EPAM Cloud Infrastructure

Orchestrator ver. 2.1.30

What's New

November 2014

CI2WN-S26-29

Version 1.0

Content

1 Overview

EPAM Orchestration Framework version 2.1.30 was released on November 1st, 2014. When working on this release, we concentrated not so much on introducing new functionality as on updating and stabilizing the existing features.

In this release, we are glad to introduce the following updates:

- EPAM Private Cloud infrastructure growth and discounts
- A complex monthly report for Project management
- A set of Orchestration Web Console improvements including Create Wizard update and Dynamic Dashboard introduction
- A Maestro Stack validation command that significantly simplifies Stack Template development
- Project Closure procedure changes that allow project members manage the project resources after the project is closed in UPSA
- HP CSA virtualization improvements
- A new Web Management Console user guide
- A set of documentation and FAQ updates

All these improvements are described in details further in this document.

2 EPAM Private Cloud Growth

EPAM Private Cloud is constantly developing and growing. During the last year, the number of projects using EPC has significantly increased, and the number of VMs running in Cloud has **doubled**. Nowadays, we have over 4000 VMs running in different regions, and this number keeps on growing.
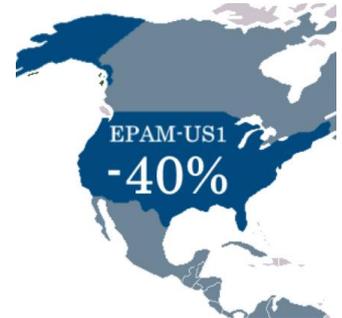
The increase of EPAM Private Cloud load causes infrastructure growth and development as well as optimization of resources usage on all levels.

With the latest production update, we introduced weekend discounts for personal projects. Today, we are glad to announce significant **price cut** for one of our production regions.

Starting from October 1, the Cloud prices for **EPAM-US1** region are reduced by **40%**!

From now on, the Region Coefficient on EPAM-US1 is 0.85 (the current coefficient for EPAM-MSQ is 0.9). This makes EPAM-US1 region the cheapest one in EPAM Private Cloud. The table below compares the estimated prices for a **Medium Windows VM** with **40 GB** volume, all 100% active:

Region	Coefficient	Price
EPAM-US1	0.85	**$44.53**
EPAM-MSQ	0.9	$46.75
EPAM-BUD	1	$51.96

The new prices will be effective at least till December 31, 2014, and further changes will be announced by a special notification.

2.1 Best Practices and Project Costs Reduction

The growths of EPAM Private Cloud usage results into higher Cloud Costs for the projects on one hand, and on higher infrastructure loads, on the other.

The high prices of Cloud-based infrastructure can be mostly explained by unreasonable resources utilization. The most frequent case here is leaving the unused VM in running state without shutting them down or removing them.

To reduce these costs, it is recommended to stop the instances when they are not used and to start them at the beginning of the working day. This can be done manually with **or2stop** and **or2start** CLI commands. However, the recommended workflow is to create a schedule that will make Orchestration automatically change the state of your resources. The schedules are set up with cron expressions that are to be specified in the **or2-create-schedule** CLI command according to the specific rules.

For example, to switch on the VM every morning and shut it down every evening on weekdays, use the following CLI Commands (please note that cron uses GMT+0 time)

```
or2addsch -a start -c "0 0 5 ? * MON-FRI" -i SAMPLE -n on_schedule
-p sample -r sample

or2addsch -a stop -c "0 0 15 ? * MON-FRI" -i SAMPLE -n off_schedule
-p sample -r sample
```

where:

-**a** parameter specifies the action

-**c** parameter specifies the cron rule

-i parameter specifies the ID of the instance to which the schedule should be applied (you can use the multiple -i parameter for several instances)

-n parameter specifies the schedule name.

To add an instance or instances to an existing schedule, use the **or2schedule-add-instances (or2schaddi)** with the following flags:

```
or2schaddi -p <project> -r <region> -i <instance_id> -n
<schedule_name>
```

Scheduling your instance activities allows you to significantly cut your project costs and release Cloud infrastructure, thus improving its performance and accessibility.

For more details on infrastructure scheduling, please, visit the Infrastructure Scheduling Service page.

3 Web Management Console Improvements

In this release, we also introduce a number of Web Management Console (WMC) improvements that significantly improve its usability.

We made some changes in the Create Wizard, and added a new feature - that allows displaying the most necessary Cloud infrastructure data right to the dashboard.

3.1 WMC User Guide

Orchestration Web Management console has been quickly developing during the previous months. We have introduced a wide range of new features and facilities, and the time has come to update the User Interface documentation.

