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PREFACE

ABOUT THIS GUIDE

This paper describes Cloud Management Console – a graphical user interface for EPAM Cloud Orchestrator, available on both desktop and mobile devices for providing instant access to users’ virtual infrastructures. Here, you can also find the basic guidelines on the available tools usage, most typical use cases and links to related resources.

The Cloud Management Console is being under active update now, thus it is possible that not all features are included to the guide. We will update the document within the nearest future.

AUDIENCE

This guide is designed for Cloud users who plan to or already work with the Cloud Management Console to manage their cloud-hosted infrastructure.

THE STRUCTURE OF THE GUIDE

The guide consists of the following sections:

1. **Overview.** The section provides general overview of the Cloud Management Console and the general principles behind its creation, introduces Desktop and Mobile interfaces.
2. **Cloud Web Site.** The section gives the short overview of EPAM cloud web site - a knowledge base containing all the necessary user information on the service.
3. **Cloud Dashboard.** Here, you can find the description of the Cloud dashboard and its widgets.
4. **Cloud Console Modes.** The section covers the existing Console modes (pages), their layout and functional specifics.
5. **Use Cases.** Here, you can find guidelines on solving the most frequent tasks by using the Cloud Management Console.
6. **Troubleshooting.** The section provides the guidelines on Cloud troubleshooting by means of the Console.
EPAM Orchestration is described in details in a number of documents, oriented on different aspects of Orchestration usage, and on different types of users.

You can find these documents on our Documentation page.

The answers to the most frequently asked questions can be found on the FAQ page.

EPAM Cloud terms and conditions are described in the EPAM Cloud Terms and Conditions. Please take a look at this document in order to avoid misunderstandings and conflicts that may arise during the service usage.

The terminology of EPAM Cloud and the related products can be found on the Glossary page.

Please email your comments and feedback to EPAM Cloud Consulting at SpecialEPM-CSUPConsulting@epam.com to help us provide you with documentation that is as clear, correct and readable as possible.
1 OVERVIEW

Cloud Management Console is a Web-UI solution that provides access to Orchestration for any user who has internet connection, no matter whether they are in- or outside the corporate network.

One of the main aims of creating the Cloud Management Console was to provide a convenient tool that would allow controlling and monitoring Cloud-based infrastructures, being simple and comprehensive for users of different levels of expertise.

While Maestro CLI is convenient for automatization tasks, Cloud Management Console is a perfect tool for performing rare and situation-specific tasks. Usability of UI is higher, and the necessary level of user’s expertise is lower.

The Console is accessible at https://cloud.epam.com and has user-friendly and effective desktop and mobile interfaces that allow to gather infrastructure information, perform a set of resources manipulations and manage cloud-related personal and project settings with a few clicks.

1.1 GENERAL PRINCIPLES

As EPAM Cloud is a self-service, Cloud Management Console was designed to be simple, clear, intuitive, consistent and elegant. The following principles underlay the Cloud Management Console development:

- **Unified approach to organizing layout on devices of different types.** The application works successfully on both mobile and desktop devices. As mobile devices have lower resolution and can display less info, the information that fits one Desktop page is split into several pages on Mobiles. However, the interface is recognizable and the controls are similar, so the user has no problems in switching from one device type to another one.
- **Simple controls.** The Cloud Management Console has a simple and intuitive interface that allows users to get all the necessary information or perform a wanted action in no more than several clicks only.
- **Error prevention.** The user cannot run any action that can cause an error. For example, if the user tries to input an incorrect value, they get a warning describing the problem and giving the tips on the values that can be accepted.
- **Flexibility and dynamic UI.** Cloud Management Console gives users the access to the controls and resources according to their permissions and specific resource’s parameters. We minimized the number of greyed and unavailable controls the user can run across.
- **Information capability.** All the information given on Cloud Management Console is grouped in logical blocks, so that it is easy to find the necessary details and related data. The user can perform operations only on the stages when they are provided with all the information necessary to weight the situation correctly.
- **Informational support.** Cloud Management Console has a multilevel help and support system that provides user with the detailed and context information, and provides a set of tools that simplify submitting support requests.
1.2 DESKTOP AND MOBILE INTERFACES

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

Having both desktop and mobile interfaces, the Cloud Management Console makes your Cloud available for you at 24/7 basis, and you can access Orchestrator with your mobile device from any public network.

Both interfaces have recognizable layout, so switching from one to the other is easy and does not require much time and effort.

![Desktop and Mobile interfaces](image)

**Figure 1 - Desktop and Mobile interfaces**

Please note that the Mobile console has a number of functional differences from the Desktop one. Please see Annex for details.

1.3 CLOUD WEB-SITE AND DASHBOARD ACCESS

When going to [https://cloud.epam.com](https://cloud.epam.com), you get to EPAM Cloud website which is a collection of documents and information sources that allow you to learn about Cloud usage, tools, facilities, related sources, events, etc.

The site is available for any user, and does not need any login actions.

The site has the Sign In button which allows you to get to the Dashboard, where all Cloud management and monitoring tools are available.

