



Hystax Acura Migration from VMware

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July 14, 2022

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CHAPTER 1

Hystax Acura Overview

Hystax is a cloud migration and Disaster Recovery company focusing on consistent replication of IT workloads and providing real-time migration and Best-In-Class Disaster Recovery.

This guide aims to explain how to migrate modern workloads from VMware to Virtuozzo Hybrid Infrastructure using Hystax Acura migration solution.

To deploy the Hystax Acura solution, refer to the [Integration Guide for Hystax Acura](#).

CHAPTER 2

Migration Steps

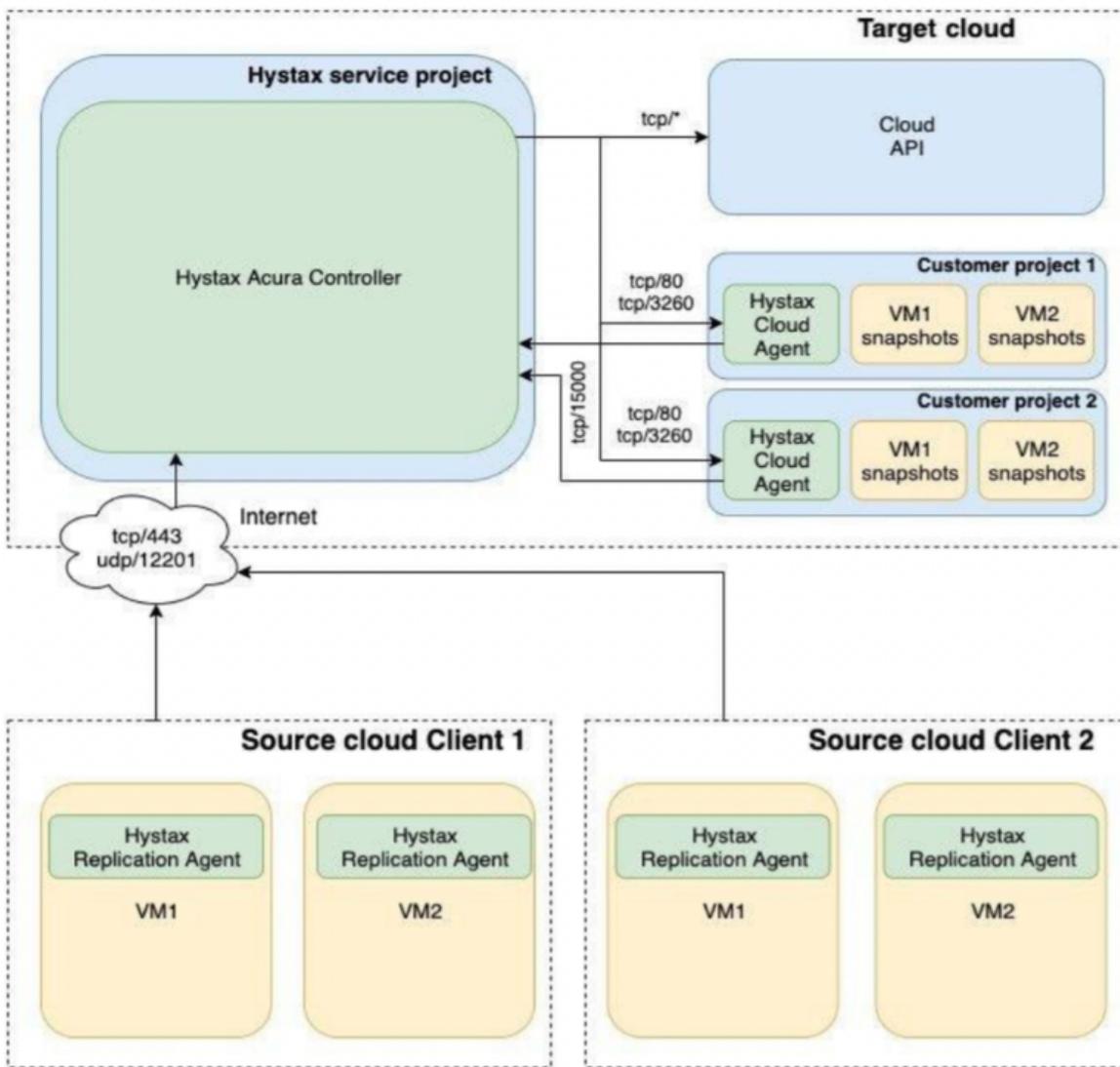
The migration process will be divided in to four sections:

1. Ensure the Virtuozzo Hybrid Infrastructure Platform is ready. Refer to the [Integration Guide for Hystax Acura](#) guide and check the following sections:
 - Virtuozzo Hybrid Infrastructure Platform resources planning and configuration.
 - Deploying the Hystax Acura migration solution on the Virtuozzo Hybrid Infrastructure.
2. VMware resources planning and configuration.
3. Deploying the HVRAgent on the VMware ESXi Hypervisor.
4. Simple Test Migration.

2.1 Resource Planning and Configuration for VMware

In this guide we will be performing a migration from VMware to the Virtuozzo Hybrid Infrastructure Platform; Before we can start with the migration, we need to ensure certain resources are available on the VMware Platform, such as a user with some specific permissions and the HVRAgent (Hystax Replication Agent for VMware) deployed on each of the ESXi Hypervisors. Replication agents are used to replicate the workloads between VMware ESXi Hypervisors (Source Platform) and the Virtuozzo Hybrid Infrastructure Platform (Target Platform/Target Project). From now on we will be referring to the VMware Platform as the Source Platform, and the Target Project or Platform when referring to the Virtuozzo Hybrid Infrastructure Platform.

Hystax Acura Migration Solution Architectural Overview



Ports needed for correct agent work:

- vSphere host - tcp/443
- ESXi host(s) - tcp/udp/902
- Send logs to the Acura cluster - udp/12201

Hystax VMware Replication Agent requires the following user permissions in vSphere (the “**VMware Consolidated Backup user**” role in vCenter):

- Virtual machine - Configuration - Disc Lease

- Virtual machine - Provisioning - Allow read-only disk access
- Virtual machine - Provisioning - Allow virtual machine files upload
- Virtual machine - Snapshot management - Create snapshot
- Virtual machine - Snapshot management - Remove Snapshot

Permission to access CBT is necessary for the correct performance of the application. To enable CBT:

- Virtual machine - Configuration - Disc change tracking

Additionally, it is recommended to include the following global permissions:

- Global - Disable methods
- Global - Enable methods
- Global - Licenses

Note: In case of using vCloud, vCenter user requires one extra permission to operate: Profile-driven storage > Profile-driven storage view.

