

A decorative graphic on the left side of the page, featuring a complex network of thin, light blue lines connecting various points, resembling a mesh or a data network structure. It is partially overlaid by a light blue diagonal band.

EPAM Cloud Infrastructure Orchestrator ver.2.1.59

What's New

December 2015

[CI2WN-S56-59](#)

Version 1.0

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CONTENT

	Content	2
1	Overview	3
2	Events and Announcements	4
	2.1 EPAM Cloud Development	4
	2.2 DNS Names Policises changes	4
3	Cloud Management Console Updates	6
	3.1 Resource Quotas management Enabled	6
	3.2 MacOs Estimations enabled	7
4	Maestro CLI Improvements	8
5	AWS: Windows Authorization Simplified	10
6	Platform Services Updates	11
	6.1 Messaging as a Service (MES)	11
	6.1.1 Service Manipulation with Maestro CLI	11
	6.1.2 Managing the Service via AWS SDK	12
	6.2 Relational Database Service Update	13
7	Billing Engine Updates	14
	7.1 Seggregated Discounts	14
	7.2 Manager's Reports subscriptions	15
8	Security Updates	16
9	Documentation Updates	17
	Table of Figures	18
	Version history	19

1 OVERVIEW

EPAM Orchestration Framework version 2.1.59 was released on December 20, 2015. We are glad to introduce the following new features and improvements:

- DNS names resolving policies were changed.
- A number of useful Maestro CLI improvements are introduced
- Cloud Management Console is updated to provide better quotas control
- Mac OS estimations are available in Cost Estimator
- Messaging as a Service is implemented.
- Relational Database Service is updated.
- Segregated Discounts are enabled.
- The ability to subscribe new users to managers' Summary reports is introduced.
- A number of user and development documents is rewritten or updated

These changes are described in details further in this document.



Our users often address us with the questions for EPAM Private Cloud SLA details and clarifications. For you to be more acquainted with the subject and to prevent misunderstandings and unexpected situations, we strongly recommend to review

[EPAM Cloud Service Offering](#) document.

2 EVENTS AND ANNOUNCEMENTS

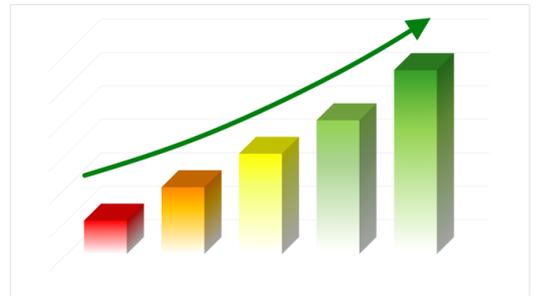
During the latest month, there have been a number of events related to EPAM Cloud service provisioning. These events were announced by emails, and, here, we would like to refresh this information and provide more details.

2.1 EPAM CLOUD DEVELOPMENT

EPAM Cloud goes through a period of quick development. Every month, service grows in several directions, from both development and usage sides. This includes not only new features and improvements, but also the increasing number of projects, resources, requests and user feedback.

Currently, **Orchestrator controls and monitors about 4500 virtual machines**. The most significant and representative points of EPAM cloud growths since the latest production update are:

- The overall number of projects in cloud increased by 2.5%
- The number of projects active in AWS increased by 5%
- The number of Azure projects increased by 6%
- The number of personal VMs increased by 10%
- Storage and memory usage increased by 5%
- CPU usage increased by 8%



2.2 DNS NAMES POLICISES CHANGES

Starting from November 30, Enterprise Admins team stopped controlling DNS suffixes on your workstations due to networking policies changes.

This means, that short DNS names are not resolved automatically any more. The change affects the resources hosted in EPAM Cloud.

To connect to your VMs, please use their full DNS names, instead of short ones.



This change is essential for Windows users. If you use Mac or Linux systems, you can ignore it.

Please check whether you use any hardcoded references to your VMs, and replace short DNS names with full ones to prevent connection errors.

