

Virtuozzo

Virtuozzo Hybrid Infrastructure 5.1

Hystax Acura Migration Guide From VMware

5/30/2022

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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 by using Hystax Acura migration solution.

To deploy the Hystax Acura solution, refer to the Integration Guide for Hystax Acura.

Migration steps

The migration process will be divided in to three sections:

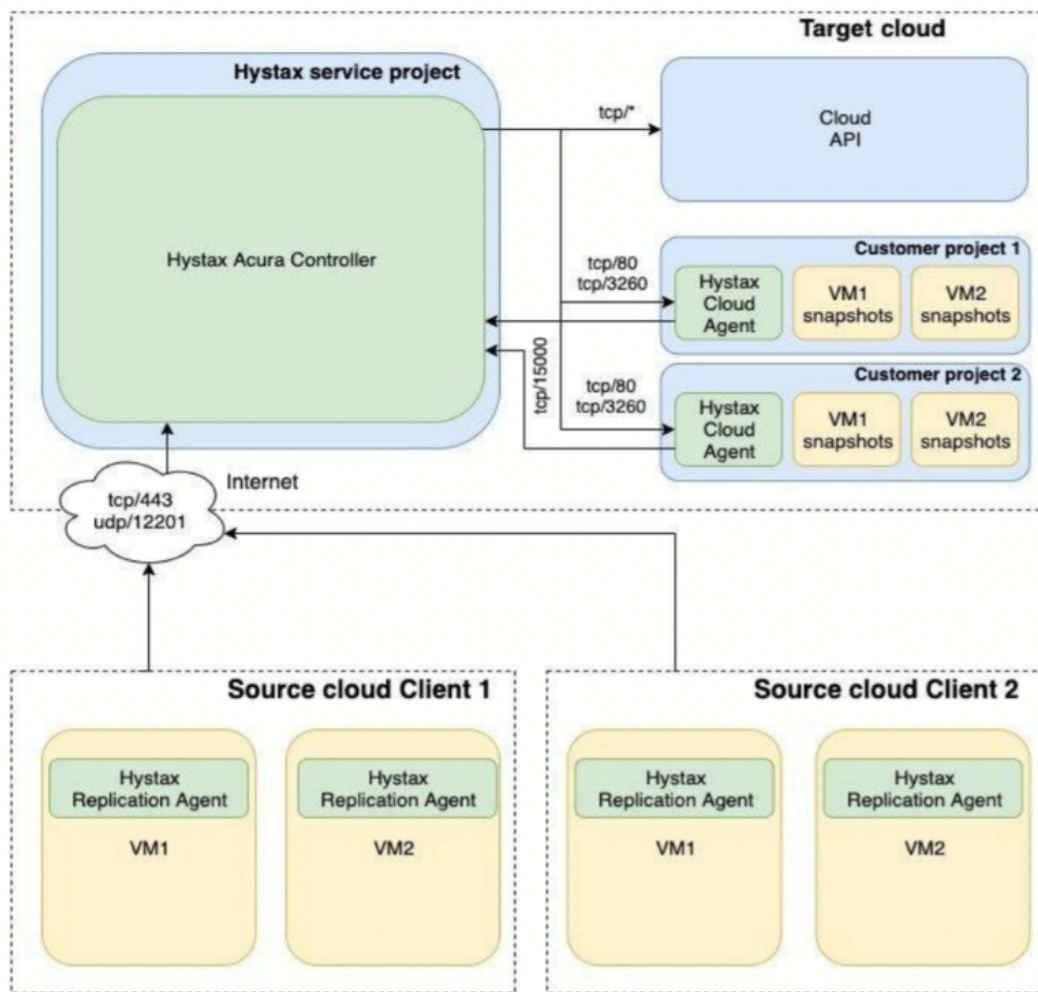
1. Ensure that Virtuozzo Hybrid Infrastructure is ready. Refer to the Integration Guide for Hystax Acura and check the following sections:
 - Virtuozzo Hybrid Infrastructure resource planning and configuration
 - Deploying the Hystax Acura solution in Virtuozzo Hybrid Infrastructure
2. VMware resource planning and configuration.
3. Deploying HVRAgent on VMware ESXi Hypervisor.
4. Performing a test migration.

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VMware resource planning and configuration

In this guide, we will perform a migration from VMware to Virtuozzo Hybrid Infrastructure. Before starting the migration, we need to ensure that certain resources are available on the VMware platform, such as a user with specific permissions and Hystax Replication Agent for VMware (HVRAgent) deployed on each ESXi Hypervisor. Replication agents are used to replicate the workloads between VMware ESXi Hypervisors (source platform) and Virtuozzo Hybrid Infrastructure (target platform/target project). In this guide, we will be referring to the VMware platform as the source platform and to Virtuozzo Hybrid Infrastructure as the target project or platform.

Architecture overview of the Hystax Acura migration solution



For the agent to work correctly, the following ports are needed:

- TCP 443 for vSphere host
- TCP/UDP 902 for ESXi host(s)
- UDP 12201 for sending logs to the Hystax Acura cluster

HVRAgent requires the following user permissions in vSphere (the role **VMware Consolidated Backup user** in vCenter):

- Virtual machine – Change Configuration – Acquire disk 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

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

- Virtual machine – Change Configuration – Toggle disk 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, a vCenter user requires one extra permission to operate: Profile-driven storage > Profile-driven storage view.