Hystax VMware Replication Agent uses VMware snapshots and VMware CBT API in order to create consistent replicas of machines' data.

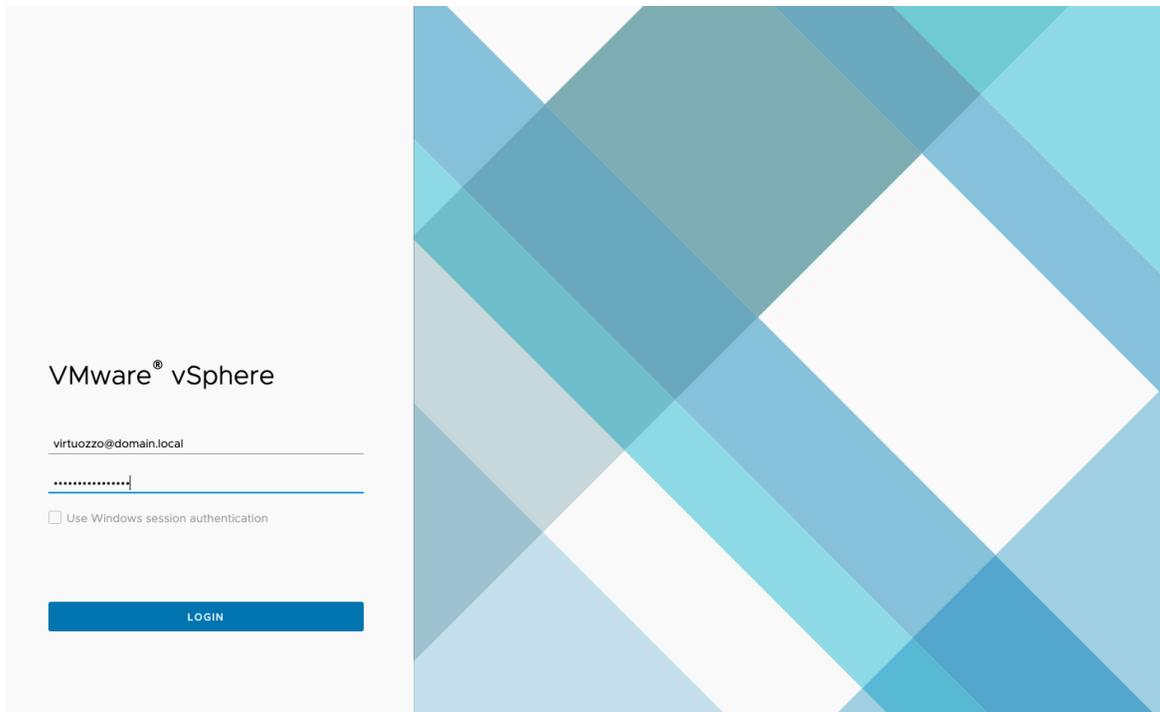
This implies the following considerations regarding VMware storage:

- VMware snapshots consume storage to retain copy-on-write buffer, so it is recommended to have at least 10% free space available on VMware storage.
- VMware puts additional load on storage while creating snapshots or running machines with existing snapshots.

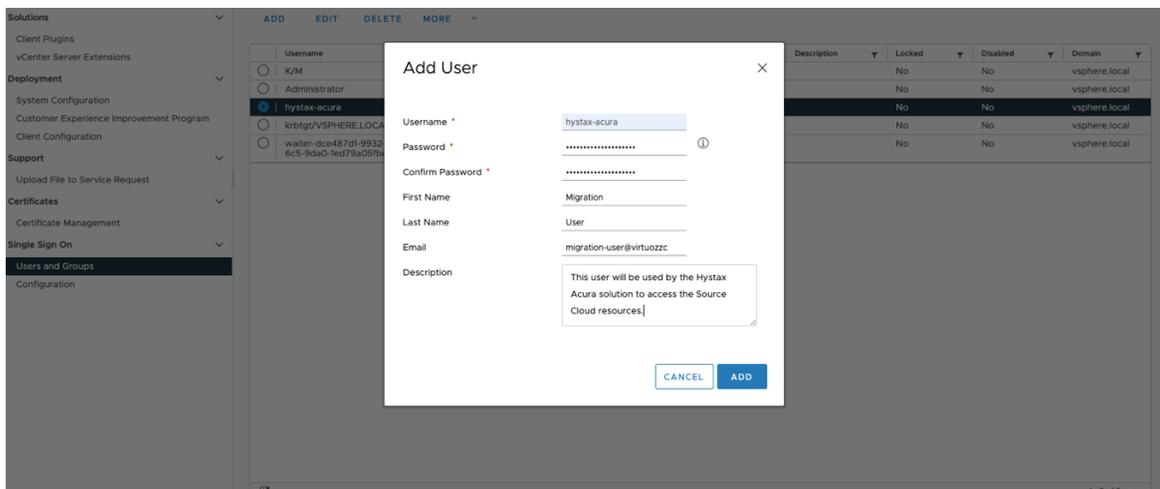
Please consider that storage performance warning thresholds need to be adjusted in order to meet this increased load during replication.

Important: The source machine must have VMware Tools installed manually prior to any replication procedures for it to display its network information in the target VMware ESXi correctly.

1. Login to your vCenter.



2. Create a user, in this example we will create a user named **hystax-user**. On your VMware vCenter client go to **Administration > Single Sign On > Users and Groups**, select your domain in the **Domain** drop-down menu and click **ADD**.



3. Create a role, we will clone the role **VMware Consolidated Backup user** and name it **Hystax-HVRAgent**. On **Administration** tab, go to **Access Control > Roles**, select **VMware Consolidated Backup user**, and click **CLONE**. Give it a meaningful name and ensure it has the following permissions selected:

- Virtual machine - Configuration - Disc Lease

- Virtual machine - Provisioning - Allow read-only disk access
- Virtual machine - Provisioning - Allow virtual machine files upload
- Virtual machine - Snapshot management - Create snapshot
- Virtual machine - Snapshot management - Remove Snapshot
- Virtual machine - Configuration - Disc change tracking

Edit Role ×

Role name
HRVAgent-Role

Description
Used by the Consolidated Backup utility

Show	Selected		Show	Selected
<input checked="" type="checkbox"/>	Virtual machine	<input type="checkbox"/> Select all	<input type="checkbox"/>	Change Configuration
			<input checked="" type="checkbox"/>	Acquire disk lease
			<input checked="" type="checkbox"/>	Toggle disk change tracking
			<input type="checkbox"/>	Provisioning
			<input checked="" type="checkbox"/>	Allow read-only disk access
			<input checked="" type="checkbox"/>	Allow virtual machine files upload
			<input type="checkbox"/>	Snapshot management
			<input checked="" type="checkbox"/>	Create snapshot
			<input checked="" type="checkbox"/>	Remove snapshot

4. Assign the role to the user. Go to **Inventory > Permissions**, select the previously created user, and click **Edit**. Search for the newly created role and add the role to the user.

