



EPAM Cloud Infrastructure

Orchestrator ver. 2.1.27

What's New

September 2014

[CI2WN-S24-26](#)

Version 1.0

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1 Overview

EPAM Orchestration Framework version 2.1.27 was released on September 20th, 2014. Preparing this release, we concentrated on improving the AWS integration to make working with Amazon-based infrastructures more similar to working with EPAM Cloud. We also introduce significant changes in Orchestration Management Console that now allows not only to monitor your Cloud infrastructure performance, but also to manipulate the resources without need to install and run Maestro CLI. The full list of the new features and improvements is as follows:

- Introducing personal discounts on weekends;
- introducing Hadoop as a Service;
- introducing infrastructure control and issues reporting via Web Interface;
- introducing automatic accounts and new types of account reports;
- AWS integration improvements, including the creation of a new detailed user guide;
- adding a set of new email notifications;
- publishing EPAM Private Cloud Service Offering document and introducing a set of documentation updates.

The details on each of these improvements are given further in this document.

2 Personal Discounts on Weekends



Personal projects are not billed, but their usage is limited by special Quotas specifying the maximum cost of the infrastructure that can be provisioned for free.

We are glad to announce that EPAM Orchestration v.2.1.27 comes with **30% Weekend Discounts** for personal projects. This means, that the price for personal

resources usage decreases by **30%** from **Friday 22:00** till **Monday 05:00** (Minsk time).

Now, you can create more resources and significantly increase your personal infrastructure load on weekend.



Please note that the Discount does not influence the Daily Resources creation quotas.

For more information on Personal Quotas, please see [Resource Utilization Quotas Guide](#), Section 2: Personal Quotas.

3 Hadoop Data Platform Service (HDP)

The new EPAM Private Cloud release is traditionally coming with a new service. This time we are glad to introduce Hadoop Data Platform Service (HDP) - a service that provides a training and development platform for projects working with big data.



Hadoop is an open-source solution that provides storage and computing facilities for processing large-scale data in clusters.

EPAM Private Cloud provides Hadoop capacities that developers can use to test and debug their Hadoop jobs before running them on production.

HDP Service is based on **Hortonworks Hadoop Distribution v.2**.

The main service controls are described below:

- To **start** the service, call the **or2-manage-service (or2ms)** command with **--activate (-a)**, **--service (-s) hadoop** and other necessary and optional flags:

```
or2ms -p project -r region -a -s Hadoop -l slaves -h shape
```

where:

- l (--hadoop-slave-count)** specifies the number of Hadoop slave machines that will be run (1 by default, if the property is not specified)
- h (--shape)** specifies the instance shape for Hadoop slave machines (MEDIUM by default, if the property is not specified)

You can also use the **-k (--key-name)** option to specify the SSH key for all the created resources.



To check whether Hadoop has started properly, you should login to the client and run a test job. The cluster is ready to work if the test job is performed without issues.

- To see the list of **Hadoop Resources**, their states and DNS names, run the **or2-describe-hadoop (or2dh)** command:

```
or2dh -p project -r region
```

- To change the number of existing **Hadoop Clients** and **Slaves**, call the **or2-manage-hadoop (or2mh)** command:

```
or2mh -p project -r region -a -c number -s resource_type
```

where:

- a (--add)** - a flag identifying that a resource should be added
- resource_type** is a type of the Hadoop resource (client, slave)
- number** identifies the number of the new resources to be created (1 by default)

You can also specify the resource shape with the **-h / --shape** parameter.

- To **monitor the HDP Service performance**, you can login to the Hadoop Resource Manager and Name Node using their DNS names and the following ports:
 - Hadoop Resource Manager: `http://hadoop_rm_dns:8088`
 - Hadoop Name Node: `http://hadoop_nn_dns:50070`

EPAM Cloud Orchestrator 2.1.27 - What's New

The screenshot displays the Hadoop Client Web UI. At the top left is the Hadoop logo. The main title is "All Applications" with a user login "dr.who" in the top right. A sidebar on the left contains navigation options: Cluster, About Nodes, Applications, NEW, NEW_SAVING, SUBMITTED, ACCEPTED, RUNNING, FINISHED, FAILED, KILLED, Scheduler, and Tools. The main area shows "Cluster Metrics" with a table of application counts and memory usage. Below this is a table of application entries with columns for ID, User, Name, Application Type, Queue, Start Time, Finish Time, State, Final Status, Progress, and Tracking UI. Two application entries are shown, both in a "FINISHED SUCCEEDED" state.

