

Hystax Acura

Cloud Migration and
Disaster Recovery Solution



Overview

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

Hystax replicates IT workloads and migrates from VMware, Hyper-V, Bare Metal, KVM, OpenStack, Azure, AWS and Oracle Cloud with an ability to do test migrations / failovers against isolated environment on a target site without influence on production workloads. All the process happens in a real-time and does not require any downtime until a customer is ready to switch to a new platform.

Live Cloud Migration

Hystax Acura provides capabilities of background replication of business applications and instant launch on a new platform.

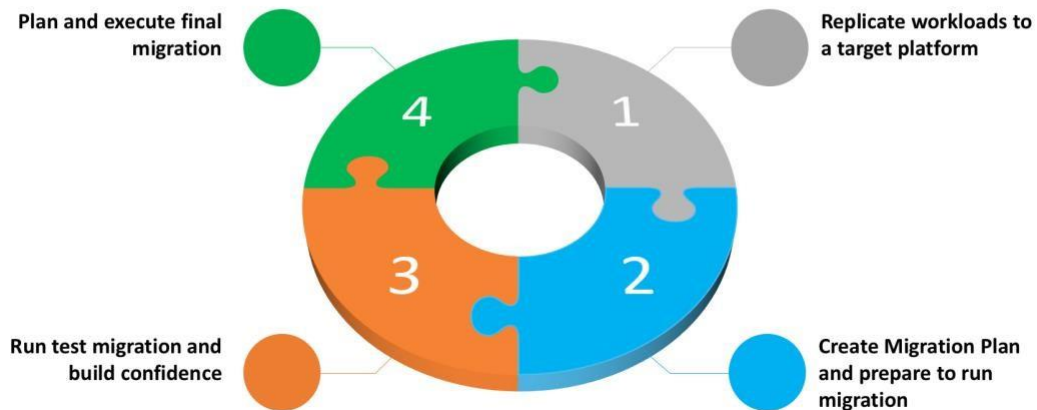
There are various reasons for customers to initiate migration process. Usually they can be classified by:

1. Decrease TCO of on-premise environment
2. Get rid of vendor lock-in from cloud platform manufacturer
3. Combine workloads under one location / cloud
4. Pursue a path to adopt in-house open-source technologies

Migration flow consists of the following steps:

- Analyze an infrastructure and identify parts / applications for the migration
- Start a background replication of IT workloads
- Create a migration plan
- Perform a test migration / configure settings / build confidence
- Perform the final migration and switch to a new platform

Migration Stages



Why is Disaster Recovery important

Disasters can be caused by internal (environment failure, application failure, human error) and external (power outage, environment theft, fire, impact of virus attacks, emergency disaster) reasons.

About 75% of disasters are caused by hardware failure or human errors.

Average loss within one hour of outage can vary from \$160,000 to \$2 million.

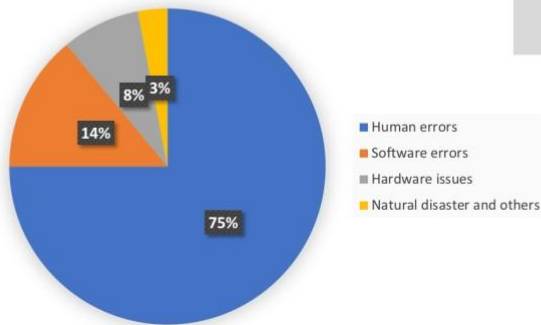
Some of the biggest disasters during the previous two years were:

- GitLab downtime due to sysadmin error – 300GB of data were accidentally deleted;
- British Airways outage with a bill that reached £150m and grounded 75,000 of passengers;
- Amazon blamed a human error for the big AWS outage that took down a bunch of large internet sites for several hours.

Challenges of IT Resilience and BCDR...

World business daily runs into different types of disasters...

- **Internal:** environment failure, application failure, human error
- **External:** power outage, environment theft, fire, impact of virus attacks, emergency disaster, etc.



...that it's not ready for...

~59%
Doesn't have DR plan

Only 41% of medium and large U.S. businesses say they have a disaster recovery and business continuity plan and test it regularly, according to [InformationWeek's 2014 State of Enterprise Storage Survey](#).

...inspite of anually growing losses.

\$164K
Average loss within an hour

Downtime costs are rising dramatically. In 2013, companies that experienced a business interruption lost an average of nearly **\$164,000 per hour**, compared with just \$100,000 in 2010, according to the Aberdeen Group.

Human error – the main reason of disaster.