Change Role
vmwvc.demo-virtuozzo.com
✕

Domain	VSPHERE.LOCAL
User/Group	hystax-acura
Role	<div style="border: 1px solid #0070c0; padding: 2px; display: flex; align-items: center;"> HRVAgent-Role ▼ </div>

Propagate to children

CANCEL

OK

At this point, the **hystax-acura** user has the necessary permissions to perform the migrations.

2.2 Deploying HVRAgent on VMware ESXi Hypervisor

There are three types of replication agents:

- **VMware agent** - an external agent to replicate VMware virtual machines without installing any software directly on VMs. Please refer that the agent requires access to VMware CBT API and network access to vCenter or ESXi host is mandatory. *Note that the agent from the same ova template must be deployed to all ESXi hosts where machines need to be protected.*
- **Windows agent** - an internal agent which can be deployed to any number of customer Windows virtual or physical machines.
- **Linux agent** - an internal agent which can be deployed to any number of customer Linux virtual or physical machines.

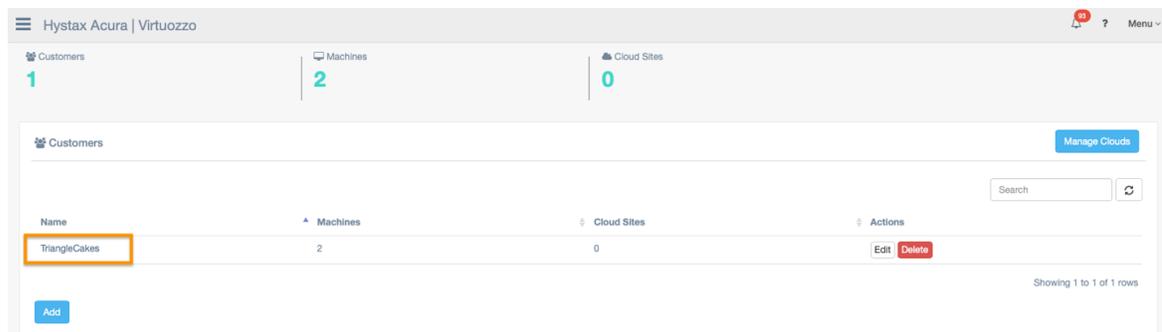
As we are performing a migration from VMware as the Source Cloud Platform, we will be using the VMware Agent. When any of the agents are deployed, the machine with it (or all machines on the same ESXi host

where the agent is located) will appear in Hystax Acura Control Panel under customer dashboard in the **Discovered** state.

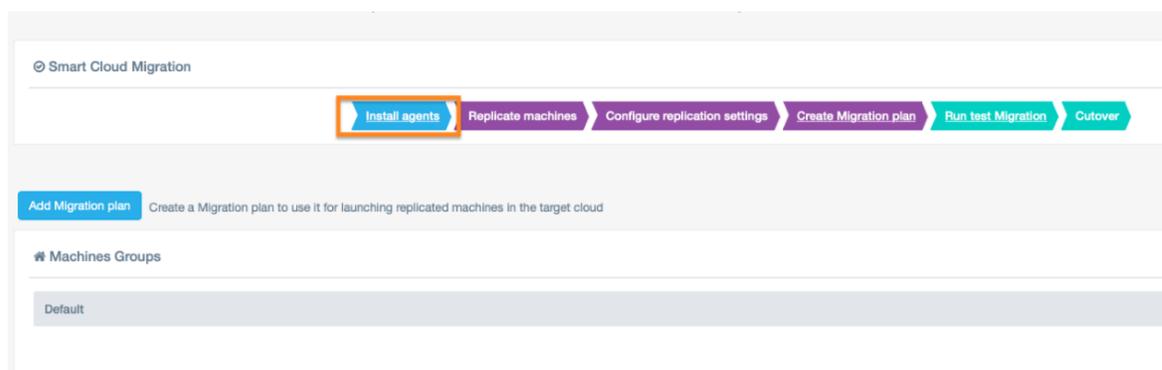
1. Login to the Hystax Acura portal by going to <https://floating-ip-acura-instance>.



2. Click on the customer you wish to perform the migration for, in our example we will be performing a migration from VMware as Source Cloud to Virtuozzo Hybrid Infrastructure platform. Any time you wish to go back to the main menu click on the Hystax logo on the top left.



3. Click **Install agents**.



4. Select the VMware agent and click **Next**.

Download agents

Step 1 Customer selection

Step 2 Agent selection

Step 3 Agent settings

Step 4 Replication instructions

On this step, select an agent type, which will replicate the machines. When all of the above is done, you can move further and click 'Next'.

External agents are deployed on a hypervisor level and can operate with multiple VMs.

Internal agents are deployed into VMs/bare metal machines, therefore, do not rely on hypervisors/storage.

Previous Next

5. You will be asked to provide credentials for the vSphere environment. Provide the credentials created previously.

Download agents

Step 1 Customer selection

Step 2 Agent selection

Step 3 Agent settings

Step 4 Replication instructions

On this step, select a group, where replicated machines will be automatically added to. If required, configure vSphere access settings for VMware replication. When all of the above is done, you can move further and click 'Next'.

Machines group

Default

Choose VMware vSphere

Registered VMware vSphere

Platform

VMware-to-VH

New VMware vSphere

Platform Name

VMware-to-VH

Endpoint

ip-of-your-vCenter

Login

hystax-user

Password

Previous Next

6. Now download the OVA file and deploy it on each ESXi host in your VMware cluster that you want to migrate workloads from.

