Alibaba Cloud Application Real-time Monitoring Service

Dashboard and alerting

Issue: 20200615
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## Document conventions

<table>
<thead>
<tr>
<th>Style</th>
<th>Description</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td>🔴</td>
<td>A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>Danger: Resetting will result in the loss of user configuration data.</td>
</tr>
<tr>
<td>⚠️</td>
<td>A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.</td>
<td>Warning: Restarting will cause business interruption. About 10 minutes are required to restart an instance.</td>
</tr>
<tr>
<td>🔴</td>
<td>A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.</td>
<td>Notice: If the weight is set to 0, the server no longer receives new requests.</td>
</tr>
<tr>
<td>📄</td>
<td>A note indicates supplemental instructions, best practices, tips, and other content.</td>
<td>Note: You can use Ctrl + A to select all files.</td>
</tr>
<tr>
<td>&gt;</td>
<td>Closing angle brackets are used to indicate a multi-level menu cascade.</td>
<td>Click Settings &gt; Network &gt; Set network type.</td>
</tr>
<tr>
<td>**</td>
<td>Bold formatting is used for buttons, menus, page names, and other UI elements.</td>
<td>Click OK.</td>
</tr>
<tr>
<td>Courier font</td>
<td>Courier font is used for commands.</td>
<td>Run the cd /d C:/window command to enter the Windows system folder.</td>
</tr>
<tr>
<td>*</td>
<td>Italic formatting is used for parameters and variables.</td>
<td>bae log list --instanceid Instance_ID</td>
</tr>
<tr>
<td>[ ] or [a</td>
<td>b]</td>
<td>This format is used for an optional value, where only one item can be selected.</td>
</tr>
<tr>
<td>Style</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>{} or {a</td>
<td>b}</td>
<td>This format is used for a required value, where only one item can be selected.</td>
</tr>
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1 Create an interactive dashboard

To create an interactive dashboard, follow these steps: create an interactive dashboard and configure the dashboard data.

1. Log on to ARMS console.

2. In the left-side navigation pane, click Interactive Dashboard, And then choose Interactive dashboard management Page, select Create an interactive dashboard > Custom dashboard.

3. In Create an interactive dashboard Dialog box, enter the name of the interactive dashboard and click OK. The new interactive dashboard is displayed in the interactive dashboard management page, but there is no data, then you need to configure data for the dashboard.

4. Add a dataset.

   a. On the interactive dashboard management page, click the right side of the dashboard name Operation Column Edit.

   b. Click Interaction Control And select Add Chart type.

   c. In the create interactive chart dialog box, enter a chart name and select Dataset, Select the chart type, enter other optional information as needed, and click OK.

For example, you can select the line chart type to view the line chart display of the dataset in the data display area.

![Interactive Dashboard Example](image.png)
5. Add a navigation tree.
   a. On the dashboard editing page, select `Interaction Control > Navigation tree control`.
   b. In the navigation tree dialog box, enter `Name` and select `Dataset type And Dataset`.
      ARMS automatically imports the multi-dimensional traversal value of the dataset to `Data Text box`.
   c. In the navigation tree dialog box, choose `OK`. The navigation tree is displayed in the left-side navigation pane.
6. Associate datasets with the navigation tree.
   a. In the data display area, find the target chart and click the gear icon.
   b. In the edit dialog box, `Dataset Area Dimension` select from the drop-down list `Navigation tree Dimension`, and click `OK`. The dimension of the dataset is associated with the dimension of the navigation tree.

7. View the data presentation of the dataset.

   Select different dimension values in the navigation tree to view the corresponding data display in the data display area.

8. In the space operation area, select `Today, This week, This month` or manually select the start time and end time to display the data within the specified time range.

9. After the dashboard is configured, click `Save` to save the current configuration. In addition, the system automatically saves every 10 seconds to prevent the data being edited from being lost.

Note:

- To prevent loss of the data being edited, ARMS automatically saves the data every 10 seconds.
<table>
<thead>
<tr>
<th>• You can adjust the chart size and position on the dashboard.</th>
</tr>
</thead>
</table>
| • Adjust the chart size  
In editing mode, you can drag the control handle in the lower right corner of a chart to adjust its size. |
| • Adjust the chart position  
In editing mode, drag the chart to adjust its position, and release the mouse to determine its final position. |
2 Create an alert

By creating alerts, you can set alert rules for specific monitored objects. When a rule is triggered, the system will send an alert message to the specified contact group in the specified alerting mode. This reminds you to take necessary actions to solve the problem.

Prerequisites

- A monitoring job is created. For more information, see #unique_5 and #unique_6.
- You have created contacts. You can only set a contact group as the notification receiver of an alert.

Context

Default behaviors of alert notifications:

- To prevent you from receiving a large number of alert notifications in a short period of time, the system only sends one message for repeated alerts within 24 hours.
- If no duplicate alerts are generated within five minutes, the system sends a recovery email to notify you that the alert has been cleared.
- After a recovery email is sent, the alert status is reset. If this alert arises again, it is deemed as a new one.

