CloudEndure API Guide

Introduction

CloudEndure exports all functionality with RESTful APIs. All the API calls have the same structure, which is described in this section.

All calls are POST requests of the following base URL: https://api.cloudendure.com/latest/{FUNCTION} Where FUNCTION is the function name.

All the parameters are passed in the request body, as a single JSON object, whose keys are the parameter names, and the values are the parameter values, JSON-encoded.

The result is passed in the response body, as a JSON encoded object with two keys: "error", whose value can either be null, indicating no-error, or a string indicating an error, and "result", whose value is a JSON-encoded returned value.

Structs

A Struct is a template for a JSON Object. It specifies the keys and their types and meanings. Structs are used to transfer collections of data over the APIS. CloudEndure uses two Structs in its APIs:

UserDetails

Represents your account settings. The following keys are required in a UserDetails Object:

Key	Type	Description
username	String	The email address of the user. Serves as a unique identifier of the user. Read-only (an attempt to change will yield an error)
firstName	String	Not used.
lastName	String	Not used.
company	String	Not used.
originalLocation	String	The Primary Location; must be one of the values returned by the function getAllLocations.
mirrorLocation	String	The Secondary Location; must be one of the values returned by the function getAllLocations.
credentials	Object	Stores the cloud account credentials in the following format: { "AWS": { "accessKeyId": AKID, "secretAccessKey"; SAK }, "Azure": {"accountID": ACID, "certificateFile": CRTFL}, "Google": {"accountID": ACID, "privateKeyJson": PRVTKEYJSON} Not all keys would be present, this depends on which cloud targets are enabled for the account.
features	Object	All the features available for the customer's account in the following format [{FEATURE_NAME: BOOLEAN}, {FEATURE_NAME:BOOLEAN}]. For each feature, FEATURE_NAME is a String and BOOLEAN is a Boolean value defining if the feature is enabled or not.

CloudResource

Represents a resource in a cloud. This Struct is read-only. The following fields are required:

Key	Type	Description
id	String	The cloud unique ID of the resource. Note that if the resource is not on AWS, CloudEndure will generate a persistent unique id for it.
name	String/null	The instance's "Name" tag. *null* if no such tag.
replicationState	String	*"Not Replicated"* / *"Replicating"* / *"Replicated"* / *"Stopping Replication"*.
errorString	String	Contains a string representing the last error condition, or an empty string if no error condition.
cloudState	String	Can be any of the possible cloud states for either a regular or an RDS instance. Replication can only start if either "Running" or "Available". Will always be "Available" for ELB resources.
CloudEndureCreationTime	String/null	The time CloudEndure created this instance. *null* if not created by CloudEndure.
CloudEndurePointInTime	String/null	The point-in-time resource was created based on.
originalId	String/null	The cloud ID of the original instance this instance is a recovery of. *null* if this instance was not created by CloudEndure.
lastConsistencyTime	String	The timestamp of the last point in time for which there is a consistent copy of the instance (in seconds since 1.1.1970). Empty if the instance is not in the *"Replicated"* state.
type	String	*"ec2"' "rds", "machine"*.
totalStorageBytes	Number	Describes the total number of bytes of storage volumes associated with this instance. Relevant only in the *"Replicating"* state.
replicatedStorageBytes	Number	Describes the total number of bytes of storage volumes copied in the initial copy. Relevant only in the *"Replicating"* state, and can be used to calculate the percentage of initial copy completed, by dividing by totalStorageBytes.
persisntentPublicIps	Array/null	An array of Strings, containing all the public IP addresses of the instance (each String contains one IP address in the format "XXX.XXX.XXX.XXX"). If no public IPs – it will be *null*.

UserStatus

Represents your account status. The following keys are required in a UserStatus Object:

Key	Type	Description
status	String	"normal" / "failingOver" / "cleaningUp" / "cloning". "cloning" means that a replica is being created. "cleaningUp" means that a replica is being deleted. "failingOver" means that a failover is being completed.
log	String	(Optional) Present only if status is "failingOver", "cleaningUp" or "cloning". A multiline log representing the sequence of events, including timestamps and success/failure indication of each step in the current process of creating a replica or completing a failover.

ReplicaProperties

Represents the properties of a replica:

{

"ElasticIP": {"value": "Create New"/null, "editable": "true"},

"Volumes": {"value": {VOLUME1_NAME: {"replicate": BOOLEAN, "ssd": "true"/"false"/"Copy Origin", "IOps": IOPS/null}, , VOLUME2_NAME: {"replicate": BOOLEAN, "ssd": "true"/"false"/"Copy Origin", "IOps": IOPS/null}....}, "editable": "true"}, // Currently the 'replicate' member is always 'true' and trying to change it to 'false' will fail.

