



EPAM Cloud Infrastructure

Orchestrator ver. 2.1.24

What's New

August 2014

[CI2WN-S20-23](#)

Version 1.0

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1. Overview

EPAM Orchestration Framework version 2.1.24 was released on August 9th, 2014.

This release introduces a wide range of significant changes of all types:

- Project and Account Management updates and improvements
- Training and Education updates (AWS Partnership Program continues, Advanced Chef webinars are held, animated Cloud presentations are introduced)
- AWS Cloud Watch integration
- Cloud Analytics for IT team improved
- Docker Service supports two new actions for containers (start and stop)
- Community activity goes on
- A set of knowledge base updates is introduced

Below, you can see the details on each of the listed improvements.


2. Mobile Management Console

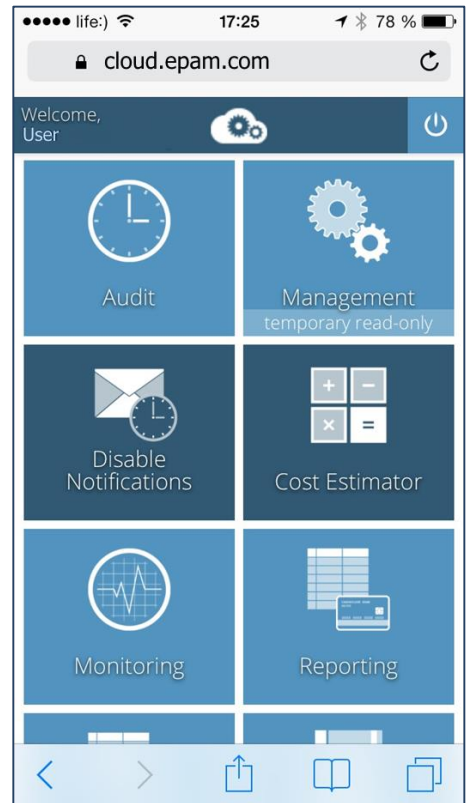
We live in the world of quick access and mobile applications that allow their users do their business without need to be bound to offices and workplaces.

We are glad to announce that starting from v.2.1.24, EPAM Private Cloud is available for you at 24/7 basis, and you can access Orchestrator with your mobile device from any public network in just two clicks! From now on, you can access your infrastructure at any moment, wherever you are.

Use <https://cloud.epam.com> to connect to EPAM Private Cloud Management Console from any place where internet connection is possible. The handy mobile interface provides you with an easy access to Orchestration UI, where you can quickly collect all the infrastructure information without need to connect to EPAM network.

You can make the access to the mobile console even faster by adding the link to the desktop of your mobile device. For example, on Apple iOS,

you can use the “Add” button () and select “Add to your home screen”. If you use Android, you can find this option in mobile browser menu.



This makes accessing EPAM Cloud Orchestration as easy as it has never been before!

3. Project and Account Management

Maestro CLI have always been targeted at Cloud Infrastructure creation and management. We focused on creating convenient tools for developers who are responsible for infrastructure composition, capability and performance.

In this release, we hurred our effort into implementation of a set of features aimed to help the people engaged in project management. These improvements simplify the infrastructure monitoring and costs optimization.

3.1. Project Reporting Details

We often received questions like “Who created the VM?”, “When was it changed?”, “Why was the VM created?” and “How much does it cost?” Now, Project Managers and Coordinators can get the answers to all these questions by using a couple of CLI commands.

- To see **the list of all the project instances with all the details**, such as the date of the instance creation, instance owner, the date of the last event that happened on the VM and the name of the person who performed the latest changes, use the **or2din** command with the **-a/--audit** flag:

```
or2din -p MY-PPRO -r REGION --audit
```

Below, you can see an example of the command response (the long line is split into several smaller lines to fit the page):