With this release, we introduce the new Web Management Console User Guide that combines the descriptions of UI elements, useful tips and user stories so that you could easily find the answer on your "How To?" questions.

The user guide is available by this link:

https://cloud.epam.com/site/competency_center/tools_and_capabilities/epam_orchestration/ciug_9_user_interface.pdf .

It is the first edition in the new format, and we will highly appreciate your comments and suggestions that would help us improve the document where needed.

3.2 Create Wizard Updates

In this release, we significantly updated the Create Wizard. We added a set of new features that assure comfortable and easy creation on new resources and their further automatic setup.

Figure 1 - New VM Properties Specification

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The improved properties specification step now has he following new options:

- **Additional storage (Gb)** - The default storage on Linux VMs is 20 GB, and 60 on Windows. With this option, you can specify the additional storage volume to be attached to your VM.
  Please note that when you add a storage volume, you will have to set it up manually on your VM. For more details on storage volumes mounting please see our FAQ page.
- **Tag** - Specify a tag for your new VM. When you specify the same tag for a group of resources, you can get the billing report by this tag in which the costs for the group will be aggregated.
- **Stop After (hours)** - Here, you can specify the time in hours after which the created VM will be automatically stopped.
- **Instance Properties** - a set of auto configuration properties that should be applied to your VM. This includes Description, Chef Role and Chef Attributes. The Chef Role properties

When specifying Chef Role, use the name of the Chef Role you want to apply. When specifying Chef Attribute, use the following syntax:

```
key1=value1, key2=value2, etc…
```

Below, you can see the list of chef roles and their attributes that are most widely used:

Role	Attribuites	Description
lamp	apache.default_site_enabled=true	Installs apache, PHP and MySQL; You can find the MySQL root password in /etc/mysql_grants.sql
tomcat7	tomcat.port=8080, tomcat.ajp_port=8009, tomcat.java_options="-Xmx128M -Djava.awt.headless=true"	Installs tomcat7 - launches am open source web server and servlet container developed by the Apache Software Foundation
mongodb	mongodb.port=27017, mongodb.bind_ip=127.0.0.1	Installs MongoDB server
jenkins	jenkins.server.plugins=confluence-publisher	Installs Jenkins continuous integration tool with confluence-publisher plugin
maestro-cli	-	Installs Maestro CLI
maven	maven.m2_home=/opt/maven	Installs a build automation tool in /opt/maven folder (on Linux)
oracle-server	oracle.db_sid=ORADB1, oracle.db_pass=oracle	Installs OracleDB on rhel-based instances with specified db_sid and db password
redis	redis.server.port=6379	Installs redis data structure server with specified tcp port

The full list of the available Chef Roles and their details is given on the Auto Configuration page.

The Create Wizard cannot be used to create resources in personal projects.

3.3 Dynamic Dashboard

EPAM Private Cloud provides a wide range of tools for infrastructure monitoring and analytics. These tools have simple controls, but the ability to reach details on different levels means that the user needs to switch between different tabs and layers, and this needs time.

Recently, we have been getting many requests for finding a solution that would allow to get access to necessary monitoring data without having to search around the Console. In this release, we a glad to introduce Dynamic Dashboard: a tool that allows adding the metrics you are interested in to the Dashboard, so that they appear to be right at hand whenever you need them.

You can add new metrics by means of the **New Metric** button at the end of the Dashboard. Each new metric will appear right **before** this button:

Figure 2 - Dynamic Dashboard

The new metric is added with the help of a Wizard that guides you starting from selecting the monitoring level up to the metrics name and data representation mode.

On most metrics, data can be represented as a Pie Chart, or as a Current value. The Pie chart typically shows the relational values of the metric in different regions. The Total shows the total value of the metrics in all regions/projects.

The following facilities are available for the metrics on the Dynamic Dashboard:

- **The Pie Chart Legend**: To see the legend, hover the mouse cursor (or click a section on Mobile Console) over one of the chart sections.
- **Update interval**: When you select the little clock icon at the top left corner of each metrics, you can see its update interval.
- **Metric Help:** Click the metric name to see its brief description
- **Deep Dive:** Click Current Value to see the detailed Deep Dive graph on the selected metrics. For Pie Charts, the Deep Dive is available on More Info button at the top right corner of the metric
- **Remove Metric:** To remove the metric from the Dashboard, click the Remove button in the bottom right corner.

> Metrics Help and Deep Dive for Mobile Console are under Development.