~75%
Human errors

Reputable studies have concluded that as much as 75% of downtime is the result of some sort of **human error**. It's always easy to say "lack of training," but even the best trained people still make mistakes...

Recovery Point and Time Objectives

Recovery Point Objective (RPO) – time between replication periods or maximum data size, that a client is ready to sacrifice in case of disaster.

Recovery Time Objective (RTO) – time between reaction to the disaster and infrastructure recovery. Usually, this parameter is analyzed for the case of one-machine recovery.

The less RPO and RTO values are for a disaster recovery the better solution is and the less impact on business or data will loss while providing failover.

Hystax Acura Installation Process

Installation requirements

- AWS, Azure, Alibaba, Google Cloud, Flexible Engine, VMware, Oracle Cloud, or Mitaka + version of OpenStack (Red Hat, Canonical, Suse, Mirantis, CentOS and Vanilla distributives are supported).
- AMI or Golden image with Hystax Acura (provided by request).
- AMI or OpenStack virtual machine with 8 vCPUs, 16GB RAM, 100Gb disk.
- Resources to create a VM with 2 vCPUs/4GB RAM/20GB disk for Hystax Cloud Agent. Created in each target / failover VPC, project, ESXi host.

Installation steps (OpenStack example)

1. Deploy a virtual machine from the provided golden image and launch it in the OpenStack cloud.
2. Open web browser and go to https://<ip_address of the machine>/. You will go to a Hystax Setup Wizard. When you pass all the steps, the installation will be completed, and you will be able start using Hystax Acura.
3. Step 1 - Enter the organization name and new Hystax Admin User credentials into the Setup Wizard. This will be the user account for logging in to Hystax Acura Control Panel and managing the system. If there are any errors, the system will notify you.

Please refer to Hystax Acura installation guide for a detailed description of deployment to a specific cloud.



The screenshot shows the Hystax Setup Wizard interface. At the top, the Hystax logo is displayed. Below it, a progress bar indicates four steps: Step 1 (Admin user creation), Step 2 (SMTP configuration), Step 3 (Target cloud configuration), and Step 4 (Log in). Step 1 is currently active. The main content area prompts the user to provide organization name and administrator user credentials. It includes four input fields: Organization*, Admin user login*, Password*, and Confirm password*. Each field has a help icon (question mark) to its right. A 'Next' button is located at the bottom right of the form. At the bottom of the page, there are links for 'Hystax Support Portal', 'Terms of use', and 'Help', along with a copyright notice: '© 2020 | Hystax | All rights reserved'.

4. Step 2 - Fill in your Hystax License key that was supposed to be shared with you in advance as well as the settings for accessing your mail server, which will be used to send notifications from Acura and generate periodic reports.

If you prefer a public SMTP server associated with your email address (gmail, yahoo etc.), please find its settings online. In case of a private SMTP server, contact your network administrator for further details.

hx hystax

1 Step 1 Admin user creation
 2 Step 2 SMTP configuration
 3 Step 3 Target cloud configuration
 4 Step 4 Log in

In order to be able to send email notifications, a mail server configuration must be introduced during initial configuration of Hystax Acura. Please enter valid SMTP settings as well as the provided license key.

License key*	<input type="text"/>	?
SMTP server*	<input type="text"/>	?
SMTP port*	<input type="text"/>	?
SMTP username*	<input type="text"/>	?
SMTP password*	<input type="password"/>	?
Test email*	<input type="text"/>	?

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5. Step 3 - Fill in all the fields by providing cloud configuration details. Use question mark icons to get hints on the fields. After you click “Next”, the Setup Wizard will validate the entered data and notify you in case of an error.

