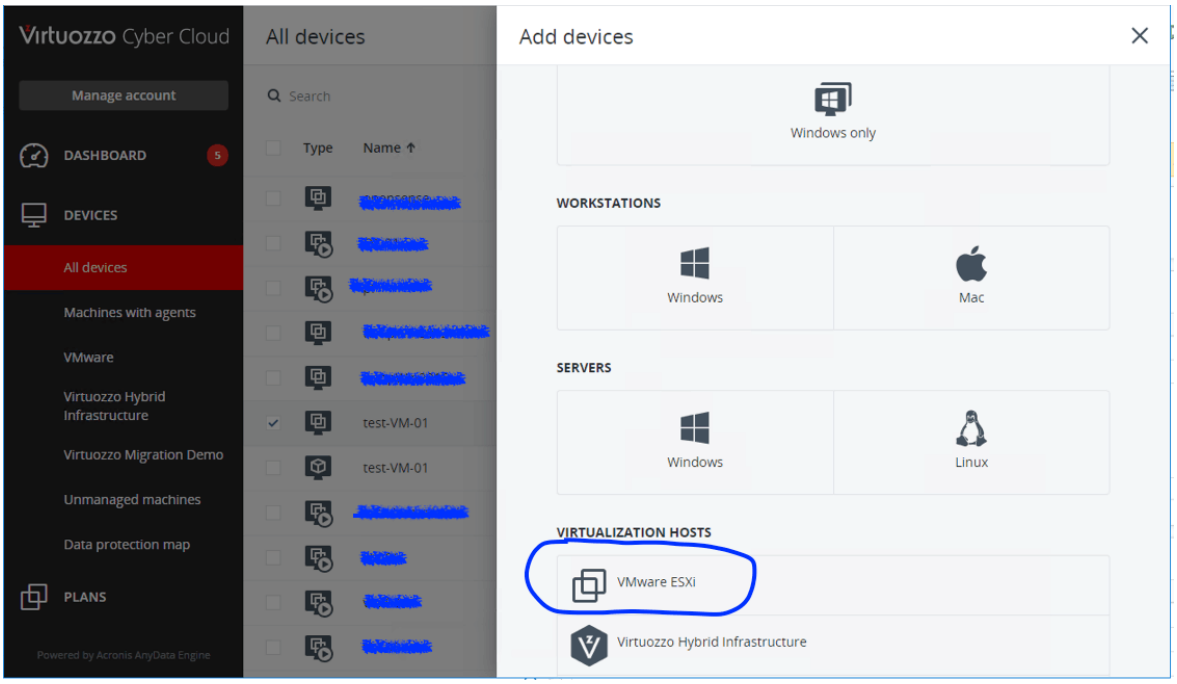

2. Unpack the archive. It will contain an OVF file and two VMDK files.
3. Make sure that these files can be accessed from the machine running the vSphere Client.
4. Start the vSphere Client and log on to the vCenter Server.
5. In the vSphere Client, click **Deploy OVF Template** in the **Actions** menu.
   The corresponding wizard will open.

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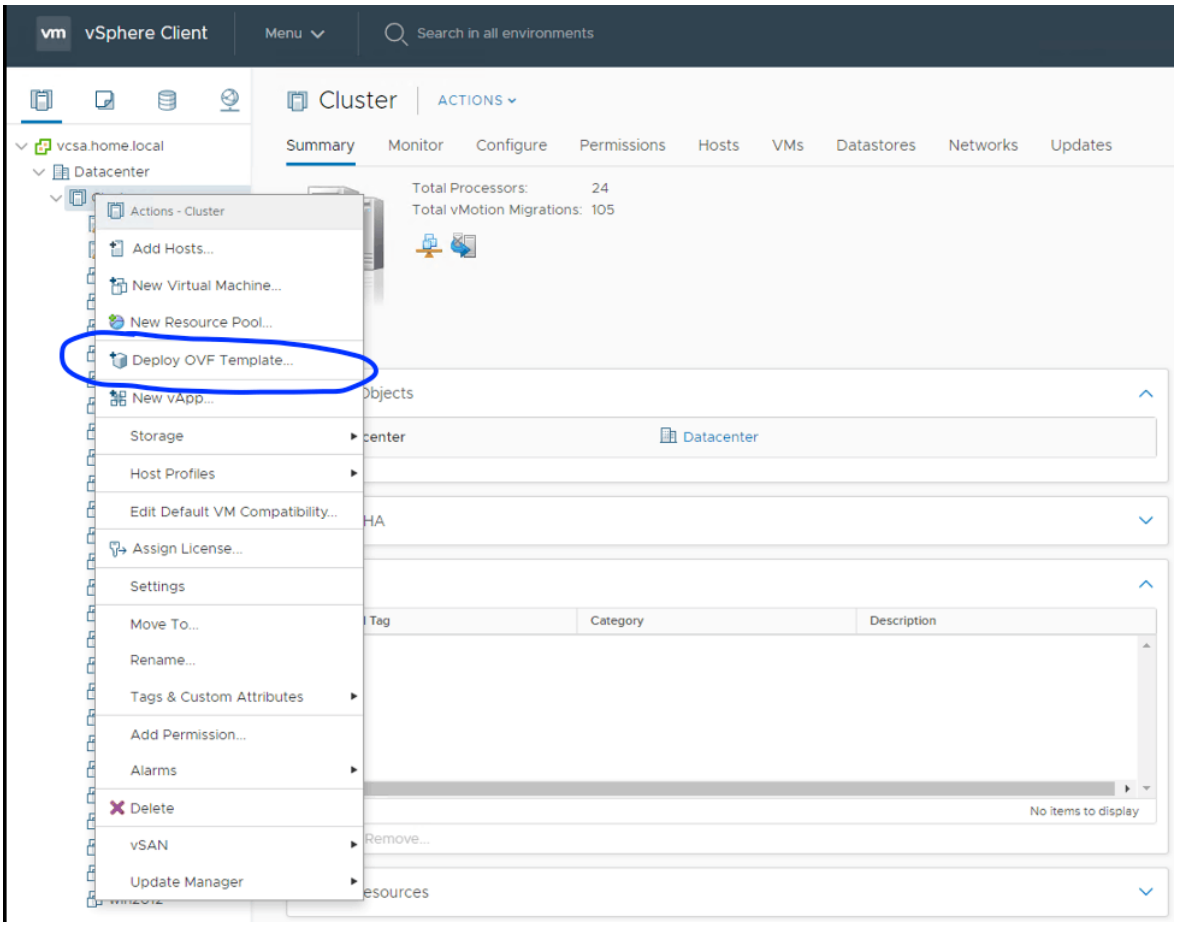

6. On wizard step #1, select all three files of the template.

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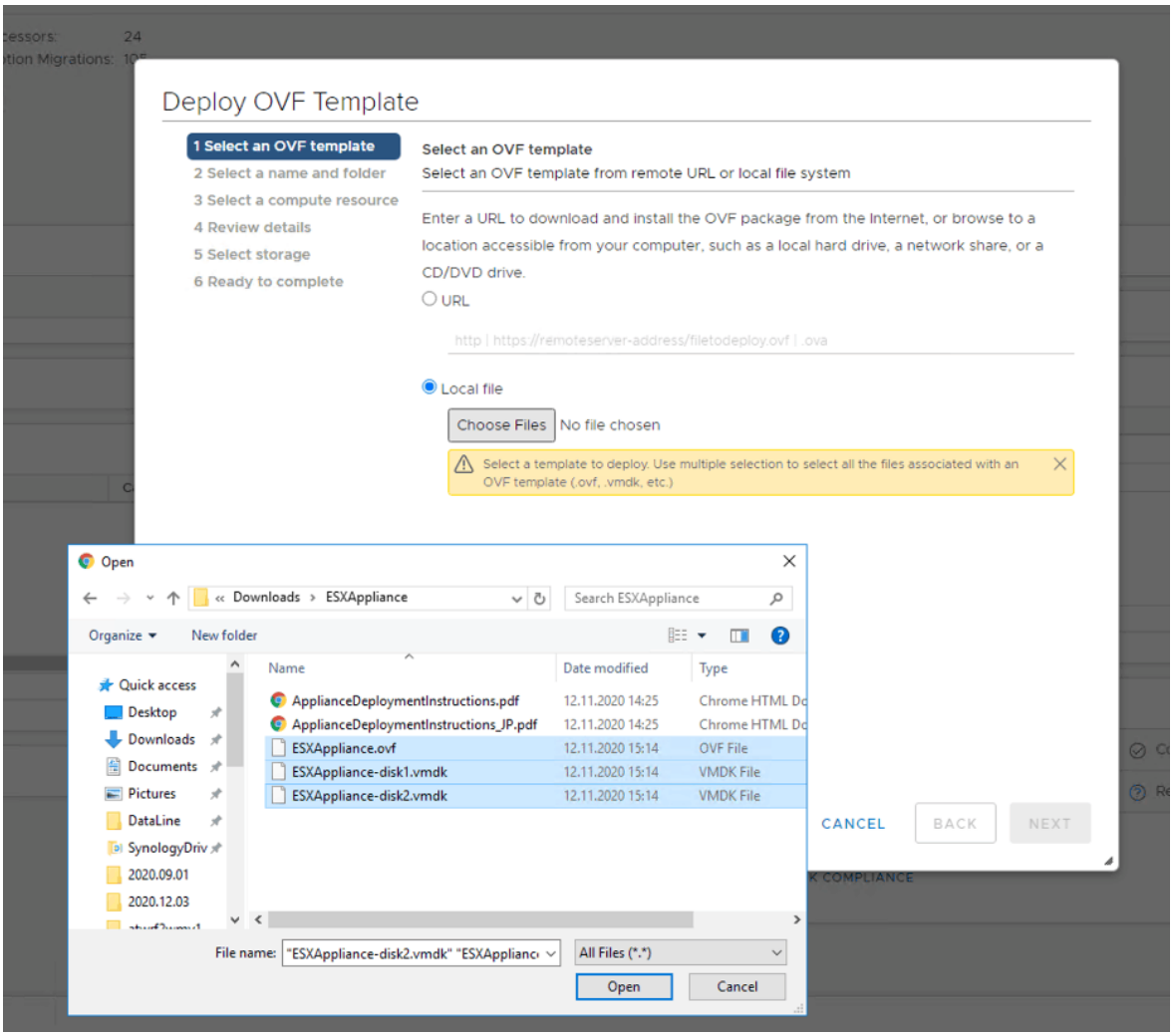

7. On wizard step #2, type in a name and choose a location for the appliance.

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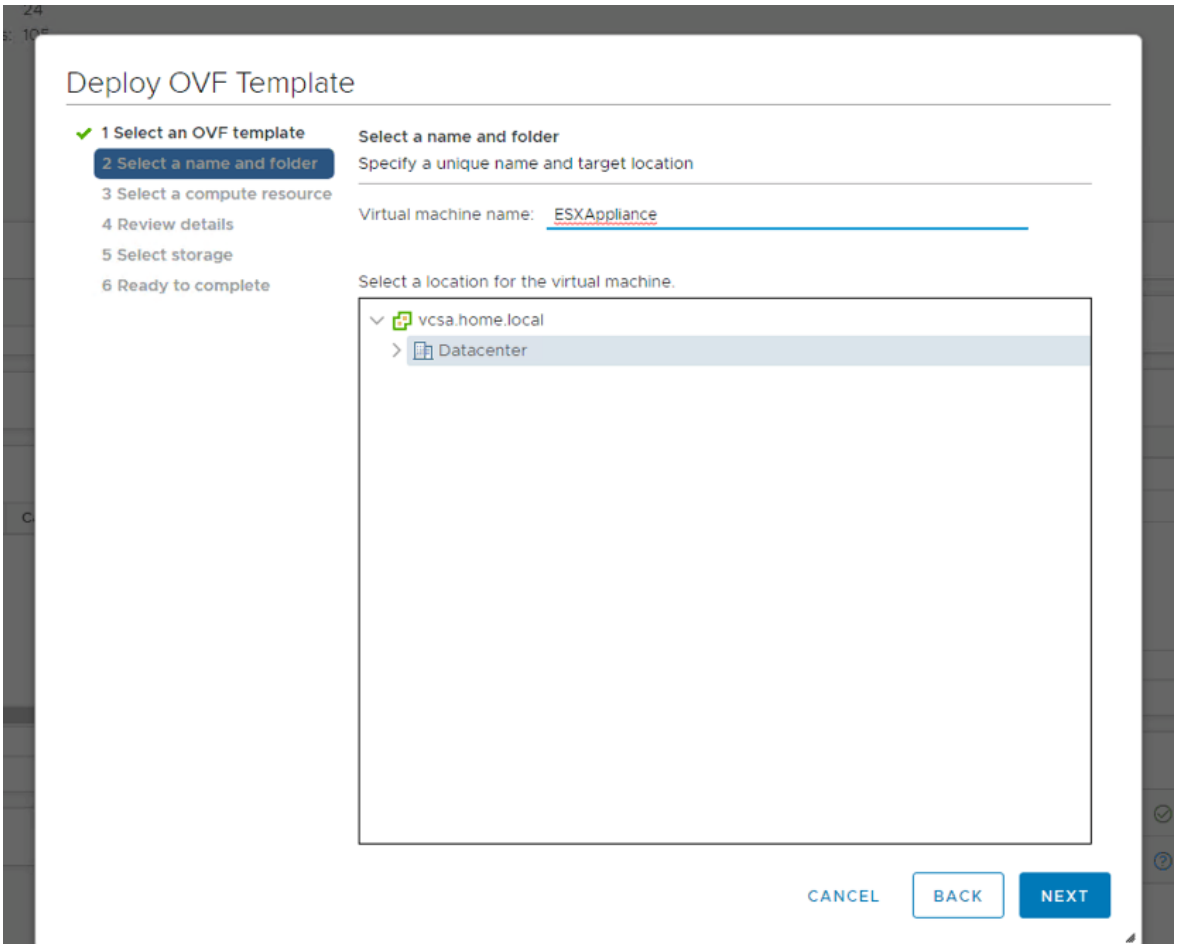

