



User guide for: RUCLOUD OPTIMIZED

v19.10

WELCOME AND CONGRATULATIONS

You will soon be drastically reducing your AWS Opex. This guide is here to help you use Rucloud optimized to its full potential. If you do however have any further questions, we are here to help. Please contact our support via:
<https://www.rucloud.technology/support/>

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Summary

Rucloud optimized is a next generation cost management product that is designed to reduce your Opex within minutes of installing and enabling.

Setup

We urge you to follow the install guide which will guide you through installing and setting up your initial admin user. However if you are in a rush then navigate to <https://<rucloud-instance-ip>/init> in your favourite browser and follow the on screen instructions.

Once you have created and logged in with your first admin user you will be able to access all dashboards and menu items.

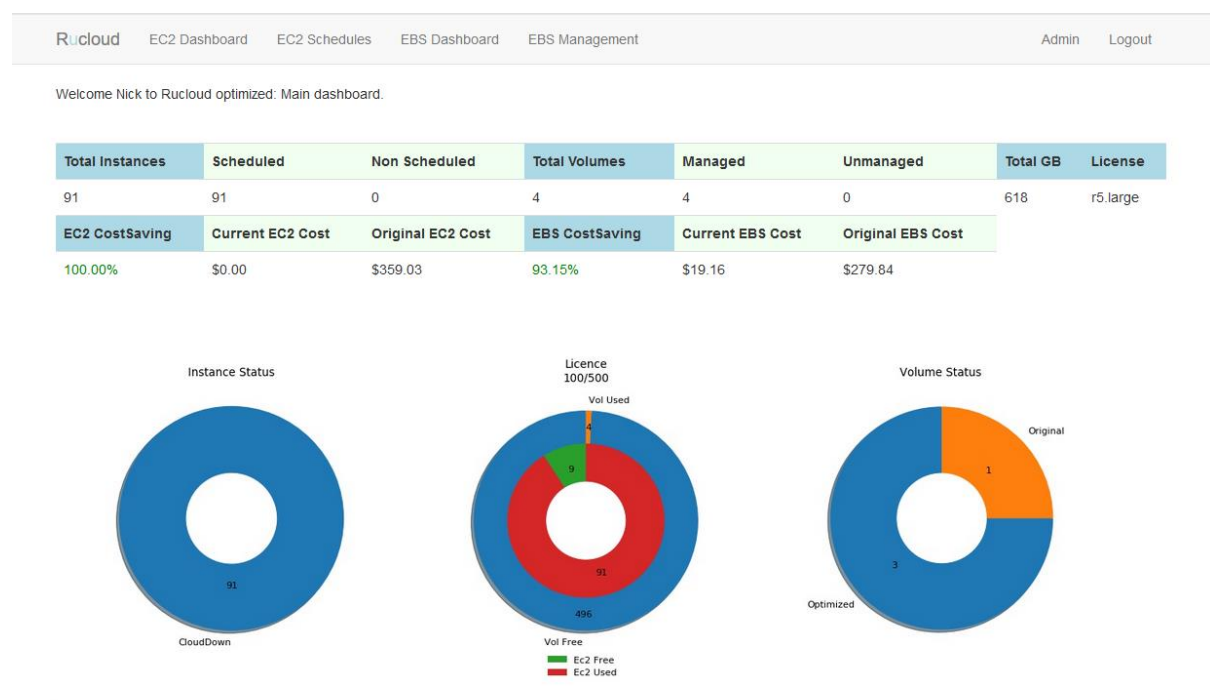
Pre-Enablement

If you have any EC2 EBS volumes that you need to exclude from our Automize automatic volume type tuning you should ensure they are set as unmanaged from the EBS Management screen before you enable the system within the Admin screen.

Main Dashboard

The main dashboard will be displayed as soon as initial setup is complete. This can be accessed at any time by navigating to <https://<rucloud-instance-ip>>.

When connected the main dashboard can also be navigated to by clicking on the Rucloud menu item.



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Figure 1- Main Dashboard

The main dashboard is split into display ribbons and dynamic donuts.

Main dashboard ribbons will show you the number of instances and volumes that are within a schedule or are managed. Your Instance licence type and point in time costs and savings.

Main dashboard donuts show the current licence usage, interface and volume status. If you exceed your licence capability the system will continue to work, however newly requested instances or volumes will not be able to be added to schedules or management. At this time, you should consider upgrading your instance to a larger type.

EC2 Dashboard

Your EC2 dashboard is where you can view your EC2 instance status.