Download agents

Step 1 Customer selection

Step 2 Agent selection

Step 3 Agent settings

Step 4 Replication instructions

Download Agent

Instructions

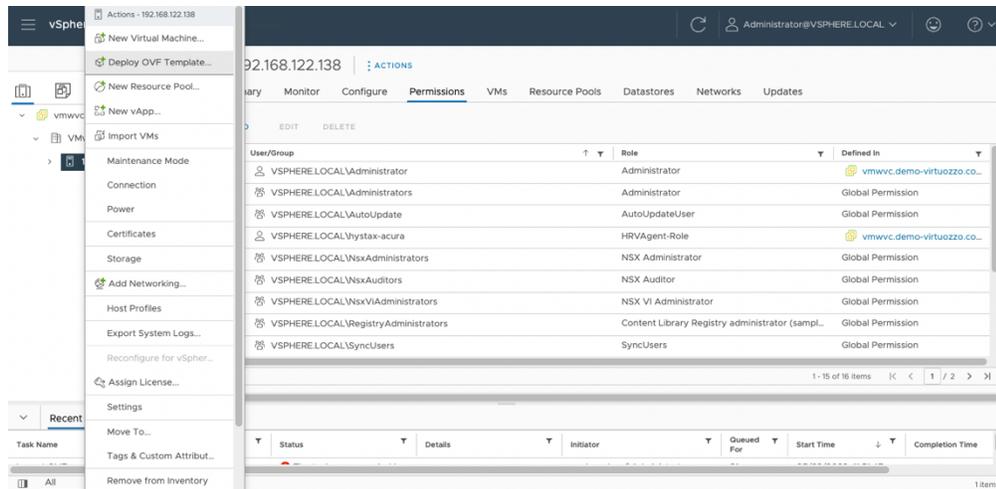
1. Download agent OVA file using the link above and deploy it on each ESXi host in your VMware cluster you want to replicate.
2. Launch deployed VMs (agents) to protect machines on each host.

Machines will be detected and shown in a few minutes after agent deployment and launch. By default, all discovered machines will have 'Discovered' status. Select machines you want to replicate and use 'Actions -> Start Replication' to start replicating them.

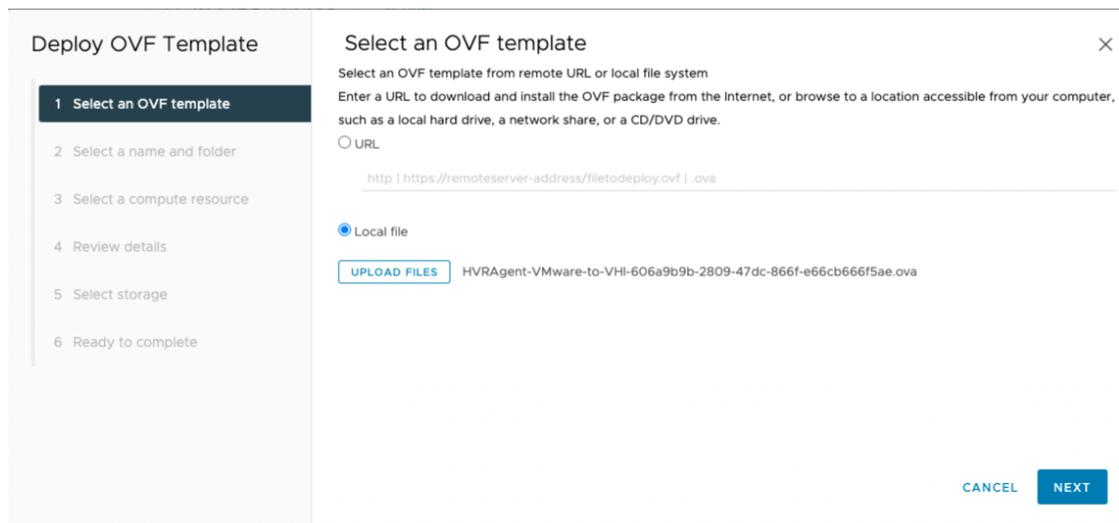
Previous Next

7. Deploy the agent:

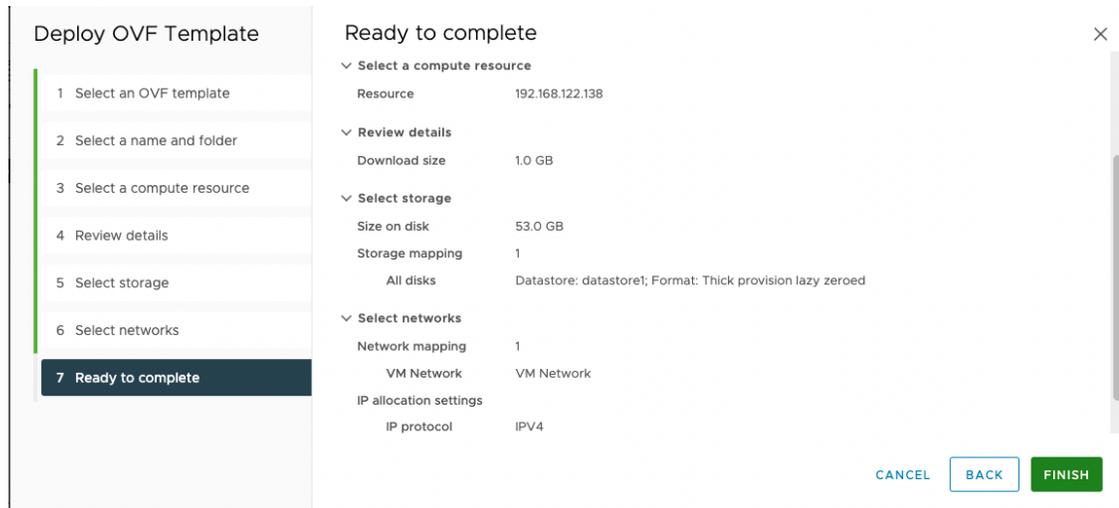
- 7.1. Use the **Deploy OVF Template** wizard to deploy the HRVAgent. Right click on the ESXi server you would like to deploy the agent. You'll need to repeat this procedure for each ESXi server available that you wish to migrate workloads from.



7.2. Select **Local file**, click **Upload files**, and choose the OVA file.



7.3. Follow the deployment wizard and provide the necessary information (compute resource, storage, networks) HVRAgent. The HVRAgent should be able to access the vCenter internal IP.