8. On wizard step #3, choose a destination compute resource.

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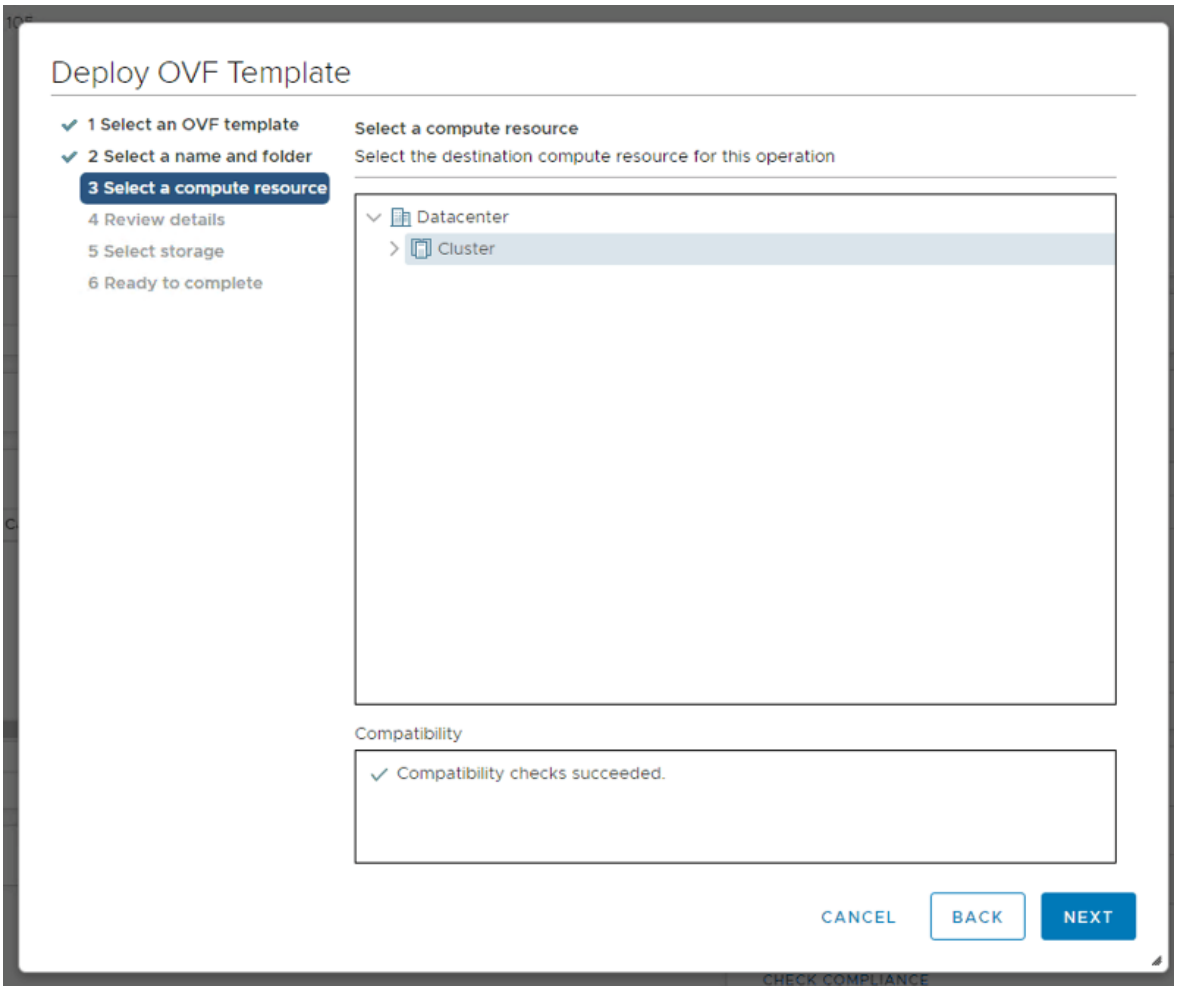

9. On wizard step #4, review the template details.

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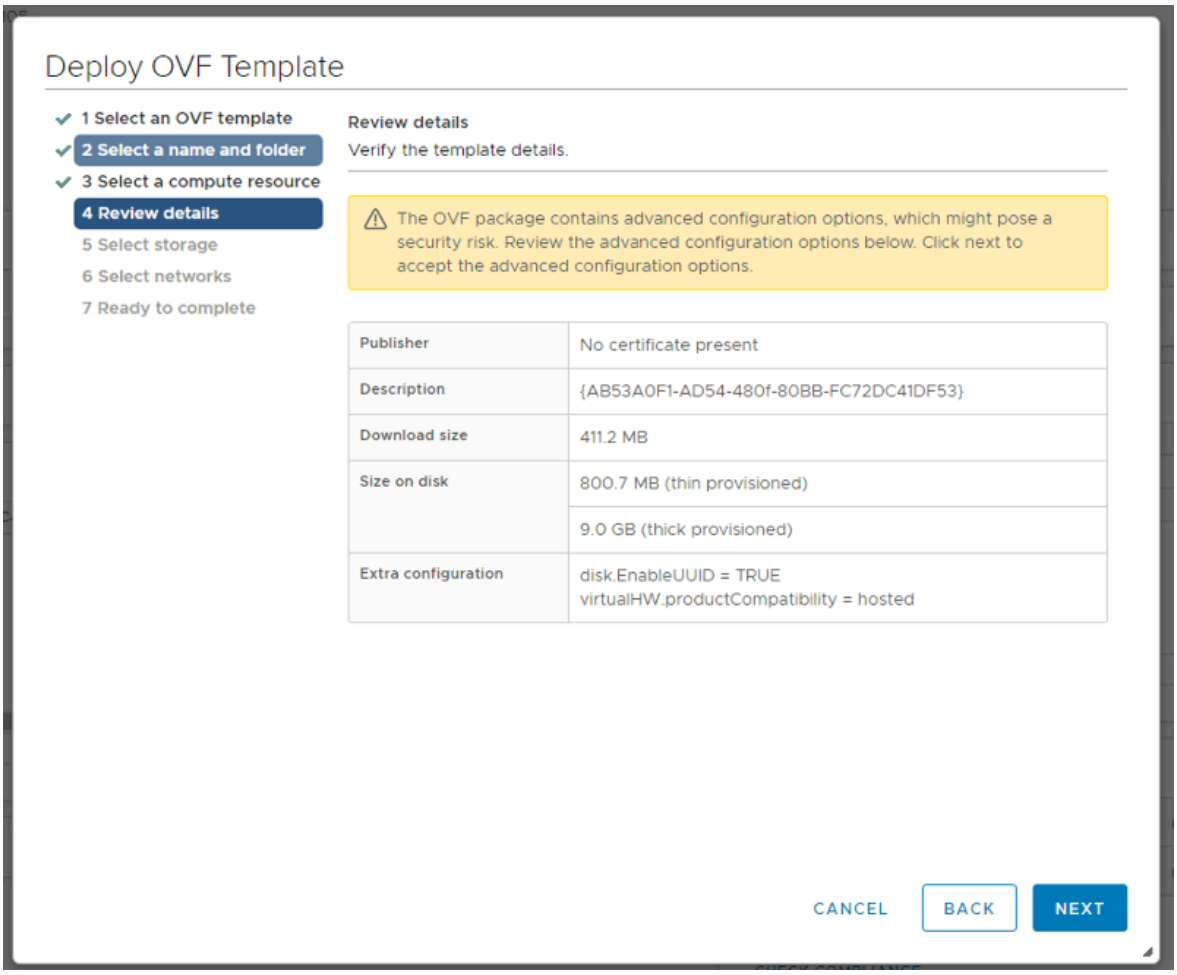

10. On wizard step #5, select storage for the appliance. If possible, select a shared datastore. The disk format, thick or thin, does not matter as it does not affect the appliance performance.

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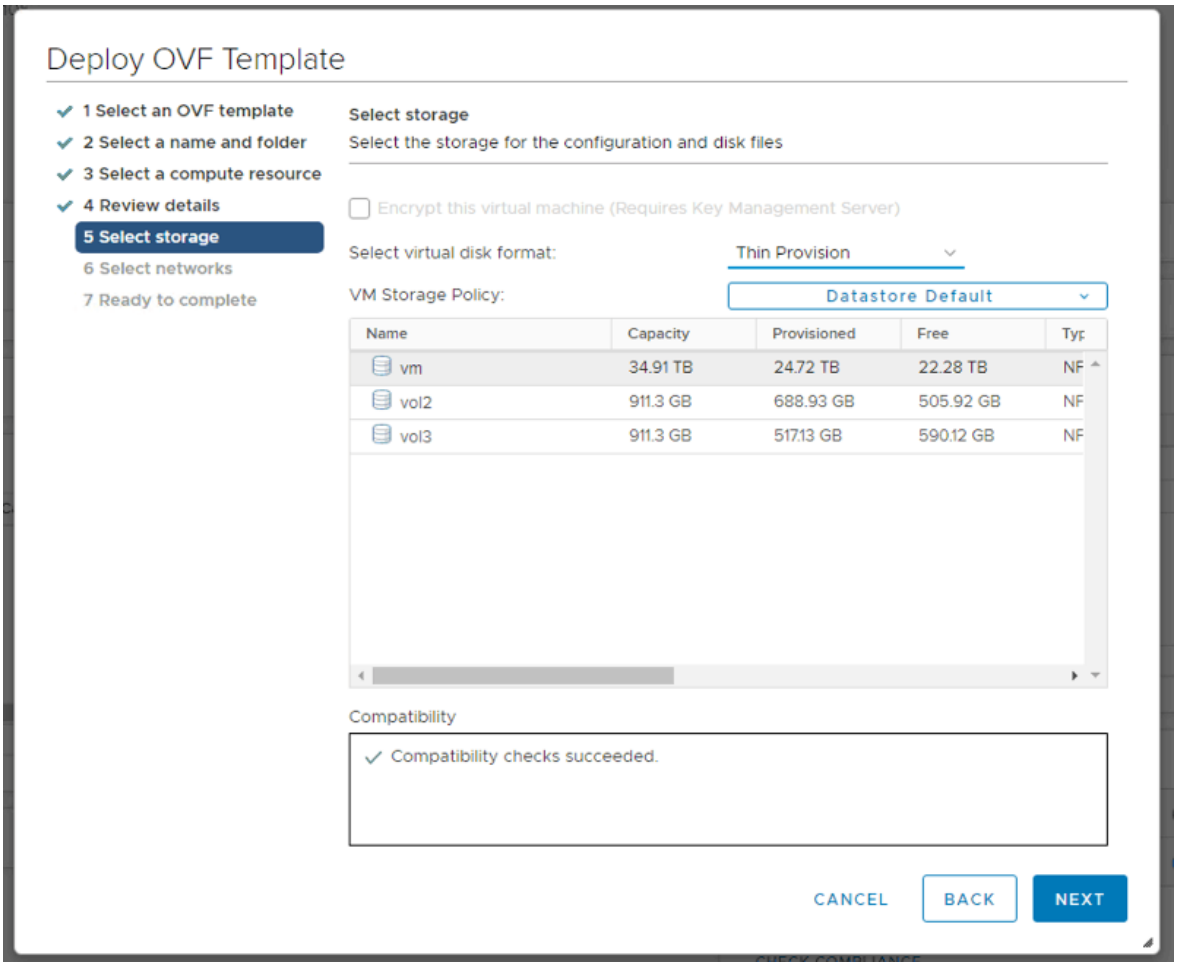

11. On wizard step #6, select networks for the appliance. The agent will require an Internet connection to register in the cloud.

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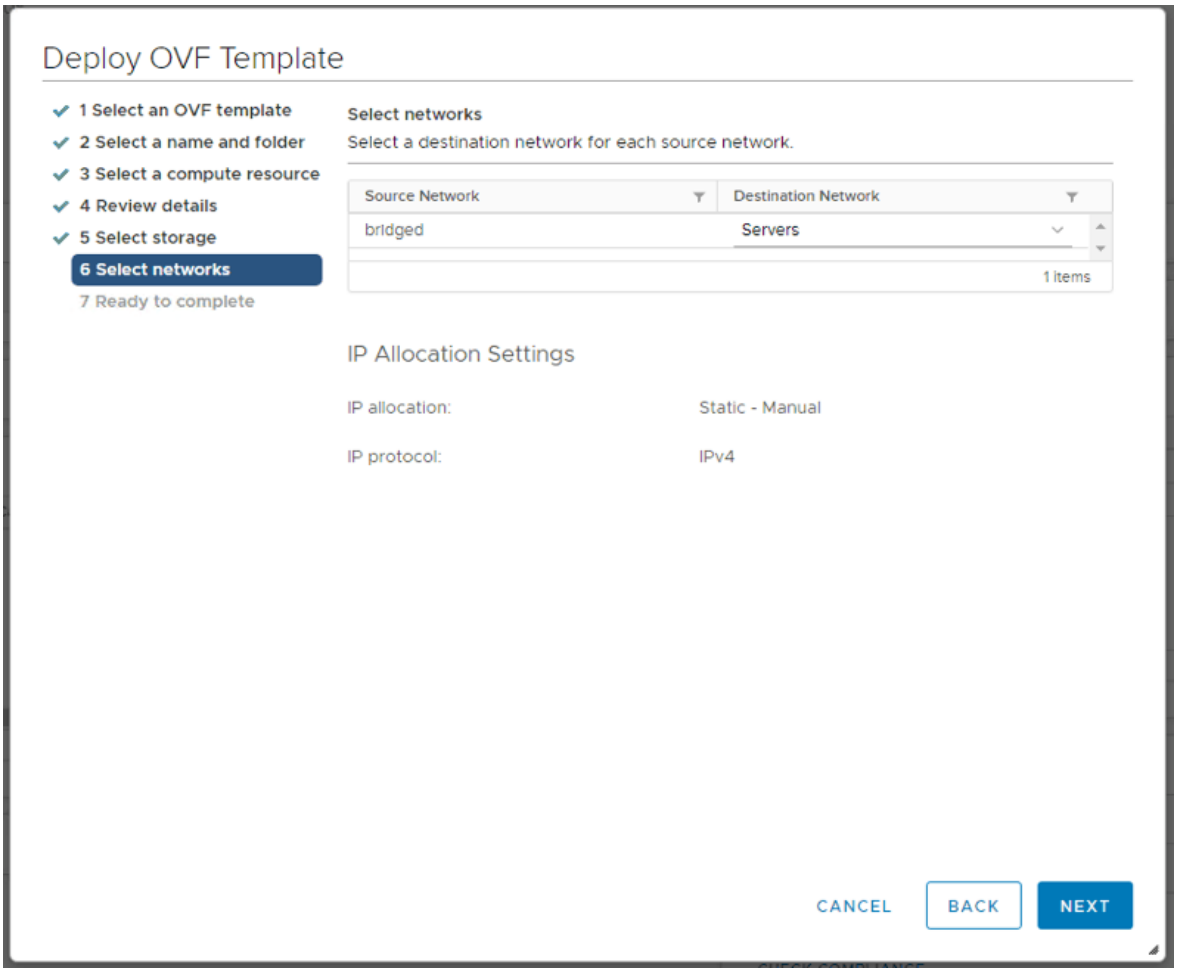