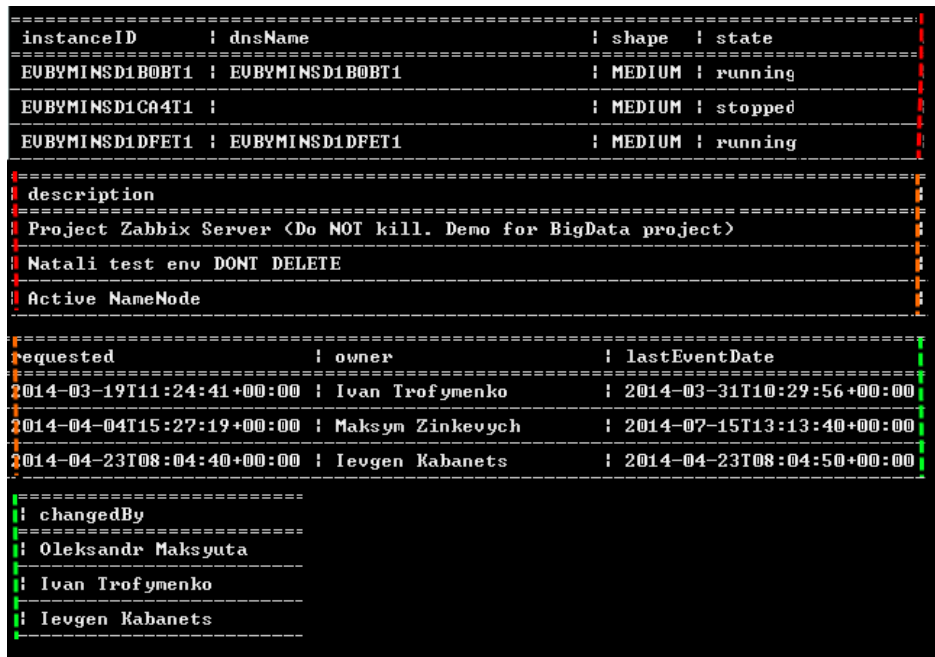


Figure 1 - or2din --audit command response

- To provide the possibility to see the **cost of a specified instance**, we added the **--instance** parameter to the **or2report** command. The instance-based reports can be of **hourly** or **resource** types and include not only the price of the instance, but also list the elements that comprise this price :

```
or2report -p MY-PRO --month 8 --year 2014 -i XXXXXXXXXX
--type resource
```

This command will create a .csv file containing a resource-based instance report for August, 2014.



Please note that you can get instance-based reports only starting from August 9, 2014. There instance reports for periods earlier than August 9, 2014 won't include volume and checkpoints costs.

3.2. Getting the Full Project Cost

For account managers, it is often important to get a unified report for a set of projects. In this release, we introduce a feature that allows you to do it quickly and easily. All you need to do is submit a request to our [Consulting Team](#) or to [Help Desk](#) and ask to activate an **EPC Account**.

An **EPC Account** is a **logical group** of PMC Projects that can be associated to a cost-center. When you submit a request for creating an account, you have to specify the following details:

- the account name
- the list of the projects to be included to the EPC Account
- the primary and secondary contacts

The people specified as the account contacts will get access to the EPC Account reporting information even if they are not assigned to the projects associated with this account.

When the EPC Account is activated, you can use the **or2report** command with the **-a/--account** flag:

```
or2report -m month -y year --account account_ID --type total
```

The requested report will be mailed to you as a .csv file and contain the list of your projects, the cost centers in which they are priced (each cost center is bound to a virtualization region), the reporting period and the cost:

A	B	C	D
PROJECT	C_CENTER	PERIOD	VALUE
EPM-AAA	SS/IT/IS/DC	2014-07	211.00621906
EPM-AAA	SS/IT/EUC/CIS/BY	2014-07	994.242380
EPM-BBB	SS/IT/EUC/CIS/RU	2014-07	584.921714
EPM-BBB	SS/IT/EUC/EU/HU	2014-07	2541.289888

Figure 2 - Account report

For more details and other possibilities granted by account usage, see the next section.

3.3. Month-End Closure

Now, there appeared a possibility to add costs for EPAM Private Cloud usage are to client bills, and we pay much attention to make things clear and accurate.

Our team developed a procedure that significantly improves chargeback processing. This is the month end closure procedure.

After a month ends, we verify and synchronize all the billing data form EPAM Orchestration and Amazon Web Services and make sure that all the bills made out for our clients are correct.

At the **5th of each month** we send e-mail reports to EPAM Revenue Group. These reports contain the costs for the previous month for all the projects activated in EPAM Private Cloud. It includes both EPAM Private Cloud and AWS costs.