Your first donut will show a live instance status for all instances within your account. The Figure 2 example is showing that 91 instances are in a CloudDown state, meaning that they are within a schedule which is CloudDown enabled and the instances are shutdown with full cost savings.

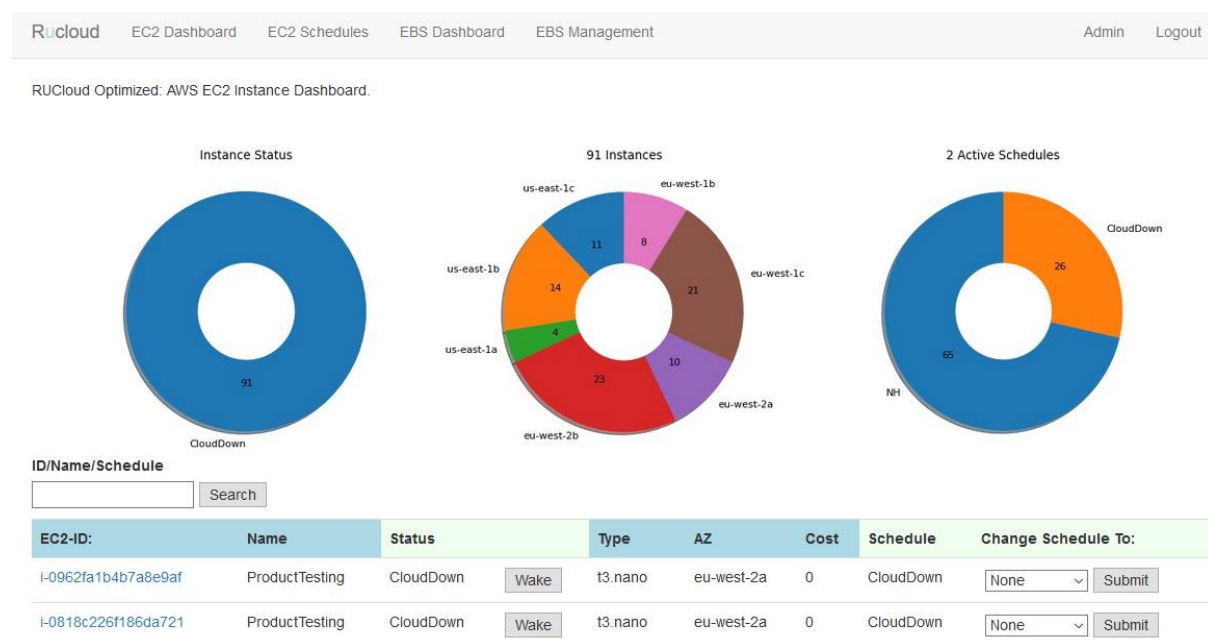


Figure 2 - EC2 Dashboard

The middle donut shows which availability zones (AZ's) instances are located and donut three shows the number and name of active schedules.

Below the instance ribbon you can see details of each instance, this view can be restricted by using the search option just above. Each instance listed can be moved between schedules, or woken/started if they are in a down state.

At the base of the EC2 Dashboard a bar graph shows your account instance type spread. Instance ID links can also be selected to show detailed logging events for each instance.

i-0ea26ae56a515adb8	ProductTesting	CloudDown	<button>Wake</button>	t3.nano	us-east-1c	0	NH	<div>None</div>	<button>Submit</button>
i-0e5b91a823b3c4610	ProductTesting	CloudDown	<button>Wake</button>	t3.nano	us-east-1c	0	NH	<div>None</div>	<button>Submit</button>

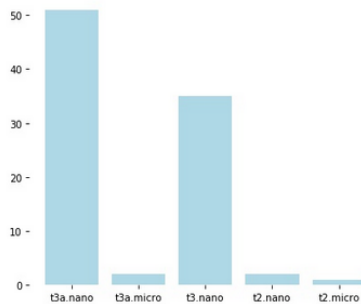


Figure 3- Instance Spread

EC2 Schedules

Schedules allow you shut or clouddown your instances. There is no limit to the number of schedules you can create. An instance can then be linked to a single schedule. To create a schedule just select a unique schedule name, define a stop and start time and the days to activate it on.

Once created the schedule will be automatically enabled but disabled for clouddown, you can disable or reenale a schedule at any time, instances within a disabled schedule will stay in their current state, unless manually woken/started.