HVRAgent uses VMware snapshots and the VMware CBT API to create consistent replicas of machines' data. This implies the following considerations regarding VMware storage:

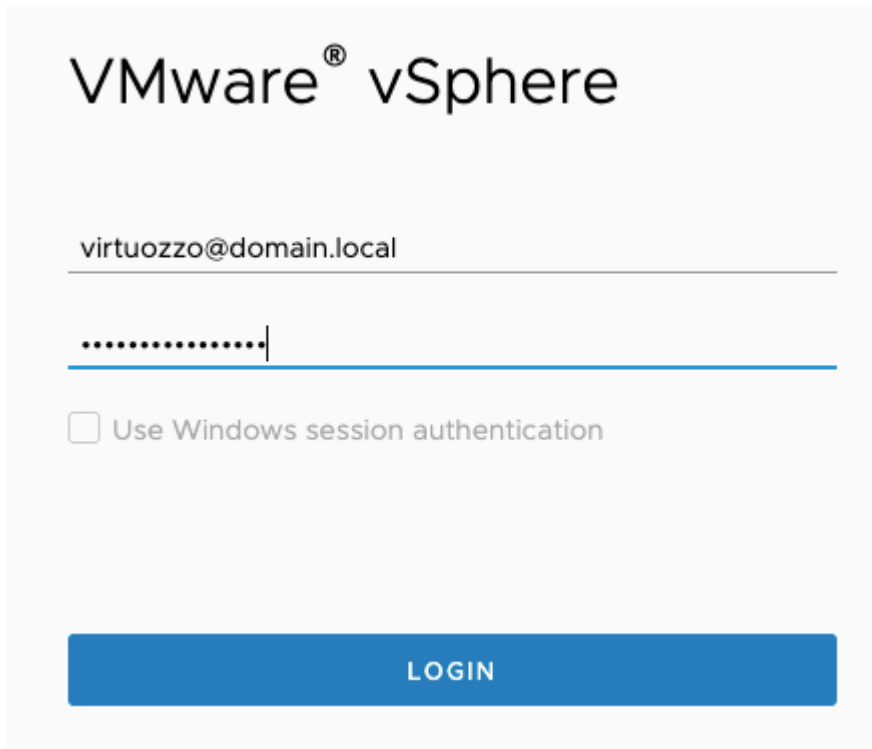
- VMware snapshots consume storage to retain copy-on-write buffer, so it is recommended to have at least 10% of free space available in VMware storage.
- VMware puts additional load on storage while creating snapshots or running machines with existing snapshots.

Also, note 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, so that its network information is correctly displayed in the target VMware ESXi.

1. Log in to vCenter.



VMware[®] vSphere

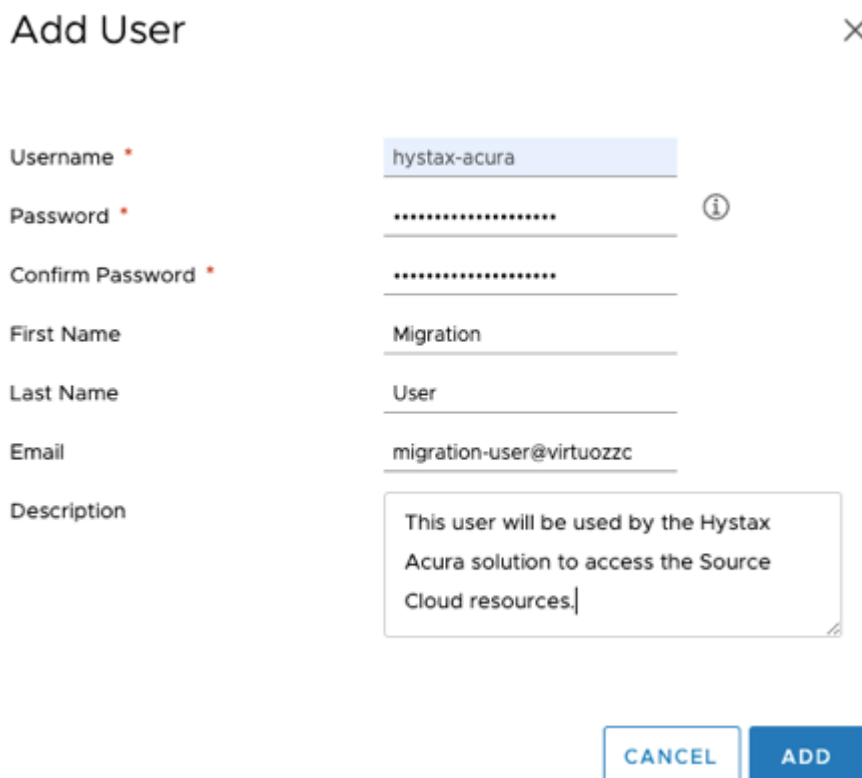
virtuozzo@domain.local

.....|

Use Windows session authentication

LOGIN

2. Create a user. In this example, we will create the user **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 then click **ADD**.



Add User ×

Username * hystax-apura

Password * ⓘ

Confirm Password *

First Name Migration

Last Name User

Email migration-user@virtuozzo

Description
This user will be used by the Hystax Acura solution to access the Source Cloud resources.