Billing managers from Revenue Group send extract from the whole reports to the particular Account managers in part of their accounts and verify if Customer agree reimburse these costs. If these costs are billable – billing managers can issue invoice to the Customer (according to the Contract terms and conditions).

It is also possible not only to get a report by projects, but also to group several projects under one EPC Account and get the account-based reports. To activate an account, please, address to our [Consulting Team](#) or to [Help Desk](#) with a respective request and provide the list of the projects you need to combine under a single account. After the account is created, the people specified as the Account contacts will start getting an additional EPC Account report at the end of each month, were the costs for all the Account projects will be gathered.

Moreover, as it have already been mentioned in previous section, you will be able to get such a report yourself by calling the **or2report** command with the **--account** flag:

```
or2report -m month -y year --account account_ID --type total
```

3.4. EPAM Private Cloud Terms and Conditions

In order to clear up some matters and avoid disputable issues and diverse interpretation of the processes that take place during the cooperation between EPAM Private Cloud as a service and our users, we started working on the Terms and Conditions document listing the main responsibilities and limitations that have to do with EPAM Private Cloud usage.

The document is still under development, but the draft version is already available at https://cloud.epam.com/site/EPC_Policy.pdf.

4. Training, Education and Certification

EPAM Private Cloud team goes on working on sharing our knowledge and providing anyone who is interested with the ability to improve their skills and to get new expertise.

4.1. AWS Partnership Program



We are glad to say that AWS Partnership Program is going on, and currently there are **32 professionals** who have passed the certification. They have got the certificates that proof their expertise and allow to proceed with the other educational programs. These EPAMers were also granted with special AWS Certification badge on [EPAM Heroes](#) portal, as the company appreciates their effort and aspiration for professional growth and development. The list of those who have already passed the certification is given on [this page](#).

If you haven't joined the program, but would like to receive the trainings and other training resources, simply complete the AWS Partner Network registration (<http://www.apn-portal.com/SelfRegisterPartner>) by registering with EPAM domain. If any questions or issues related to APN Portal Registration occur, feel free to contact the APN Support team (apn-portal-support@amazon.com).

4.2. Advanced Chef Training

These days, [Maxym Zinkevych](#) is holding a set of webinars on advanced Chef usage. The following topics have already been covered and are planned for the nearest future:

Webinar Topic	Details	Date
Lecture 1: Chef Solutions, Enterprise, Open Source, Hosted Chef	<ul style="list-style-type: none"> The differences, pros and contras of each solution 	07.31.2014
Lecture 2: Chef DK	<ul style="list-style-type: none"> How can Chef DK be used for development purposes? How can ChefSpec, Foodcritic and TestKitchen be deployed and used? 	08/07/2014
Lecture 3: EPAM Private Cloud	<ul style="list-style-type: none"> How EPC is built? How we automate things inside clouds? What issues can happen inside cloud? 	08/14/2014
Lecture 4: SaaS in Clouds	<ul style="list-style-type: none"> How SaaS may be implemented in Cloud? How automation helps SaaS? Why do we need SaaS? 	08/21/2014
Lecture 5: Hadoop as a Service	<ul style="list-style-type: none"> How HaaS is implemented in EPC? What other Big Data solutions can be used? 	08/28/2014

The primary audience for the webinars are Junior Software Maintenance Engineers and Software Maintenance Engineers.

You can submit for the webinars by following [this link](#).

4.3. Cloud Toons - Basic Concepts in Plain English

EPAM Private Cloud is documented in details. We have a vast range of documents for all elements of our infrastructure, we keep on developing our knowledge base, and filling several resources with more and more info.

For a new user, especially for a one, who is not really aware of technical details (e.g., an account or a project manager, an analyst, etc.) it can be quite difficult to sort everything out.

To help you to familiarize yourself with EPAM Private Cloud and to start feeling confidently when it comes to Cloud usage, we invented **Cloud Toons** - a set of short (up to 3 minutes) animated presentations that explain EPAM Private Cloud in plain words and not leave a chance to gaps in your knowledge.

You can already find the two pilot episodes on our [web-site](#) and on [EPAM Kharkiv](#) YouTube channel.