Rucloud		EC2 Dashboard	EC2 Schedules	EBS Dashboard	EBS Management	Admin Logout	
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New Schedule: Name	Stop	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
<input type="text"/>	<div>01</div> <div>:00</div>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<div>01</div> <div>:00</div>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<button>Create</button>

Name	CloudDown		Stop	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Enabled	
JIRA	N	<div>Y/N</div>	21:00	Y	Y	Y	Y	Y	Y	Y	7:00	Y	Y	Y	Y	Y	Y	Y	<div>Y/N</div>	<button>Delete</button>
CloudDown	Y	<div>Y/N</div>	18:00	Y	Y	Y	Y	Y	Y	Y	16:50	Y	Y	Y	Y	Y	Y	Y	<div>Y/N</div>	<button>Delete</button>
NH	Y	<div>Y/N</div>	18:00	Y	Y	Y	Y	Y	Y	Y	16:50	Y	Y	Y	Y	Y	Y	Y	<div>Y/N</div>	<button>Delete</button>

Figure 4 - EC2 Schedules

You can enable a schedule for clouddown at any time. On its next stop event, the schedule will put all its instances into a clouddown state (rather than a standard shutdown). When an instance is in clouddown your instance compute and storage costs are zero.

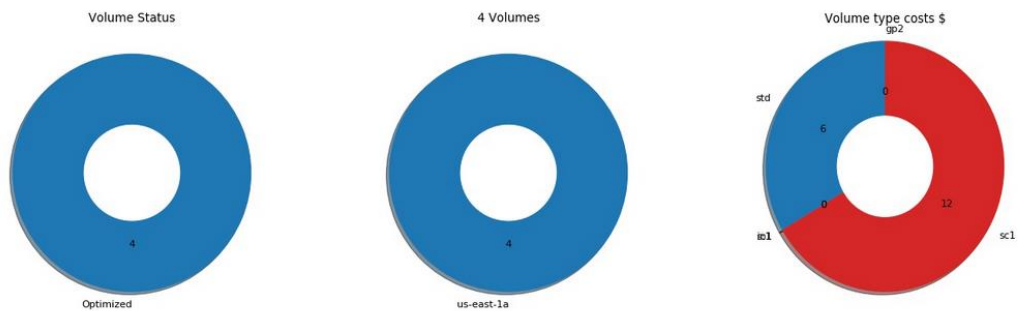
EBS Dashboard

Your EBS dashboard will show you all your volumes managed by rucloud automize technology. Automize, automatically tiers your EC2 EBS volumes to a type appropriate to your disks workload requirements. Volumes at install set to gp2 will be entered into automize management automatically, however this can be disabled within EBS Management.

Most recent optimizations are shown at the base of the EBS dashboard.

RUCLOUD Optimized: AWS EBS Volume Dashboard.

Total Volumes	Total GB	Managed	Unmanaged	Monthly Cost
4	618	4	0	\$18.79



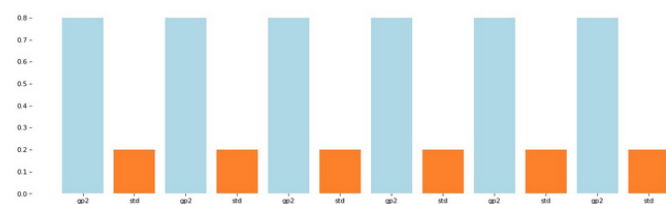
Most recent optimisations:

ID	VolID	TypeFrom	TypeTo	StartTime	EndTime	LocalTime
17747	vol-06c1deb5598a5bdd6	gp2	std	2019-11-01 18:06:17.880691	2019-11-01 18:11:31	Nov 1, 2019 6:11 PM
17746	vol-06c1deb5598a5bdd6	std	gp2	2019-10-29 17:46:27.198729	2019-10-29 17:56:43	Oct 29, 2019 5:56 PM
17745	vol-0728c85e96c56a1db	std	gp2	2019-10-29 13:06:10.444470	2019-10-29 13:11:34	Oct 29, 2019 1:11 PM

Figure 5- EBS Dashboard

Each volume link can be followed to show all historic optimizations for that disk and a bar graph indicating monthly costs for each type.