Cluster Metrics												
Apps Submitted	Apps Pending	Apps Running	Apps Completed	Containers Running	Memory Used	Memory Total	Memory Reserved	Active Nodes	Decommissioned Nodes	Lost Nodes	Unhealthy Nodes	Rebooted Nodes
2	0	0	2	0	0 B	8 GB	0 B	2	0	0	0	0

ID	User	Name	Application Type	Queue	StartTime	FinishTime	State	FinalStatus	Progress	Tracking UI
application_1410265866280_0002	hdfs	QuasiMonteCarlo	MAPREDUCE	default	Tue, 16 Sep 2014 13:06:52 GMT	Tue, 16 Sep 2014 13:07:46 GMT	FINISHED	SUCCEEDED	<div style="width: 100%;"></div>	History
application_1410265866280_0001	hdfs	QuasiMonteCarlo	MAPREDUCE	default	Tue, 09 Sep 2014 12:41:43 GMT	Tue, 09 Sep 2014 12:42:24 GMT	FINISHED	SUCCEEDED	<div style="width: 100%;"></div>	History

Figure 1 - Hadoop Client Web UI

For the details on the new HDP Service, please, see the [Hadoop Service](#) page on Orchestration web-site.

4 Infrastructure in Three Clicks

In current release, we concentrated on improving our Web Management Console that would not only allow you to gather the information about your resources, but also provide you with a convenient infrastructure manipulation tool.

From now on, EPAM Private Cloud users can easily access the following facilities via Orchestration Management Console:

- Running instances and stacks with a handy unified wizard.
- Simple Resources Navigation and control - with an updated system of navigation, you will be able to find any necessary resource in few seconds and perform basic operations on it with a single click!
- Quick and simple issues reporting.

Adding these facilities is a significant step in improving Orchestration usability. From now on, manipulating your Cloud infrastructure is as simple as it has never been before. To perform the basic operations, you don't have to install and run maestro Command Line interface. All you need to do is login to [Orchestration Management Console](#) and find the necessary option. In just a few clicks.

4.1 Unified Create Wizard

The Create Wizard is available on the main page of [Orchestration Management Console](#):

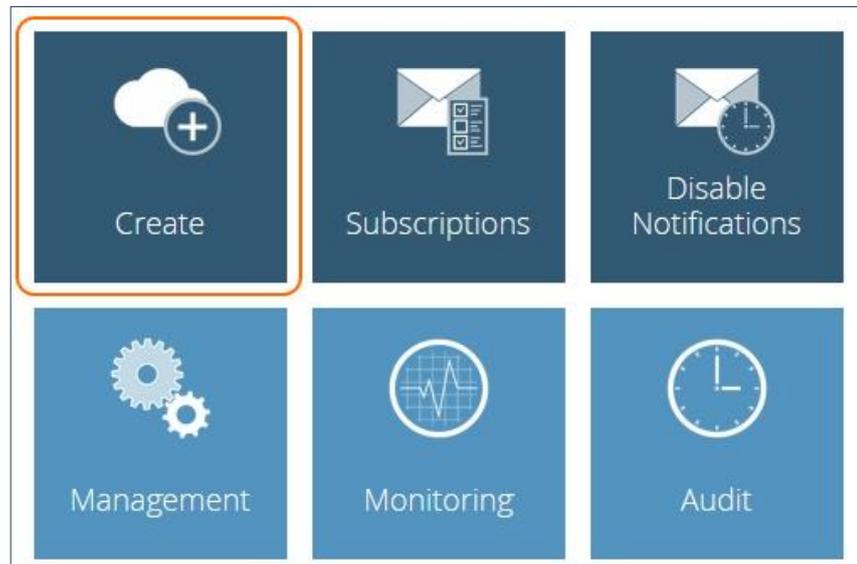


Figure 2 - Create Wizard Button

With the unified Create Wizard implementation, you don't have to install any additional tools and look for the commands grammar to perform basic infrastructure operations.

The Wizard allows to run the following resources in just several clicks:

- EPC instances
- AWS instances
- Maestro Stacks
- Cloud Formation Stacks

The resource running process is unified and can be described in a simple scheme:

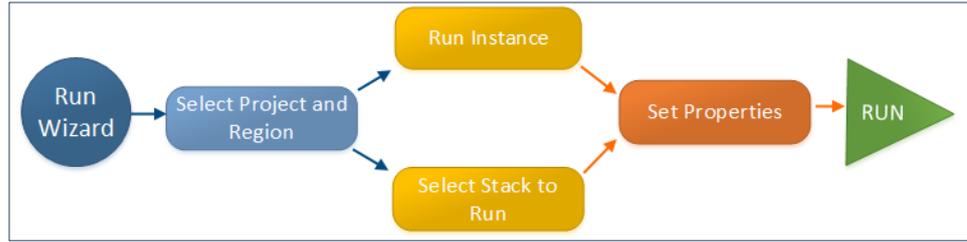


Figure 3 - Resources Run Flow

The Wizard guides the user through several steps, where all they should do is select the necessary options and properties.