12. On wizard step #7, click **Finish** to create the appliance.

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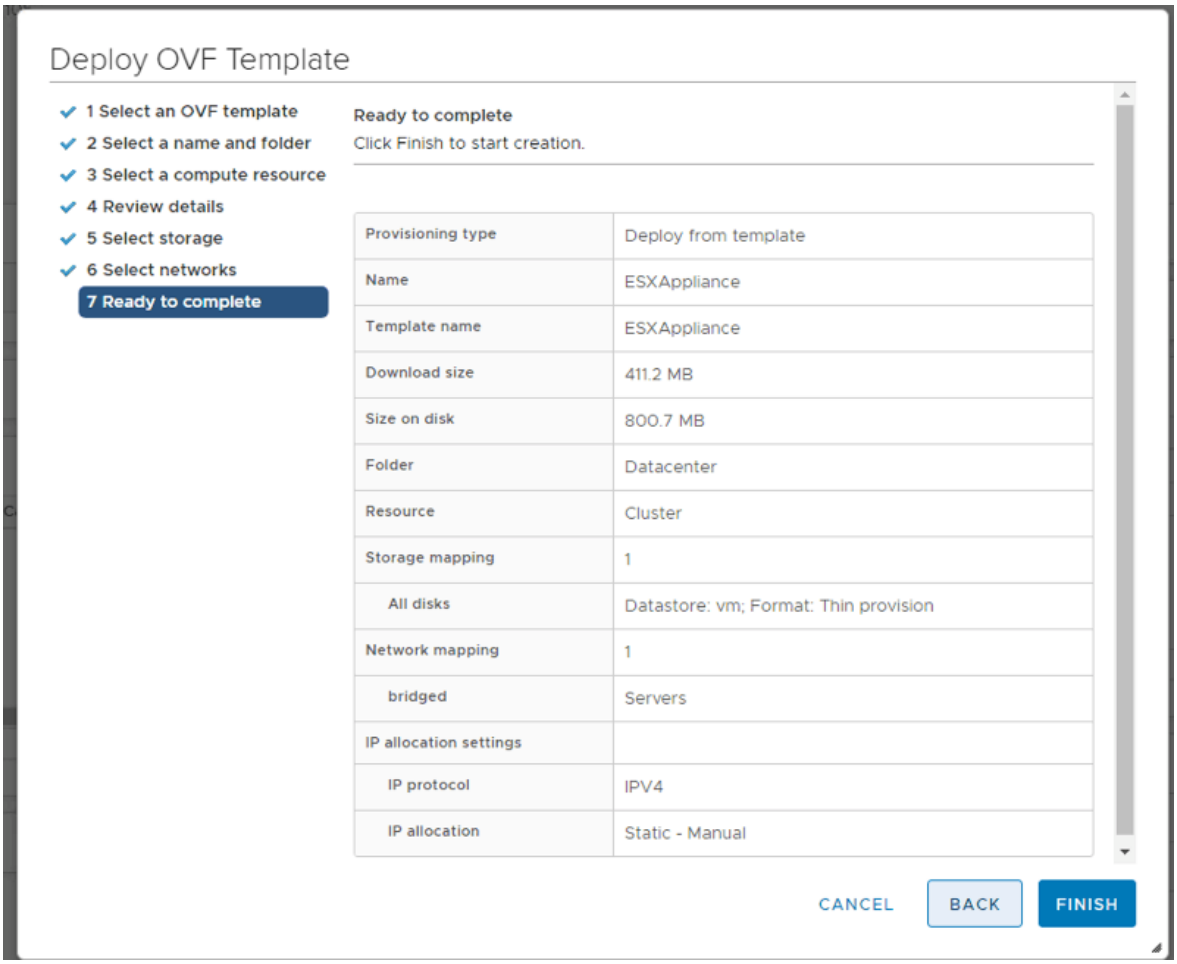

1.2 Configuring the VMware Agent

After creating the agent appliance, start it. In the vSphere Client, open **Inventory**, right-click the appliance name, and then select **Power** > **Power On**. Select the **Console** tab.

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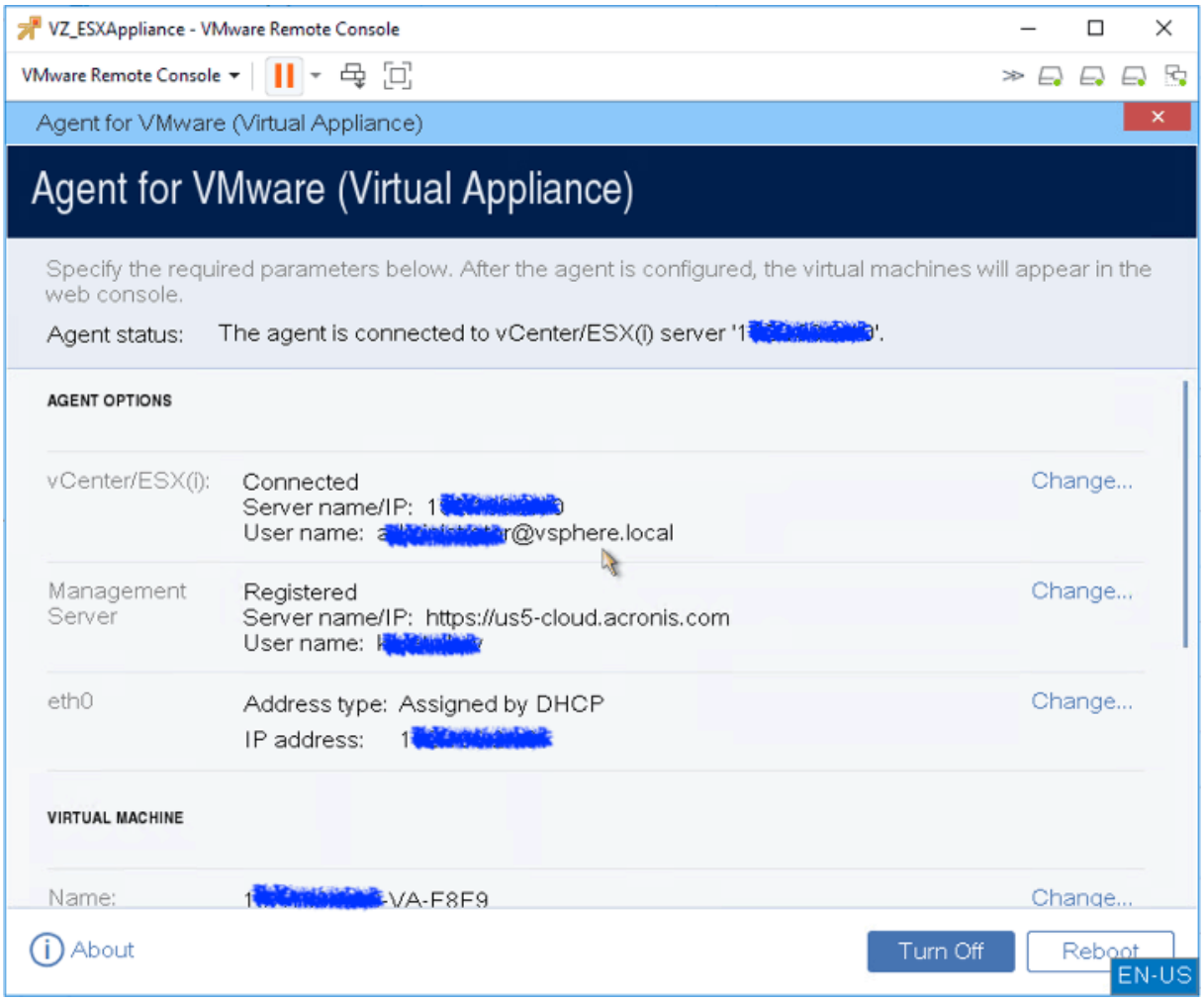

Configure the agent as follows:

1. (Optional) Configure a proxy server if you have one in your network:
   a. Start the command shell by pressing CTRL+SHIFT+F2 while in the virtual appliance UI.
   b. Edit the following section in the file `/etc/Acronis/Global.config`:

```
<key name="HttpProxy">
<value name="Enabled" type="Tdword">"1"</value>
<value name="Host" type="TString">"ADDRESS"</value>
<value name="Port" type="Tdword">"PORT"</value>
<value name="Login" type="TString">"LOGIN"</value>
<value name="Password" type="TString">"PASSWORD"</value>
</key>
```

   If the section is missing, copy and paste it to the file inside the `<registry name="Global">...</registry>` tag.
   c. Replace `ADDRESS` with your proxy server host name or IP address and `PORT` with the port number.
   d. If your proxy server requires authentication, replace `LOGIN` and `PASSWORD` with the proxy server credentials. Otherwise, delete these lines.

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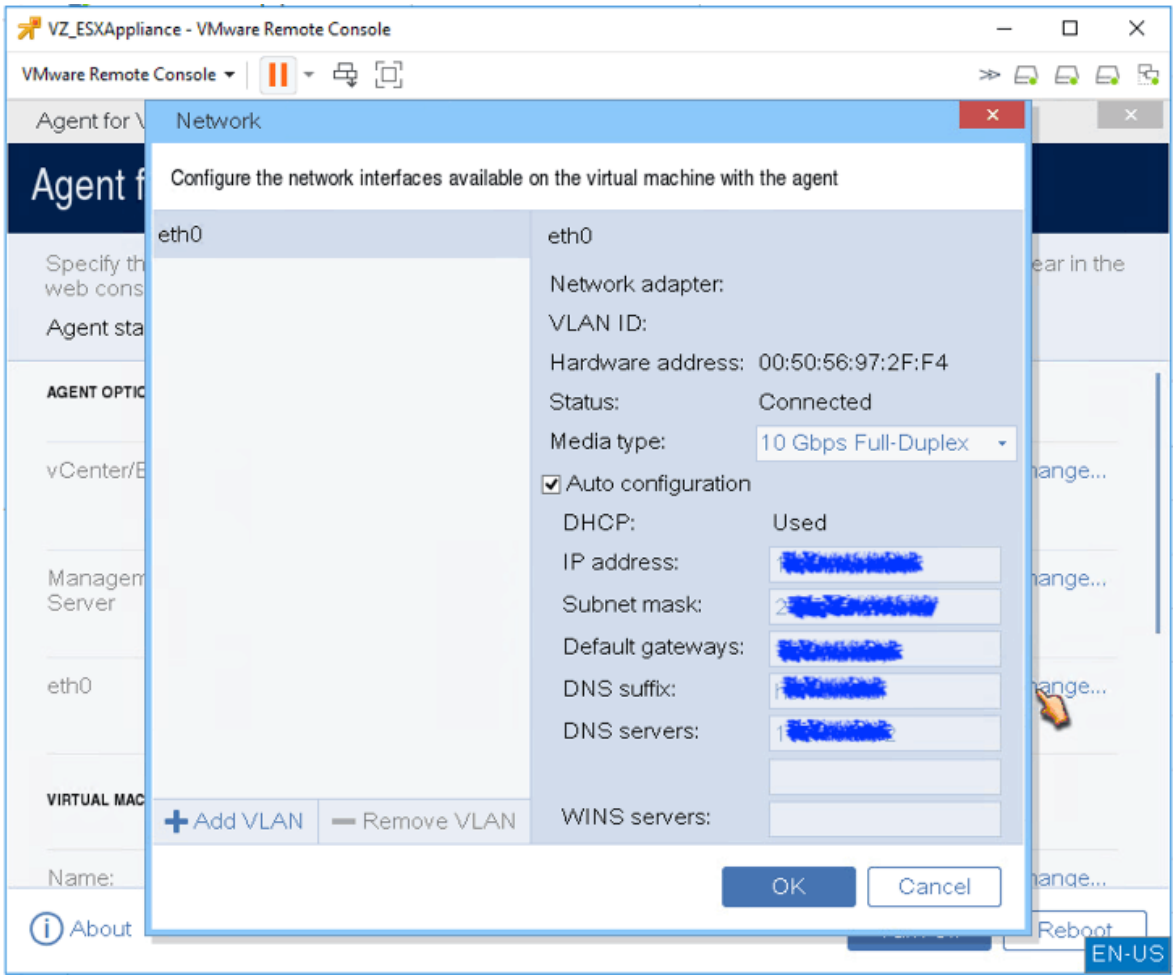
e. Locate (or create) the `env` section in the file `/opt/acronis/etc/aakore.yaml` and add the following lines to it:

```
http-proxy: LOGIN:PASSWORD@ADDRESS:PORT
https-proxy: LOGIN:PASSWORD@ADDRESS:PORT
```

f. Replace `LOGIN` and `PASSWORD` with the proxy server credentials, and `ADDRESS:PORT` with the address and port number of the proxy server.

g. Reboot the appliance with `reboot`.

2. The agent's network connection will be configured automatically via DHCP. To change the default configuration, under **AGENT OPTIONS**, in **eth0**, click **Change** and specify the desired network settings.



3. Under **AGENT OPTIONS**, in **vCenter/ESX(i)**, click **Change** and specify the vCenter Server name or IP address. The agent will be able to back up and recover any virtual machines managed by the vCenter Server.

   If you do not use a vCenter Server, specify the name or IP address of the ESXi host whose virtual machines you want to back up and recover. Normally, backups run faster when the agent backs up virtual machines located on its own host.