hx hystax

1 Step 1 Admin user creation
 2 Step 2 SMTP configuration
 3 Step 3 Target cloud configuration
 4 Step 4 Log in

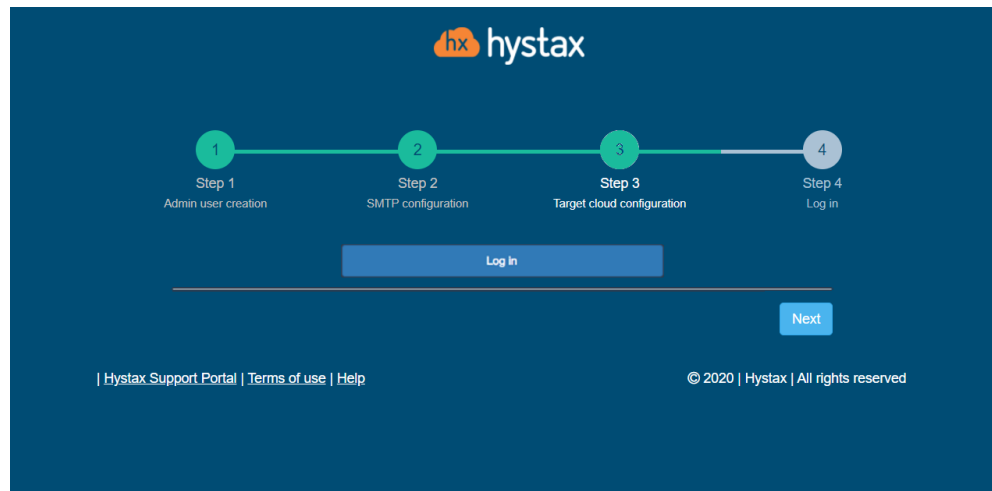
Please provide configuration information to connect Hystax Acura to a target Openstack. Refer to the hints by hovering question marks in needed. Hystax Initial Configuration Wizard will test connection to the cloud and all necessary access permissions when you go to the next step by clicking the 'Next' button.

Keystone API endpoint*	<input type="text"/>	?
User domain*	<input type="text"/>	?
Username*	<input type="text"/>	?
Password*	<input type="password"/>	?
Target project domain*	<input type="text"/>	?
Target project ID*	<input type="text"/>	?
Hystax Service Network*	<input type="text"/>	?
Floating IP Network*	<input type="text"/>	?
Hystax Acura Control Panel Public IP*	<input type="text"/>	?
Additional parameters	<input type="text"/>	?

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6. Step 4 - Installation is complete and you can log in to the system using credentials entered in the first step.



Please refer to Hystax Acura installation guide for a detailed description of deployment to a specific cloud.

Supported Platforms and Hypervisors

Hystax Acura supports replication of the following platforms:

- VMware (agentless)
- Hyper-V
- Amazon Web Services
- Microsoft Azure
- Google Cloud Platform
- KVM
- Oracle Cloud
- OpenStack
- Bare Metal
- Xen
- Alibaba

OpenStack, Amazon Web Services, Microsoft Azure, GCP, Alibaba, Flexible Engine, VMware are supported on a target or failover site.

Operating Systems Compatibility Matrix

Source Platform	Platform/OS version	Agent, replication type, distribution
VMware ESXi/vSphere	ESXi 5.5+	HVRAgent (VMware) external replication OVA VM template
Bare Metal OpenStack Azure AWS Google Cloud Oracle Cloud Virtuozzo Alibaba Flexible Engine KVM	Windows 7	HWRAgent (Windows) internal replication MSI installer
	Windows 8	
	Windows 10	
	Windows Server 2008 R2	
	Windows Server 2012	
	Windows Server 2012 R2	
	Windows Server 2016	
	Windows Server 2019	
	Debian 7	HLRAgent (Linux) internal replication .deb/.rpm packages
	Debian 8	
	Ubuntu 14.04	
	Ubuntu 16.04	
	Ubuntu 18.04	
	Ubuntu 20.04	
	CentOS 6.2+ (not supported if GPT is used)	
	CentOS 7.0+	
	CentOS 8.0+	
	RHEL 6.1+	
RHEL 7.0+		
RHEL 8.0+		

Replication and Instant Spinning Up on Target / Failover Cloud

Hystax Acura consistently replicates any types of supported workloads and stores full and incremental replicas on a target cloud using EBS or cinder volumes.