The Dashboard is available only for authorized corporate employees.
2 CLOUD WEB SITE

Cloud Web Site is an on-line knowledge base containing all the information on EPAM Cloud that would allow you to explore the Service tools, facilities, and specifics, to master Cloud infrastructure management and monitoring approaches and to find the resources to enhance your Cloud expertise.

The picture below shows the main page of the site in desktop and mobile layouts and marks its main tools:

1. **Main Menu.** The Main Menu lists all the sections of the Site. A click on a section reveals its content. Each section is accompanied by the related documentation, so you can get necessary details without searching.

2. **Learn Portal.** The Learn Portal collects all the documentation and links necessary for successful self-education on EPAM Cloud usage.

3. **EPC in Brief.** This banner gives the basic information about EPAM Cloud. There are five pages that are changed automatically.

4. **Quick Access.** In this part of the page, you can find quick access to the most frequently referenced pages.

5. **What’s New.** This section gives links to the latest news, events and Orchestration update information.

6. **Sign In.** Click this button to sign in to the Cloud Dashboard and get access to Cloud resources manipulation tools.

You can also login to the Cloud Dashboard using EPAM Login Portal (Cloud Orchestrator option).
3  CLOUD DASHBOARD

3.1 LAYOUT OVERVIEW

Cloud Dashboard has the following elements:

1. **Dashboard Menu.** Provides access to different Console modes.
2. **Learn More** button. Leads to the Cloud website.
3. **Widgets.** Provide access to wizards and controls for the core and most frequent Cloud operations.
4. **VM statistics.** Provides the information on the overall number of VMs in different states in the projects to which you are assigned.
5. **Announcements board.** Provides information about the latest updates and events.

The Mobile version does not include the menu, VM states and Announcements board. The Mobile Dashboard is represented as a set of tools tiles that includes the standard dashboard tools and the tiles for getting to different Console modes.

3.2 DASHBOARD WIDGETS

The Dashboard provides quick access to core EPAM Cloud management functionality via a set of specific widgets. There are five types of dashboard tools:

- **Wizard/Dialog Form** - a sequence of dialog boxes leading you to settings changes or an infrastructure management action.
- **Action Link** - a tool initiating a specific action directly, without need for additional input from you.

There are the following types of action links:

- Link to a specific tab;
- A link, initiating a simple action;
- Cloud Metrics - custom widgets that allow to put a specific Cloud analytics data to the dashboard.

Please note that some of these tools are available only for users with specific **Cloud Role** and permissions sets.

Below in this section, you will find the information on these elements.
3.2.1 Using Wizards

A wizard is a Dashboard tool that allows to perform certain infrastructure or project manipulations via a sequence of dialog boxes that lead you through a number of steps, each designed to define a specific scope of settings.

There are the following wizards available on the Cloud Dashboard:

- **Run.** The wizard allows to run new resources in Cloud. You can use it to run new VMs with the default Maestro Stack template, as well as to run custom stacks (both Maestro and CloudFormation) in any region available for your project. The wizard is available only for the users who can run new instances.
- **Console.** The wizard allows you to login to your project’s management consoles on AWS, Azure, and Google clouds.
- **Stack Builder.** The wizard allows to specify custom infrastructure manipulation scenarios saved as Maestro Stack templates.
- **Cost Estimator.** The tool allows to get approximate costs of your Cloud infrastructure. The estimations are based on the main VM parameters, such as OS and shapes, the storage that you plan to utilize, the number of checkpoints, etc.
- **Terraform.** The wizard allows to manage and run Terraform templates.
- **Schedules.** The wizard allows to create custom schedules that will make Orchestrator change VMs state automatically according to the specified rules.
- **Security Guard.** The wizard allows to review current project security settings and enable additional security tools for AWS-based infrastructures. The wizard is available for Project Manager, Project Coordinators and Account Managers only.

Please note that the set of wizards available for each user depends on their permissions. Some wizards are available only for users with a specific project role or admin permissions set.
- **Manage Cloud.** The wizard allows to customize user permissions, project quotas and regions, and subscription settings. Available for Project Managers, Project Coordinators, and Account Managers only.
- **Manage Images.** The wizard allows to review and manage custom images for your projects.
- **Manage Keys.** The wizard allows to review and manage SSH keys for you on your projects.
- **Requests for Support.** The wizard directs you to the section on support.epam.com where you can leave a support request. Using support.epam.com is the recommended way to apply for support, as these requests have higher priority over those sent by e-mail. You can also register AWS-related issues directly to the AWS support team.
- **Manage Services.** The wizard allows to work with the main Cloud Platform services.
- **Activate Project.** The wizard allows to activate personal or UPSA projects in the necessary regions. UPSA projects activation is available for Project Managers, Project Coordinators, and Account Managers only.
- **Subscriptions.** The widget runs the Subscriptions dialog that allows you to customize the set of notifications you will get from Orchestrator. You can enable/disable only the notifications that are allowed for customization.
- **Manage Metrics.** The wizard allows to add Cloud Monitoring metrics to the Dashboard and then manage them.