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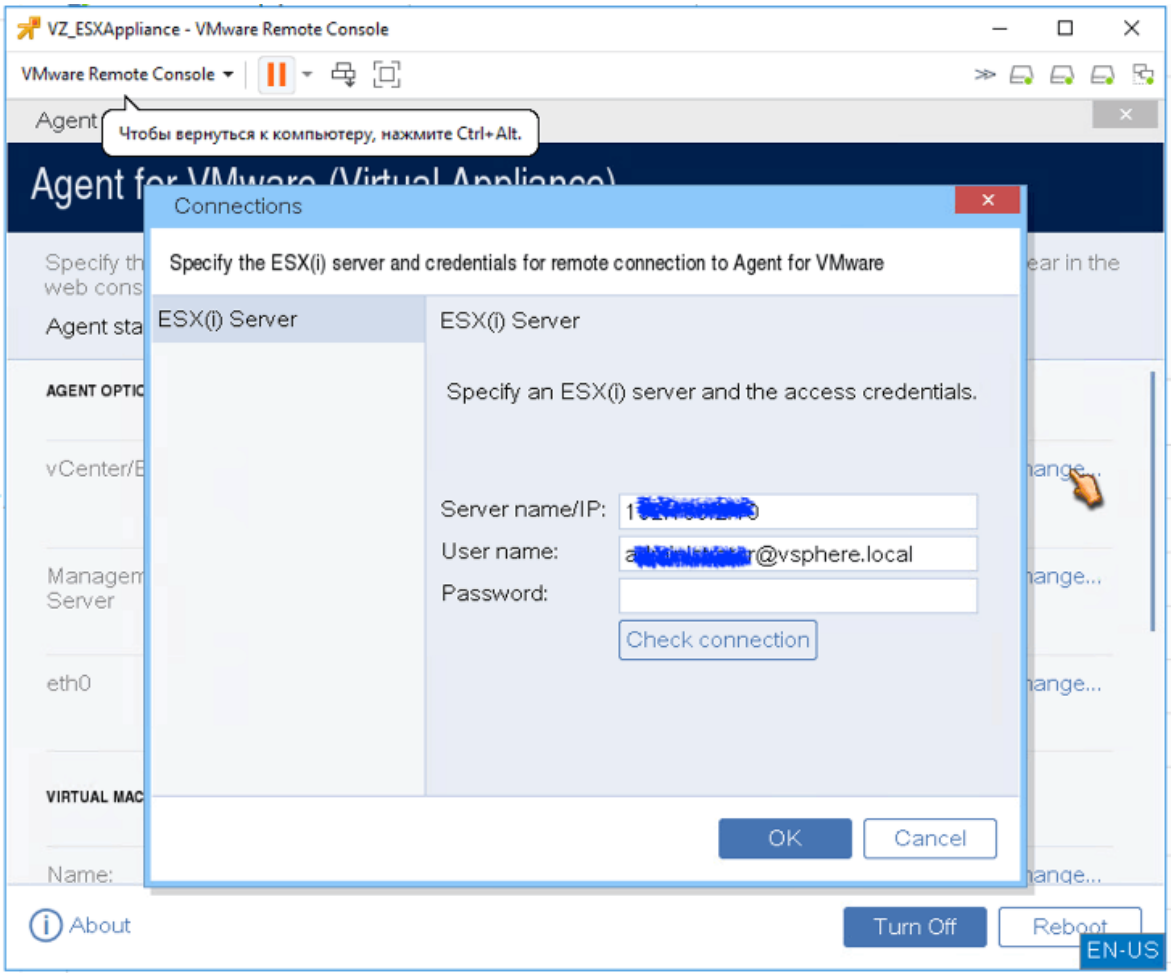
Specify the credentials that the agent will use to connect to the vCenter Server or ESXi. It is recommended to use an account that has the Administrator role assigned. Otherwise, provide an account with the necessary privileges on the vCenter Server or ESXi.

Click **Check connection** to ensure the access credentials are correct.



4. Under **AGENT OPTIONS**, in **Management Server**, click **Change**.

   In **Server name/IP**, select **Cloud**. The software will display the Cyber Protection service address. Do not change this address unless instructed otherwise.

   In **User name** and **Password**, specify the user name and password for the Cyber Protection service. The agent and the virtual machines managed by the agent will be registered under this account.

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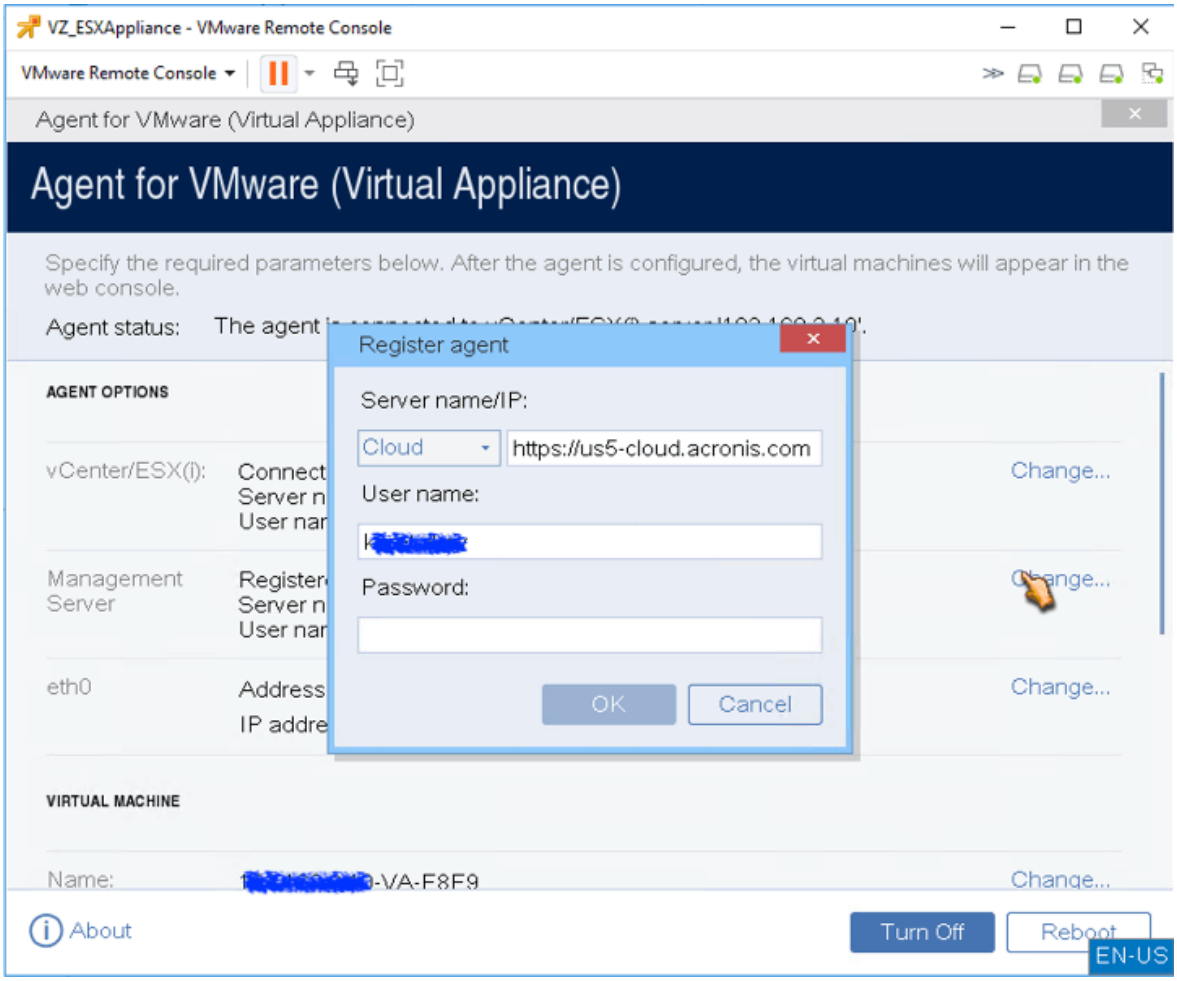

5. Under **VIRTUAL MACHINE**, in **Time zone**, click **Change**. Select the time zone of your location to ensure that the scheduled operations run at the appropriate time.

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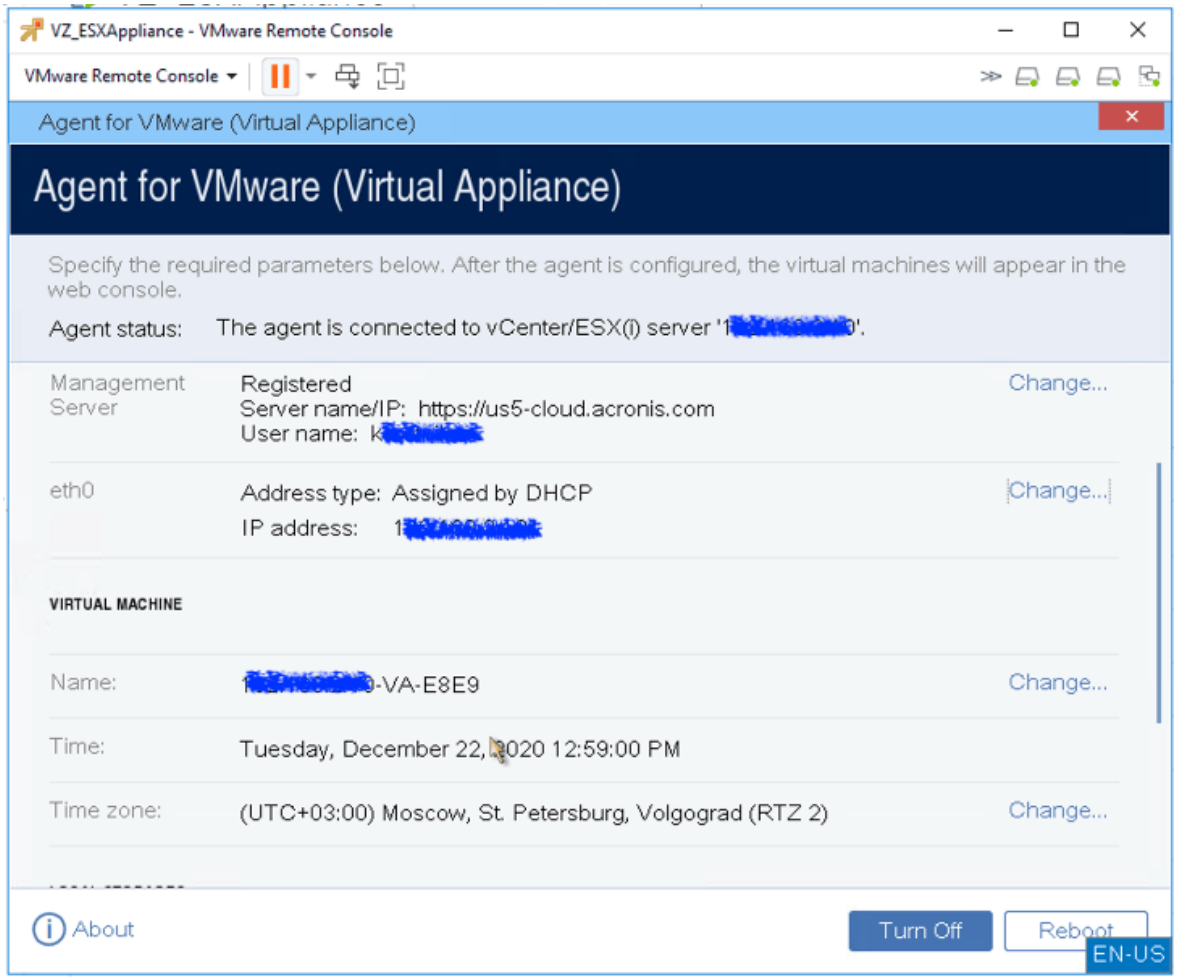

6. Optionally, you can attach an additional disk to the virtual appliance so the Agent for VMware can back up to this locally attached storage.

   Add the disk by editing the settings of the virtual machine and click **Refresh**. The **Create storage** link will become available. Click this link, select the disk, and then specify a label for it.

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2 Deploying the VMware Agent from a QCOW2 Template

Such an appliance is a pre-configured virtual machine that you deploy in Virtuozzo Hybrid Infrastructure. It contains a protection agent that enables you to administer cyber protection of all virtual machines in a Virtuozzo Hybrid Infrastructure cluster.

Before you proceed to deploy one or more agents, take note of the following:

- **Agent system requirements.**

  When deploying the agent virtual appliance(s), you can choose between different predefined combinations of vCPUs and RAM, i.e. flavors. You can also create your own flavors.

  The medium flavor with 2 vCPUs and 4 GB of RAM is optimal and sufficient for most operations. It is recommended, however, to let an agent have 8 GB of RAM and 4 vCPUs to improve backup performance if the backup traffic exceeds 100 MB/s (in 10 Gbps networks, for example).
- **The number of agents.**

  Even though one agent can protect the entire cluster, you can deploy more if you need to distribute the backup traffic bandwidth load.

  If you have more than one agent in a cluster, the virtual machines are automatically evenly distributed between the agents, so that each agent manages an equal number of machines.

  Automatic redistribution takes place when a load imbalance among the agents reaches 20%. This may happen, for example, when a machine or an agent is added or removed. For example, you may realize that you need more agents to help with throughput and deploy an additional virtual appliance to the cluster. The management server will assign the most appropriate machines to the new agent. The load on older agents will be reduced. When you remove an agent from the management server, the machines assigned to the agent are distributed among the remaining agents. This, however, will not happen if an agent gets corrupted or is deleted manually from a Virtuozzo Hybrid Infrastructure node. Redistribution will start only after you remove such an agent from the Cyber Protection web interface.

  You can view the result of the automatic distribution:

  - In the **Agent** column for each virtual machine in the **All devices** section
  - In the **Assigned virtual machines** section of the **Details** panel when an agent is selected in **Settings** > **Agents**
- **Limitations**
  - Virtuozzo Hybrid Infrastructure appliances cannot be deployed remotely.
  - Application-aware backup of virtual machines is not supported.

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2.1 Configuring Networks in Virtuozzo Hybrid Infrastructure

Before deploying and configuring the virtual appliance, you need to configure networks in Virtuozzo Hybrid Infrastructure.

The network requirements for the agent are:

- The virtual appliance requires at least two network adapters. The actual number may vary depending on the network architecture.
- The virtual appliance must be connected to Virtuozzo networks with the following network traffic types: **Compute API**, **VM Backup**, **ABGW Public**, **VM Public**.

For more information about configuring the networks, see Requirements for the compute cluster and Network requirements and recommendations sections in the Virtuozzo Hybrid Infrastructure documentation.

2.2 Configuring User Accounts in Virtuozzo Hybrid Infrastructure

To configure the agent appliance, you need a Virtuozzo Hybrid Infrastructure user account. This account must have the Administrator role in the **Default** domain. For more information about users, refer to the Virtuozzo Hybrid Infrastructure documentation. Grant this account access to all projects in the **Default** domain.

To do this, run the following script in the Virtuozzo Hybrid Infrastructure cluster via the OpenStack Command-Line Interface. For more information on how to connect to this interface, refer to the Virtuozzo Hybrid Infrastructure documentation.

```
# su - vstoradmin
# kolla-ansible post-deploy
# exit
# . /etc/kolla/admin-openrc.sh
# openstack --insecure user set --project admin --project-domain Default --domain
Default USERNAME
# openstack --insecure role add --domain Default --user USERNAME --user-domain
Default compute --inherited
```

Here, `USERNAME` is the Virtuozzo Hybrid Infrastructure account with the Administrator role in the **Default** domain. The virtual appliance will use this account in order to back up and restore the virtual machines in any child project under the **Default** domain.