"InstanceType": {"value": TYPE/"Copy Origin", "editable": "true"},

"InstanceSubnet": {"value": SUBNET_ID/"Copy Origin", "editable": "true"},

"PrivateIPs": {"value": [IP]/"Copy Origin"/"Create New", "editable": "true"} //Currently supports only one IP. Attempting to enter multiple private IPs will fail. "Create New" is currently not supported if the source machine is on AWS.

}

Functions

All the functions detailed below are synchronous and return quickly. Long operations (such as starting replication or creating a replica) return immediately with a clear indication of success or failure, and the client can poll the status until successful completion or failure. As explained above, the functions always return a clear success/fail indication – failure is never suppressed.

login

Returns a cookie called 'session', representing the session, which needs to be passed when calling any all other function. A user may login multiple times in parallel (parallel sessions). For security reasons, 3 successive failed attempts to login (successive = within up to one minute between calls), and any successive failed attempt thereafter, will lock the account for one minute, during which any login attempt to that account will return the *"Too Many Failed Attempts"* error.

Parameters:

Parameter	Type	Description
username	String	The username provided during registration.
password	String	The password matching the username.

Return Value: null

Possible Errors:

Error (String)	Description
Bad Credentials	The username doesn't exist, the password doesn't match the username, or the user has not been activated.
Too Many Failed Attempts	Not enough time passed since last failed attempt. Wait one minute and retry.
Unexpected Error	Internal server error (not supposed to happen)

logout

Returns *null* and renders the session cookie useless (will no longer be accepted by any calls).

Parameters:

None

Return Value: *null*

Possible Errors:

Error (String)	Description
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

getAllLocations

Returns an Array of Strings, each representing a location that can be used as Primary Location or Secondary Location.

Parameters:

None

Return Value: Array of Strings

Possible Errors:

Error (String)	Description
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

getUserDetails

Returns the details of the CloudEndure account, in the form of a UserDetails Object.

Parameters:

None

Return Value: userDetails (UserDetails)

Possible Errors:

Error (String)	Description
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

setUserDetails

Sets or modifies the details of the CloudEndure account, given a UserDetails Object. All keys are mandatory, except firstName, lastName and company. Overwrites all values. The username key is read-only, and must be identical to what CloudEndure already stores for this user.

Parameters:

None

Return Value: *null*

Possible Errors:

Error (String)	Description
Cannot Change Email	The username is different from what is stored in CloudEndure for this user. Read the username first, using getUserDetails, and use the same one.
Bad Credentials	The format of the cloud credentials provided is illegal or the credentials are incorrect. This also includes an empty value of any for any of the credentials.
Replica Creation or Failover in Progress	You must not change the UserDetails while a creation of a replica/a failover are in progress.
Unknown Original Location	The value of the originalLocation is not one that is returned by getAllLocations.
Unknown Mirror Location	The value of the mirrorLocation is not one that is returned by getAllLocations.
Bad Features	Either the format of *features* is incorrect, or not all feature that appear there exist and are available for that customer.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

setPassword

Changes the account's password.

Parameters:

Parameter	Type	Description
password	String	The password to set.

Return Value: *null*

Possible Errors:

Error (String)	Description
Password Is Illegal	The provided password is empty or illegal (too short/long etc.)
Not Logged In	User is not logged in
Incorrect Old Password	**oldPassword** does not match the current password of the user.
Unexpected Error	Internal server error (not supposed to happen)

listMachines

Returns all the CloudResources of all CloudResource types (see CloudResource) the user has in a given location.

Parameters:

Parameter	Type	Description
location	String	One of the values returned by getAllLocations.

Return Value: Array of CloudResources

Possible Errors:

Error (String)	Description
Unknown Location	The value of the location parameter is not one of the values returned by getAllLocations.
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

startReplication

Starts replication of an instance. If replication is already started, nothing happens. To manually install the agent on the instance, call this function with shouldInstallAgent=false first, and then install the agent manually. Only once the agent is installed, the replication actually starts. Note that the successful return of the function indicates the replication process has started, not that it ended.

Parameters:

Parameter	Type	Description
machineId	String	The cloud unique ID of the instance.

Return Value: *null*

Possible Errors:

Error (String)	Description
Machine Credentials Missing	The credentials required to connect to the instance are missing, call storeCredentials first.
Bad Machine Id	The machineId doesn't match any instance in the Primary Location.
Machine Is Not Running	The requested instance is not currently running.
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)
Agent Not Running	CloudEndure's agent is not running on the machine

stopReplication

Stops replication of an instance. Note that the successful return of the function indicates the stopping process has started, not that it ended.