The Wizard prompts you for the parameters that are required by the resource you are going to run. For example, to start an instance, you will have to select instance image and shape; you can also specify additional options if needed:

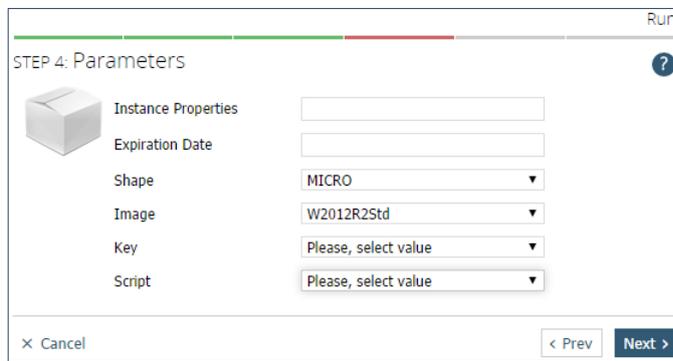


Figure 4 - Specifying Parameters

If you want to run a Cloud Formation or a Maestro stack, the Parameters step will list all the parameters required by the selected stack.

In case a stack you want to run does not need any parameters, you will be automatically directed to Confirmation step (that otherwise follows Parameters):

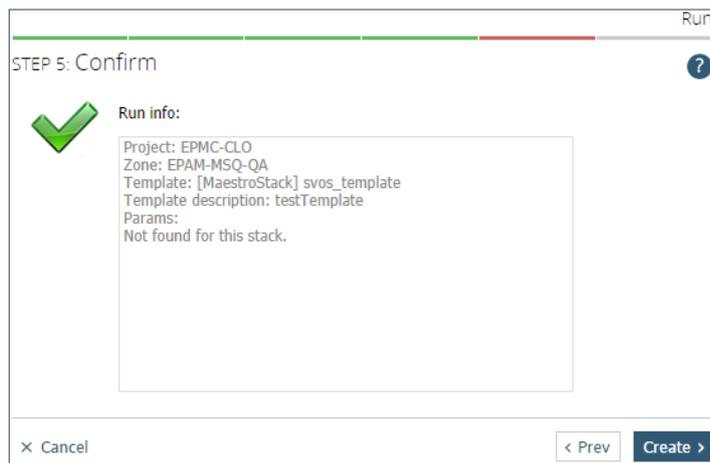


Figure 5 - Confirmation Step

When the last step is done, you get a new resource run, and all the process takes no more than a minute and several clicks!



The wizard cannot be used to create personal resources.

4.2 Simple Resource Navigation

In order to simplify the resources navigation on Orchestration Management Console, we introduced the **Collapse** button that gives you quick access to the items trees on the Console pages:

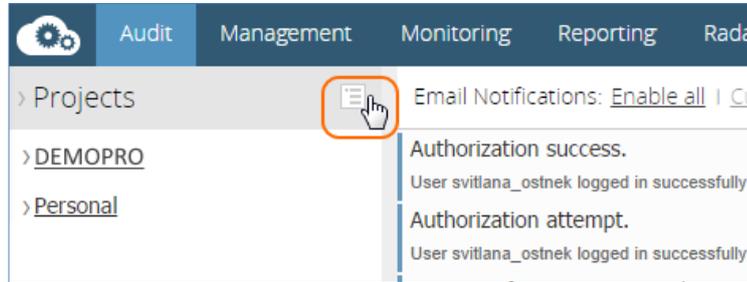


Figure 6 - Collapse Button Location

Each click on the button expands the next level of the tree, up to the VMs level. A click with the VM level expanded will collapse the whole tree up to the initial Projects level:

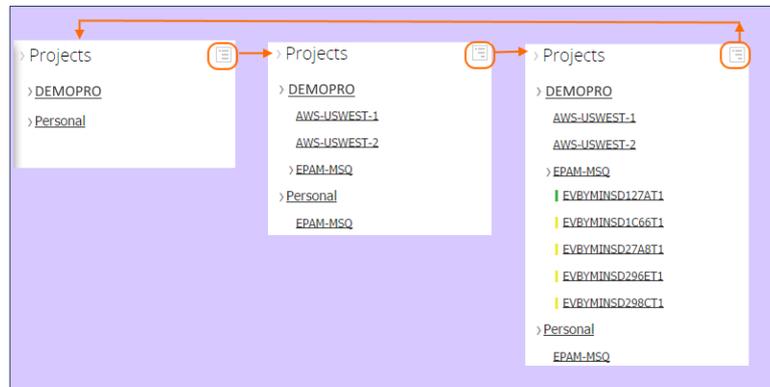


Figure 7 - Collapse Button Performance

If you need to search among the VMs of a **particular state** on Audit and Management pages, you can use the **Filters** available under the Projects tree. Here, you can select which instances should be displayed in the instances list: running, pending, stopped, or transitional ones. The screenshot below gives the list of **Running** instances on the demo project:

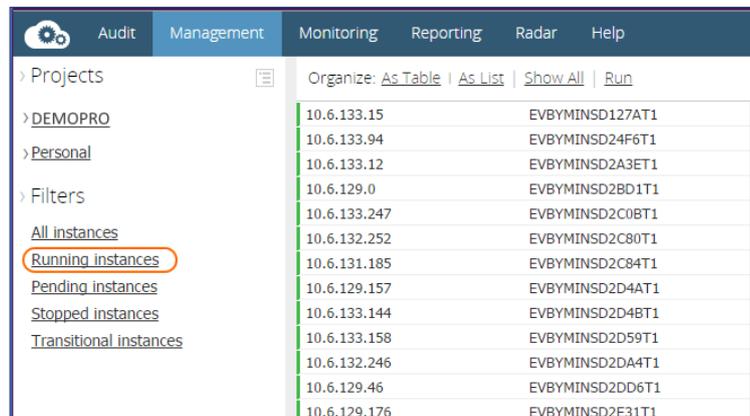


Figure 8 - Running Instances Filter in Use

4.3 Managing Infrastructure in Three Clicks

The enhanced Orchestration Management Console allows you not only to create new resources, but also to **start, stop, suspend, reboot and terminate** instances in just three clicks:



Figure 9 - Infrastructure Manipulation Steps

This means that to change the state of a VM in cloud, all you have to do is go to Console [Management](#) page, select the necessary image, and then select the action you want to perform on it:

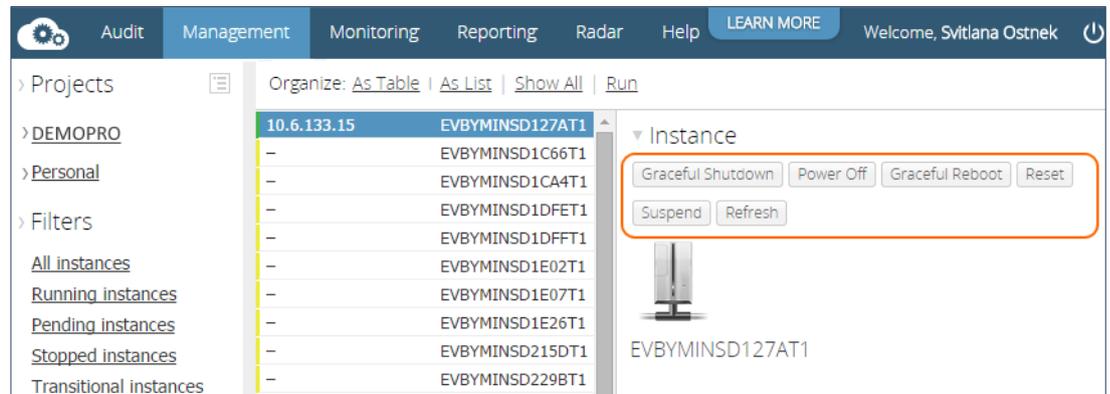


Figure 10 - Instances Manipulation Toolbar

The list of the available actions depends on the actual state of the selected instance.

All the actions duplicate the functionality of the existing CLI commands with and without "--force" option.



You can manipulate Cloud infrastructure via Orchestration Management Console only if you are connected to EPAM network.

4.4 Quick Issues Investigation and Reporting

One of the main tasks faced by EPAM Orchestrator is monitoring all the processes that take place in your Cloud infrastructure. The [Audit](#) page lists all the events invoked from Orchestration side and third-party participants like events in AWS-based resources and those caused by the Cron Scheduler.

All the arising issues are also reflected here and highlighted in red.