CANCEL ADD

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

- Virtual machine – Change Configuration – Acquire disk lease
- Virtual machine – Change Configuration – Toggle disk change tracking
- 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

Edit Role ✕

Role name
 HRVAgent-Role

Description

Used by the Consolidated Backup utility

Show Selected ▾

- ✓ Virtual machine

Select all **Show** Selected ▾

- Change Configuration
 - Acquire disk lease
 - Toggle disk change tracking
- Provisioning
 - Allow read-only disk access
 - Allow virtual machine files upload
- Snapshot management
 - Create snapshot
 - Remove snapshot

CANCEL
SAVE

4. Assign the role to the user. Go to **Inventory > Permissions**, select the previously created user, and then 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-apura
Role	HRVAgent-Role ▼
	<input type="checkbox"/> Propagate to children

CANCEL

OK

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

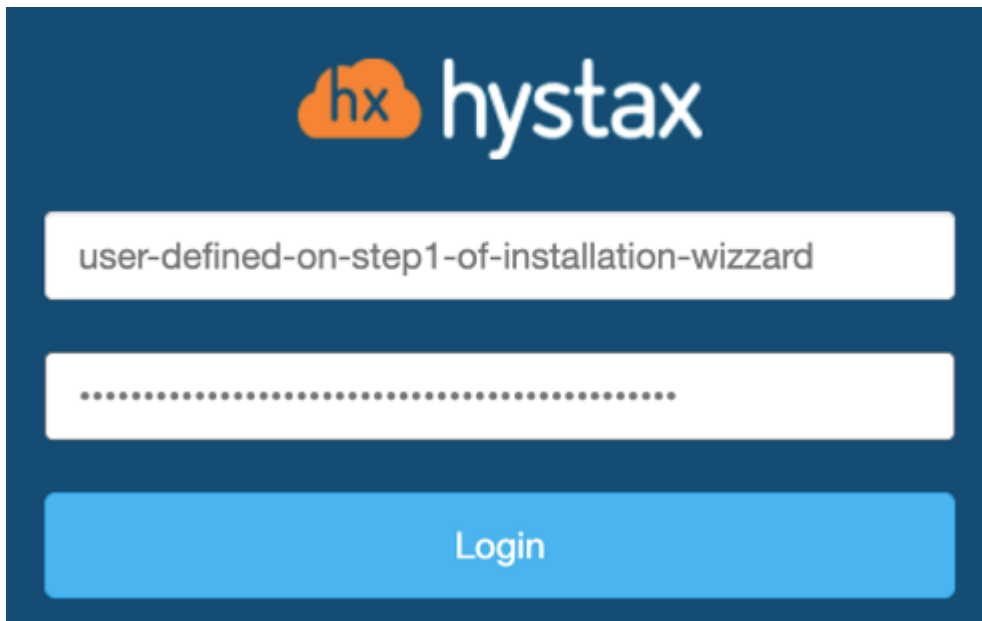
Deploying HVRAgent on VMware ESXi Hypervisor

There are three types of replication agents:

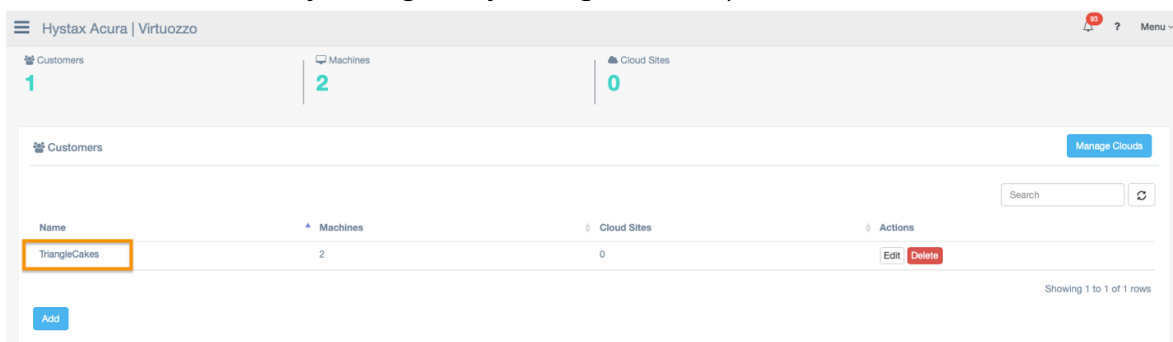
- VMware agent is an external agent to replicate VMware virtual machines without installing any software directly on VMs. Note that the agent requires access to the VMware CBT API and network access to a vCenter or ESXi host is mandatory. Also, keep in mind that the agent from the same OVA template must be deployed to all ESXi hosts where machines need to be protected.
- Windows agent is an internal agent that can be deployed to any number of customer Windows virtual or physical machines.
- Linux agent is an internal agent that 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 use the VMware agent. When any of the agents is deployed, the machine with it (or all machines on the same ESXi host where the agent is located) will appear in the Hystax Acura Control Panel under customer dashboard in the **Discovered** state.