8. Once the HVRAgent VM is up, check the console and verify all is correct.

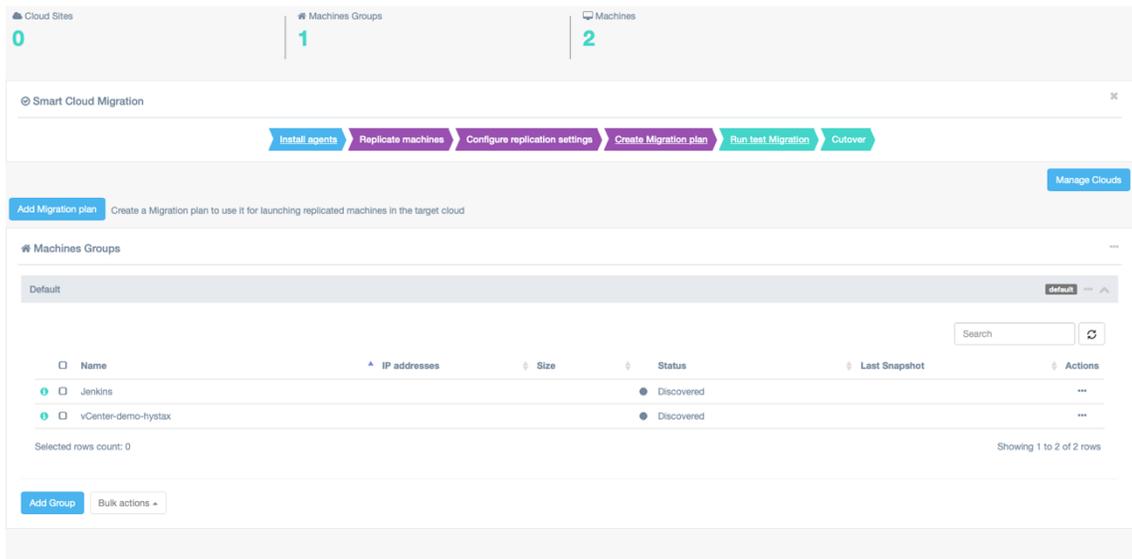
```

Docker status: Ok Image status: Ok Agent status: Ok Connection to VMware: Connected

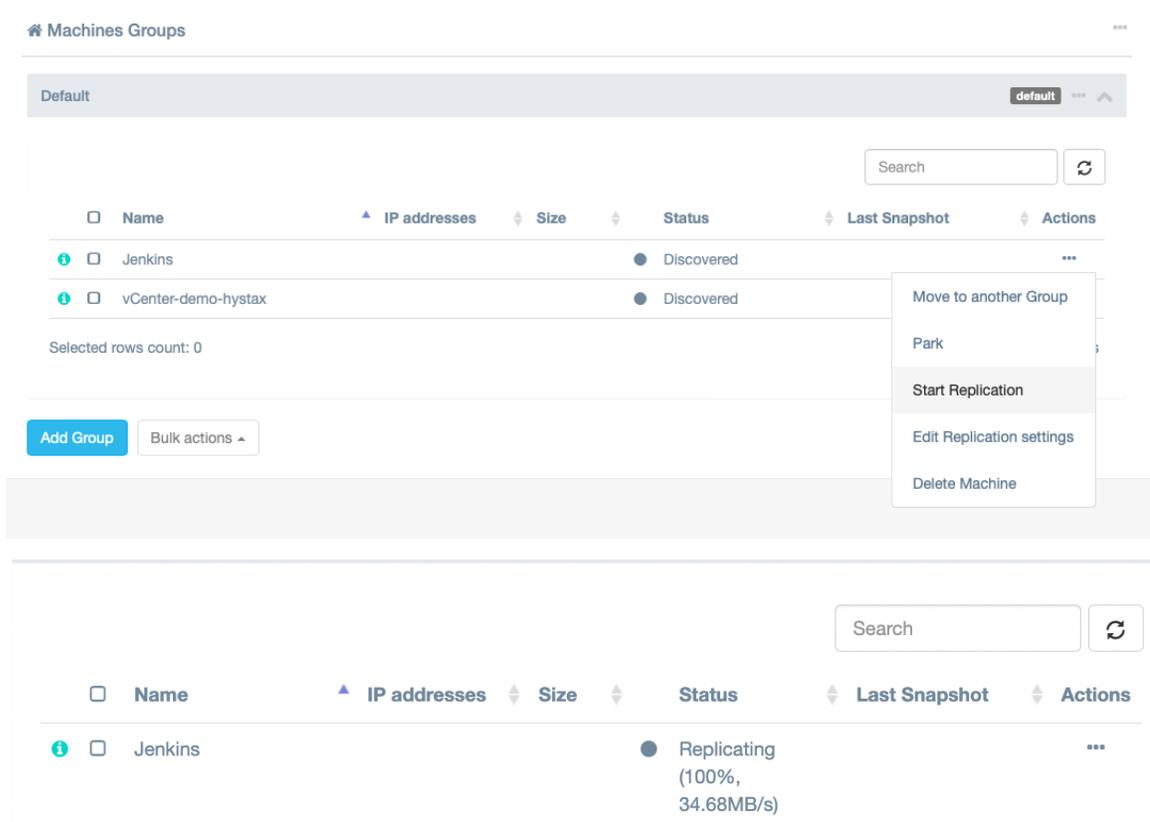
HVRAgent stopped
Detect base image in progress...
Base image found
Starting HVRAgent in progress...
HVRAgent started
2022-05-23 10:15:01,533:INFO: Hystax Acura VMware machine DR Agent - Version 3.7.245
2022-05-23 10:15:01,534:INFO: Quiesce strategy: QuiesceStrategy.enforce
HVRAgent stopping in progress...
HVRAgent stopped
Detect base image in progress...
Base image found
Starting HVRAgent in progress...
HVRAgent started
2022-05-23 10:16:05,632:INFO: Hystax Acura VMware machine DR Agent - Version 3.7.245
2022-05-23 10:16:05,633:INFO: Quiesce strategy: QuiesceStrategy.enforce
HVRAgent stopping in progress...
HVRAgent stopped
Detect base image in progress...
Base image found
Starting HVRAgent in progress...
HVRAgent started
2022-05-23 10:17:09,969:INFO: Hystax Acura VMware machine DR Agent - Version 3.7.245
2022-05-23 10:17:09,970:INFO: Quiesce strategy: QuiesceStrategy.enforce
  
```

< **To console** > < Restart services >

9. Click on the Hystax logo on the top left and on the customer, you'd like to manage. You will see the machines running on your ESXI server have been discovered.