Parameters:

Parameter	Type	Description
machineId	String	The cloud unique ID of the instance.

Return Value: *null*

Possible Errors:

Error (String)	Description
Machine Credentials Missing	The credentials required to connect to the instance are missing, call storeCredentials first.
Bad Machine Id	The machineId doesn't match any instance in the Primary Location.
Machine Is Not Running	The requested instance is not currently running.
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)
Agent Not Running	CloudEndure's agent is not running on the machine

clone

Create a clone of the application in the Secondary Location:

- For each replicated instance from the *machineIds* parameter in the Primary Location, create a running instance in the Secondary Location.
- For each replicated AWS RDS instance in the Primary Location, create a running RDS instance in the Secondary Location, assuming the secondary location is part of AWS.
- If the Primary Location is cloud-based, for each VPC/Network, Security Group, ELB and network configuration associated with each replicated instance, create an equivalent in the Secondary Location.
- If the Primary Location is cloud-based, for each public persistent ip attached to a replicated instance in the Primary Location, create a public persistent ip in the Secondary Location and attach it to the replica instance.

Notes: replication on instances in the Primary Location continues uninterrupted. The replica instances are not maintained in sync with the source instances.

The function returns immediately, but if successful, the process of creating a replica only starts.

Before creating any new clone resources in the Secondary Location, CloudEndure first "cleans" it by deleting all replicas of the instances in the *machineIds* parameter previously created by CloudEndure in that location (same as calling the *cleanup* function).

Parameters:

Parameter	Type	Description
originalLocation	String	One of the values returned by getAllLocations. Must be the current Primary Location.
Timestamp	String	This is an optional parameter, describing the point-in-time that the replica will be based on (in seconds since 1.1.1970). If this parameter is not present, the latest available state and data will be used ('Now').
machineIds	Array	The ids of the machines to create replicas for. If this parameter is not present, all instances in the "Replicated" state in the Source Location will be used.
shouldCleanup	Boolean	Defines if only the replicas of the provided instances should be deleted before creating new replicas or all the resources in the target location that were created by CloudEndure. If this parameter is not present, it means the same as passing "false".

Return Value: *null*

Possible Errors:

Error (String)	Description
Unknown Original Location	The value of the originalLocation parameter is not one of the values returned by getAllLocations.
Not Ready	Creation of a replica/a failover/Cleanup are in progress (see getStatus).
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Bad timestamp	The provided timestamp is not available for the logged user.
Unexpected Error	Internal server error (not supposed to happen)
Bad Ids	One or more of the provided ids are illegal – either does not correspond to a real machine or the machine is neither replicated nor replicating.

cleanup

Deletes all the resources that were created by CloudEndure in the Secondary Location in the past:

Notes: replication on instances in the Primary Location continues uninterrupted.

The function returns immediately, but if successful, the cleanup process only starts.

Parameters:

Parameter	Type	Description
machineIds	Array	The ids of the machines to delete replicas for (**source machines**). If parameter is not present, all instances that are in the "Protected" state as assumed to be passed.
shouldCleanup	Boolean	Defines if only the replicas of the provided instances should be deleted before creating new replicas or all the resources in the target location that were created by CloudEndure. If this parameter is not present, it means the same as passing "false" to it.

Return Value: *null*

Possible Errors:

Error (String)	Description
Not Ready	Creation of a replica/a failover/Cleanup is in progress (see getStatus).
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)
Bad Ids	One or more of the provided ids are illegal – either does not correspond to a real machine or the machine is neither replicated nor replicating.

completeFailover

Completes a failover based on the latest replica application created by calling the *clone* function. Switches roles between the Primary Location and the Secondary Location in the following manner:

- All replication in the Primary Location stops
- The Primary Location becomes Secondary Location and vice versa.
- All instances that whose original instance is replicating, will start replicating (without requiring PEM files or manual deployment).

The function returns immediately, but if successful, the completion of the failover process only starts.

Parameters:

Parameter	Type	Description
originalLocation	String	One of the values returned by getAllLocations. Must be the current Primary Location.

Return Value: *null*

Possible Errors:

Error (String)	Description
Unknown Original Location	The value of the originalLocation parameter is not one of the values returned by getAllLocations.
Not Ready	Creation of a replica/a failover/Cleanup are in progress (see getStatus).
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

getStatus

Returns a global status of the user.