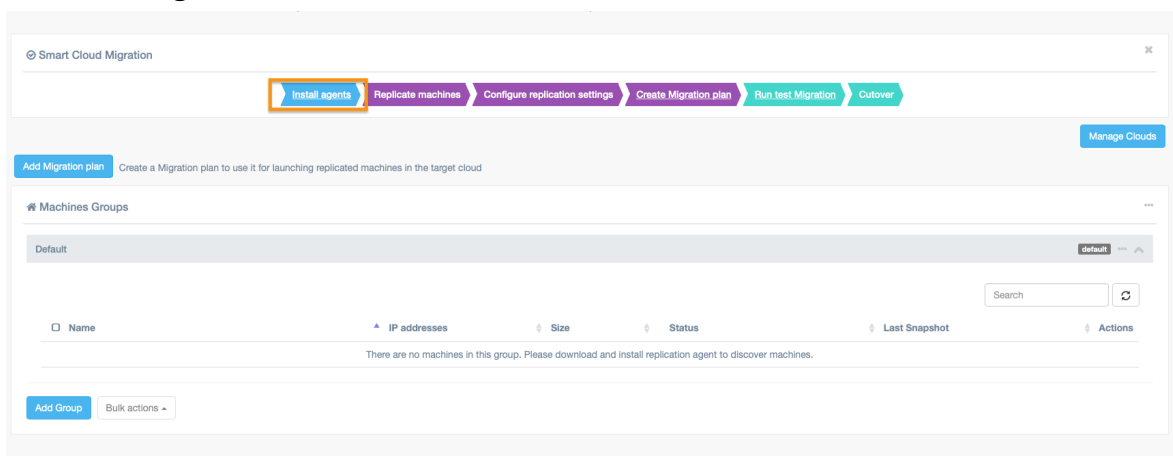
1. Log in to the Hystax Acura portal at <https://floating-ip-acura-instance>.



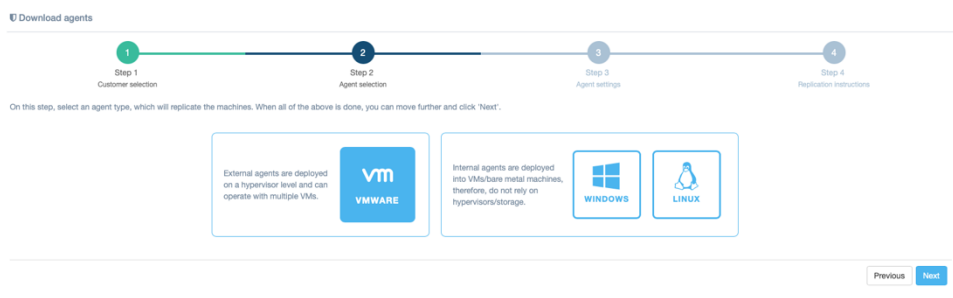
2. Select the customer you wish to perform the migration for. In our example, we will perform a migration from VMware as the source cloud to Virtuozzo Hybrid Infrastructure. You can go back to the main menu by clicking the Hystax logo on the top left.



3. Click **Install agents**.



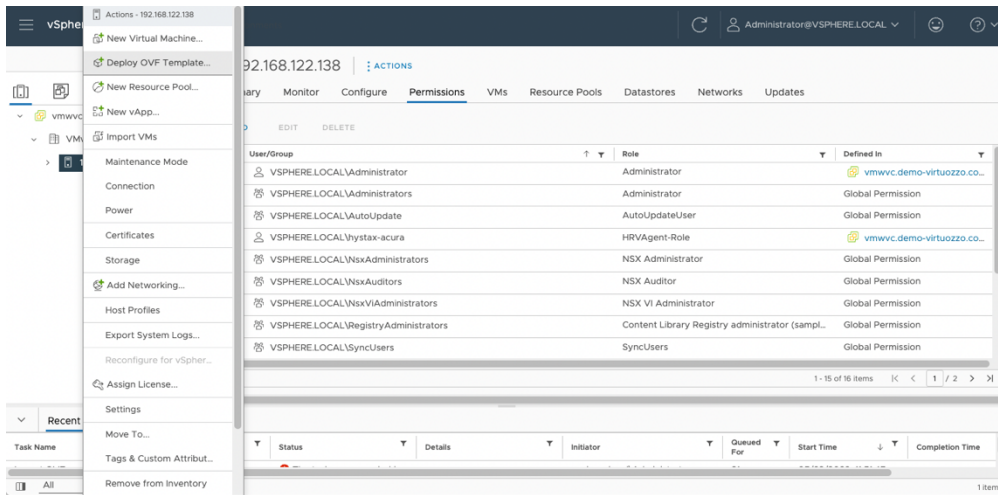
4. Select the VMware agent, and then click **Next**.



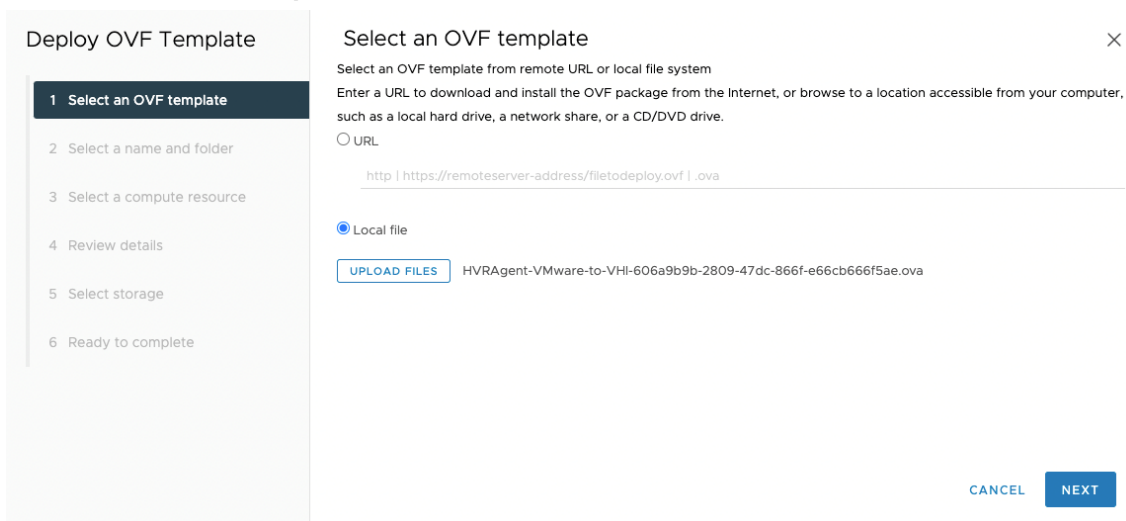
5. You will be asked to provide credentials for the vSphere environment. Provide the credentials created previously.