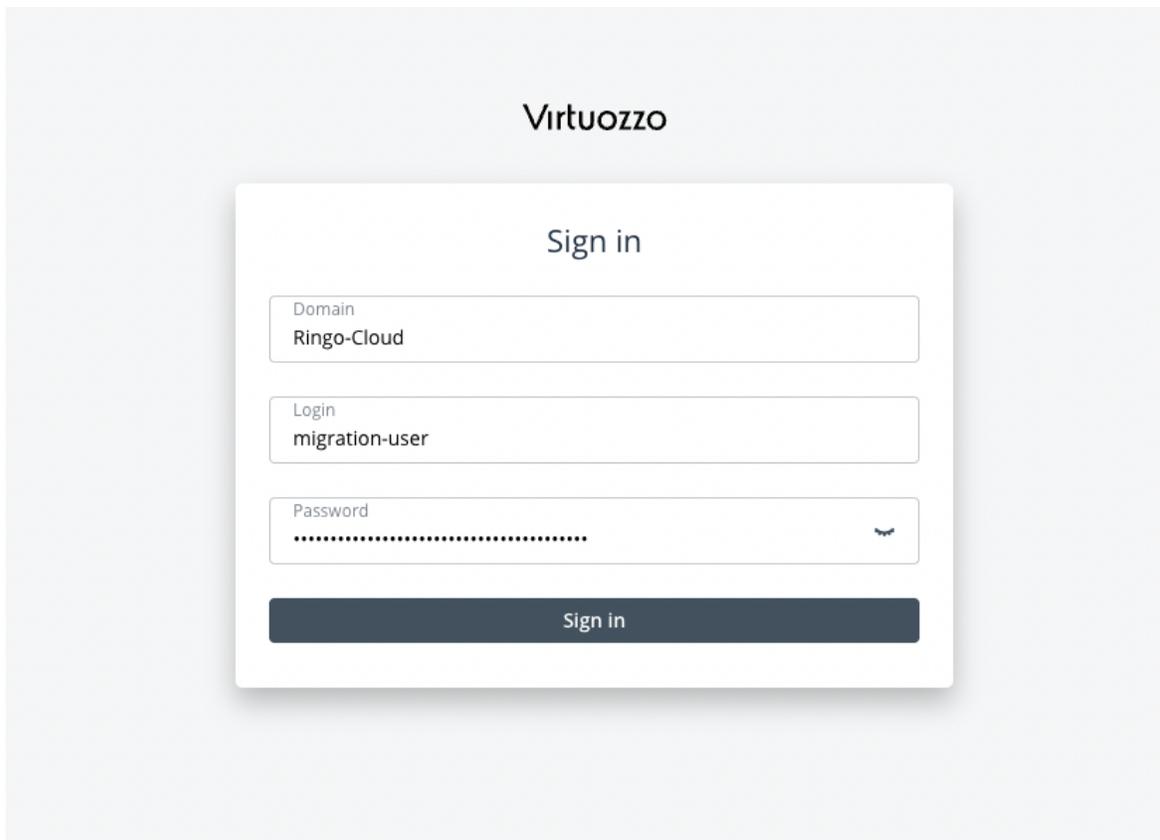
10. Click on **Start Replication**. If everything is correctly configured, replication of the remote instance will start on your target cloud. Replication will take some time, depending on how much data will be replicated and the connection between your source and target cloud.



11. Wait until the instance is synced.

<input type="checkbox"/>	Name	IP addresses	Size	Status	Last Snapshot	Actions
<input type="checkbox"/>	Jenkins	192.168.122.193	14.9 GB	Synced	05/23/2022 12:27 PM	...

12. While the image is being synced, let's create a target network (the network that will be used by our instance on the replicated target cloud). Go to your VHI self-service portal on "**vhi-admin-panel-fqdn:8800**" and login to the target project.



13. Once you've logged in, check the **Virtual machines** tab and you will see that the Acura cloud agent has been deployed automatically.

<input type="checkbox"/>	Name ↑	Status ↓	IP address	vCPUs ↓	RAM ↓	Storage ↓	Volumes	⚙️
<input type="checkbox"/>	Target Project1_cloud_agent	Active	192.168.3.54	2	4 GiB	8 GiB	1	...

14. Go to **Networks**, click **Create virtual network**, and follow the steps. I will create the network using exactly the same CIDR (172.31.32.0/20) as the instance being replicated. You could use any other network CIDR, this is just to show an example of a migration with exactly the same IP address source and remote.

15. Add a migration plan. Start by adding a machine. Click on the ellipsis icon "...", then click **Add machine** > **Default**, and select discovered machine.

Add Migration plan

Name*

Basic Expert

Devices & Ranks Subnets* +

:: Rank 0 - 0 machines

Add machine Default Jenkins

Close Save

16. Next, configure the subnets for your new instance. Expand the view for your instance. You will see information regarding Machine ID, Flavor (important to check the flavor you choose have enough resources for your instance), and Port (network). Also, on the left you'll see information regarding the network to be used.

Add Migration plan

Name*

Basic Expert

Devices & Ranks Subnets* +

:: Rank 0 - 1 machines

:: Jenkins - xlarge, 1 ports

Machine ID* 526cd8b4-4b31-3620-e065-8ec17715dd52

Flavor name*

#	Port name*	Port subnet*	Port ip
1	<input type="text" value="port_0"/>	<input type="text" value="subnet_0"/>	<input type="text" value="172.31.44.76"/>

Subnet ID*

CIDR*

Close Save

We will replace the Flavor name with one that is available on our cloud. You can check available flavors by going to **Virtual machines** and **Flavors**. Also, we will find the subnet ID

for our newly created network and paste it there.