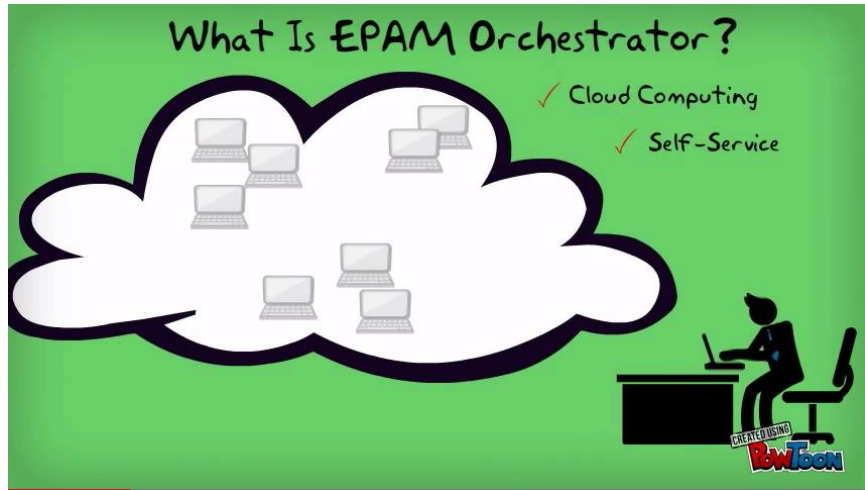


Figure 3 - Cloud Toons screenshot

We will go on creating the new Cloud Toons. If you have suggestions on the topics that would be useful to explain to make them clear and easily comprehensible, feel free to contact our [Consulting Team](#) and share your ideas.

5. AWS Cloud Watch Integration

EPAM projects more and more often use Amazon Web services via linked account mechanism (see more at http://aws.amazon.com/billing/faqs/#consolidated_1).

Still, there are situations when it would be convenient for users to monitor the AWS instances from EPAM Orchestration. In this release, we integrated [Amazon Cloud Watch](#) and EPAM Orchestrator, so that you can see all the metrics monitored by Amazon on the [Monitoring](#) page of Orchestration UI.

Below, you can see Amazon Cloud Watch general data for an instance:

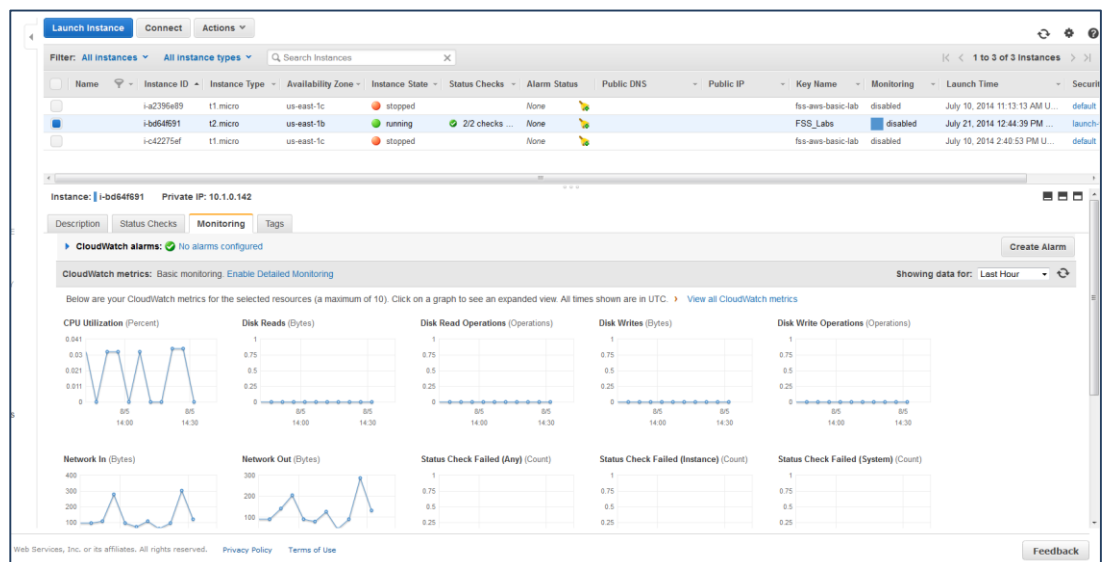


Figure 4 - Amazon Cloud Watch

Each metrics is given on a separate graph that can be viewed in details on a mouse click.