Although each wizard is designed to help you perform a specific set of manipulations, the general flow of wizard usage is the same:

Select Scope and Action → Specify Details → Review → Confirm → See Results

In some cases, the wizard can include only one page, or you may have to pass through one step for several times, for example, when there is a need to specify different types of settings when running a Maestro Stack template with the Run wizard.

The wizards will not allow you to get to the next step if at least one necessary parameter is not specified or any parameter is given incorrectly on the previous one.

If you need more information on what should be specified on the current step, you can always refer to the wizard help by clicking the “Help” button at the top right corner of each step.

Below, you can see a screenshot of a typical wizard step:
1. **Wizard name.**
2. **Step number and description.**
3. **Help button**, calling the description of the elements on the current step.
4. **Input/Review section.** Here, you input the necessary parameters values or see the summary of the action that will be (or already was) performed.
5. Incorrect parameter value **message**
6. **Wizard navigation.**
3.2.2 Using Action Links

An action link is a tile on the dashboard, initiating an action that does not require additional user input, or directs you to a specific Console tab or a web page.

There are seven default Action links available on the Cloud Dashboard (Desktop version):

- **Disable Notifications.** The link disables all the Orchestration notifications that are allowed for user customization.
  
The notifications that are not allowed for customization, will still be sent.
  
  Disable Notifications button effect overrides the settings specified in the Subscriptions wizard

- **Deactivate Personal Project.** The link deactivates a personal project for you (the activation is performed with the Activate Project wizard)

- **Download CLI.** Initiates the download of the latest version of Maestro CLI tool.

- **Status.** Directs you to the Status Dashboard that shows EPAM Cloud regions availability statistics.

- **Diagnostics.** The link leads to the Diagnostics support tool. Available for Cloud Support team only.

- **Errors.** The link leads to Cloud logs support tool. Available for Cloud Support team only.

- **Knowledge base.** The link refers to EPAM Cloud space in EPAM knowledge base.

---

Mobile Dashboard also includes links to different [Console Modes](#).
3.2.3 Cloud Metrics

EPAM Cloud provides a powerful functionality that allows to gather and monitor analytics information on any level:

- Overall EPAM Cloud statistics (all regions or a single region)
- General statistics for all projects you are assigned to
- Statistics by a single project you are assigned to
- Statistics by a single VM

The Manage Metrics wizard allows you to add necessary metrics to the dashboard so that you have the most frequently referenced information at hand. All you have to do is run the wizard and go through the metrics specification steps.

After that, the metrics appears as another widget on the Dashboard.

Apart from displaying some indicator’s value, metrics widgets also include a number of controls that make the tool usage comprehensible and easy:

1. **Metrics value and scope.** The value can be represented as a number or as a pie chart.
2. **Value update information.** Hover the mouse over the icon to see which period is covered and how often the value is updated.
3. **Deep Dive.** Opens a popup with the Deep Dive graph with the details of the metrics value changes throughout the time.
4. **Metrics name.** Click it to see the metrics description.
5. **Manage Metrics button.** Opens the Manage Metrics wizard on the Metrics management step. Here, you can:
   - Remove an existing metrics by clicking the red cross icon next to it
   - Change a metrics’ position on the dashboard by clicking it in the list and then clicking the position where it should be moved to. The metrics taking the target position will move one step down.
4 CLOUD CONSOLE MODES

EPAM Cloud Console includes a number of modes that allow to get into deep details of your Cloud infrastructure monitoring, audit and management.

On Desktop console, the modes are reached through the menu placed on the top of the Dashboard. Using the Mobile console, you can reach the modes via respective action links:

Each mode provides a specific type of information and includes its own tools, some duplicating the Dashboard widgets:

- **Audit Mode.** The mode provides information on the events that take place in your Cloud infrastructure.
- **Management Mode.** Here, you can find the list of all the resources available for your projects, find the details on these resources and change their states up to termination.
- **Monitoring Mode.** The mode allows to see resources statistics and performance details.
- **Reporting Mode.** The mode provides your projects’ billing information.
- **Radar Mode.** Here, you can find general EPAM Cloud statistics by all region and by each region separately.
- **Help.** The page displays the most essential sections of EPAM Cloud knowledge base.

Below in this section, you can find the information on the basic layout principles of all modes, and the details on each mode effective usage.
4.1 AUDIT MODE

The Audit Mode is designed to provide you with the full information on the events taking place in your Cloud infrastructure, including not only the actions themselves, but also the related details - the event initiator, affected resources, and action results.

The screenshot below shows the main elements of the Audit Mode page.

Where:

1. **Project Tree.** Use the tree to select the scope of events you want to view:
   - Select a project name to see events within the whole project
   - Select a region name within the project branch to see the project events within this region
   - Select a specific VM within a region branch to see events related to this VM. The color indicator next to the VM identifier shows its current state:
     - **green:** running or starting instance
     - **yellow:** stopped instance
     - **grey:** missing instance
     - **dark yellow:** stopping instance
     - **red:** error

2. **Email Notifications.** Allows to enable/disable and customize events notifications. These options functionally duplicate the Subscriptions and Notifications Dashboard widgets.