17. Source the information regarding the subnet ID.

17.1. Login to your Virtuozzo Hybrid Infrastructure Admin panel via SSH.

17.2. Source the `admin-openrc.sh` file.

```
# source /etc/kolla/admin-openrc.sh
```

17.3. Run the command `openstack network list --insecure` and identify the subnet ID.

```
[root@ ~]# openstack network list --insecure
+-----+-----+-----+
| ID | Name | Subnets |
+-----+-----+-----+
| 0845987c-9f6b-4f66-b309-a3020c4bbf39 | migrated-vm-network | 05afbd8d-2293-42b6-a4b7-38e70bb5fb9d |
| 2028c210-b2ad-4bdb-abb0-57c18b0f66f3 | HA network tenant c7a06cdd102c419d98365448757472b0 | 19713340-b0ed-4040-815d-40e372740310 |
| 40e0bdb6-ee47-4c8a-8791-3f9e0d69d691 | vm-network | a70208af-1ece-4234-948b-8aef297a3279 |
| 467c893d-f141-4645-86d6-de8e1bced23e | external | 70dd6fca-d4b9-4885-84a2-8636792f39cb, ab5e7524-47b5-4d87-8f2a-7e19c5d4e3f3 |
| 9fad0052-fc80-4150-9dd5-d0b9daf4b9ce | public | 825c3066-3989-4572-946d-02b20268bed9, fc61fa16-508c-4d03-9201-fbf24ce6cfb1 |
| cf21ea0f-ee6f-4d7b-af26-3aa8413412af | HA network tenant 15afdf824c534233b036ff3bf9375879 | 01cc2e76-d9ed-4b6f-b80c-cff069931be4 |
| ec8d6f59-e7ee-4633-a317-18134a3d523e | vm-network | 1ca208fd-1158-4648-af21-01ef653c8af0 |
+-----+-----+-----+
```

18. Add the subnet ID.

Edit migration plan
✕

Name*

Basic

Expert

Devices & Ranks

Rank 0 – 1 machines

Jenkins – xlarge, 1 ports

Machine ID*

Flavor name*

#	Port name*	Port subnet*	Port ip
1	<input type="text" value="port_0"/>	<input type="text" value="subnet_0"/>	<input type="text" value="172.31.44.76"/>

Subnets*

Subnet ID*

CIDR*

Close

Save

19. Add a secondary Port. Add a subnet by clicking the “+” button on the **Subnets** section, we will be adding a floating IP.

526cd8b4-4b31-3620-e065-8

#	Port name*	Port subnet*
1	port_0	subnet_0

05afbd8d-2293-42b6-a4b7-3

172.31.32.0/20

Subnet ID

CIDR

20. Click on the **Subnet ID*** drop down menu for your new subnet and select the Public IP you wish to use. By leaving the **Port IP** field blank you are specifying DHCP. Provide a name for the plan and click **Save**.

Edit migration plan ✕

Name*

Basic Expert

Devices & Ranks Subnets* +

:: Rank 0 – 1 machines ⋮ ^

:: Jenkins – xlarge, 2 ports ⋮ ^

Machine ID*

Flavor name*

#	Port name*	Port subnet*	Port ip	
1	<input type="text" value="port_0"/>	<input type="text" value="subnet_0"/>	<input type="text" value="172.31.44.76"/>	<input type="button" value="🗑"/>
2	<input type="text" value="port_1"/>	<input type="text" value="public"/>	<input type="text" value="Port IP"/>	<input type="button" value="🗑"/>

Subnet ID*

CIDR*

Subnet ID*

CIDR*

21. Click on **Run test migration** and select the migration plan.

Migrate

1

Step 1
Select Customer

2

Step 2
Select Migration plan

3

Step 3
Setup Cloud Site settings

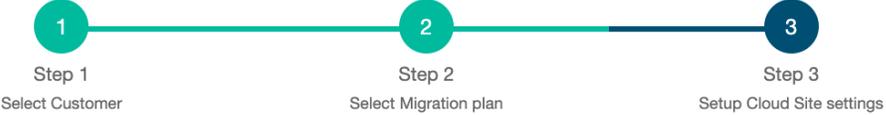
On this step, select Migration plans, based on which you want to start migration procedure of your infrastructure to Cloud Site. Select one or more plans, also you can create a custom Migration plan in the appropriate field. When all of the above is done, you can move further and click 'Next'.

jenkins-migration ▼

Custom Migration Plan ▼

22. Create a cloud site by giving a name, a cloud site is a way to logically group a migration plan with a

snapshot to be used for the migration. Give the Cloud Site a name, select a snapshot and click on **Run migration**.



On this step, specify a name for future Cloud Site, select a snapshot to migrate your business application to and check correctness of all configurations of future Cloud Site. When all of the above is done, click the button “Start” and in several minutes your Cloud Site will be ready for work.