You can also add VM-level metrics to the Dashboard when you are looking through the Monitoring section. In the metric details, click the **Watch** button, and the Current Value metric type will be automatically added to your Dashboard:
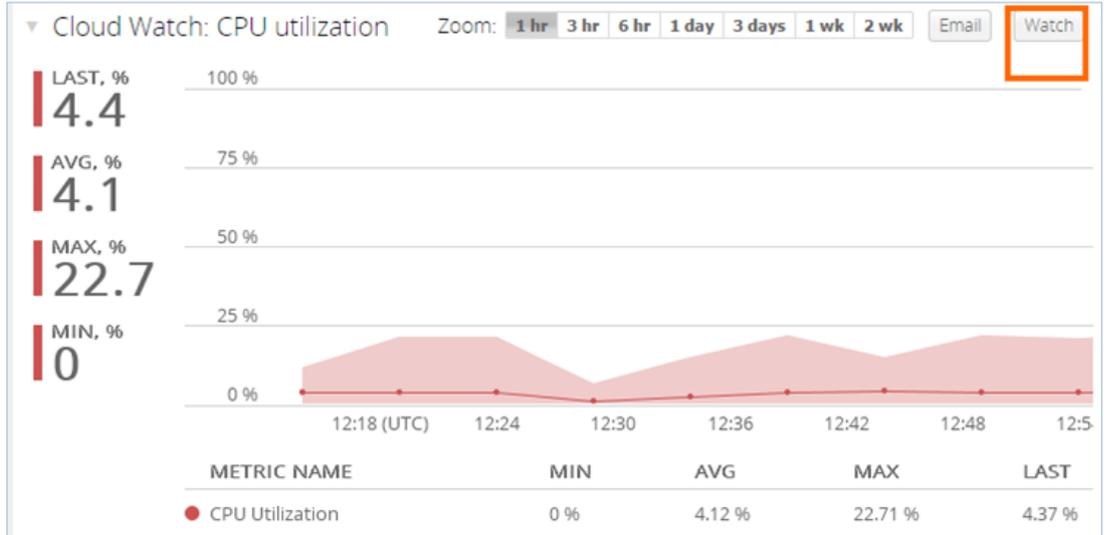
Figure 3 - Adding a Metric from Monitoring Section

This applies to Amazon Cloud Watch and default Chef and Zabbix Server Monitoring VM-level metrics

4 Maestro Stack Templates Validation

Despite Maestro Stacks is a good time- and effort-saving solution for situations when you have to perform simultaneous sets of actions on a regular basis, it hasn't yet acquired wide application. One of the reasons was the necessity to perform various CLI operations to download and run a stack. In one of the recent releases, we introduced a UI wizard that allows to run stacks without any special effort.

In this release, we concentrated on Maestro Stacks development simplification. We introduce the **or2-validate-maestro-stack-template (or2vmst)** command that performs a maestro Stack template validation by the following parameters:

- JSON and XML syntax validation
- Stack template Logic check
- Check for the template commands availability in the region
- Check for template commands permission for the user

The validation covers **all** the errors in the specified Maestro Stack template file and returns the list of the errors:

The typical syntax of the **or2vmst** command is:

```
or2vmst -r <region> -p <project> -m <template path>
```

On the screenshot below, you can see an example of the command execution:

Figure 4 - or2vmst command call

The command allows you to quickly validate your maestro Stack template file without need to upload it to Orchestration and try to execute it to find the error, which significantly reduces time and effort needed to develop a Maestro Stack template.

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5 Virtualization Layer Improvements

EPAM Private Cloud team keeps on working not only on new features and automation improvement, but also on virtualization-level development. Since we have introduced the HP CSA technology on several regions, we keep on improving it to make EPAM Private Cloud meet the sophisticated expectations of its users.

In the current release, we introduce two new features for **EPAM-UA1** and **EPAM-US1-PROD**:

- **or2-change-shape (or2chshape)** command: allows resizing the shape of the existing VM. To change the shape of an instance, run the command using the following flags:

```
or2chshape -i <instance_id> -p <project> -r <region> -s <shape>
```

The command returns the following response:

```
D:\maestro-cli\bin>or2chshape -p DEMOPRO -r EPAM-UA1 -i i-123456 -s MEDIUM
Response: Shape has been changed from SMALL to MEDIUM for instance i-123456
```

You can change shape to both larger and smaller one, but you have to keep in mind the following limitations:

- you can change the VM shape only on a stopped instance;
- you can change the VM shape if the VM has no checkpoints.

- **Recycle Bin:** if a VM is deleted by mistake, you have 20 days to restore it by submitting a support request. Currently, the service is activated in beta mode and is free. If it proves its value, it will be turned into a full-grown paid service.