3. **Projects Filter.** The filter allows to select the project to which all the returned events should be related and specify the type of events to be displayed:
   - **Default** – resource-related events;
   - **ACS** – auto configuration events;
   - **Hardware** – events on hardware dedicated instances;
   - **Maestro Stack** – events related to maestro Stacks usage;
   - **Project** – events related to AWS/Azure/Google Cloud actions and static IPs manipulations;
   - **Jenkins/Docker/AEM** – events related to the respective service usage.
   - **AWS** – events related to AWS Services actions
4. **Events List.** The list of the events returned after the filter is applied. Each item provides event name, short description, time, related resource. The events related to errors are marked red for quick identification.

5. **Info.** Provides the details on the selected event.

6. **Show Related button.** Click the button to see the events related to the resource affected by the selected event.

7. **Email button.** Click the button to get the event info to your email.

8. **Resource details.** Provides the detailed information on the resource affected by the selected event or, for Project events, on the corresponding project or zone.

### 4.2 MANAGEMENT MODE

The Management Mode is designed to provide you with the information on the resources composing your project’s infrastructure, and to allow you control them.

#### 4.2.1 Mode Elements and Controls

The screenshot below shows the main elements of the Management Mode page:

![Management Mode Screenshot](image)

**Figure 11 - Management Mode**

1. **Toolbar.** Lists the Management related tools (the set of tools may vary according to your permissions):
   - **Organize** – switches the display mode of the resources list:
     - **As table** – the default table view
     - **As list** – the elements are represented as a list, with the resource name and comments for each item
     - **Show all** – cancels all filters and lists all resources in all projects to which you are assigned
EPAM Cloud Orchestrator – Cloud Management Console

- **Customize Columns** – allows selecting the Management screen columns to be shown or hidden and rearranging the columns on the screen.
- **Schedules** – allows to set up automatic resources manipulation. Calls the Schedules wizard (also available from the Dashboard).
- **Stack** – calls the Run or Stack Builder wizards to run an existing stack or create a new one.
- **Settings** – calls the Manage Cloud wizard to manage project quotas, permissions or subscriptions settings.

2. **Project Tree.** Use it to select the scope of resources you want to view:
   - Select a project name to see all the resources assigned to your project.
   - Select a region name within the project branch to see the project resources within this region.

3. **VM State Filters.** Use these filters to find the VMs of a specific state.
4. **Find By Filter.** Allows to filter the retrieved resources by a specific property.
5. **Resource List.** Gives the list of the VMs found by specified scope and filters. The list includes VMs IDs and properties. There is a filter for each property that does not need a unique value for each VM. Thus, you can apply several properties filters to make your search more precise.
6. **Instance Info.** Includes the main information on the selected resource and the buttons that can be used to manipulate its state. The set of the buttons depends on your permissions and the current state of the selected VM.

7. **Instance details.** Lists the detailed information on the selected instance. The information is grouped by content into expandable sections:
   - **Security.** Provides the information on the security status of the VM, and latest security checks, performed by Nessus scanner. Instance owner and users with respective permissions have access to the ‘Scan Now’ button that allows to initiate custom scanning.
   - **Owner.** Provides the information on the owner of the selected VM – their name, contacts, project role. VM owners and users with the respective permissions can use the ‘Change Owner’ button to reassign the VM to a new user.
   - **Billing.** Shows the amount billed for the VM usage for the current month.
   - **Tag.** Shows the number of tags assigned to the VM. When the section is expanded, the list of existing tags is displayed.
   - **Audit.** Lists latest five user events related to the selected instance and the details on them. Click the “Show Related” button to get to the Audit mode and see all the events related to the selected resource.
   - **Network.** Gives the main information on the server network.
   - **Properties.** Lists the properties assigned to the specified VM. The ‘Manage Properties’ button allows to update and delete existing properties and to create new ones.
   - **Chef.** Describes chef attributes.
   - **Details.** Only for AWS-type regions. Shows the VM launch details.
   - **Volume.** Provides the information on the volume attached to the VM (either system or additional). Several Volume sections are possible.
   - **ACS.** Contains information on instance auto configuration.
4.2.2 Customize Columns Wizard

The Customize Columns Wizard allows selecting the columns to be shown or hidden on the Management screen. It can also be used to rearrange the columns on the screen.

The Customize Columns Wizard is available as one of the Organize menu item options.

Clicking Customize Columns opens the Customize Columns window listing all columns available on the Management screen. The columns where values are defined by Orchestrator are marked as ‘SYSTEM’. The columns where values can be defined by the user are marked as ‘CUSTOM’.

The list of available columns includes all tags assigned to instances in the user’s projects. By showing or hiding certain tags, you can filter the list of instances by tag.
Check or uncheck the Show checkbox to have the corresponding column shown or hidden.

The ‘id’ column cannot be hidden, therefore, its checkbox is always disabled.

To rearrange the columns, click the line for the column you wish to move (the selected line will be marked with a green border on the left) and click the place in the table where it has to be moved. The lines will switch places.

To save your changes, click Apply and Close.

Columns customization is applied on the per-user basis, that is, each user customizes the Management screen for themselves.

### 4.2.3 Manage VM Wizard

Manage VM wizard is called by buttons in instance info sections.