Started from this release, you can easily get all the details on any event without having to carry out additional investigations manually. You can get maximum information with no more but two buttons: **Show Related** and **Email**. The buttons are available in the details tab for each of the events:

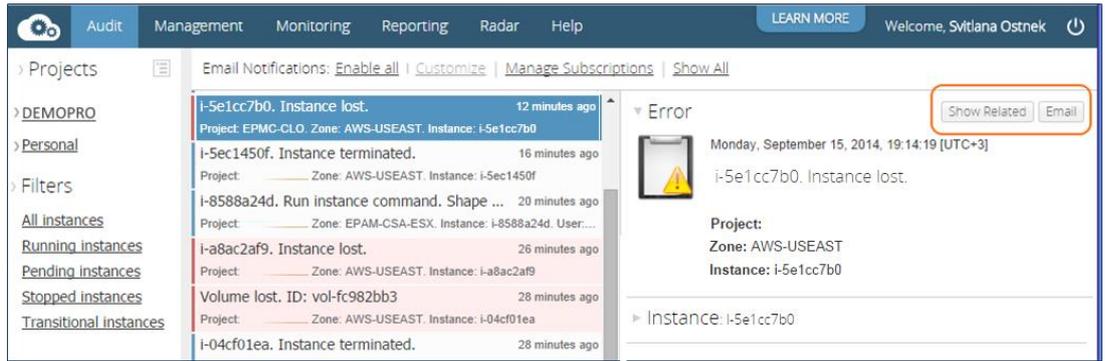


Figure 11 - Audit Event Controls

- The **Show Related** button displays all the events related to the resource described in the selected event. This allows you to see and analyze the history of the resource.
- The **Email** button sends the details on the event to your e-mail. In case an event is an issue that you need to be solved, you can use this option to get the issue details that can be later forwarded to the Support team:

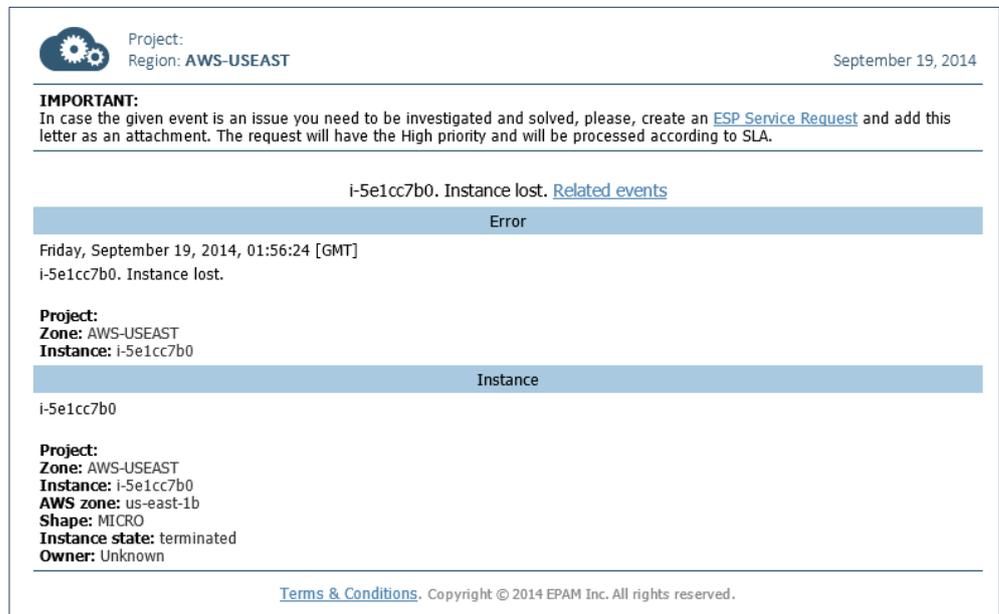


Figure 12 - Event Details Email



In case you need to forward the issue details to the Support Team, we strongly recommend to create an [ESP Service Request](#) and attach the received letter to it. The requests coming via ESP, are marked as important and have higher priority.

5 Reporting Updates

Last time EPAM Orchestration introduced Maestro Accounts that allow to gather billing details for a set of related projects in one report.

In this release, we introduce a set of account-related updates that are intended to simplify the reports aggregation by user and project. From now on, we distinguish between three different types of accounts:

- **Manager Account** - an automatic account created for the users with Project Sponsor, Sales Executive and Account Manager roles and aggregating the projects to which the person is assigned in one of the mentioned roles.
- **Customer Account** - an automatic account aggregating the projects by Customer name.
- **Maestro Account** - an account created by request and aggregating the projects specified by the user.

Each of these account types has its own processing and reporting specifics.