VolID	Name	StartType	StartTime	Size	lops	Managed
vol-06c1deb5598a5bdd6	RUCLOUD OPTIMIZED BUILD SERVER	gp2	2019-10-05 20:51:09.806973	8	100	1



ID	VolID	TypeFrom	TypeTo	StartOpt	SizeFrom	SizeTo	lopsFrom	lopsTo	EndOpt
17747	vol-06c1deb5598a5bdd6	gp2	std	Nov 1, 2019 6:06 PM	8	8	100	40	Nov 1, 2019 6:11 PM
17746	vol-06c1deb5598a5bdd6	std	gp2	Oct 29, 2019 5:46 PM	8	8	40	100	Oct 29, 2019 5:56 PM
17729	vol-06c1deb5598a5bdd6	gp2	std	Oct 27, 2019 4:26 PM	8	8	100	40	Oct 27, 2019 4:31 PM
17727	vol-06c1deb5598a5bdd6	std	gp2	Oct 24, 2019 5:16 PM	8	8	40	100	Oct 24, 2019 5:21 PM
17723	vol-06c1deb5598a5bdd6	gp2	std	Oct 19, 2019 8:56 PM	8	8	100	40	Oct 19, 2019 9:01 PM

Figure 6 - EBS optimizations

EBS Management

After install all disks are set into an automized managed state. If you need to exclude any disks these can be deselected by clicking on the Y/N button for each instance or group unmanaging using a partial match select on its ID or Name. Disks can be put back into a managed state at any time.

Donuts show total management status, volume AZ placement and percentage of volume types across your account.



Figure 7 - EBS Management

Admin

From the admin screen you can fully enable or disable the system. If you need to exclude any disks from automize after install please exclude volumes before enabling the system.

Disabling the system will not effect any viewing capability or schedule creation/deletion. However all stop/start and automize actions will not be acted upon. A warning on the main dashboard will indicate if the system is disabled.

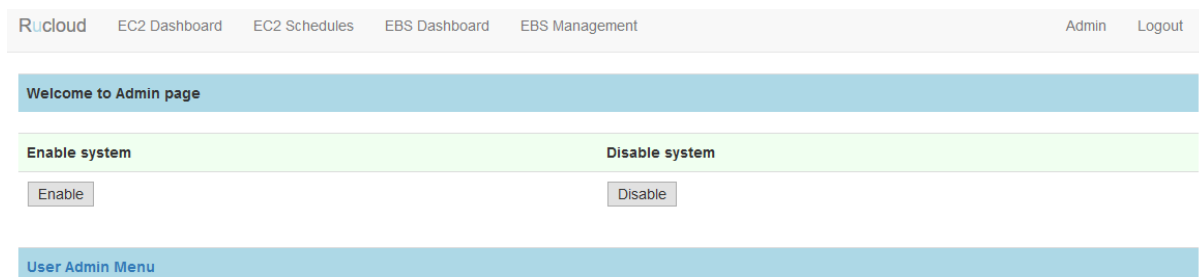


Figure 8 - Admin menu

From the admin screen you can also access the user admin menu where you can register new and delete existing user accounts. You will need to login with a registered user to perform any action within the rucloud optimized system.

Considerations

Customer Managed Keys Access

If you use KMS Customer Managed Keys for EBS volume encryption, then you will need to allow the **rucloud_role** access to all your appropriate keys.

Note: If you do not do this then instances that have encrypted volumes attached where the application does not have access to those keys will not be able to perform a CloudDown operation.

From the Management Console, Select **Services -> KMS -> Customer managed keys**

Click on the **appropriate key**

Scroll down to **Key users** and select **Add**

Search for the **rucloud_role**, select the tick box and press **Add**

Resource tagging

Any EBS volumes or EC2 instances that do not have a **Name tag** will be excluded from being managed.

To make maximum use of RUCLOUD OPTIMIZED please ensure that all EBS volumes and EC2 instances have a **Name tag** prior to installing the applications.

However, if you add a **Name tag** later, the application will automatically pick this up and add the resource.

Supported Regions

- RUCLOUD OPTIMIZED does not manage any AWS resources that reside in the following regions:
 - Beijing (cn-north-1)
 - Ningxia (cn-northwest-1)
 - AWS GovCloud (us-gov-east-1 and us-gov-west-1)
- The RUCLOUD OPTIMIZED instance can be installed in the following regions:
 - Ohio (us-east-2)
 - N. Virginia (us-east-1)
 - N. California (us-west-1)
 - Oregon (us-west-2)
 - Hong Kong (ap-east-1)
 - Seoul (ap-northeast-2)
 - Singapore (ap-southeast-1)
 - Sydney (ap-southeast-2)
 - Tokyo (ap-northeast-1)
 - Canada (ca-central-1)
 - Frankfurt (eu-central-1)
 - Ireland (eu-west-1)