Replace **Default** with the name of another domain to manage backups for virtual machines in that domain.

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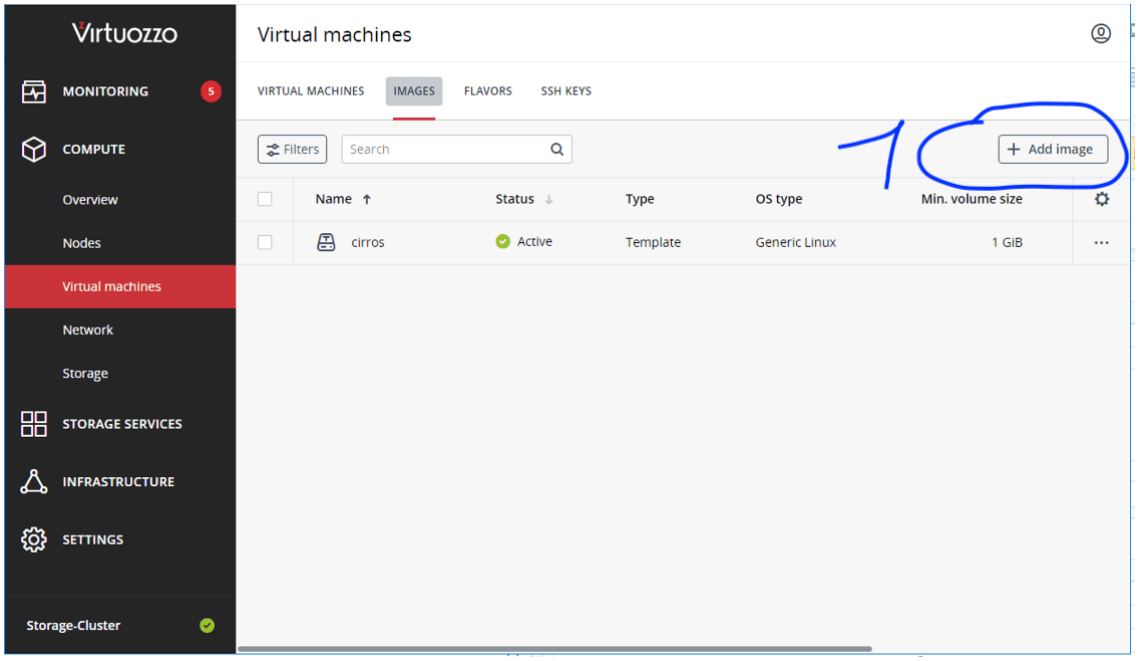
2.3 Creating the VMware Agent Appliance

To create a VMware Agent appliance from a QCOW2 template, do the following:

1. Log in to your Cyber Protection account.
2. Click **Devices** > **All devices** > **Add** > **Virtuozzo Hybrid Infrastructure**. The ZIP archive will be downloaded to your machine. Unpack it to get the QCOW2 template.
3. Log in to your Virtuozzo Hybrid Infrastructure account.
4. Add the QCOW2 image file to the Virtuozzo Hybrid Infrastructure compute cluster:
   a. On the **Compute** > **Virtual machines** > **Images** tab, click **Add image**.



   b. In the **Add image** window, click **Browse**, and then select the QCOW2 file.

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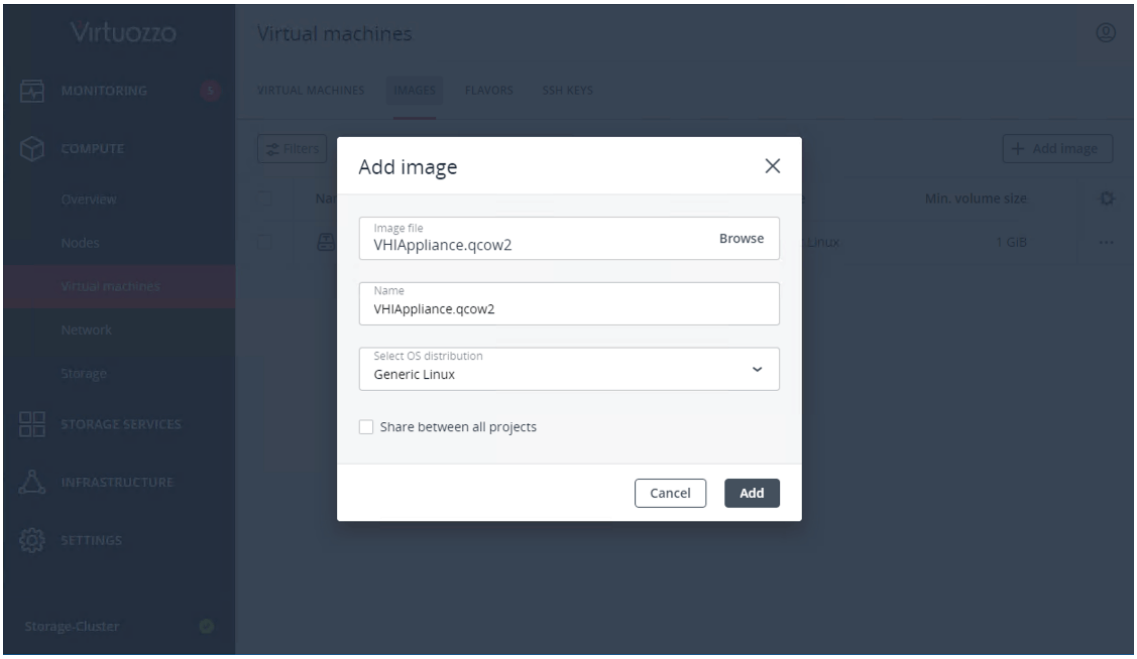
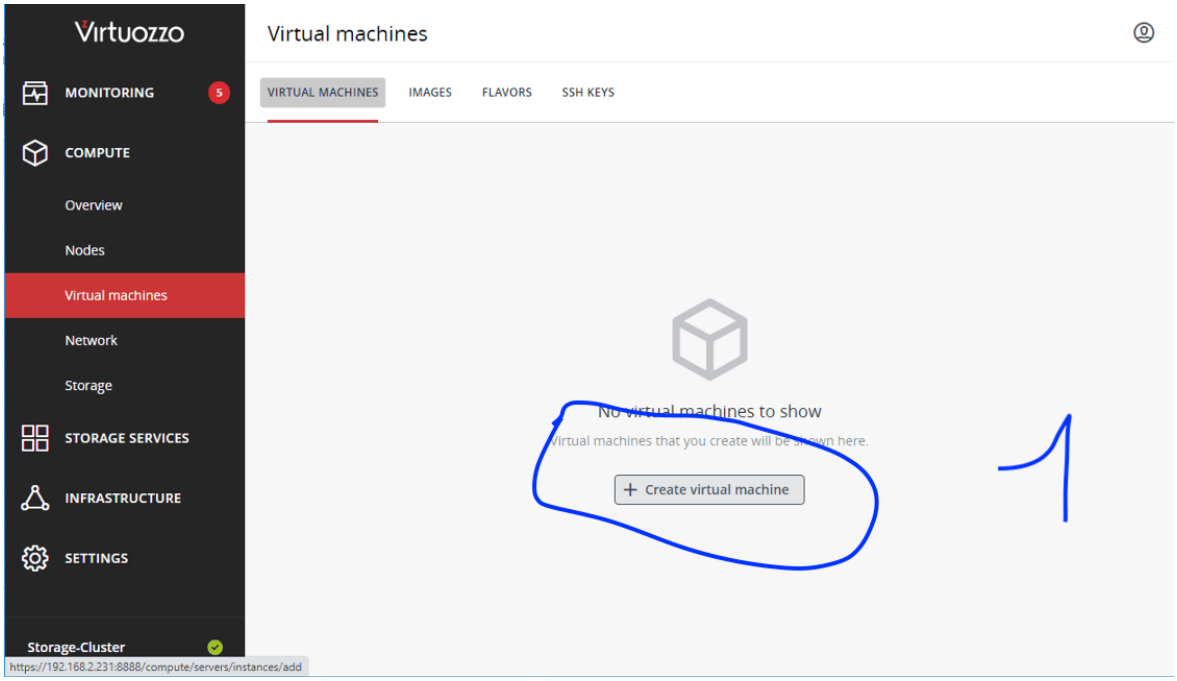
c. Specify the image name, select the **Generic Linux** OS type, and then click **Add**.



5. In the **Compute** > **Virtual machines** > **Virtual machines** tab, click **Create virtual machine**.



A window will open where you will need to specify a name for the new virtual machine.

6. In **Deploy from**, choose **Image**.
7. In the **Images** window, select the QCOW2 image file of the appliance, and then click **Done**.

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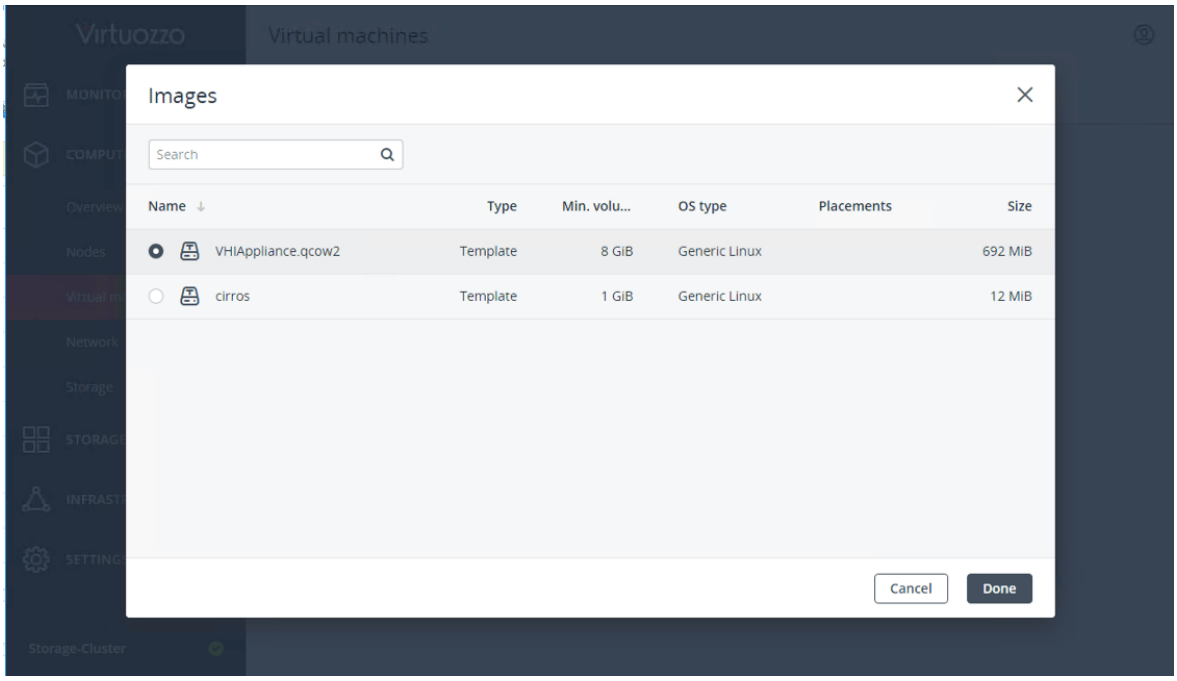

8. In the **Volumes** window, do not add any volumes. The volume that is added automatically for the system disk is sufficient.
9. In the **Flavor** window, choose a desired combination of vCPUs and RAM, and then click **Done**. See the agent system requirements in "Deploying the VMware Agent from a QCOW2 Template".
10. In the **Network interfaces** window, click **Add**, select a **public** virtual network, and then click **Add**. It will appear in the **Network interfaces** list.

    If you use a setup with more than one physical network (and thus with more than one public virtual network), repeat this step and select the virtual networks that you need.
11. Click **Done**.
12. Back in the **Create virtual machine** window, click **Deploy** to create and boot the virtual machine.

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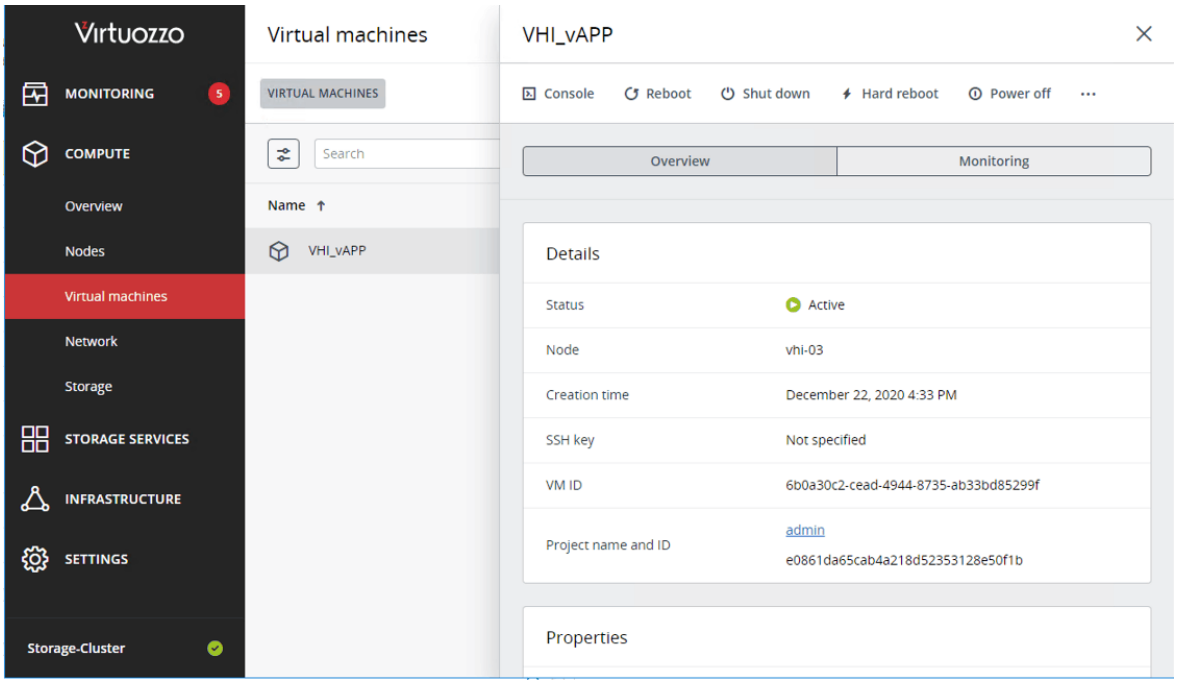

2.4 Configuring the VMware Agent

After creating the agent appliance, you need to configure it so that it can reach both the Virtuozzo Hybrid Infrastructure cluster that it will protect and the Cyber Protection cloud service.