The status changes from "normal" to "cloning", "cleaningUp" or "failingOver" when a process started by calling *clone, cleaup* or *completeFailover* has not finished yet.

The status returns from "cloning" to "normal" when the replica of the application was created, without waiting until the instances finish booting , from "cleaningUp" to "normal" when all resources of the replica were deleted and from "failingOver" to "normal" when the failover was completed.

Parameters:

None

Return Value: userStatus (UserStatus)

Possible Errors:

Error (String)	Description
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

getAvailableTimestamps

Returns all available points-in-times to which recovery can be made. If the feature is not enabled for the user, returns an empty array.

Parameters:

None

Return Value: Array of Strings, where each is a timestamp (in seconds since 1.1.1970).

Possible Errors:

Error (String)	Description
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)

getFutureReplicaConfiguration

Returns the configuration of the future replicas created of the provided machine.

Parameters:

Parameter	Type	Description
machineId	String	The id of the machine (**source machine**) for which to fetch the configuration

Return Value: A *ReplicaProperties* Object

For an AWS source and an AWS target, the default values are:

- InstanceType – "Copy Origin"
- Subnet – "Copy Origin"
- PrivateIPS – "Copy Origin"
- ElasticIP – "Create New" if the source has an elastic IP and null if it does not.

For a non-AWS source, the default values are:

AWS

- InstanceType – "m3-large"
- Subnet – "Create New"
- PrivateIPS – "Create New"
- ElasticIP – null.

Google Cloud

- InstanceType – "n1-standard-2"
- Subnet – "Create New"

Possible Errors:

Error (String)	Description
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in
Unexpected Error	Internal server error (not supposed to happen)
Bad Id	The provided id illegal – either does not correspond to a real machine or the machine is neither replicated nor replicating.

Installer command line arguments

The CloudEndure installer can be ran unattended an all the input it needs can be passed to it via command line arguments. The syntax is identical for the Windows and Linux installers.

The usage is:

INSTALLER_FILE [options]

Options:
```
 -h, --help                            Show the help message and exit
 -u USERNAME, --username=USERNAME
 -p PASSWORD, --password=PASSWORD
 --log-console                         Print installer output to console
 --log-file=LOG_FILE                   Print installer output to the file LOG_FILE
 --session=SESSION                     Session cookie value
 -U UPGRADE, --upgrade=UPGRADE         Secret key of agent for upgrade
```

Additional on premise options:
```
 --no-prompt        A silent installation. On premise parameters will be taken from command line
 --drives=DEVICES   The drives to protect
 --ports=PORTS      Ports to open in the replica
 --name=NAME        Machine name to be displayed in the dashboard
```

Examples

A Linux machine running on AWS:
python installer_linux.py -userUSERNAME -password=PASSWORD

A Linux machine running on-premise. The machine name on CloudEndure dashboard will be that machine's hostname (to override, supply the --name argument):
python installer_linux.py -user=USERNAME -password=PASSWORD --no-prompt --drives="/dev/sda,/dev/sdb" --ports="80,443,22"

A Windows machine running on-premise. The machine name on CloudEndure dashboard will be that machine's hostname (to override, supply the --name argument):
Installer_win.exe -user=USERNAME -password=PASSWORD --no-prompt --drives="c:,d:" --ports="80,443,3389"

setFutureReplicaConfiguration

Sets the configuration of the future replicas created of the provided machine.

Parameters:

Parameter	Type	Description
machineId	String	The id of the machine (**source machine)** for which to fetch the configuration
newConfiguration	ReplicaProperties	The new properties.

Return Value: null

The *newConfiguration* has to contain all components as they appear in the object returned by *getFutureReplicaConfiguration* for the same machineId.

Notes

- If you choose not to replicate the origin's private IP configuration and define it manually yourself (setting the *privateIPs* to something other than "Copy Origin" or "Generate New"), you can only set one private IP this way.
- You cannot set any field to "Copy Origin" if the origin machine is not an AWS instance.
- You cannot modify fields that are marked as "editable"="false"

Possible Errors:

Error (String)	Description
Details Not Set	The user has not set her account settings via setUserDetails yet.
Not Logged In	User is not logged in.
Unexpected Error	Internal server error (not supposed to happen)
Bad Id	The provided id illegal – either does not correspond to a real machine or the machine is neither replicated nor replicating.
Bad Configuration Format	The format of the *newConfiguration* parameter is invalid.
Field Not Editable	Trying to modify one or more of the fields that are marked "editable"="false".
Not Supported	One of the values in newConfiguration is not supported for the type of the machine (AWS / non-AWS)