In EPAM Orchestration, the Cloud Watch data are gathered, interpreted and represented on the Monitoring page under the AWS regions the same way as Chef and Zabbix VM KPI:

EPAM Cloud Orchestrator 2.1.24 - What's New

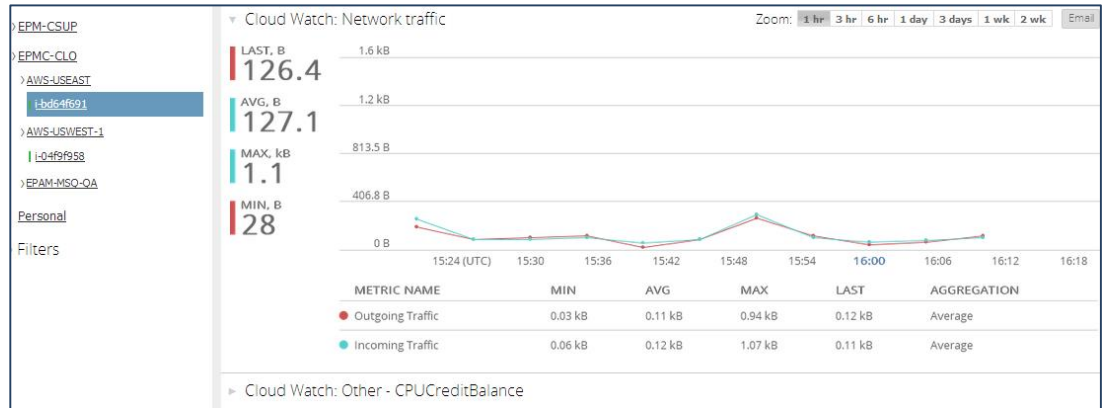


Figure 5 - Cloud Watch in EO UI

AWS monitoring data representation has a number of convenient features that are absent in Cloud Watch:

- The “Email” button at the top of the graph details makes the graph and the metrics details be mailed to your EPAM address.
- The metrics that deal with pair data (for example, network in/outcoming data) are grouped in one graph so that you can easily compare the dynamics of both.
- The metrics peak values are highlighted separately.

6. Cloud Analytics For IT

Cloud analytics information is important not only for those who create and manipulate VMs in Cloud, but also for the IT specialists engaged in Cloud support. We put our finest effort to make this process more responsive to the events and issues and to minimize the time and effort necessary for issues detection and resolving.

We introduced a set of new reports that allow to notice the problems in infrastructure within the shortest time. Our experts also updated the Disaster Recovery and created the High Availability plans.

Below, you can find the details on these features.

6.1. Issues Reporting for EPC IT Group

The following reports are introduced for better issues monitoring and disaster recovery:

- **Weekly Service Level Reports.** EPAM Cloud Service Level (SL) Reports display the uptime rate of the EPAM Cloud infrastructure by regions. This statistics is based on Cloud Healthcheck data. This report contains the information about EO instances and zones availability and is updated every Sunday at 23.00 UTC(0). The report is mailed to EPAM Private Cloud top management and support teams.

Zone	SLA	Based on data since
AWS-AP-NORTHEAST	99.53	Jun 21, 2014 5:10:16 PM
AWS-AP-SOUTHEAST	99.53	Jun 21, 2014 5:10:16 PM
EPAM-BUD	99.78	Jun 21, 2014 5:10:38 PM
EPAM-KZ1	98.81	Jun 21, 2014 5:10:30 PM
EPAM-MSQ	99.53	Jun 21, 2014 5:10:16 PM

Figure 6 - SLA Report extract

- Daily Instance Run Reports.** This daily report sent to EPC Cloud Operations managers and provides the information on the instances start time and the number of errors in instance running in all the regions. This allows to see whether there are any problems with instances creation in different regions:

Region: EPAM-CSA-ESX							
Image	Started in less than 30m	Started in 30m-1h	Started in 1h-2h	Started in 2h-5h	Started in 5h+	Error state	Other state
CentOS6_32-bit	1	--	--	--	--	--	--
Ubuntu10.04_32-bit	--	--	--	--	--	2	--
Win7-64	--	--	--	--	--	1	--