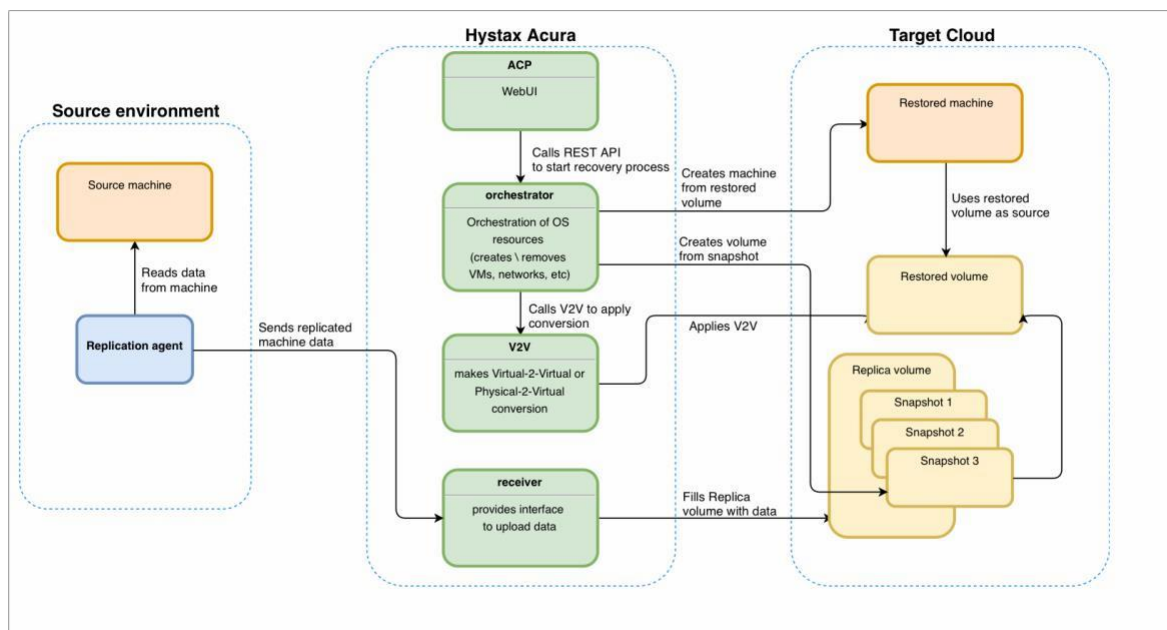
Windows devices are replicated in an application-consistent state, Linux devices are in a crash-consistent state.

VMware workloads are replicated by external replication agent which is deployed on VMware as a standalone virtual machine with injected credentials to VMware API for taking snapshots. Customer downloads an OVA template, deploys it to VMware and run the agent from this template.

Hystax Acura supports replication of Windows and Linux machines on any platforms by installing internal replication agents directly to operating system of replicated bare metal or virtual machine.

Hystax Acura can start instantly replicated workloads on a target site as soon as full or incremental replicas are completed. Launch a Cloud Site from restore point and Migration / DR Plan selected and test the workloads started on a target / failover cloud.

Data Flow for migration and Disaster Recovery looks like the following way:



Hystax Acura Migration Capabilities

Hystax Acura automates the process of live migration from any types of supported workloads to the following cloud platforms: OpenStack, Flexible Engine, Azure, AWS, VMware, Alibaba, GCP.

Replication happens in a background without stopping any machines and, as soon as full replicas are on a target cloud, the business application can be started with orchestration on a target cloud as a test or final migration.

Test migrations help to configure IT workloads settings (CPU, RAM etc.) and build confidence in a migration process before performing the final migration and switching from one production to another.

Customer can do any number of incremental replicas and run test migrations from any of them.

Final migration happens without any data loss and in a controlled manner with a small pre-defined maintenance window.

Hystax Acura: Enterprise-grade Real-time Migration

Real-time background data replication to a target site

Agentless migration without any data loss

Migration within a small maintenance window

Testing and configuration of migrated site before making it primary

Migration Plan

Migration Plan is a scenario used to recreate IT workloads on a target platform. It consists of instructions about machine, subnet, NAT, VPN, S2S VPN, firewall rules and security groups details.

Machine details are replicated from source platform and are generated automatically in a Migration Plan.

Migration Plans support orchestration and dependencies between components of business applications.

Select All

```

demo_drplan
41  },
42  "memcached3": {
43    "cpu": 1,
44    "rank": 0,
45    "id": "52da914b-e711-333d-ba48-d5dd045a3346",
46    "ports": {
47      "port_0": {
48        "ip": "192.168.15.12",
49        "subnet": "main_subnet"
50      }
51    },
52    "ram": 2048
53  },
54  "rhe17.2": {
55    "cpu": 2,
56    "id": "522f3448-6a56-aa45-2131-207f7dda6664",
57    "ports": {
58      "port_0": {
59        "ip": "192.168.15.100",
60        "subnet": "main_subnet"
61      }
62    },
63    "rank": 0,

```

Custom Disaster Recovery Plan

Hystax Acura Disaster Recovery Capabilities

Hystax Acura supports Active-Passive replication scenario when RPO value of 15+ minutes is set for workloads.

Windows devices are replicated in an application-consistent state, Linux devices are in a crash-consistent state.