The table below provides the examples of full DNS names of virtual servers, depending on the hosting region:

EPAM Cloud Region Name	DNS Suffix	Full DNS Name Example
EPAM-BY1	minsk.epam.com	EVBYMINS0000.minsk.epam.com
EPAM-MSQ3	minsk.epam.com	EVBYMINS0000.minsk.epam.com
EPAM-RU1	moskow.epam.com saratov.epam.com	EVNUMOSS0000.moscow.epam.com EVRUSARSD0000.saratov.epam.com
EPAM-HU1	budapest.epam.com	EVHUBUDSD0000.budapest.epam.com
EPAM-UA1	kyiv.epam.com	EVUAKYISD0000.kyiv.epam.com
EPAM-US	princeton.epam.com	EVUSPRISD0000.princeton.epam.com
EPAM-US1-PROD	princeton.epam.com	EVUSPRISD0000.princeton.epam.com
ANY region. VM name starts with ECS...	epam.com	ECSA00000000.epam.com

If you have any issues with accessing your resources, please address our [Consulting](#) or [Enterprise Admins](#) team.

3 CLOUD MANAGEMENT CONSOLE UPDATES

EPAM Cloud Management Console goes on being an important and often the main tool of virtual infrastructures management.

EPAM Orchestration v.2.1.59 includes two meaningful updates, related to project management in Cloud:

- Daily resource quotas management is allowed via Manage Cloud wizard.
- Mac OS cost estimations are allowed for the Cost Estimator tool.

3.1 RESOURCE QUOTAS MANAGEMENT ENABLED

In EPAM Cloud, quota are used to control project monthly expenses and resources creation. One of the quota types that are applied to all projects activated in Cloud, are **daily resource creation quotas** which control the amount of resources that can be created on the project during 24 hours.

Daily resource quotas have default settings for each project:

Item	Description	Daily Limit
Volumes	Number of storage volumes created	5
Volume size	Size of each storage volume	500 GB
Total volume size	Total size of each volume	2.5 TB
Instances	Number of instances created	20

Starting with the current update, the Manage Cloud tool allows project managers and coordinators not only to set up monthly resource utilization quotas, but also to change these quotas without addressing the Support team via the Service Portal:



Figure 1 - Resource quotas management

So, to change your project's resource quota, perform the following steps:

1. Run the Manage Cloud wizard
Please note that the wizard is available only for users who have Project Manager, Project Coordinator, or Account Manager role.
2. Select the **Manage resource Quota** option and click **Next**.
3. Specify the project and region for which the quota should be updated, then select quota type (instance, volume, checkpoint), and set up the new value for it.
4. Click **Apply and Close** to submit the change and get back to the Dashboard, or click **Apply** if you want to proceed with quotas or other project setup.

When you submit the resource quota change, EPAM Cloud support team gets a notification providing the information on the planned change. If the change is possible, they approve the request, and your project's quotas get changed. If there are any technical reasons that obstruct the quotas change, the request will be declined. In both cases, Cloud Support teams and the quotas change requestor get an email with the resource quotas change results.

3.2 MACOS ESTIMATIONS ENABLED

Mac OS becomes more and more frequently requested by Cloud users. The image is not available by default, but Cloud Support team can provide a Mac OS instance by request.

Planning is necessary for effective Cloud infrastructure usage, and one of its important part is estimation of resources cost. With the current update, we introduced the MACOS instance type in the Cost Estimator, which allows to evaluate the Mac OS instances before creation:

The screenshot shows a 'PRICE MODEL' section with 'Availability Region' set to 'EPAM-BY1'. Below is the 'COMPUTE INSTANCES' section, where 'OS' is 'MACOS', 'Shape' is 'MEDIUM', and 'Qty' is '1'. 'Reservation' is '1 MONTHS' and 'Usage' is '100%'. The cost is '\$63.41'. Other sections include 'ADDITIONAL BLOCK STORAGE', 'MACHINE IMAGES', and 'CHECKPOINTS', each with a '+' icon. A 'TOTAL' section shows '\$63.41' and a breakdown of 'Instances' at '\$63.41'. There are 'EMAIL' and 'CLOSE' buttons at the bottom.