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

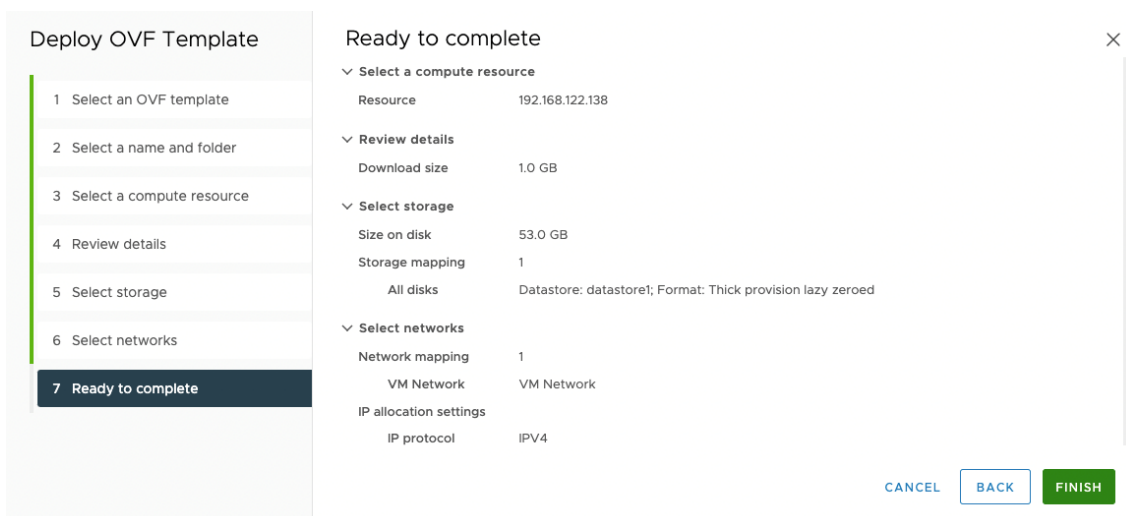
7. Deploy the agent:
 - a. Use the **Deploy OVF Template** wizard to deploy HRVAgent. Right-click the ESXi server you wish to deploy the agent on. You will need to repeat this procedure for each ESXi server available that you wish to migrate workloads from.



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



c. Follow the deployment wizard and provide the necessary information (compute resources, storage, networks) for HVRAgent. HVRAgent must be able to access the vCenter internal IP address.