- London (eu-west-2)
- Stockholm (eu-north-1)
- Bahrain (me-south-1)
- Sao Paulo (sa-east-1)

EBS Volumes

- EBS Volumes are added into the RUCLOUD OPTIMIZED system if the following conditions are met:
 - EBS Volume has an AWS Tag with the Key 'Name'
 - EBS Volumes are within a region supported by RUCLOUD OPTIMIZED
 - EBS Volume is of the type gp2
- When an EBS Volume is removed from the AWS console, RUCLOUD OPTIMIZED will automatically remove the EBS Volume from the RUCLOUD OPTIMIZED system.
- Current EBS pricing is determined by the EBS pricing information that was published at 1st October 2019.
- EBS pricing for those of type standard are calculated using a fixed number of IO requests which is set to 2.6 million per month. This is due to the fact that it is not currently possible for RUCLOUD OPTIMIZED to accurately predict the number of IO requests that will be performed in a month.

AutoMize Technology – EBS Volume Tiering

- AutoMize Technology determines the volume type based on workload and will modify the EBS volume type accordingly. A TierDown operation is when the volume type is changed from **gp2** to **standard** (if size < 500 GiB) or from **gp2** to **st1** or **sc1** (if volume size >= 500 GiB and is not a boot volume). A TierUp operation is the reverse of this process.
- RUCLOUD OPTIMIZED can only work within the constraints of the AWS infrastructure. For EBS volume conversions there are two limitations.
 - Firstly, not more than 100TB of EBS volumes can be modified at any given time within a single region.
 - Secondly, an EBS volume modification cannot be performed until at least six hours have passed from the time of the last modification completed for that volume.

Performance

During disk modifications some slight performance degradation may be observed. Any volume you wish to exclude from the AutoMize Technology you can do so by unmanaging it from the RUCLOUD OPTIMIZED system.

Instances

- Instances are added into the RUCLOUD OPTIMIZED system if the following conditions are met:
 - Instance has an AWS Tag with the Key 'Name'
 - Instance does not reside in a region not support by RUCLOUD OPTIMIZED
 - Instance of a type that was listed in AWS on-demand pricing on 1st October 2019
 - Newer instance types or instance types that become available in regions in the future will be supported in later releases of RUCLOUD OPTIIMIZED
 - Instance is not EC2 Classic and therefore resides in a VPC

- Instance is not part of an Auto-Scaling Group
 - Instance is in the running state
- When an instance is removed from the AWS console, RUCLOUD OPTIMIZED will automatically remove the instance from the RUCLOUD OPTIMIZED system and will also remove any AWS resources that are created and managed by RUCLOUD OPTIMIZED.
- RUCLOUD OPTIMIZED instance costs always uses the on-demand Linux price for the instance type in the specific region. This is due to it not always being currently possible to determine the Operating System running on the instance. Therefore, as the Linux pricing is the cheapest, you may well see large cost savings than shown by our system.

Shutdown Scheduler

Our shutdown scheduler simply stops and restarts EC2 instances at the times specified within the schedule. The scheduler is not intelligent where applications are concerned. You should ensure that your applications are started automatically if required.

CloudDown Technology

- CloudDown Technology is an additional option you can enable your shutdown schedules for. It goes further than the standard scheduler by saving your EBS volume costs.
- Snapshots are created by RUCLOUD OPTIMIZED, and all have the prefix **RUCLOUD OPTIMIZED**. These snapshots **must not** be removed.
- Do not attempt to start or manually recover an instance in a CloudDown outside RUCLOUD OPTIMIZED. To individually start an instance, the 'wake' option is available.

Infrastructure as Code (IaC)

If you use IaC to manage your AWS estate then do not use this product without speaking to us first. You can contact RUCLOUD TECHNOLOGY LIMITED using the [contact form](#) on our website.

RUCLOUD OPTIMIZED can work with some Infrastructure as Code products but may need some prior modifications.

Backup Solutions

- Please ensure that your backup solution is not impacted by RUCLOUD OPTIMIZED.
- It is not possible to create an AMI of your instance or take snapshots of your EBS Volumes when instances are in the CloudDown state. If you have backup systems in place that would attempt to do backups when instances are in the CloudDown state, then these may need to be modified.

Contact Us

We love to talk to our customers. If you have any questions please contact RUCLOUD TECHNOLOGY LIMITED using the [contact form](#) on our website, we will be happy to answer any concerns you may have.