Figure 2 -Mac OS instance in Cost Estimator

Please note that Mac OS usage has the following specifics which influences instances usage and estimations:

- Mac OS instances can be created only in EPAM-BY1 region
- System storage volume is 60GB
- Standard instance shape is LARGE (2CPU, 7.5RAM)

If you need a Mac OS instance for your project, please [submit a request](#) to the Cloud Support team.

4 MAESTRO CLI IMPROVEMENTS

Maestro CLI is a tool that is widely used by our users who regularly manage cloud-based infrastructures. This tool provides full control over resources, detailed monitoring and events audit access (but still, the permissions level depend on the specific user's project position and Cloud role).

The changes in Orchestration facilities are typically reflected in Maestro CLI, as new commands or changes in existing commands' parameters set.

With the current production update, among others, we introduce two useful updates here:

- Volume properties.** Setting properties to resources is a powerful leverage for manipulating them. The properties related to Chef usage allow to set up automatic configuration of the VMs. Descriptive properties help to distinguish the resources and get basic information about their purpose. With the current update, we introduce the ability to specify properties to specific volumes. This simplifies volumes identification and management. To add a property to a volume, use the **or2-set-properties (or2setp)** command with the **-v/--volume** parameter:

```
or2setp -p demopro -r region -v vol_id_1 -t "property name=value"
```

The command execution will give the response providing the property details. On the screenshot below, you can see the result of applying the property **"disk name = C:"** to a volume:

status	name	value	resource	resourceType
set	disk name	C:	i-4d5fa39c	volume

Figure 3 - Setting a property to a volume

To get the information about the properties that were assigned to instance volumes, use the **or2-describe-volumes (or2dvol) --full** or **or2-describe-instance-properties (or2getp)** command:

```
or2getp -p demopro -r region -v vol_id_1 -v vol_id_2
```

The command, when executed, returns the volumes properties info. The screenshot below shows the values of **"disk name"** property assigned to two disks:

name	value	resource	resourceType
disk name	D:	vol-61a7c9f1	volume
disk name	C:	vol-70084fb8	volume

Figure 4 - Getting volumes properties info



If you set the property name as “description”, it will also be available in **or2dvol** command output (without the **-full** parameter)

- **Improved help.** One of the key features of Maestro CLI is its **unified** access to all Cloud platforms supported by EPAM Orchestrator. This means that the tool is designed to allow users run the same set of commands in private EPAM regions, as well as in AWS and Azure clouds.

However, despite the fact that unification level is quite high, some technical specifics characteristic of certain virtualization techniques do not allow to make Maestro CLI possibilities equal in all cases.

That's why, the set of supported Maestro CLI commands slightly differs in different clouds and regions.

To make the tool more user friendly and to help in preventing unexpected commands rejections, we introduced the **--region** parameter to **or2help** command. Without the parameter, the command returns the list of all commands, supported by Maestro CLI.

When the region is specified, command output includes only the commands available in the given region:

```
or2help --region
```

5 AWS: WINDOWS AUTHORIZATION SIMPLIFIED

We tend to unify Cloud resources management in Cloud, provide common command line and UI tools that can be used to manipulate infrastructures on any platform supported by EPAM Orchestration.

However, due to technical and security reasons, some points cannot be unified. This is true for VMs authorization rules, applied to instances hosted in EPAM, AWS and Azure

Recently, we introduced access by EPAM domain credentials to both Linux and Windows instances, hosted in EPAM private regions. However, this cannot be applied to instances run in AWS and Azure.

Azure sends credentials in letters coming with the instance launch.

Meanwhile, logging in to Windows instances hosted in AWS needs getting a password, which is encrypted by AWS for security reasons.

With the current update we introduce the **or2-aws-decrypt-password (or2adp)** command which decrypts the password coming from AWS and returns the value that can be used to login to the instance.