To configure the virtual appliance:

1. Log in to your Virtuozzo Hybrid Infrastructure account.
2. On the **Compute** > **Virtual machines** > **Virtual Machines** tab, select the virtual machine that you created. Then, click **Console**.

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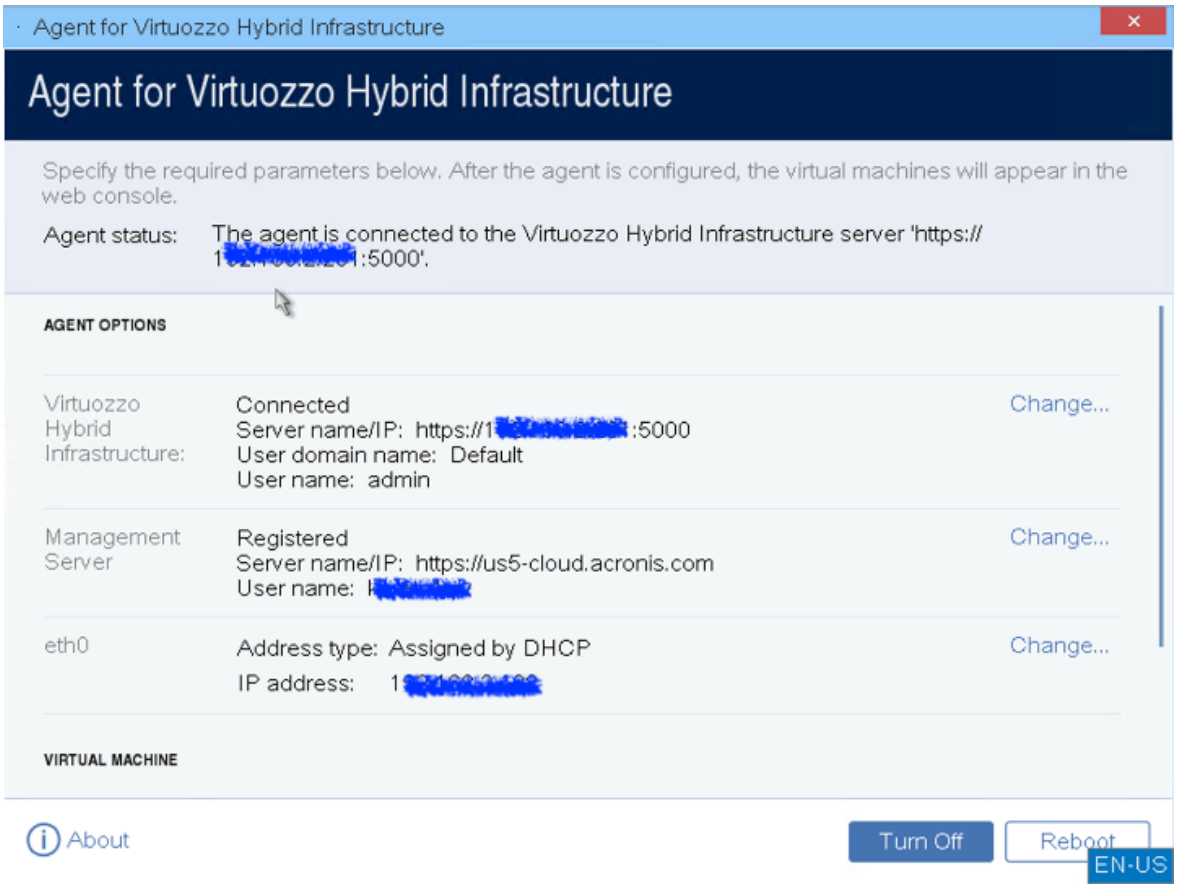

3. Configure the network interfaces of the appliance. There may be one or more interfaces to configure, it depends on the number of virtual networks that the appliance uses. Ensure that automatically assigned DHCP addresses (if any) are valid within the networks that your virtual machine uses, or assign them manually.

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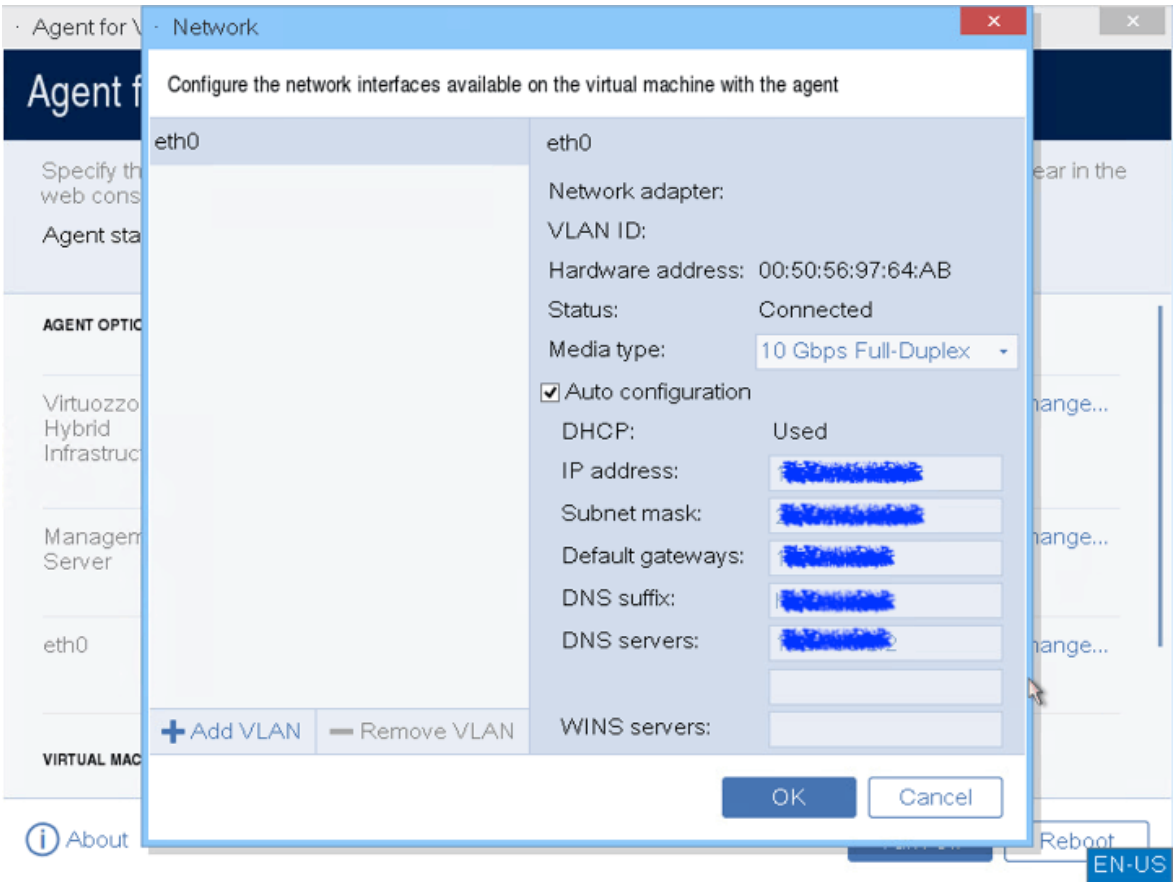

4. Specify the Virtuozzo cluster address and credentials:
   - The DNS name or IP address of the Virtuozzo Hybrid Infrastructure cluster. This is the address of the cluster's management node. The default port 5000 will be automatically set. If you use a different port, specify it manually.
   - In the **User domain name** field, specify your domain in Virtuozzo Hybrid Infrastructure. For example, **Default**. The domain name is case-sensitive.
   - In the **User name** and **Password** fields, enter the credentials for the Virtuozzo Hybrid Infrastructure user account with the **Administrator** role in the specified domain. For more information about users, roles, and domains, refer to the Virtuozzo Hybrid Infrastructure

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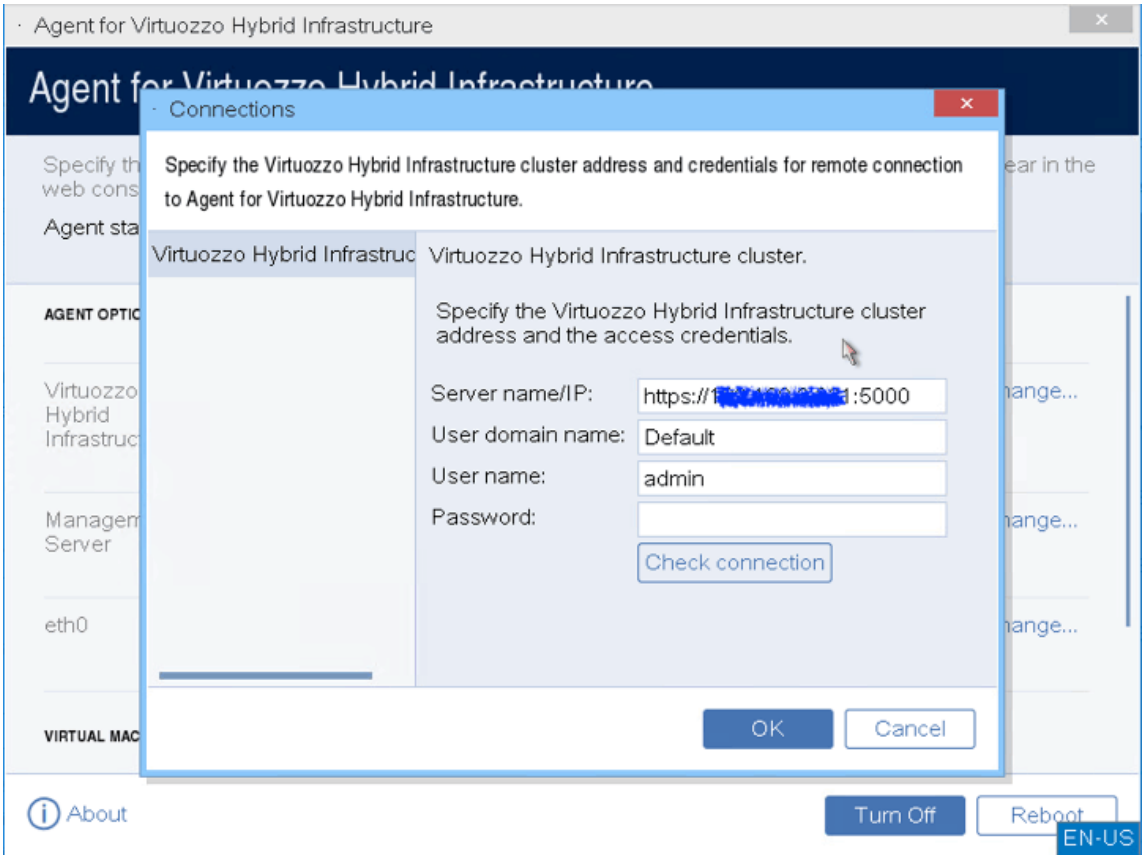
documentation.



5. Specify the Cyber Protection management server address and credentials for accessing it.

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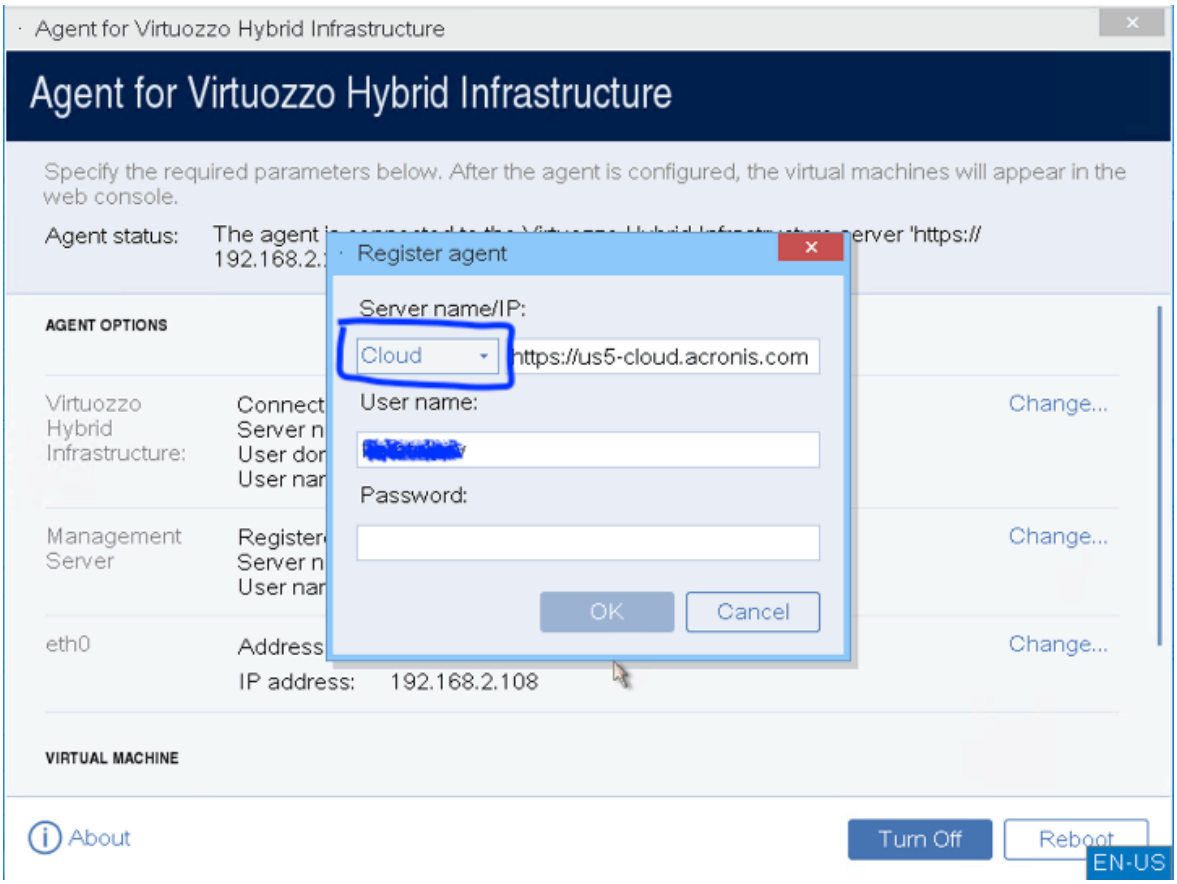

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3 Migrating Virtual Machines

Migrating virtual machines from VMware vSphere to Virtuozzo Hybrid Infrastructure involves two major steps:

1. Backup the virtual machines.
2. Recover them to Virtuozzo Hybrid Infrastructure.

These steps are described in detail in the next sections.