Region: EPAM-MSQ-QA							
Image	Started in less than 30m	Started in 30m-1h	Started in 1h-2h	Started in 2h-5h	Started in 5h+	Error state	Other state
CentOS5-template	21	--	--	--	--	--	--
CentOS6-template	1	--	--	--	--	--	--
Win7-32	--	--	1	--	--	1	--

Figure 7 - Daily Instance Run Report extract

- Chef Monitoring Problems Report.** EPAM Private Cloud uses Chef as an auto configuration tool for automated setup of the VMs created in Cloud. We introduced a mechanism that monitors the performance of EPC Chef Server and reports the issues to EPAM Cloud Support Level 3 and Cloud Consulting teams. The check by regions and status update is performed on a daily basis and covers only relatively new instances (RNI), that were created during the latest 30 days and are in the RUNNING state.

Problem Info For Zone: EPAM-MSQ	
Zone Name:	EPAM-MSQ
Chef Host:	chefserver.minsk.epam.com
Problem Description:	21 (20.2%, threshold is 5%) newly created running instances (RNI) are not sending attributes to Chef server
Running instances:	1398
RNI:	104 (RNI "Relatively new instances" is the number of running instances created last 30 days)
Active Chef clients:	57 of 104 RNI (54.8%)
Inactive Chef clients:	15 of 104 RNI (14.4%, used in threshold)
Never registered on Chef:	6 of 104 RNI (5.8%, used in threshold)
Registered on custom Chef:	0 of 104 RNI (0%)
Have unknown Chef server:	26 of 104 RNI (25%)

Figure 8 - Chef Problems report extract

6.2. EPAM Private Cloud High Availability Improvements

EPAM Private Cloud became a mission critical system for EPAM. Our command dedicated much effort to improving the Orchestration reliability of high level that would assure the uninterrupted connection even if one of the regions is disconnected.

We implemented a set of High Availability solutions on different levels:

- High Availability for Orchestration CLI**

EPAM Cloud Orchestrator 2.1.24 - What's New

The 'cli.properties' file used to have only one option specifying the Orchestration URL. This is the **default.orch.url** option the value of which is used to connect to Orchestration if the ORCH_URL environment variable is not set.

To provide High Availability of Orchestration CLI, we implemented the ability to switch from the default URL to a backup URL in case any issues arise. The list of Orchestration backup URLs is given in a new property - **backup.orch.url.list**:

```
...
#Default ORCH_URL if env variable is not set
default.orch.url=https://orchestration.epam.com/maestro2/
#Comma-separated backup ORCH URL list (optional)
backup.orch.url.list=https://bud.orchestration.epam.com/maestro2/,
https://us1.orchestration.epam.com/maestro2/,
https://ua1.orchestration.epam.com/maestro2/
...
```

If the main URL is inaccessible, CLI addresses the URLs specified in the backup list.

- **Web UI and ACS High Availability** (on <https://cloud.epam.com>)

The Orchestrator Application UI is accessible via URL <https://cloud.epam.com> from the Internet and from the EPAM corporate network. The requests to the URLs are processed with a Load Balancer located in the DMZ zone in Minsk. For High Availability purposes we have a clone of this Load Balancer located within the DMZ zone in the Budapest data center. In case some issues arise in Minsk, the http requests to cloud.epam.com will be forwarded to Budapest.

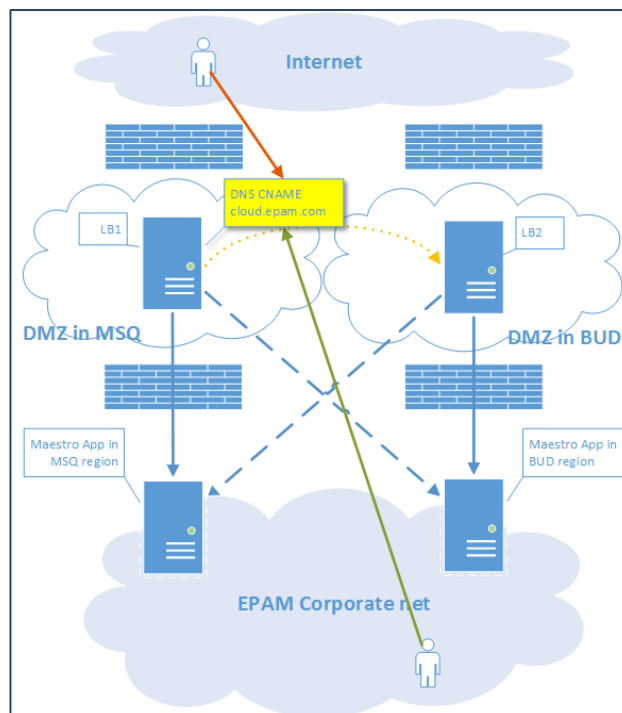


Figure 9 - Web UI HA Scheme

Auto configuration High availability is based on the same principle with two Load balancers, the main and the 'safety' one, used when issues occur.