Hystax Acura has the following capabilities:

- Single control plane for all customers or projects – manage all your customers through one console
- Low RPO and RTO – best-in-class RPO values and instant RTO
- Sophisticated role-based access management and audit – manage user access and assign granular roles to various resources. View and export audit logs
- Flexible reports and event notification – get full resource utilization report and configure all level event notifications
- Logs collected in one place – logs from all customers are concentrated in one place.
- Custom PSA Integration – integrate solution with existing PSA systems, automatically create and file tickets
- Full coverage with RESTful API – Hystax Acura is 100% covered with RESTful API. Easy automation and integration with current management systems.
- Deduplicated storage and configurable retention policies – optimized resource utilization by unique deduplication technologies. Flexible snapshot retention policies

Hystax Acura Disaster Recovery

Significant Economy on Disaster Recovery

On-premise and cloud disaster recovery

Instant business application recovery and no vendor lock-in

Agentless replication and regular automatic DR scenarios testing

Disaster Recovery Plan

Disaster Recovery Plans support the same capabilities as Migration Plans. Please refer to the respective section of this document.

Disaster Recovery Flow

Disaster Recovery flow usually consists of the following stages:

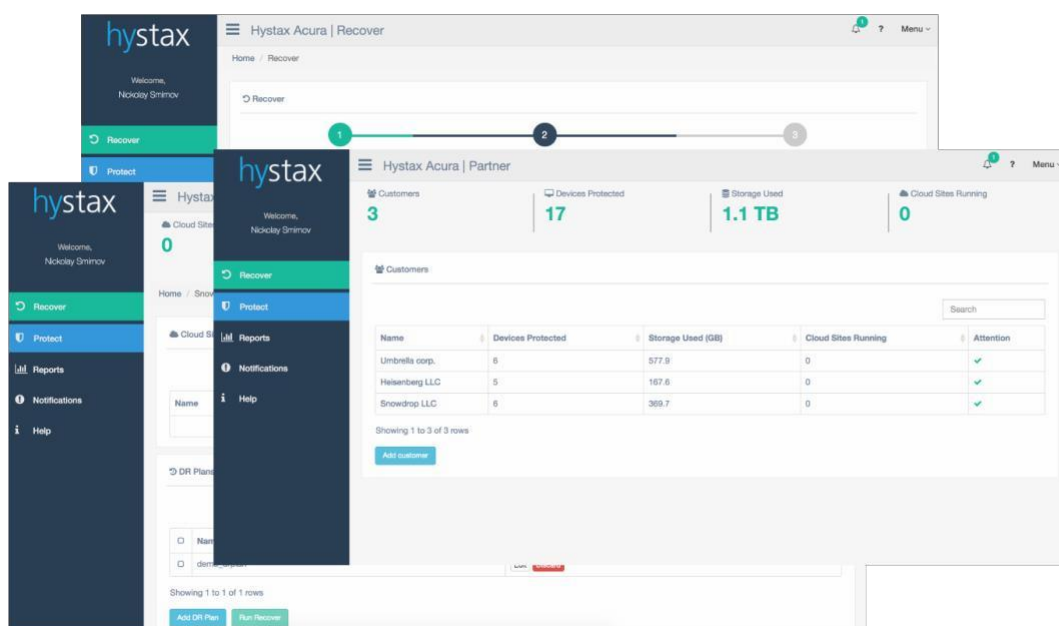
- Analyze infrastructure and identify parts / applications for DR protection
- Start background replication of IT workloads
- Create Disaster Recovery Plan
- Perform test failover / configure settings
- Perform failover in case of disaster

Hystax Acura Control Plane

Hystax Acura Control Plane is a single pane of glass to manage Migration or Disaster Recovery solution.

It provides functionality to protect / replicate machines, manage replication settings, create Migration / DR Plans and run Migrations / Failovers.

Hystax Acura Control Plane is divided into standalone modules and can be integrated into existing control planes or rebranded according to customer / partner needs.



Full RESTful API Coverage

Hystax Acura solution is 100% covered with RESTful API and can be integrated into an automated flow of Migration or Disaster Recovery / self-healing.

Data Deduplication and WAN-optimization

Data deduplication means storing data in an efficient format not to store the same objects or pieces of data twice.

WAN-optimization stands for optimal network utilization to send only necessary data and not to use full business network channel for any particular function (like Disaster Recovery).

Hystax Acura provides the high-level of data deduplication and WAN-optimization. It is achieved by proprietary technologies of client-side data deduplication and network compression.

Hystax Acura Documentation

Please refer to <https://docs.hystax.com> for a full Hystax Acura Documentation.

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