3.1 Backing Up Virtual Machines

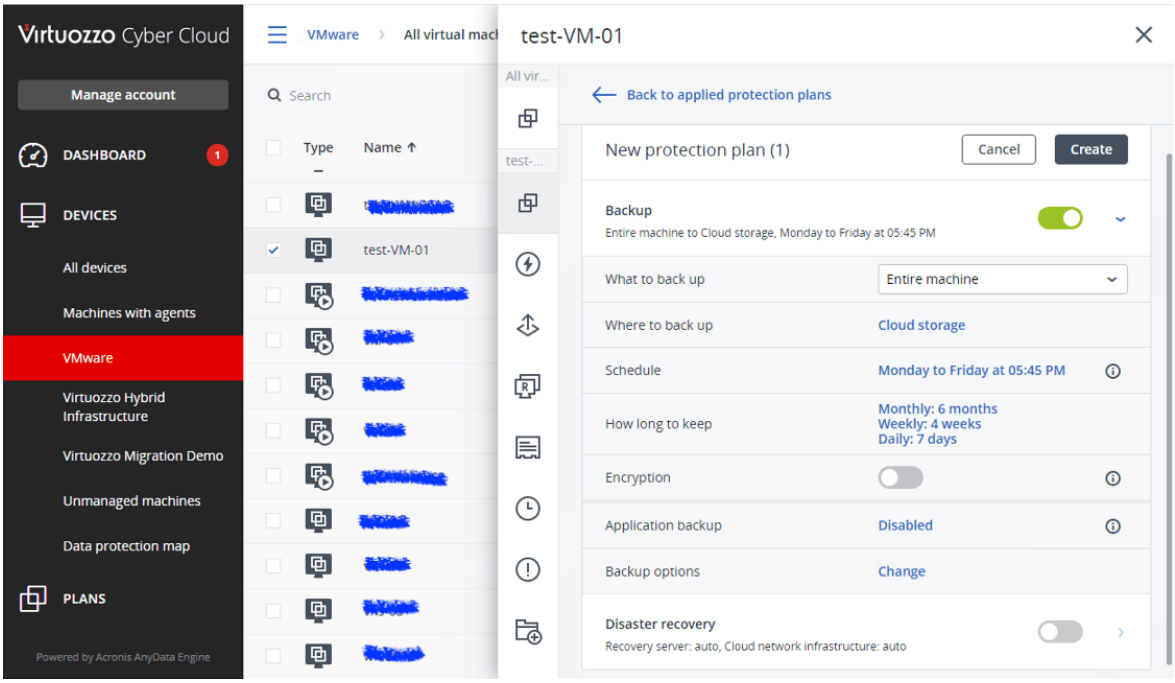
To backup virtual machines, you will need to create a protection plan with the **Backup** module enabled. It is a set of rules that specify how the given data will be protected on a given machine. A protection plan can be applied to multiple machines at the time of its creation, or later.

To create the first protection plan with the **Backup** module enabled, select the machines that you want to back up and click **Protect**.

The software will display protection plans that are applied to the machine. If the machine does not have any plans assigned to it, you will see the default protection plan that can be applied. You can adjust the settings as needed and apply this plan or create a new one.

To create a new plan:

1. Click **Create plan**. Enable the **Backup** module and unroll the settings.



2. (Optional) To modify the protection plan name, click the default name.
3. (Optional) To modify the **Backup** module parameters, click the corresponding setting of the protection plan panel.

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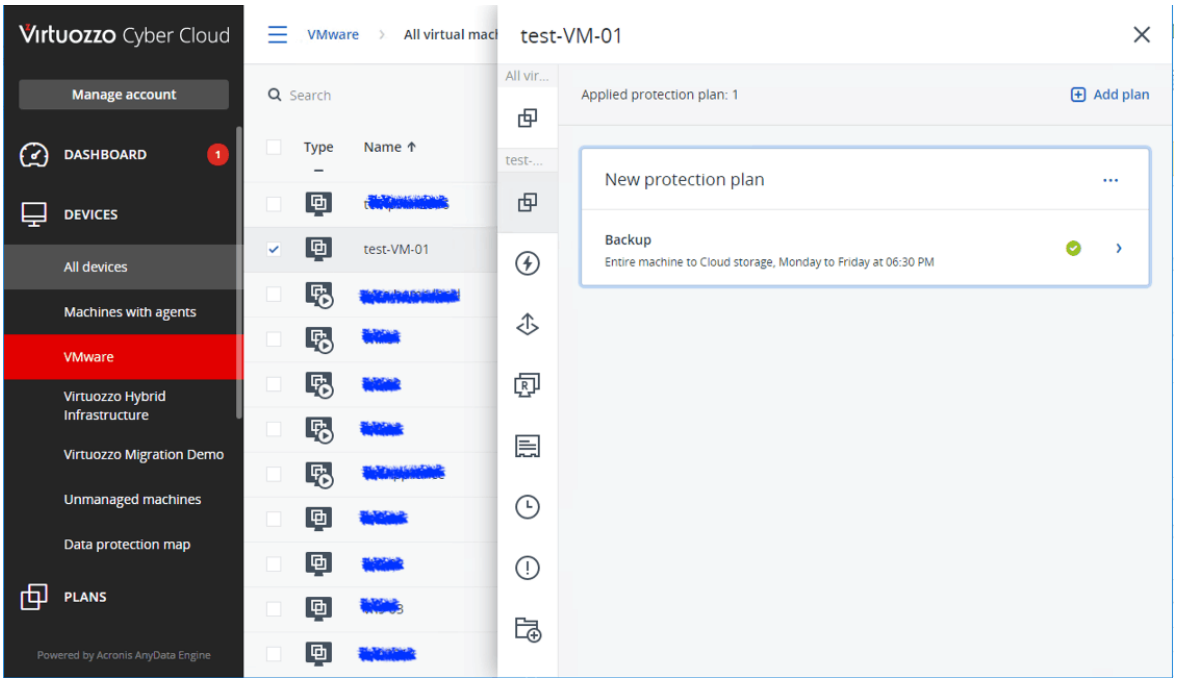
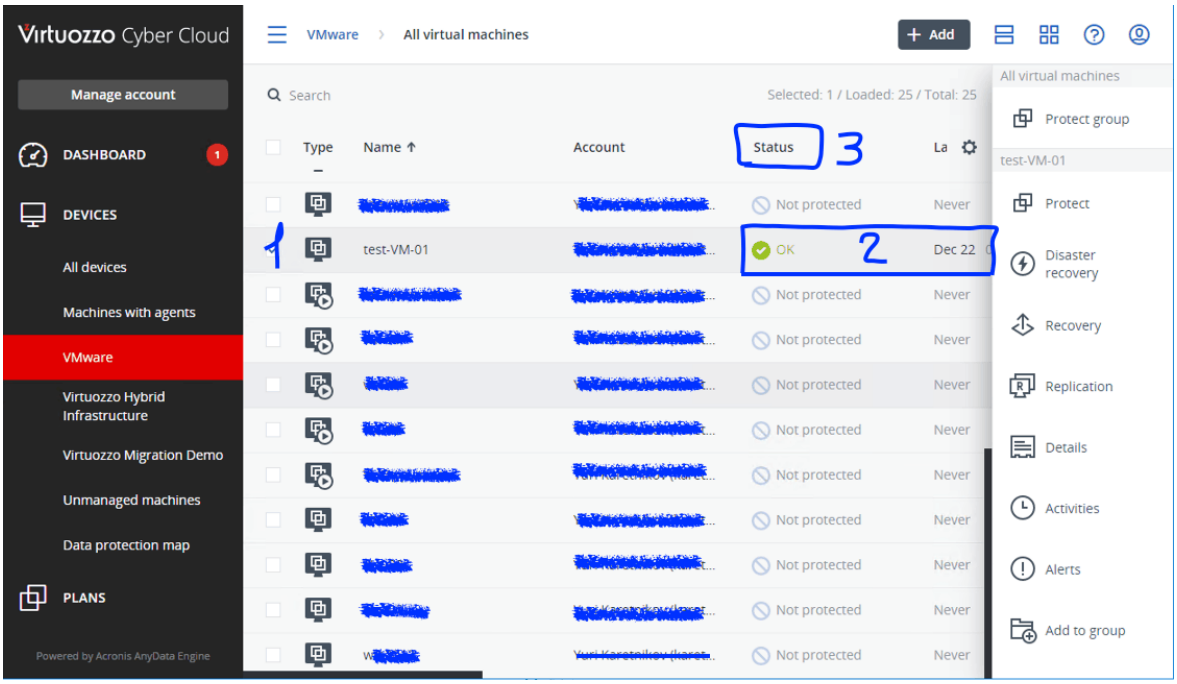
4. (Optional) To modify the backup options, click **Change** next to them.
5. Click **Create**.

To apply an existing protection plan:

1. Select the machines that you want to back up and click **Protect**. If a common protection plan is already applied to the selected machines, click **Add** plan. The software will display the previously created protection plans.



2. Select a protection plan to apply.
3. Click **Apply** and wait until the backup procedure is complete.



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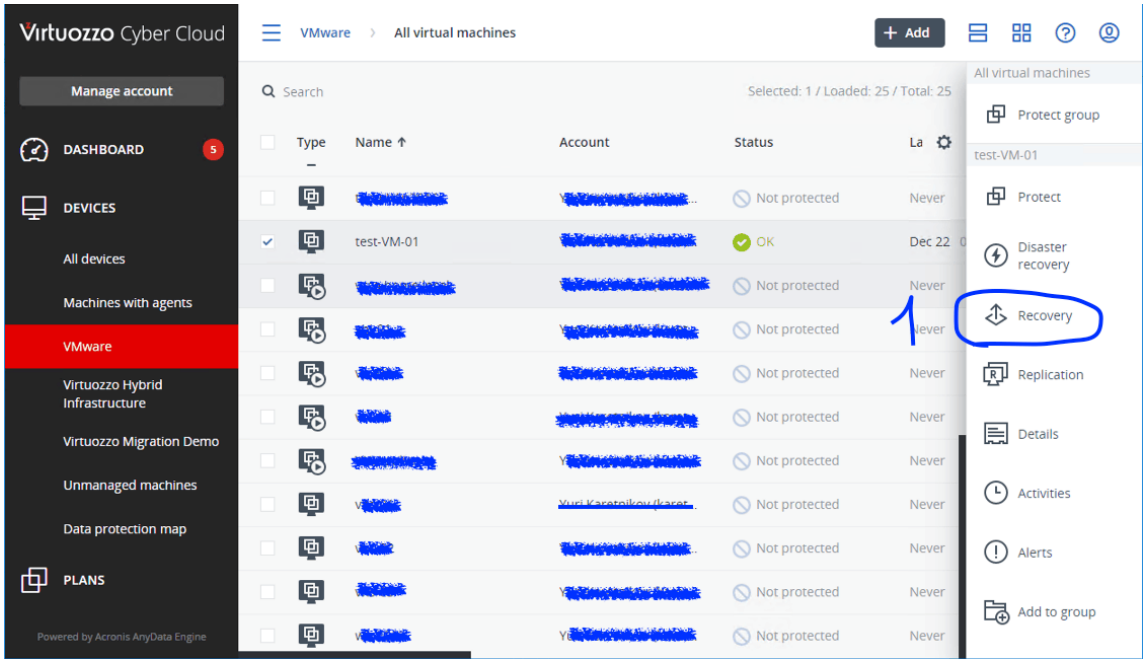
3.2 Recovering Virtual Machines

To complete migration, virtual machines need to be recovered from their backups to the desired location.

One prerequisite is that a virtual machine must be stopped during recovery. By default, the software stops the machine without a prompt. When the recovery is completed, you have to start the machine manually. You can change the default behavior by using the VM power management recovery option (**Recovery** options > **VM power management**).

To recover a VM to a desired location:

1. Do one of the following:
   - Select a backed-up machine, click **Recovery**, and then select a recovery point.



   - Select a recovery point on the **Backup storage** tab.
2. Click **Recover** > **Entire machine**.