7. Docker Improvements

In previous version, we released Docker as a Service. It allows to create a hypervisor hosting a set of containers that share the hypervisor's resources but are independent in manipulation. This allows to distribute the resources of one VM (hypervisor) effectively, minimize the infrastructure costs and facilitate its monitoring.

Docker as a product is an open-source engine for automating applications deployment inside software containers. To find out more details on Docker as a product, please visit the [Official Docker Web-Site](#).



In EPAM Orchestration v.2.1.24, we added an important Docker feature: now, the containers can be not only run and terminated, but also **stopped** and re-launched (**started**). This allows to free the hypervisor resources occupied by a container and make them available for other containers, thus improving their performance.

To stop or start a container, use the **or2dc** command with the **--action stop/--action start** and **--container** flags:

```
or2dc -p sample -r sample -a stop -h EVBYMINS220000 -c
```

8. Unified Resource Referencing

In EPAM Private Cloud Orchestration v.2.1.24 we unified the mechanism of VMs description. Now, you can describe resources in all the region using their hostname as a reference.

In addition, in EPAM-UA1 region, it is possible to describe VMs by the Subscription ID.

9. Community Input

As was announced in our [previous release](#), Yauhen Artsiukou introduced a set of interesting Ruby-based features for working with Orchestration. These are two Ruby gems that allow working with Orchestration via Ruby - **knife-or2** and **fog-or2**. The gems were improved and stabilized, but the work is still in progress.

The gems are available by the following links:

- **fog-or2**: https://git.epam.com/yauhen_artsiukhou/fog-or2
- **knife-or2**: https://git.epam.com/yauhen_artsiukhou/knife-or2

Feel free to look at them and provide your comments.

We highly appreciate your input. If you have good ideas and ready to join the development process, do not hesitate to [contact](#) Yauhen for details.

10. Knowledge Base Improvements

In this release, we introduce several documentation and knowledge base updates. As EPAM Private Cloud is a self-service, the quality of the provided documentation is extremely important for the users to be able to learn how to use it and to find all the answers to the questions that arise during the Orchestration usage.

We pay lots of attention to creating new documents, supporting the existing ones and updating the knowledge base. However, some errors may occur, varying from unfortunate misprints to missing or unclear details. That's why 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 [Svitlana Ostnek](#).

10.1. Documentation Updates

The following documents were created:

- [EPAM Private Cloud Terms and Conditions](#) - the draft version of a document describing the main concepts, responsibilities, rules and limitations in scope of EPAM Private Cloud usage.
- [EPAM Private Cloud Services Quick Reference Guide](#) - the document listing all the services provided by EPAM Private Cloud, their typical work flows, activation and pricing details.

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

- [Maestro CLI Reference Guide](#) - added the new command details.
- [Maestro Stacks Guide](#) - added the information on API commands adaptation for stack templates.
- [Cloud Analytics Guide](#) - AWS Cloud Watch integration added.

We also updated the Orchestrator the Case Studies on Orchestration web page, and they can be easily found at the bottom of the site [Main page](#):



Figure 10 - Case Studies

The other improvement was clarifying the documentation description on the [Documentation](#) page so that now it is more convenient for the users to see what each document is about without having to open it or visit its parent page.

10.2. Knowledge Sharing

EPAM Private Cloud team 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:

- [“Berkshelf and Cookbook Dependencies”](#) by levgen Kabanets

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- [“Auto Configuration Using Puppet and AWS Cloud Formation”](#) by Oleksandr Molchanov
- [“Windows Azure Recovery Services”](#) by Pavlo Revenkov

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

Version History

Version	Date	Summary
1.0	August 9, 2014	Initial version is published



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