Thus, to login to a newly created AWS-based Windows instance, please perform the following steps:

1. Make sure the instance is up and running, e.g., using the **o2-describe-instances** command.
2. Run the **or2console** command providing the instance ID, project and region:

```
or2console -p demopro -r aws-region
```

3. When the command is executed, you get an email containing the details on the VM and an attachment with the encrypted password.
4. Save the attachment to your disc or copy its content to an empty file.
5. Run the **or2-aws-decrypt-password (or2adp)** command, providing the name of the key used to run the instance and the path to the file with the encryption:

```
or2adp -p %private_keyfile_path% -e %encrypted_password_file_path%
```

The command response will contain the password to be used to login to your Windows VM with as Administrator.

Please note that the command is executed on the client's side, external tools have no access to the private part of the key.

6. Use this password to login to your VM via RDC:



Figure 5 - Remote connection to a Windows instance

6 PLATFORM SERVICES UPDATES

Traditionally, the new version of Orchestration comes with a set of improvements in platform services. These are the new Messaging as a Service, and some updates in the Relational Database service, released with the previous Orchestration update.

6.1 MESSAGING AS A SERVICE (MES)

With the current production update we are glad to introduce Messaging as a Service which allows to set up a RabbitMQ server (v.3.1.5) for messages exchange.

The service is similar to [Amazon SQS](#) and is available in EPAM regions only.

EPAM Private Cloud provides a special entry point in the Messaging service that may be used for communication between **AWS SDK** and the service.

Please note that when working with the Messaging Service, Maestro CLI addresses the service API directly, omitting Orchestrator.

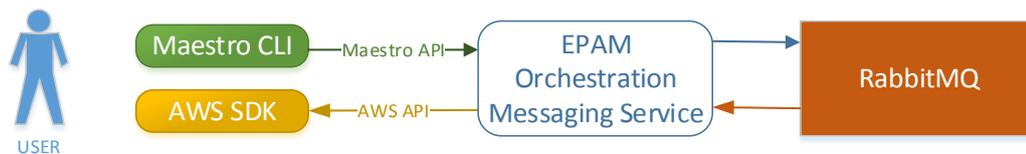


Figure 6 - Messaging service performance scheme

In both cases, to use the service, you need to **create a token** that will be used to reach the RabbitMQ server. The token is created by the **or2-manage-service (or2ms)** command with the **--init-entry-point** flag:

```
or2ms -p demopro -r demoregion -s messaging --init-entry-point
```

For each project-region combination, there should be a special token created. The token is stored in the **default.properties** file, and has the following structure:

```
messaging.demopro.demoreg.access=http://service_vm_dns:5673#token
```

6.1.1 Service Manipulation with Maestro CLI

The typical flow of the service usage, with respective commands, is:

- Activate the service using the **or2ms** command with **-a -s messaging** parameters:

```
or2ms -p demopro -r demoregion -s messaging --activate
```

On the service activation, Orchestrator launches a **MEDIUM Ubuntu14.04_64-bit** VM with RabbitMQ server on it.

A project can have only one Messaging service in each region.

- Create a new queue with the **or2-manage-queues (or2mq)** command:

```
or2mq -p demopro -r demoregion -a create -q queue-name [-v
visibility_timeout]
```

Where:

- **queue-name** specifies the name of the new queue
- **visibility-timeout** specifies the time, in seconds, after which the messages taken by the consumer get back to the queue. The default and the minimum value here is 30.

You can also use the **or2mq** command to clear the queue (**-a purge**), to view the information about queues (**-a describe**), or to remove an existing queue (**-a delete**).

- Manage messages using the **or2-manage-messages (or2mm)** command. To create a new message and send it to RabbitMQ, use the command with the **-a send** parameter:

```
or2mm -p demopro -r demoregion -q queue-name -a send -m message-content
```

Where **message-content** is the content of the message to be sent, 256KB max. You can specify the "file" prefix to get the message from a specific file, e.g.: **-m file:D:/message.txt**.