- The manager account is created automatically for the users with the given project roles and you don't have to submit a special request to have one.
- The report of each type is available only for the users with respective rights.

5.1 Manager Account

Starting from the current release, Orchestrator daily addresses UPSA to collect and sort the information about the projects active in Cloud and the people who take main account-related project roles (**Project Sponsor, Sales Executive, Account Manager**).

For each of these people a **manager account** is created. It gathers all the projects in which a person has one of the mentioned roles.

At the end of each financial month, the owners of manager accounts receive an email containing an analytical report by all the projects, in which they have account-related roles.

In case you need to see the current status of EPC bills for your Manager Account before the email comes, you can use Maestro CLI to get a **manager report**. To do it, call the **or2report** command with the **--account (-a)** flag:

```
or2report -m month -y year -a --csv
```

The **--csv** flag indicates that the report will be passed to a CVS file.

5.2 Customer Account

Each project is assigned to a customer. From now on, **Principal Account Managers** can get the report by customer without having to submit any additional requests. All they have to do is running the **or2report** CLI command with the **--account-name (-n)** flag:

```
or2report -m month -y year -n "Customer Name" -c
```

It is enough if the customer name fits only a part of the value of the "customer" field in the projects properties. For example, if the user specifies "*Customer Name*" as "EPAM", Orchestration will still find the customer registered as "EPAM Systems". If Orchestration finds several customers that include the given name, additional clarification will be needed.



Currently, Customer reports are available only via CLI. However, introducing this functionality to Web Management Console is scheduled for one of the nearest Orchestration updates.

5.3 Maestro Account

If the user needs to get a report by Maestro Account, they should also use the **or2report** command with the **--account-name (-n)** flag, and specify the name of the Maestro account. Unlike with the customer search, this name should strictly fit the name of the target account:

```
or2report -m month -y year -n account_name -c
```

If the provided name does not fit any of the existing accounts, Orchestration will search for the customer with a similar name and provide the customer report in case the user has rights to get it.

5.4 Quota Update Reports

From now on, any quota parameters changes are reflected and reported in **Quota Parameter Change** email notification.

The email gives the new Quota sums, including the Alert sum, and Quota Actions:

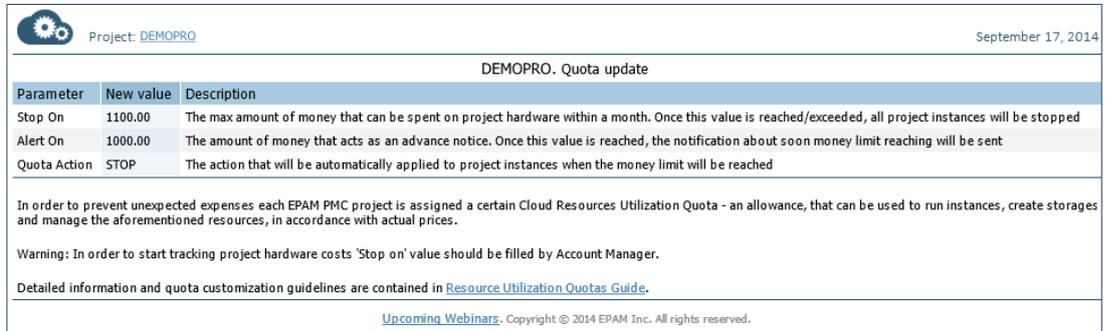


Figure 13 - Quota Update Report

This allows the project members to keep track of the quotas and timely correct the project resource utilization plan.

6 AWS Improvements

One of EPAM Orchestration aims was to unify working with Hybrid Clouds. EPAM Orchestration supports working with AWS, and currently, there are 22 Projects, over 150 VMs running in 8 AWS regions.

In this update, we paid a lot of attention to AWS related features to make Amazon-based infrastructures manipulation and monitoring easier and similar to those in EPAM cloud:

- Improved AWS Monitoring with Cloud Watch.
- Support VMs management via Web Management Console (for the details, see the [Infrastructure in Three Clicks](#) section).
- Support running Cloud Formation Stacks via Web Management Console (see the [Unified Run Wizard](#) section).
- Paid much effort to fixing bugs and solving the existing issues.

We also prepared the detailed [AWS Utilization Guide](#), in which we describe all the specifics of AWS-based infrastructures and share useful tips for effective Amazon Web Services usage.

Moreover, starting from October 2, each Thursday from 15:00 to 17:00 GTT time [Andrii Melekhovskiy](#) will be delivering webinars on AWS usage for DevOps (see the [Knowledge Sharing](#) section).