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

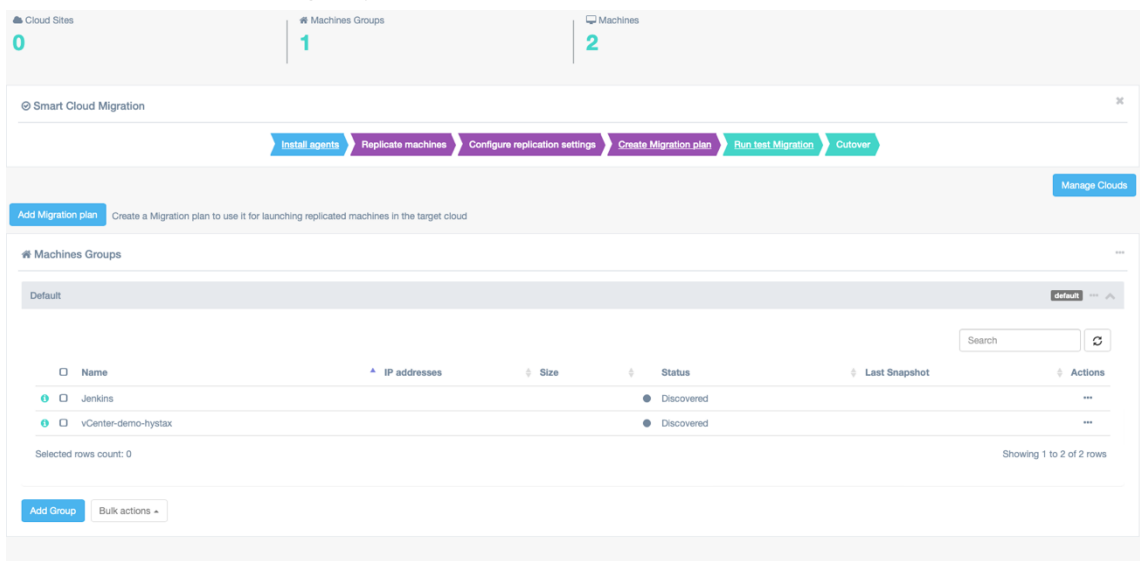
```

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

HURAgent stopped
Detect base image in progress...
Base image found
Starting HURAgent in progress...
HURAgent 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
HURAgent stopping in progress...
HURAgent stopped
Detect base image in progress...
Base image found
Starting HURAgent in progress...
HURAgent 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
HURAgent stopping in progress...
HURAgent stopped
Detect base image in progress...
Base image found
Starting HURAgent in progress...
HURAgent 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 >

- Click the Hystax logo on the top left, and then select the customer you wish to manage. You will see the machines running on your ESXI server have been discovered.



- Click the ellipsis icon ..., and then click **Start replication**. If everything is correctly configured, replication of the remote instance will start in your target cloud. The replication will take some time, depending on how much data will be replicated and the connection between your source and target cloud.

Machines Groups

Default default

Search ↻

<input type="checkbox"/>	Name	IP addresses	Size	Status	Last Snapshot	Actions
<input type="checkbox"/>	Jenkins			Discovered		...
<input type="checkbox"/>	vCenter-demo-hystax			Discovered		...

Selected rows count: 0

Add Group Bulk actions ▾

Move to another Group
Park
Start Replication
Edit Replication settings
Delete Machine

Search ↻

<input type="checkbox"/>	Name	IP addresses	Size	Status	Last Snapshot	Actions
<input type="checkbox"/>	ip-172-31-44-76			Replicating (10%, 14.92MB/s)		...

Selected rows count: 0 Showing 1 to 1 of 1 rows

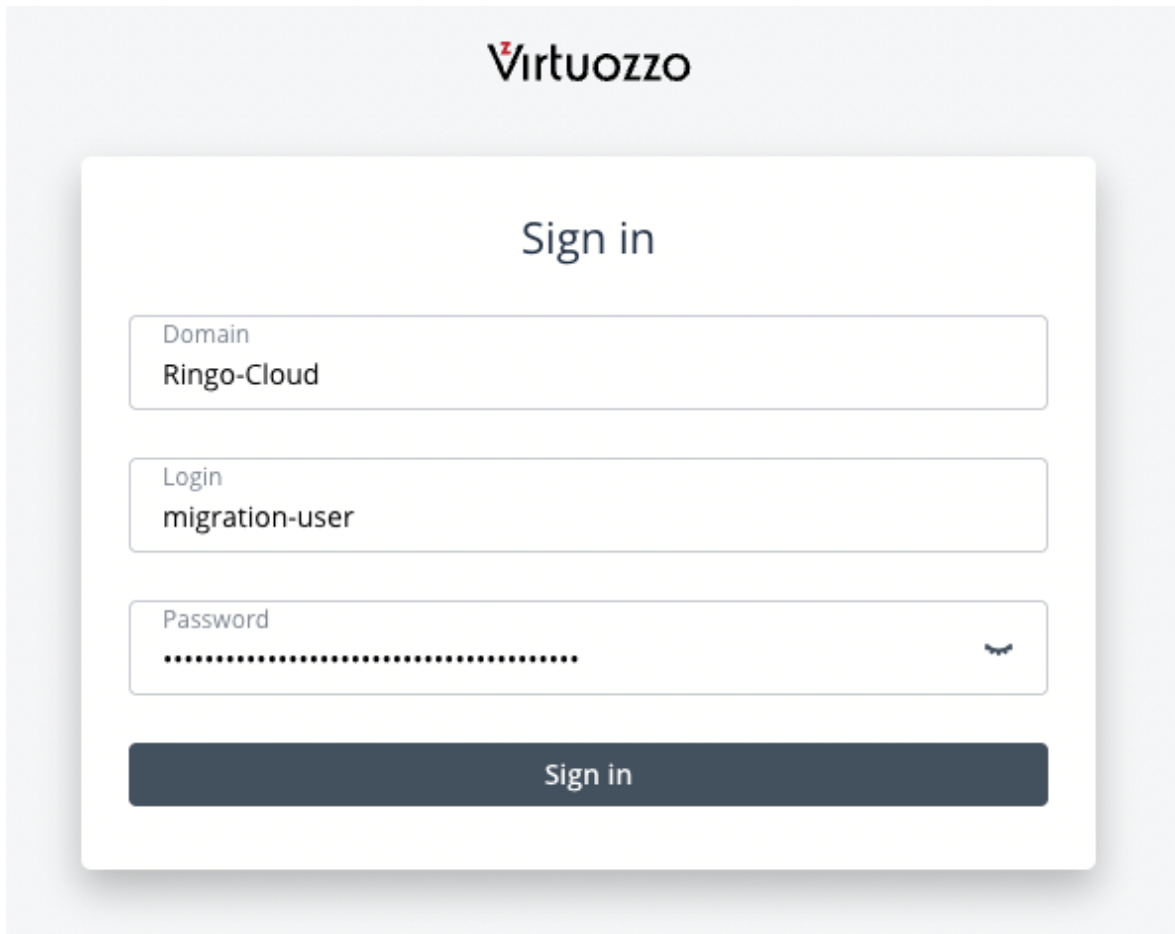
11. Wait until the instance is synced.

Search ↻

<input type="checkbox"/>	Name	IP addresses	Size	Status	Last Snapshot	Actions
<input type="checkbox"/>	ip-172-31-44-76	172.31.44.76	8.0 GB	Synced	05/01/2022 10:45 PM	...

Selected rows count: 0 Showing 1 to 1 of 1 rows

12. While the image is being synced, create a target network (the network that will be used by our instance in the replicated target cloud). Go to your Virtuozzo Hybrid Infrastructure self-service portal at **vhi-admin-panel-fqdn:8800** and log in to the target project.



- On the **Virtual machines** tab, check 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	...

- Go to **Networks**, click **Create virtual network** and follow the steps. We will create the network by using exactly the same CIDR (172.31.32.0/20) as the instance being replicated, to show an example of a migration with exactly the same IP address source and remote. You can use any other network CIDR.
- Add a migration plan. On step 1, add a machine. Click the ellipsis icon ..., then click **Add machine** > **Default** > the machine discovered.

Add Migration plan ✕

Name*

Basic Expert

Devices & Ranks Subnets* +

:: Rank 0 – 0 machines ... ^

Add machine Default Jenkins

Close Save