To receive messages, use the **or2mm** command with the **-a receive** action:

```
or2mm -p demopro -r demoregion -q queue-name -a receive -c messages-
count -w wait-time
```

Where:

- **messages-count** is the number of messages the consumer should take from the queue
- **wait-time** is the time the consumer waits for the messages. Only the messages coming during this time will be received.

To delete a message from the queue, use the **or2mm** command with **-a delete** action:

```
or2mm -p demopro -r demoregion -q queue-name -a delete -i message-id
```

6.1.2 Managing the Service via AWS SDK

To work with Messaging service via AWS SDK, you should provide credentials that contain your username (name_surname in lower case) and token, generated by **or2ms --init-entry-point** command.

You should also provide endpoint as <http://{service-host}:5673/amazon/>.

The following actions are implemented:

- createQueue()
- listQueues()
- listQueuesWithNamePrefix()
- purgeQueue()
- deleteQueue()
- sendMessage()

The other AWS SDK options are not supported by the Messaging service.

6.2 RELATIONAL DATABASE SERVICE UPDATE

With the previous Orchestration update, we introduced the Relational Database Service which automatically creates database entities.

With the current update, we improved the databases available within the service, and added a set of the new ones.

The service is available only in EPAM regions. Still, it is similar to AWS RDS service, and the set of the databases provided by the two platforms, is similar. The table below compares the databases available for EPAM and AWS RDS services (the updated and new databases in EPAM RDB are marked green):

Service	Database					
	PostgreSQL	MySQL	MariaDB	Oracle	SQL Server	Amazon Aurora
EPAM RDB	+	+	+	+	+	-
AWS RDB	+	+	+	+	+	+

The service is manipulated with the **or2-manage-rdb (or2rdb)** command with different **--action/-a** parameter values [describe, install, remove].

For more details on the service usage, please address [EPAM Cloud Services Guide](#).

7 BILLING ENGINE UPDATES

As EPAM Cloud is growing and developing, the number of hosted and monitored resources constantly grows, together with the number of activated projects, supported regions and platforms.

All this inevitably causes the need to update and modernize the approaches used to keep track of resources usage, to bill these resources correctly and to provide timely and precise reports to Cloud users.

Orchestration v.2.1.59 includes two important improvements related to billing and reporting in EPAM Cloud. These are:

- Implementing segregated discounts which allow to adjust costs for projects of a specific type.
- Allowing to subscribe new users to Account Managers' reports to make these reports

Below, you can find the details on these features.



7.1 SEGREGATED DISCOUNTS

Having a highly developed and flexible billing system is an important part of providing an enterprise level service.

EPAM Orchestrator is a unique solution, which allows to perform resources audit and monitor the changes in infrastructure hourly, and apply one of the following billing approaches, depending on the situation:

- **Calculating billing by EPAM Orchestrator's tools.** This approach is used with resources hosted in EPAM regions, with each region having its own billing specifics. Moreover, the engine allows to get prices not only for virtual, but also for hardware servers usage.
- **Taking billing information directly from external Cloud providers,** and converting it to EPAM Orchestration report's format. This approach is used to get costs for resources hosted in public clouds with which EPAM Cloud is integrated (AWS, Azure)
- **Mixed approach.** Some of the bills coming from external providers can be recalculated according to a custom scheme.

This is accompanied by a **discounts system**, which allows to provide a specified discount to a project, or set up time-dependent discounts (for example, cheaper resource usage on weekends). If a VM was unavailable during some time due to Orchestrator issues, it is possible to adjust its price, so that the projects pay only for the resources that were actually used.

However, the growing Cloud infrastructure, the increasing number of projects and customers resulted into the need to develop a more personal approach to discounts which would allow to concentrate not only on the location of virtual resources or time when they are used, but also on their actual owners.

Thus, the new version of EPAM Orchestration is coming with a **segregated discounts** that allow to modify billing policy for a specific project or to a number of projects belonging to a specific group (e.g, personal projects, internal EPAM projects, projects assigned to a specific customer, etc).

7.2 MANAGER'S REPORTS SUBSCRIPTIONS

One of the main reporting tools provided by EPAM Orchestration is the monthly Summary reports.