Please, don't forget that within the AWS Partner Network program, you have the ability to take free AWS trainings and certifications. For more details, see the [AWS Partnership](#) page.

7 Cloud Analytics for IT

In the current release, we introduce a set of new features that are aimed to simplify the work of the IT team and to make it more effective.

The improvements list includes the following points:

- New type of notifications for Cloud Support team: **EPC Regions Availability Changes Notification**. The information on the region status change is taken from the Health Check functionality.
- **Graphical Tools** on Orchestration Management Console. The members of the IT group now have access to a set of special tools that enable quick and easy incidents investigation by means of web interface. The tools are available on the main dashboard of the Management Console:

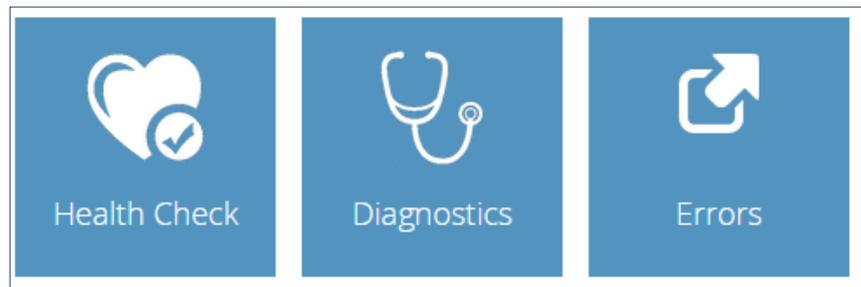


Figure 14 - New Service Tools

- The **Health Check** tool gives the main information on the regions availability and performance
- The **Diagnostics** tool provides the detailed information about Orchestration systems collected by JMX
- The **Errors** tool gives access to Orchestration logs stored on Graylog server.

8 CSA-type Regions Improvements

HP CSA is a cutting edge technology that we keep on introducing to EPAM Private Cloud. EPAM Orchestration v.2.1.27 comes with the following set of improvements of CSA-based regions (EPAM-US1-PROD, EPAM-UA1, EPAM-KZ1):

- Tags are now available
- Maestro Services are now available (log, monitoring, chef, load-balancer, docker)
- For CSA-type regions, the maintenance mode automatically disables VMs removing.

These improvements and a set of fixes are intended to make CSA-type regions usage even more reliable and convenient.

9 EPC Service Offering

EPAM Private Cloud is a highly developed service with hundreds of users and constantly growing workloads.

Keeping such a complicated and high performance product at the necessary quality level needs much resources and efforts of dozens of experts of different qualifications. All the processes are interrelated and depend on each other, and thanks to a high level of organization the service performs like a clock.

This needs all the procedures and responsibilities to be clearly defined and regulated. EPAM Private Cloud team has a set of documents that coordinate their work. We carefully gathered and classified the EPAM Private Cloud Service Procedures in one document - [EPAM Private Cloud Service Offering](#) that is now available for you.

Here you can find the main positions on EPAM Private Cloud Service provisioning, as well as the useful links to the detailed procedures descriptions and related reference guides.

10 Knowledge Base Improvements

In this release, we introduce two new documents, a set of documentation updates and, traditionally, new articles.

We highly appreciate your feedback on the provided documentation and knowledge base content. Please, feel free to send your comments and suggestions to our [Consulting Team](#) or address directly to [Svitlana Ostnek](#).

10.1 Knowledge Sharing

Our experts keep on delivering the DevOps education program and concentrate on using AWS. In October, Andrii Melekhovskiy is delivering a set of webinars on AWS practice. Below, you can see the lectures topics, agenda, and delivery time:

#	Topic	Delivery Time
1	Compute resources <ul style="list-style-type: none"> • EC2 instances • Elastic Load Balancing • Auto Scaling 	15:00-17:00 GTT
2	Data storages <ul style="list-style-type: none"> • EBS • S3 • Glacier • Cloud Front 	15:00-17:00 GTT
3	Databases <ul style="list-style-type: none"> • RDS • Dynamo DB • ElasticCache 	15:00-17:00 GTT
4	Virtual Private Cloud <ul style="list-style-type: none"> • VPC and subnets • Routing • Network ACL • NAT 	15:00-17:00 GTT
5	Security, monitoring and logging <ul style="list-style-type: none"> • IAM users and roles • Cloud Watch • Cloud Trail 	15:00-17:00 GTT

To see the details on the training and subscribe for it, please, visit the [training page](#).