16. Add a migration plan. On step 2, configure the subnets for your new instance. Expand the view for your instance. You will see the information on the machine ID, flavor, and port (network). Also, on the left you will see the information on 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* ✕

Subnet ID* ▼

CIDR*

Close Save

We will replace the flavor name with one that is available in 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 on the subnet ID:
- Log in to your Virtuozzo Hybrid Infrastructure admin panel via SSH.
 - Source the `admin-openrc.sh` file:

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


c. 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 | 05afb8d8-2293-42b6-a4b7-38e70b5fb9a |
| 2028c210-b2ad-4bdb-abb-57c18b0f66f3 | HA network tenant c7a06cdd102c419d98365448757472b0 | 1971834b-86e4-4d46-815d-4be572746310 |
| 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-fc80-4159-9ad5-a0b9daf4b9ca | public | 825c3066-3989-4372-946d-02b202688ead9, fce1fa16-508c-4d03-9201-fbf24ceccfb1 |
| cf21ea9f-ee6f-4d7b-af28-3aa8413412af | 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* jenkins-migration

Basic Expert

Devices & Ranks

Subnets* +

Rank 0 - 1 machines

Jenkins - xlarge, 1 ports

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

Flavor name* xlarge

#	Port name*	Port subnet*	Port ip
1	port_0	subnet_0	172.31.44.76

Subnet ID* 05afb8d8-2293-42b6-a4b7-38e70b5fb9a

CIDR* 172.31.32.0/20

Close Save

19. Add a secondary port. Add a subnet by clicking + in the **Subnets** section. We will add a floating IP address.

Name*

Basic **Expert**

Devices & Ranks

:: Rank 0 – 1 machines

:: Jenkins – xlarge, 1 ports

Machine ID*

Flavor name*

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

Subnets*

subnet_0

Subnet ID*

CIDR*

Name

Subnet ID*

CIDR*

- Click the **Subnet ID*** drop-down menu of your new subnet, and then select the public IP address you wish to use. If you leave the **Port IP** field blank, the IP address will be allocated via DHCP. Provide a name for the plan and click **Save**.

Name*

Basic Expert

Devices & Ranks

:: 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"/>	
2	<input type="text" value="port_1"/>	<input type="text" value="----"/>	<input type="text" value="Port IP"/>	

Subnets* +

Subnet ID*

CIDR*

Subnet ID*

- (172.31.32.0/20)
- fip-service-subnet (169.254.32.0/23)
- public (192.168.3.0/24)

Close Save

Edit migration plan



Name*

Basic Expert

Devices & Ranks

:: Rank 0 – 1 machines

:: Jenkins – xlarge, 2 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"/>	
2	<input type="text" value="port_1"/>	<input type="text" value="public"/>	<input type="text" value="Port IP"/>	

Subnets*

Subnet ID*

CIDR*

Subnet ID*

CIDR*

Close Save

21. Click **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'.

Select All

jenkins-migration

Custom Migration Plan

Previous Next Run migration

22. Create a cloud site. A cloud site is a way to logically group a migration plan with a snapshot to be used for the migration. Specify the cloud site name, select a snapshot, and click **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

Jenkins-Cloud-Site

Snapshot time

05/23/2022 12:53 PM

Final Migration plan

Machines

Search