![Manage VM wizard call buttons](image)

Each button calls a specific part of the wizard:
• **Scan Now.** Clicking ‘Scan Now’ allows configuring and starting Nessus security scanning of the selected VM.

![Security Check Step](image)

**Figure 15 - Security Check step**

- **Choose server** – Select the internal or external scanning server to define the type of your VM scanning. Depending on the configuration, this field can have both the ‘Internal’ and ‘External’ options or the ‘Default’ option if only the default scanning server is available.
  - **Internal** – the VM will be scanned by Nessus server, hosted on the same platform where the target VM is (for example, VM in an EPAM region will be scanned by a server, also hosted in an EPAM region).
  - **External** – the VM will be scanned by Nessus server, hosted on the platform, other than that where the target VM is (for example, VM in an EPAM region will be scanned by a server, hosted in AWS, and vice versa).
- **Nessus policy** – Select the Nessus policy with which the VM will be scanned. A Nessus policy is a set of rules against which the VM is scanned. You can find the description of the available policies on [this page](#).

• **Change Owner.** At this step, you can reassign the selected VM to a different user:

![Change Owner Step](image)

**Figure 16 - Change Owner step**

On this page:
- **Current owner** – the user to whom the VM is assigned at the moment.
- **Default owner** – the user to whom project VMs with undefined owner are assigned by default.
- **New owner (email)** – the user to whom the VM should be assigned.

Owner change procedure is performed immediately after you submit the request.
• **Manage Tags.** On this page, you can view and manage the tags assigned to your VM:

![Image of Manage Tags](image)

*Figure 17 - Manage Tags step*

You can change the prefixes, keys and values of the existing tags by typing the new values in the corresponding cells. The **Prefix** and **Key** are optional fields. If you specify no **Prefix** and **Key** values, the default values will be used - **user** for prefix and **tag** for key. Click the cross icon to remove an existing tag. Click ‘Add new row’ to add a new tag. To submit the changes, click ‘**Update Tags**’ button.

• **Show related.** The click in on the ‘**Show related**’ button displays the list of the latest audit events related to the selected VM:

![Image of Related Audit Events](image)

*Figure 18 - Related Audit Events step*

The table consists of the three columns:
- **Date** – the event date.
- **Event description** – the details on the action performed to the VM.
- **Event initiator** – the user who initiated the described event.
• **Manage Properties.** This page allows to view and manage the properties assigned to the selected VM.

![Manage Properties](image)

*Figure 19 - Manage Properties step*

You can change the existing properties keys (names) and values by moving the cursor to the respective field.

Click the cross icon to remove a property, and ‘Add new row’ to add a new one.

To submit the changes, click ‘Update Properties’

• **Manage VM Options.** This step is available by click on the ‘Back’ button on any of the steps listed above. Here, you can change the selected VM and VM management option:

![Manage VM Options](image)

*Figure 20 - Manage VM options*
4.3 MONITORING MODE

Cloud Monitoring is designed to provide you with the detailed information on your Cloud infrastructure performance and cost alterations on different levels – project, region, and VM.

There are some differences between project/region and VM-level monitoring.

4.3.1 Project and Region Monitoring

On Project and Region levels, you can find a set of Key Performance Indicators (KPIs), representing the respective analytical info. All the indicators are grouped by type. By default, the group header is displayed with the indicators values summary. The group can be unfolded for the details.

The screenshot below shows a typical project-level monitoring page:

![Figure 21 - Project-Level monitoring](image)

1. **Project Tree.** Use it to select the monitoring scope.

2. **KPI Group Details.** When the group is unfolded, you can see the details on each included indicator.

   A. **KPI name and description.** This includes the KPI name abbreviation used in the Summary view, KPI description and a colored mark indicating the KPI value changes:

      - **Grey:** the value didn’t change during the last seven days
      - **Red:** the current value is the maximum one for the last seven days
      - **Yellow:** the current value is the minimum one for the last seven days
      - **Green:** the current value is in a “normal” scope, i.e., it does not reach neither maximum, nor minimum point

      Clicking the KPI name will call a pop-up window with the detailed KPI description.

   B. **KPI value.** On Project level, the KPI Value represents the monthly total value for the selected KPI. On Region and Cloud levels, the **Value** gives the data for the current day.

   C. **Trend.** The graph, representing the KPI trend. In most cases (except for the VM level) the Trend graph does not give the exact numbers. It has an exponential Y-axis to provide clearer visualization in case there is a wide scattering of the values. The main purpose of
this graph is to show whether there is a stable growing trend, or a fluctuation around an average value, etc. If the KPI value did not change during the investigated time period, the trend will be shown as a smooth line.

Clicking the Trend graph, you can get to the Deep Dive mode which provides the details on the VMs engaged in the selected KPI value forming (Project Level), or the detailed information on the KPI value changes (Region level)

D. Comments. The analysis of the KPI trend. This includes the minimum and the maximum value during the reviewed period, the average value and the info on the value changes comparing to the previous day.

3. KPI Group Overview. The name of the KPI group and the summary of the included KPIs values marked according to their changes.

4.3.2 VM-Level Monitoring

On the VM level, you can see the information on the specific VM’s performance.