10.2 Cloud Blog

EPAM Private Cloud team also keeps on sharing their knowledge and experience with those who are interested in Cloud technologies. This month, we translated into English and published the next articles to share the experience of our Cloud team with the international EPAM Cloud community:

- [“Windows Azure Recovery Services, Part 2”](#) by Pavlo Revenkov
- [“Windows Azure Recovery Services, Part 3”](#) by Pavlo Revenkov

These articles will also appear in our [Cloud Blog](#) on EPAM Systems web-site and in our [BlogPost](#) blog.

10.3 Documentation Updates

The following documents were created:

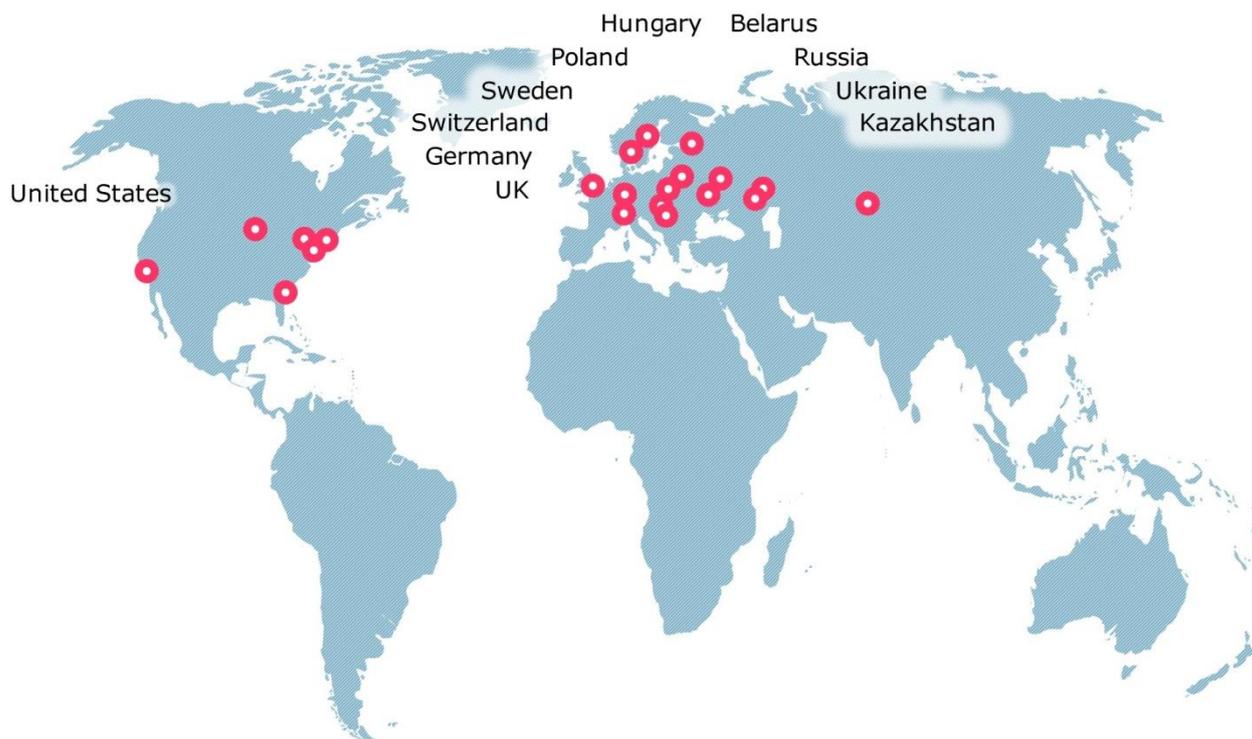
- [EPAM Private Cloud Service Offering](#) - the finalized version of a document announced in the previous release. It describes the main concepts, responsibilities, rules and limitations in scope of EPAM Private Cloud usage
- [AWS Utilization Guide](#) - As though there already was an AWS-related document, it contained only the general descriptions and main points. We completely re-wrote it and created a detailed guide that is aimed to answer all the questions you may want to ask about using AWS in EPAM Private Cloud

We updated the following guides to make them reflect all the recent changes:

- [Maestro CLI Reference Guide](#) - added the new command details
- [Resource Utilization Quotas Guide](#) - added personal quotas deactivation disclaimer, sales/marketing group quota increased
- [Cloud Analytics Guide](#) - updated according to current changes
- [EPAM Private Cloud Services Guide](#) - added the Hadoop Data Platform Service
- FAQ sections in [EPAM Knowledge Base](#) and on [Orchestration web-site](#) were updated

Version History

Version	Date	Summary
1.0	September 20, 2014	Initial version is published



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