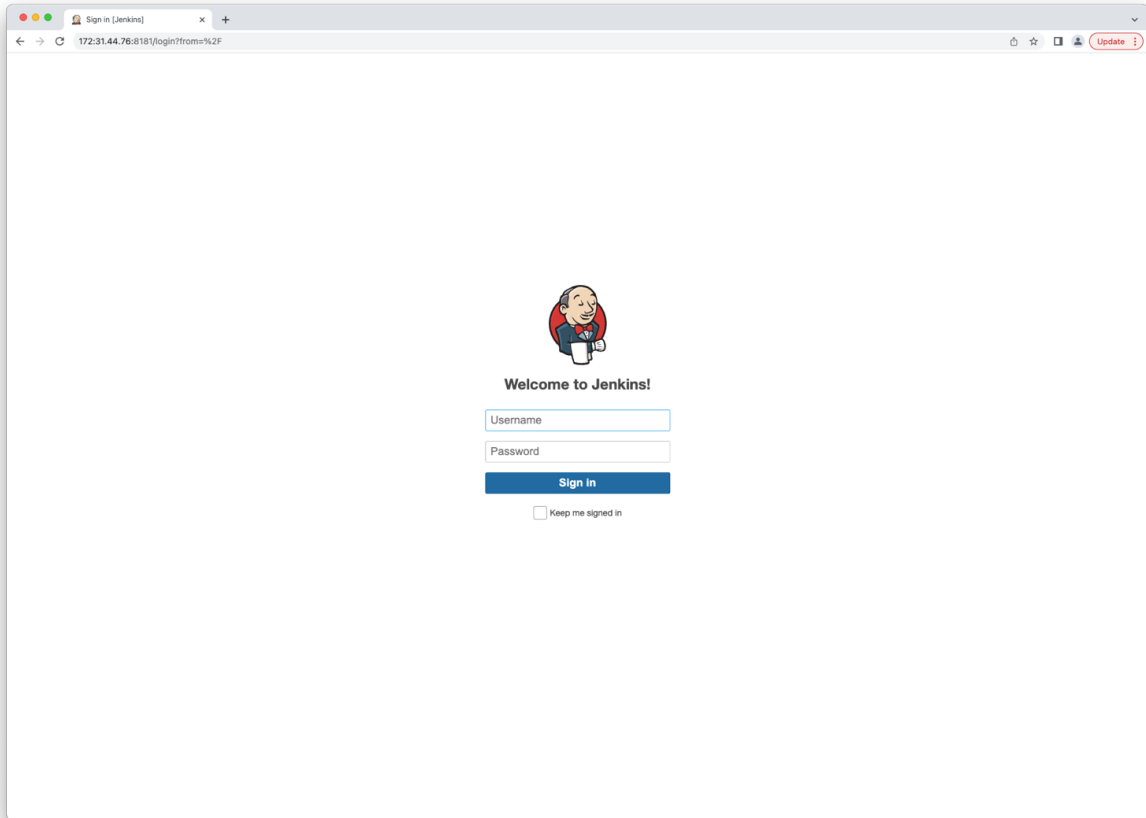
Name	IP Address	Flavor	Rank	Subnet
Jenkins	172.31.44.76	xlarge	0	subnet_0, public

Showing 1 to 1 of 1 rows

Previous Next Run migration

If the test migration is successful, you will see your replicated instance available in your target cloud. When you are done reviewing the test migration, you can delete the resources by deleting the cloud site. Then, you can redo the migration or detach Hystax Acura from the migration.

<input type="checkbox"/>	Hystax Acura	Active	192.168.100.182	8	25 GiB	50 GiB	...
<input type="checkbox"/>	Jenkins	Active	172.31.44.76, 192.16...	1	512 MiB	0 bytes	...



For the final cutover, detach Hystax Acura from the migration. In this case, 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

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

Name	State	Actions
jenkins-cloud-site	Detaching	Edit Delete

Showing 1 to 1 of 1 rows

Now, you can manage your resources from Virtuozzo Hybrid Infrastructure as you normally do.

Providing access to the 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. Log in to the Hystax Acura solution web interface and click **Settings** on the left-hand side. Click **Roles**, and then click **Add**.

Add Role ✕

Share role with customers

Name

Description

Role owner

Settings template

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

Partner Admin
Role owner: Virtuozzo
Settings template: Partner

TriangleCakes Inc.
Role owner: TriangleCakes
Settings template: Customer

Add

Active

Share role with customers

Name* TriangleCakes Inc.

Description Role project scope for TriangleCakes

- 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 plans

3. Add a user. Click **Users**, and then click **Add**. Fill in all the information and select the **Customer:Customer** name in **Organization**.

Add User ×

Username * hystax-apura

Password * ⓘ

Confirm Password *

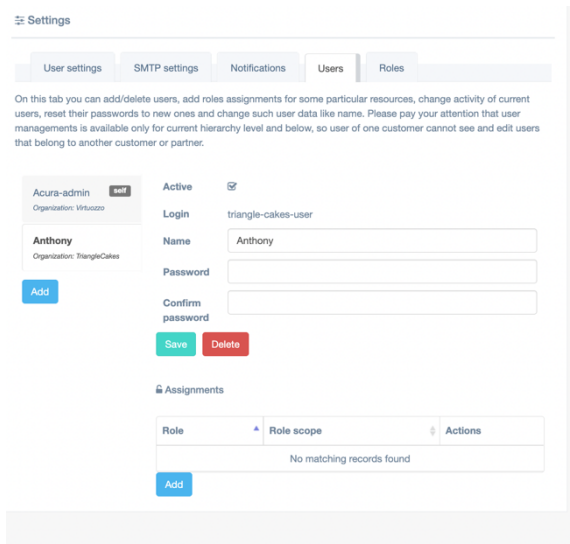
First Name Migration

Last Name User

Email migration-user@virtuozzo

Description This user will be used by the Hystax Acura solution to access the Source Cloud resources.

4. Click the newly created user to assign a role.



5. 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, is able to log in to the Hystax Acura web interface and perform Migration as a Service (self-service migration).



☰ Hystax Acura | TriangleCakes
 🔔 8
?
Menu ▾

☁️ Cloud Sites
Machines Groups
🖨️ Machines

2
1
1

🔍 Smart Cloud Migration
✕

Install agents
Replicate machines
Configure replication settings
Create Migration plan

Run test Migration
Cutover

Manage Clouds

☁️ Cloud Sites

🔄

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

Showing 1 to 2 of 2 rows

🔍 Migration plans

Hystax OptScale helps companies quickly increase FinOps adoption

- Cloud cost optimization and management
- Full cost transparency for managers and full budget allocation
- Engineers engagement in FinOps process via Slack
- Clusters, jobs, resource groups

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, check the correctness of the entered data and availability of the necessary permissions.

Limitations

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