For more details on HP CSA technology introduction, please, see the [EPAM Hybrid Cloud](#) Case Study.

6 Project Closure Procedure Changes

EPAM Orchestration v.2.1.30 introduces another important update on project management. This is the changed project closure procedure that provides more control over the project resources. Previously, when Orchestrator detected a project's closure, the project resources were blocked and to move them to another project, the users had to submit requests to Cloud Support team. However, this contradicted the self-service principle.

From now on, when Orchestration detects that a project was closed in UPSA, it starts sending daily e-mail **project closure notifications** to the Project Coordinator. The notification includes the list of the resources still existing in the project. The project team has **7 days** to decide whether these resources should be saved and moved to another project.

To move your VM to another project, please leave a Support Request on https://support.epam.com: Catalog of Requests -> EPAM Private Cloud -> Project Management -> Move VM to another project.

In seven days, all the resources remaining in a closed project are **automatically deleted**.

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> According to EPC Policy, the resources remaining in a closed project are billed until they are deleted by project users or until they are deleted automatically in 7 days.

7 Month-End Closure Manager's Report

In the current release, we finalize the development of month-end closure procedures that are aimed to simplify EPAM Private Cloud billing reporting and prices monitoring for project Sponsors, Sales Executives and Account Managers.

Summary report of your projects in EPC, September 2014   September, 2014

Dear **Sir**

You have received this report because you are *Project Sponsor, Sales Executive, or Account Manager* on projects active in EPAM Private Cloud.
The report is sent at the end of the billing month and contains the finalized Cloud chargeback for your projects (see the attachment).

This report contains the following sections:

- VM Lifetime Report - number of VMs and the duration they have been running per project
- Account Optimization Ratio Report - ratio of VM usage and optimization recommendations
- Service usage report - usage of EPC services the information on VMs engagement and coverage by EPC services
- Monthly billing report - the total chargeback for the projects in your account

If you have any questions or need assistance, please, contact EPAM Private Cloud Consulting team SpecialEPM-CITConsulting@epam.com. In case you need additional services, please, leave a request on EPAM Service Portal https://support.epam.com (EPAM Private Cloud section)

VM Lifetime Report   Top ↑
The report provides the information on the lifetime of the VMs existing in your projects. Each column contains the number of VMs of a specified age.

Project	Less than 1 week	From 1 week to 1 month	From 1 to 3 months	From 3 to 6 months	From 6 to 12 months
4SEA-PRR	1	0	0	0	0
AERL-ODC	1	0	0	0	0
CBI-APIS	2	0	0	0	0
EMPC-GRLS	1	0	0	0	0
EPM-ASMT	1	0	0	0	0

Figure 5 - Manager's report

The report includes four sections:

- **VM Lifetime Report** - provides the information on the lifetime of the VMs existing in your projects. Each column contains the number of VMs of a specified age.
- **Account Optimization Ratio Report** - report provides the information on the time your projects' VMs spend in running state. Each column contains the number of VMs that have running state for the specified time (in % of the overall lifetime during last month).

- **Service usage report** - provides the information on the number of VMs engaged in EPC Services and covered by them. Here, you can find the overall number of VMs in projects and the amounts of service-related VMs in percentage of the overall number.
- **Monthly billing report** - provides the total chargeback for the projects in your account.

8 Knowledge Sharing

8.1 DevOps Education Program on Confluence

We are glad to announce that the DevOps education program information has been collected and systematized in one place - EPAM Knowledge Base - and can be reached by the following link: https://kb.epam.com/display/ESUPCC/DevOps+Education+Program.

Here, you can find the list of available trainings, and the related materials you can use for self-education purpose.

The section will be updated as soon as new trainings and materials appear.

8.2 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:

- "SQL Reporting Services in Clouds, Part 1" by Pavlo Revenkov
- "SQL Reporting Services in Clouds, Part 2" by Pavlo Revenkov

These articles will also appear in our Cloud Blog on EPAM Systems web-site an in our BlogPost blog.

8.3 Documentation Updates

Orchestration Web Management Console user Guide was created.

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

- Maestro CLI Reference Guide - added the new command details
- EPAM Private Cloud Billing Guide - Updated screenshots and EPAM-US1 region coefficient
- Cloud Analytics Guide - added the dynamic dashboard info
- Resource Utilization Quotas Guide - updated Personal projects details
- FAQ sections in EPAM Knowledge Base and on Orchestration web-site were updated

Version History

Version	Date	Summary
1.0	November 1, 2014	Initial version is published

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Switzerland   Kazakhstan

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