The reports include the details on Cloud usage by all the projects to which the recipient is assigned as Account Manager, Project Sponsor, or Sales executive.

The Summary report includes project chargeback details, the information on infrastructure utilization and services usage. All this information allows to analyze the way project teams use EPAM Cloud and to change some approaches to make it more effective.

However, actual decisions on the changes in Cloud usage are often taken by project managers, technical experts and other members of project teams, so the information given in the Summary report is useful for these people.

With the current production update, we introduce the ability to subscribe specific users to Summary reports, so that they can start getting them directly, without need to get them forwarded.

To subscribe a person to the Summary report, please, [submit a request to Cloud Support](#) and provide the name of the Account Manager, to whose report new people should be subscribed, and the names of these people. The request should be submitted by the mentioned Account Manager or approved by them.

8 SECURITY UPDATES

During the past weeks, we also continued working on EPAM Cloud Security, and are glad to announce the following news and improvements:

- EPAM Cloud has passed the ISAE certification without any remarks from the auditor's side. This certificate confirms that EPAM has an adequate internal control system to protect the data and confidential information belonging to its customers. For EPAM's customers, it serves as yet another testament to the reliability of the company. You can find more details on EPAM Systems Audit certifications the certification [here](#).



Receiving the high positive feedback on EPC during the Certification proofs that our product is highly reliable and meets high international standards based on the wide experience in software development and usage.

We would like to thank [Ivan Trofymenko](#), [Dzmitry Pliushch](#), and [Andrei Paulau](#) for taking active part in the certification process.

- Nessus vulnerability scanner was launched for EPAM Cloud
- Admin Utility tool was significantly improved and updated:
 - personal SSH keys are now used for authorization;
 - commands simplified and systemized;
 - a number of security improvements implemented,
- IP Validation reports are introduced. The reports lists the instances with IP addresses that do not correspond those stored in EO database. The reports are sent weekly to Cloud Support team.

9 DOCUMENTATION UPDATES

As EPAM Cloud is a self-service, it needs to be documented in details. The scope of services and facilities provided by Orchestration constantly grows, thus, the documentation set has been expanding respectively throughout the time.

With the current update, we go on with the big task on Documentation update and restructuring. This time, we concentrated on the technical guides for developers and updating the previously created documents with the up-to-date information:

New Guides	
EPAM Cloud Management Console Guide	The guide is dedicated to EPAM Orchestration Web UI features and facilities overview.
CloudFormation Service Guide	The document describes CloudFormation service usage in EPAM Cloud, explains the difference between CloudFormation and Maestro stacks, and provides guidelines on their usage for infrastructure management automation.
Improved Guides	
Maestro CLI Developer's Guide	This document provides detailed guidelines on use and customization of Maestro CLI client.
Maestro API Guide	The document provides description, syntax and options for the main commands available through Maestro Application Programming Interface (API).
Updated Guides	
EPAM Cloud Services Guide	The document provides the descriptions and usage guidelines for core and platform services in EPAM Cloud.
Maestro CLI User Guide	The document gives the list and the detailed descriptions of Cloud infrastructure management commands available in Maestro CLI.
Maestro CLI Quick Reference Card	The paper provides brief descriptions of Maestro CLI commands, with parameters and examples.
<p>+ 20 FAQs</p> <p>+ KB Space Updated</p> <p>+ Site Updated</p>	

Please note that the documentation is being under constant development and changes together with EPAM Cloud Orchestration. Feel free to address the Cloud Consulting team if you have any comments or suggestions on the knowledge base improvements.

TABLE OF FIGURES

Figure 1 - Resource quotas management.....	6
Figure 2 -Mac OS instance in Cost Estimator	7
Figure 3 - Setting a property to a volume.....	8
Figure 4 - Getting volumes properties info	8
Figure 5 - Remote connection to a Windows instance.....	10
Figure 6 - Messaging service performance scheme	11

VERSION HISTORY

Version	Date	Summary
1.0	December 20, 2015	First published