For VMs hosted in EPAM Cloud, the information is gathered by the default EPAM monitoring (for OpenStack regions) and Zabbix Server (if the Monitoring service is activated).

The screenshot below shows a typical VM-level Monitoring page layout:

Figure 22 - VM-Level Monitoring

1. Tree View. To see the VM-level statistics, expand the necessary project, and then - the region which hosts the VMs to be inspected. Each VM in the Project Tree list has a colored indicator that shows the state of the VM:
   - green: running or starting instance
   - yellow: stopped instance
   - grey: missing instance
   - dark yellow: stopping instance
   - red: error

2. Metrics details. By default, shows only the information source (EPAM telemetry monitoring, Zabbix, CloudWatch). When unfolded, provides the metrics value graph.
3. **Zoom.** The options are available to view the monitoring details for various time periods from several hours to several months.

4. **Email.** The button sends the details on the metrics to your email.

5. **Watch.** The button adds the metric to the Cloud Dashboard. After this, the metric is represented on the Dashboard and can be manipulated with the [Manage Metrics wizard](#).
4.4 REPORTING MODE

In the Reporting Mode, you can retrieve the information on your project's costs related to virtual and hardware servers' usage by your project.

The screenshot below shows the main elements of the Reporting Mode page layout:

![Reporting Mode Screenshot]

1. **Project Tree.** Use the tool to specify the scope of resources that should be covered in the report. You can select the project to get the report covering all the resources in all regions. Select a region within a project's branch to see the chargeback only for the resources hosted in this region.

2. **Report Settings.** The menu allows to specify a number of criteria according to which the report will be generated:
   - **Report type** specifies the type of the report should be generated:
     - Total – total amount billed (default option)
     - Subtotal – total amount billed split by categories
     - Resource – total amount billed split by categories and instances
     - Hourly – detailed report.
   - **Period** – the reporting period that should be covered in the report.
   - **Tag** – allows to retrieve the costs of resources that have a specified tag.

3. **Show Button.** Click it to submit the specified parameters and get the report. Will be greyed if you select Resource or Hourly report type.

4. **Email Button.** Click it to submit the specified report settings and get an email with the respective report.

5. **Report.** Here, you can see the requested Total or Subtotal report and the total chargeback sum according to this report.
4.5 RADAR MODE

The Radar Mode allows you to see general information on the overall virtual capacities existing in EPAM Cloud infrastructure.

The information here is represented in Key Performance Indicators (KPI), grouped according to their origin. By default, the group header is displayed, with the indicators values summary. The group can be unfolded for the details.

The screenshot below shows the typical elements of the Radar Mode page:

1. **Regions tree.** You can view statistics for the whole Cloud infrastructure (all regions), or in a specific region.
2. **Time filters.** Here, you can select a seven-days period for which the radar statistics is to be shown.
3. **KPI Group Overview.** The name of the KPI group and the summary of the included KPIs values, marked with the following colors:
   - Grey: the value didn’t change during the last seven days
   - Red: the current value is the maximum one for the last seven days
   - Yellow: the current value is the minimum one for the last seven days
   - Green: the current value is in a “normal” scope, i.e., it does not reach neither maximum, nor minimum point
4. **KPI Group Details.** When the group is unfolded, you can see the details on each included indicator.
   - **KPI name and description.** This includes the KPI name abbreviation used in the Summary view, KPI description and a colored mark indicating the KPI value changes. Clicking on the KPI name will call a pop-up window with the detailed KPI description.
   - **KPI value.** On Project level, the KPI Value represents the monthly total value for the selected KPI. On Region and Cloud levels, the Value gives the data for the current day.
   - **Trend.** The graph, representing the KPI trend. In most cases (except for the VM level) the Trend graph does not give the exact numbers. It has an exponential Y-axis to provide clearer visualization in case there is a wide scattering of the values. The main purpose of this graph is to show whether there is a stable growing trend, or a fluctuation around an
average value, etc. If the KPI value didn’t change during the investigated time period, the trend will be shown as a smooth line.

Clicking the Trend graph, you can get to the Deep Dive mode, which provides the details on the value changes.

**H. Comments.** The analysis of the KPI trend. This includes the minimum and the maximum value during the reviewed period, the average value and the info on the value changes comparing to the previous day.

### 4.6 HELP MODE

The Help Mode provides access to the main sections of EPAM Cloud knowledge base on the Cloud website, without redirecting you there.

The structure of the topics and the layout of pages is similar to those on the website, which makes the Help mode recognizable and easy to use.

![Help Mode](image)

1. **The Topics tree.** Lists the knowledge base topics.
2. **Breadcrumbs.** Shows the path to the current topic.
3. **Topic content.** The page providing the information on the selected topic.
4. **Links.** The **Permanent Link** opens a new tab with the permanent link to the selected topic. The **Topic on Site** link redirects you to the respective page on the Cloud website.

---

Please remember that besides the Help Mode, Cloud Management Console provides different context help options you can refer to at any moment.
5 USE CASES

This section describes the most typical scenarios related to Cloud Management Console usage.