Cloud Site Name

Snapshot time

Final Migration plan

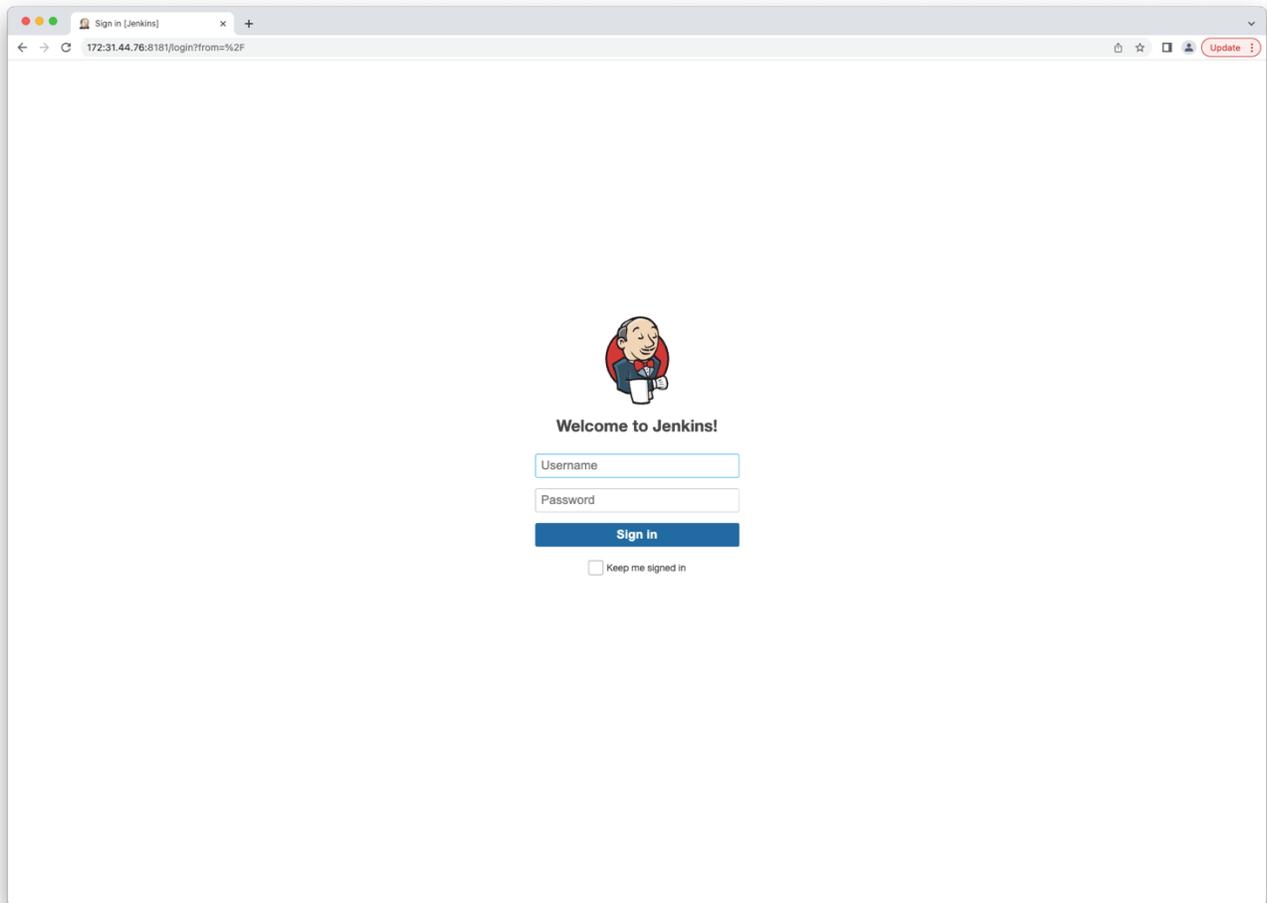
Machines

Name	IP Address	Flavor	Rank	Subnet
Jenkins	172.31.44.76	xlarge	0	subnet_0, public

Showing 1 to 1 of 1 rows

If all went well you will see your replicated instance available on your target cloud. When you are done reviewing the migration test you can delete the resources, by deleting the cloud site, then you can redo the migration, or you could detach.

Category	Name	Status	IP Address	Rank	Memory	Storage	Actions
Virtual machines	Hystax Acura	Active	192.168.100.182	8	25 GiB	50 GiB	...
Network	Jenkins	Active	172.31.44.76, 192.16...	1	512 MiB	0 bytes	...



For the final cutover, just detach Hystax Acura from the migration and Hystax Acura will stop tracking any resources belonging to this migration.

Machines running
1

jenkins-cloud-site Detach Delete

State: **Running** Project ID: **c57dd14c08bc4d6780ab1787774fd6e8** Snapshot: **05/23/2022 12:56 PM**

Machines

Search ↻

Name	IP Address	Flavor	Subnet	Snapshot	Status	Actions
Jenkins	192.168.3.56 172.31.44.76	tiny	subnet_0 public	05/23/2022 12:27 PM	Active	-

Showing 1 to 1 of 1 rows

Cloud Sites

Search ↻

Name	State	Actions
jenkins-cloud-site	Detaching	Edit Delete

Showing 1 to 1 of 1 rows

Now you can manage your resources from VHI as you would normally do.

CHAPTER 3

Providing Access to Hystax Acura Portal

In order to allow users to manage their migration workloads, we can create a user with project scope from the Hystax Acura web interface.

1. Login to the Hystax Acura Solution web interface and click on the **Settings** tab on the left-hand side. Then click on **Roles** and click **Add**.

Add Role ✕

Share role with customers

Name

Description

Role owner

Settings template

- Assign the necessary permissions to the role. We will provide full access to the **TriangleCakes** target cloud.

The screenshot shows a configuration window for a role named "TriangleCakes Inc.". On the left, there are two role cards: "Partner Admin" (Role owner: Virtuozzo, Settings template: Partner) and "TriangleCakes Inc." (Role owner: TriangleCakes, Settings template: Customer). Below the cards is an "Add" button. The main configuration area includes:

- Active:**
- Share role with customers:**
- Name*:** TriangleCakes Inc.
- Description:** Role project scope for TriangleCakes
- Permissions:**
 - Manage users and roles allocation
 - Edit user info
 - Reset user password
 - Create users
 - Activate users
 - Delete users
 - User assignment
 - Roles assignment to own users
 - View users
 - Manage Migration plans
 - Edit Migration plan
 - View Migration plans
 - Add Migration plans
 - Delete Migration plan

- Now we will add a new user. Click **Users** and then click **Add**. Fill in all the information and select the **Customer:Customer** name as **Organization**.

The screenshot shows the "Add user" form with the following fields:

- Login*:** trianglec-user
- Name*:** Anthony
- Password*:** [masked]
- Confirm password*:** [masked]
- Organization*:** Customer: TriangleCakes

At the bottom right, there are "Close" and "Save" buttons.

- Click on the newly create user in order to assign a role to the user.

Settings

User settings SMTP settings Notifications Users Roles

On this tab you can add/delete users, add roles assignments for some particular resources, change activity of current users, reset their passwords to new ones and change such user data like name. Please pay your attention that user managements is available only for current hierarchy level and below, so user of one customer cannot see and edit users that belong to another customer or partner.

Acura-admin **self** Active
Organization: Virtuozzo

Anthony
Organization: TriangleCakes

Add

Login: triangle-cakes-user

Name: Anthony

Password:

Confirm password:

Save Delete

Assignments

Role	Role scope	Actions
No matching records found		

Add

- Click **Add** in the **Role** section and add the role.

Assign role



Assignment role

TriangleCakes Inc. ▼

Role scope

Customer: TriangleCakes ▼

Close

Save

The user, at this point, will be able to login to the Hystax Acura web interface and perform and the Migration as a Service (self-service migration).

The screenshot displays the Hystax Acura portal interface. On the left is a dark blue sidebar with the Hystax logo and navigation links: 'Download agents', 'Migrate', 'Reports', 'Events', 'Settings', 'Troubleshooting', and 'Help'. Below these links is a promotional banner for 'Hystax OptScale' and a list of features. The main content area has a header with the user name 'Anthony' and counts for 'Cloud Sites' (2), 'Machines Groups' (1), and 'Machines' (1). A 'Smart Cloud Migration' workflow is shown with steps: 'Install agents', 'Replicate machines', 'Configure replication settings', 'Create Migration plan', 'Run test Migration', and 'Cutover'. Below this is a 'Manage Clouds' button and a table of 'Cloud Sites'.

Name	State	Actions
website-testdomain	Running	Edit Delete
website-testdomain1	Deleting	Edit Delete

Showing 1 to 2 of 2 rows

CHAPTER 4

Troubleshooting

Hystax Acura automatically checks cloud access and the necessary permissions for assuring successful operation. It provides detailed error messages that describe their potential causes.

In case of an error, please check the correctness of the data entered and availability of the necessary permissions.

CHAPTER 5

Limitations

The Hystax Acura limitations are listed in the [official documentation](#).