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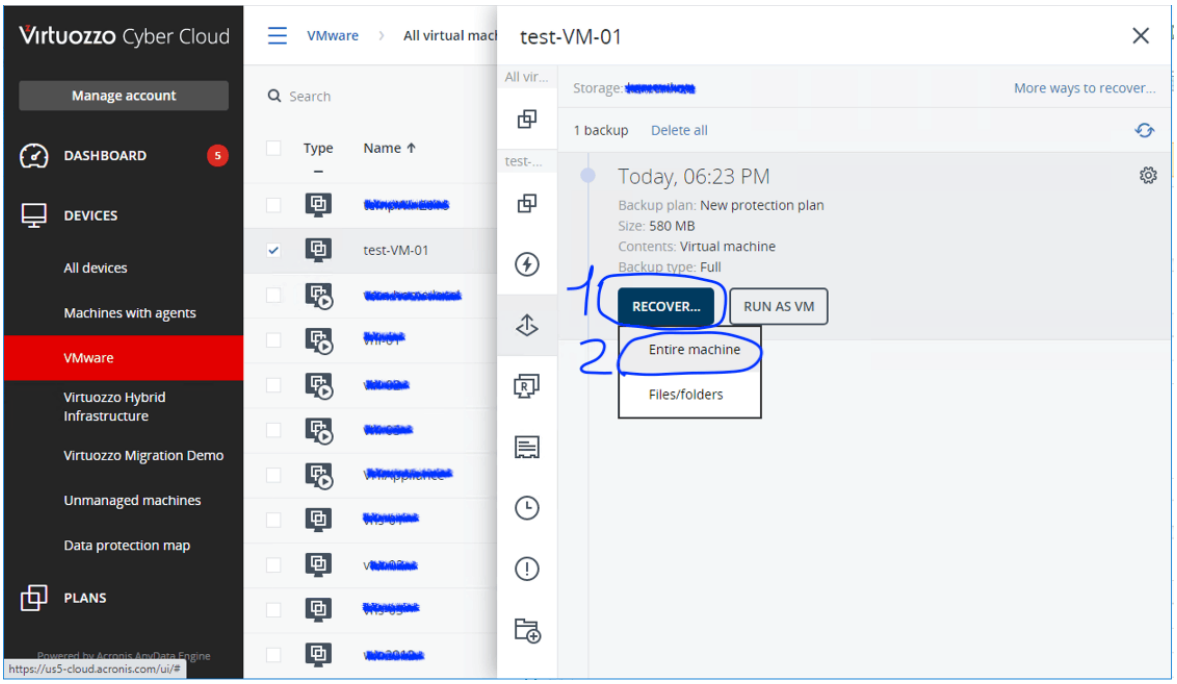
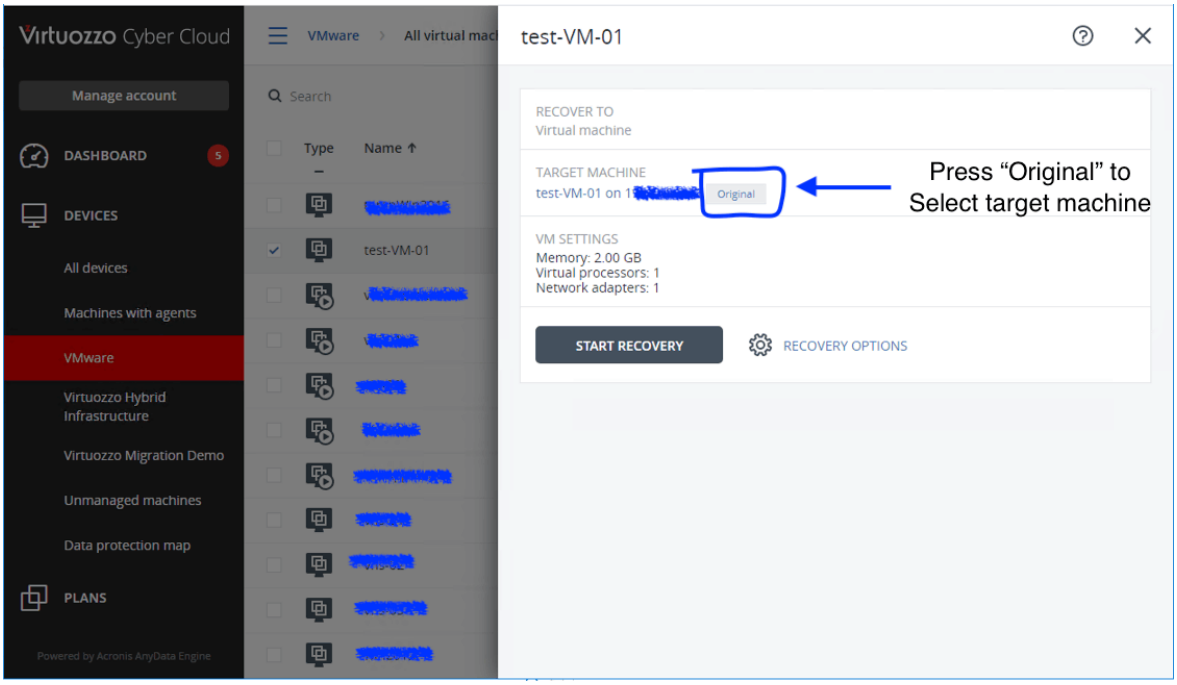


By default, the software automatically selects the original machine as the target machine.



To recover to another virtual machine, click **Target machine**, and then do the following:

a. Select the hypervisor **Virtuozzo Hybrid Infrastructure**.

b. Select whether to recover to a new or existing machine.

c. Select the storage, domain, project and specify the new machine name, or select an existing target machine.

d. Click **OK**.

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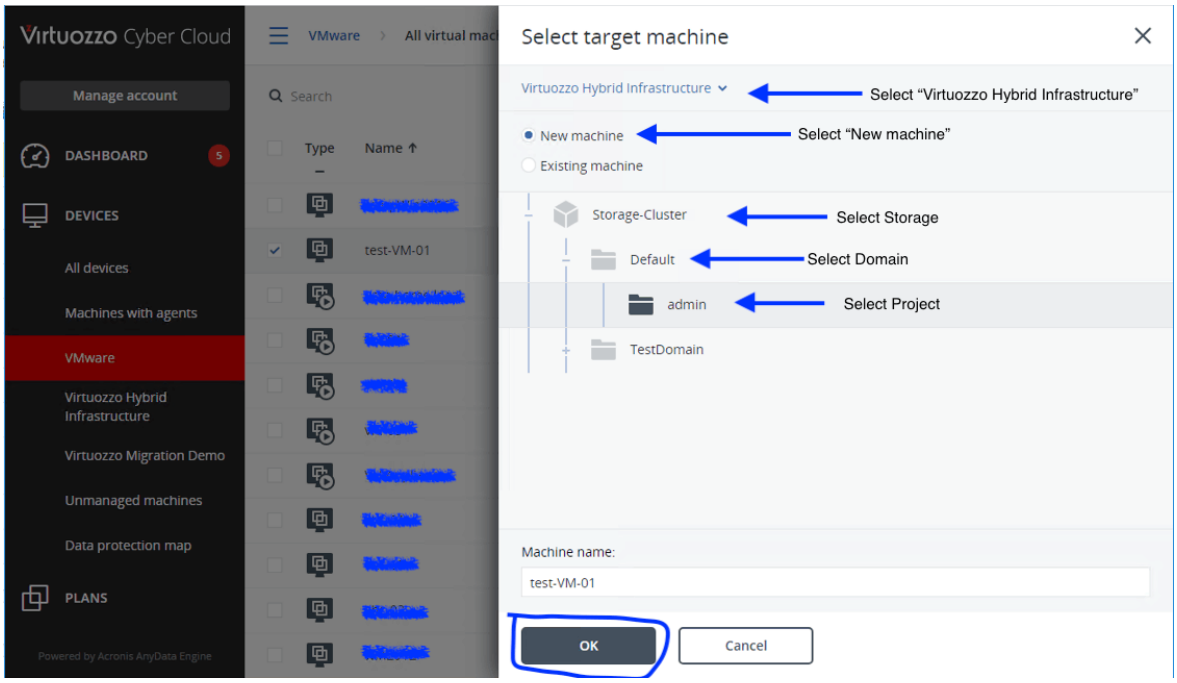
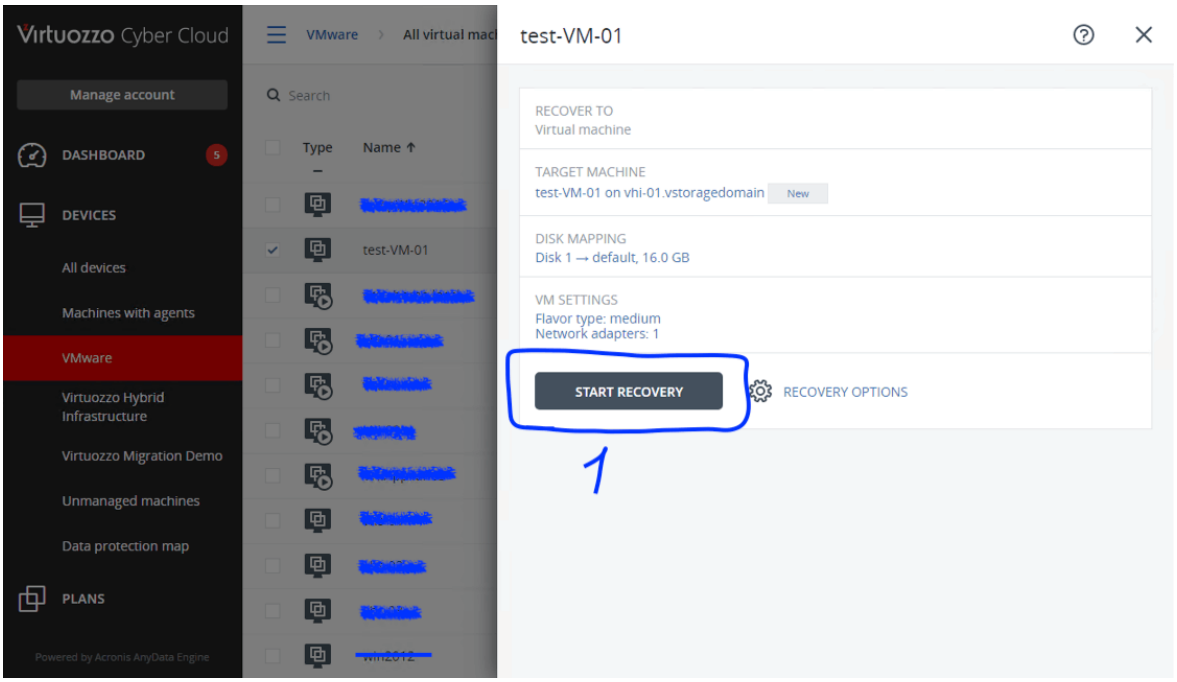


3. Setup up the additional recovery options if needed.
4. Click **Start recovery**.



5. When recovering to an existing virtual machine, confirm that you want to overwrite the disks.

The recovery progress is shown on the **Activities** tab.

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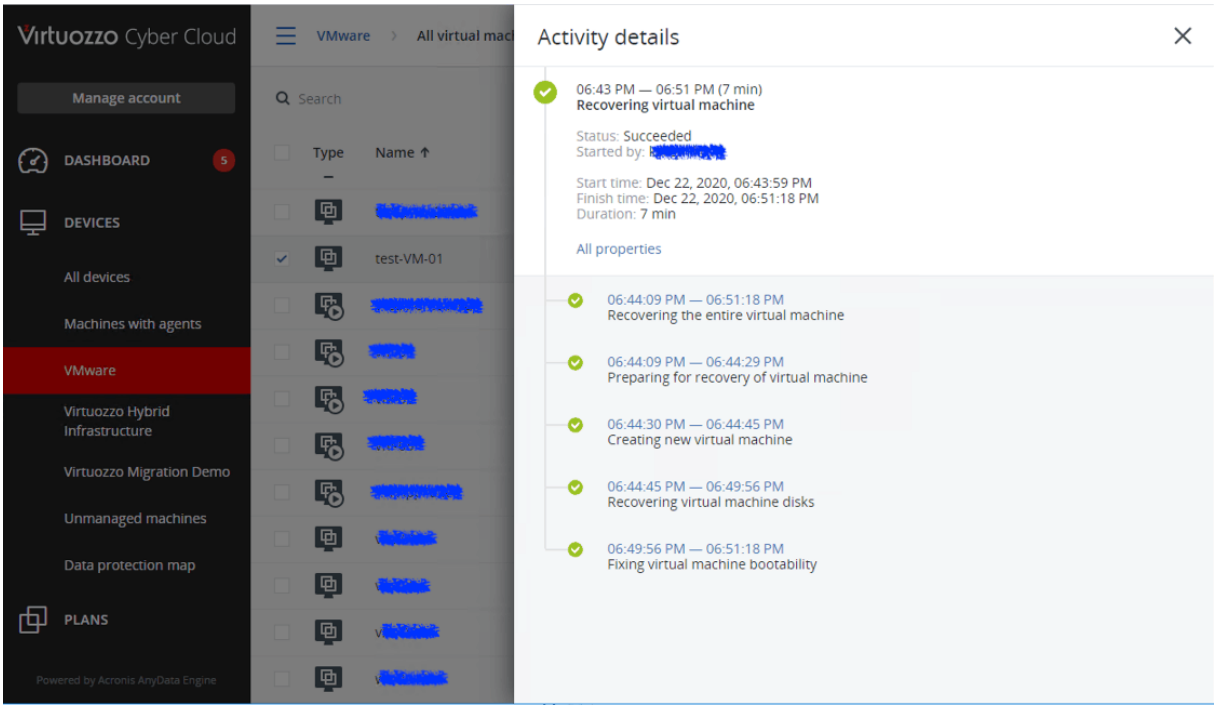
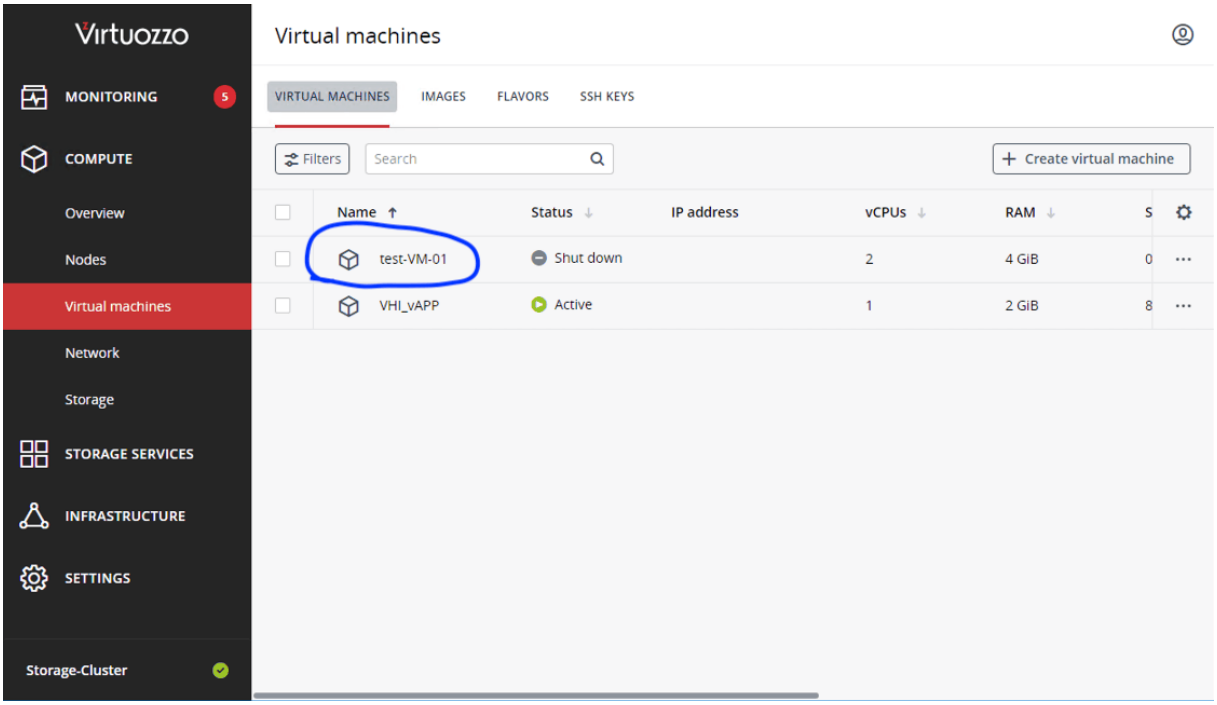


After a successful migration, you will see your VM in Virtuozzo Hybrid Infrastructure.



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