5.1 ACTIVATING A PERSONAL PROJECT

A personal project is the ability for any EPAM employee to have their Cloud resources free of charge, for education or training purposes.

The typical flow of personal projects activation and usage is:

- Login to Cloud Dashboard
- Select Personal project
- Confirm activation
- Use Cloud tools to manipulate infrastructure

Personal project is activated almost instantly; as soon as it happens, you will get an e-mail and can start using Maestro CLI and Cloud Management Console to create and manipulate your personal resources.

5.2 ESTIMATING INFRASTRUCTURE COST

To estimate the approximate price of the infrastructure to be created, you can use our Cost Estimator tool. For you to make the estimations as precise as possible it is recommended to answer a number of infrastructure-related questions:

- Which Cloud to use? (EPAM, AWS, Azure)
- Which region?
- Instances details
  - Number
  - Capacity
  - Reservation time (month, days, hours) for each
  - Usage rate (24/7, specific hours) for each
- Any additional Storage?
  - Number
  - Size
  - Usage rate
  - Reservation time
- Any Images or Checkpoints?
  - Number
  - Size
  - Usage rate
  - Reservation time

Having decided on these questions, you can perform reliable cost estimations. However, please note that the real price will depend on the actual usage rate and storage volumes load.

The pricing for AWS and Azure machines run in Cloud differs from that of EPAM orchestrator machines. Our Cost Estimator allows to perform estimations only for EPAM regions. To estimate the price of the AWS-based infrastructure you plan to create, you can use the AWS Simple Monthly Calculator. To estimate prices in Azure, see the Azure Pricing page.
5.3 UNSUBSCRIBING FROM CLOUD NOTIFICATIONS

EPAM Orchestrator distinguishes several types of notifications, depending on the event that triggers them. The notifications strategy depends on your project role and the settings, which can be default or customized by the project manager or coordinator.

Sometimes, getting notifications from Orchestration is not desirable. In such cases, you can unsubscribe from getting them by updating your personal subscriptions settings, or the Project Manager can update notifications policy for the whole project.

Please note that there is a number of subscriptions you cannot unsubscribe from:

- Messages related to a VM’s state change, if you are the owner of this VM
- Monthly reports, sent to Project Managers, Project Coordinators, and Project Sponsors
- Messages sent to all Cloud users by the Support team

In case you do not want to get such messages, we would recommend you to setup respective Outlook filters.

For more details on personal notifications settings please see our Quick Start Guide, Section 6: User Subscriptions Management.

For more details on project notifications plan customization, see our Account Management Guide, Section 10: Subscriptions.
5.4 RUNNING A VM

To run the VM with the Management Console, use the Run wizard and follow the scheme below:

- **Step 1**
  - Select “My templates”
  - Select Project
  - Select Region

- **Step 2**
  - Select “Run Instance”

- **Step 3**
  - Input VM Parameters

- **Step 4**
  - Review VM parameters
  - Review cost estimation

To be able to run a VM, you need to have respective permissions. In case you do not have access to the Run button, please address your Project Manager.

5.5 SCHEDULING INFRASTRUCTURE CHANGES

It is often convenient to setup automatic infrastructure manipulations, so that Orchestrator starts or stops the specified instances according to pre-defined schedules, without need in additional user actions.

There are two types of scheduled actions:

- **One-time VM stop.** When you create a new VM, you can make Orchestrator stop it at the specified date and time, or after some shift (in hours). To do it, specify the Expiration parameter when you run the VM.

- **Repetitive actions.** You can use the Scheduling service to make Orchestrator stop/run your VMs regularly according to previously specified rules. Each rule can include only one action and is applied to all VMs assigned to this rule. Thus, if you want your VMs to be both stopped and started automatically, you will need to apply two rules to each of your VMs.

The roadmap below can help you to establish an effective scheduling of your infrastructure changes:
5.6 WHO CHANGED MY VMS?

One of the important points in effective Cloud usage and management, is the existence of tools that would allow to quickly detect infrastructure changes, find their status and people who initiated them.

Within the Cloud Management Console, the Management mode provides all the necessary tools to retrieve such information.

The typical flow is given on the diagram below:

You can see the list of project resources as soon as you select the respective project in the Project tree.

If you select a specific region, you can use the Organize tool to select the “With Audit” results display mode. This adds events-related columns to VMs details in the list:

- **LastModifiedBy** – the name of the user who was the last to perform an action on the VM
- **LastModifiedTime** – the time that has passed since the latest Orchestration even on the VM

By selecting a necessary VM, you can view its details and Audit - the information about five latest events. If this is not enough, click the **Show Related** button to view all the events related to the selected resource.

Please note that the Audit tools track only the events, related to Orchestrator actions – VMs state change, owner change, properties update. The actions performed by the user directly on the VM (login, settings changes, etc.) are not tracked here.
5.7 FINDING PROJECT COST

Cloud reporting tools allow to get the billing information on any resources allocated to your project. This includes both virtual resources hosted on any available platform (EPAM Cloud, AWS, Azure) and hardware resources (assigned to EPAM-HW1 region).

The billing reports are available on the Reporting page.

The diagram below shows the main steps you should make to get a proper project report:

When setting report details, you have to specify the following details:

- **Report type** specifies the type of the report that should be generated:
  - Total – total amount billed (default option)
  - Subtotal – total amount billed split by categories
  - Resource – total amount billed split by categories and instances
  - Hourly – detailed report.

Total and Subtotal reports can be displayed to the Report section of the page. Resource and hourly reports can be only sent to your email.

- **Period** – the reporting period that should be covered in the report.

- **Tag** – allows to retrieve the costs of resources that have a specified tag. The tags are set with the `or2-set-tag` Maestro CLI command:

  ```shell
  or2-set-tag -p <project> -r <region> -i <instance_id> -t <tag_name>
  ```

Reports are not displayed to the screen automatically. When you finish with the report settings, click the **Show** button to see the report on the Reporting page (available for Total and Subtotal reports only). The **Email** button will make Orchestration send the report of any type to your email.
### 5.8 FINDING PROJECTS INFRASTRUCTURE DETAILS

To use Cloud effectively, you need to know not only how resources can be created and managed, but also how to retrieve information on the existing VMs, their parameters and performance.

You can get this information using the Cloud Management Console:

The **Management** page is used to get the list of all the resources available for your project, their configuration and settings.

The **Monitoring** page is used to keep track of infrastructure performance, load, and general state. You can get the info related to different levels of your infrastructure, and, when it comes to VMs, receive the analytics data to your Email or add them to the **Dashboard**.
6 TROUBLESHOOTING

It may happen that you will get some errors or encounter other issues when working with EPAM Cloud Orchestrator. Below is given a recommended troubleshooting procedure which is intended to help you resolve your issues.

![Troubleshooting scheme]

In case you have problems with managing your infrastructure, can’t execute commands or reach your VM, please, go to Orchestrator Management page and ensure your VM is available and not deleted by anyone.

Infrastructure manipulation restrictions can also be related to lack of permissions. By default, the permissions are granted according to your project role, but this can be changed by the project manager via UPSA or Manage Cloud wizard. The tips on this are given on the User Permissions page and in the Managing Permissions section of this guide.

If your VM is present and available, all permissions are granted, but CLI commands still do not work for you, it is possible, that due to technical issues, the connection to your region is broken. Please, take a look at the Zones Status page which gives real-time information on each of the Orchestrator regions availability. If the region is currently unavailable, we recommend to wait for a while until the technical issues are fixed and the region performance is resumed.

In case of emergency, or when you have infrastructure configuration issues not related to the regions performance, please, contact the Cloud Consulting Team or L1.5 team.

If you encounter an unexpected Orchestrator behavior, please, look at the FAQ pages in EPAM Knowledge Base or at Cloud website. It is highly possible that the solution is already described there.

If you get an unexpected “Service under Maintenance” message when trying to login to Cloud web-site or “EPAM orchestration in progress” message when trying to execute a CLI command, please, check whether you have received a corresponding SIN notification on Orchestrator maintenance. If you have not
received one, please, address the Cloud Consulting Team for further instructions and help. If you have an issue that is not listed above, or you have performed the described steps, but your issue is not solved due to one reason or another, please, submit an incident request to support.epam.com (EPAM Cloud section in the Catalog).
# ANNEX. MOBILE VERSION LIMITATIONS

Here, you can find the list of the features, available in the Desktop console, and not supported for mobile devices.

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<td><strong>Dashboard</strong></td>
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<td>4</td>
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<td>+</td>
<td>-</td>
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<td>Ability to &quot;Find by&quot; options</td>
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<td>-</td>
</tr>
<tr>
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| 3.9     | January 2019      | - Added Console wizard  
- Remove Cloud-specific activation wizards/buttons |
| 3.8     | May 25, 2018      | - Added Activate Project wizard  
- Removed Activate Personal Project and Deactivate Personal Project action links  
- Updated personal project activation flow |
| 3.7     | February 9, 2018  | - Added missing wizards (Azure Portal, Google Console, Manage Keys, Manage Images)  
- Added missing action link (AWS Console)  
- Removed info about the default Chef server monitoring |
| 3.6     | January 28, 2017  | - Removed the mentions of the Suspend operation due to its deprecation |
| 3.5     | April 7, 2017     | - Column customization description updated |
| 3.4     | December 16, 2016 | - Classification changed from Confidential to Public, approved by Dzmitry Pliushch |
| 3.3     | October 29, 2016  | - Description of Customize Columns Wizard added |
| 3.2     | July 1, 2016      | - Manage VM description updated – Manage Tags and Manage Properties functions added |
| 3.1     | May 26, 2016      | - Added the Manage VM wizard description |
| 3.0     | December 20, 2015 | - Restructured and merged with the Analytics guide |
| 2.3     | August 7, 2014    | - Updated screenshots. Added new tiles and functionality according to Orchestration v.2.1.48 release |
| 2.2     | January 15, 2014  | - Updated the Dynamic Dashboard icons  
- Added Schedules and Stacks wizard descriptions |
| 2.1     | December 6, 2014  | - Added Chef Server Info viewing |
| 2.0     | November 1, 2014  | - Updated and restructured to fit the latest Cloud Management Console updates |