An alert widget is essentially a data display method for datasets. When you create an alert widget, a dataset is created to store the underlying data of the alert widget.

Note:

New alerts take effect within 10 minutes. The alert check may have a delay of 1 to 3 minutes.

Create an application monitoring alert

To create an alert for an application monitoring job on Java Virtual Machine-Garbage Collection (JVM-GC) times in corresponding-period comparison, perform the following steps:

1. In the left-side navigation pane, choose Alerts > Alert Policies.
2. On the Alert Policies page, choose Create Alert > Application Monitoring Alert in the upper-right corner.
3. Log on to the console. Click the target application in Applications. In the left-side navigation pane, choose Alerts > Alert Policies.

4. On the Alert Policies page, click Create Alert in the upper-right corner.

5. In the Create Alert dialog box, enter all required information and click Save.
   a) Enter Alert Name, for example, alert on JVM-GC times in corresponding-period comparison.
   b) Select an application for Application Site and an application group for Application Group.
   c) In the Type drop-down list, select the type of the monitoring metrics, for example, JVM_Monitoring.
   d) Set Dimension to Traverse.
   e) Set alert rules.
      A. Select Meet All of the Following Criteria.
      B. Edit the alert rule. For example, an alert is triggered when the value of N is 5 and the average value of JVM_FullGC increases by 100% compared with that in the previous hour.

   Note: To add another alert rule, click + on the right of Alert Rules.

   f) Set Notification Mode. For example, select Email.
   g) Set Notification Receiver. In the Contact Groups box, click the name of a contact group. If the contact group appears in the Selected Groups box, the setting is successful.

Create a browser monitoring alert

To create a page metric alert on the JS error rate and JS error count, perform the following steps:

1. In the left-side navigation pane, choose Alerts > Alert Policies.

2. On the Alert Policies page, choose Create Alert > Browser Monitoring Alert in the upper-right corner.
3. In the **Create Alert** dialog box, enter all required information and click **Save**.
   
a) Enter Alert Name, for example, page metric alert.

b) In the **Application Site** field, select the monitoring job you created.

c) In the **Type** field, select the type of the monitoring metric, for example, **Page_Metric**.

d) Set Dimension to **Traverse**.

e) Set alert rules.

   **A. Select Meet All of the Following Criteria.**

   **B.** Edit the alert rule. For example, an alert is triggered when the value of N is 10 and the average value of JS error rate is at least 20.

   **C.** To add another alert rule, click **+** on the right of Alert Rules. For example, an alert is triggered when the value of N is 10 and the JS error count is at least 20.

f) Set Notification Mode. For example, select SMS and Email.

g) Set Notification Receiver. In the **Contact Groups** box, click the name of a contact group. If the contact group appears in the **Selected Groups** box, the setting succeeds.

### Create a custom monitoring alert

To create a user access alert for a custom monitoring job, perform the following steps:

1. In the left-side navigation pane, choose **Alerts > Alert Policies**.

2. On the **Alert Policies** page, choose **Create Alert > Custom Monitoring Alert** in the upper-right corner.

3. In the **Create Alert** dialog box, enter all required information and click **Save**.

   a) Enter Alert Name, for example, user access notification.

   b) Set Type to **Create Alert Based On Existing Drilled-down Dataset**.

   c) Set Alert Variable Definition. Select a dataset for variable a and set Drill-down Dimension to **Traverse**.

### Note:

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To define another alert variable, click + on the right of Alert Variable Definition. In the dialog box that appears, define variable b.

d) Set alert rules.

A. Select Meet All of the Following Criteria.

B. Edit the alert rule. For example, an alert is triggered when the value of N is 3 and the average number of agents that you created is at least 0.

Note:
You can also include a simple composite metric in the alert rule. For example, an alert is triggered when the value of N is 3 and the average value of dataset A divided by dataset B is at least 5.

e) Set Notification Mode. For example, select Email.

f) Set Notification Receiver. In the Contact Groups box, click the name of a contact group. If the contact group appears in the Selected Groups box, the setting is successful.

Create a Prometheus monitoring alert

To create an alert for a Prometheus monitoring job, for example, an alert on network receiving pressure, perform the following steps:

1. You can select one of the two available methods to access the Create Alert page.

   • On the New DashBoard page of the ARMS Prometheus Grafana dashboard, click the icon to go to the ARMS Prometheus Create Alert dialog box.

   • In the left-side navigation pane of the console, choose Alerts > Alert Policies. On the Alert Policies page, choose Create Alert > Prometheus in the upper-right corner.
2. In the Create Alert dialog box, enter all required information and click Save.
   a) Enter Alert Name, for example, network receiving pressure alert.
   b) Select the corresponding Cluster of the Prometheus monitoring job.
   c) Set Type to grafana.
   d) Select the specific dashboard and chart to monitor.
   e) Set alert rules.

   A. Select Meet All of the Following Criteria.
   B. Edit the alert rule. For example, an alert is triggered when the value of N is 5 and
      the average value of network receiving bytes (MB) is at least 3.

   Note:
   A Grafana chart may contain data of curve A, curve B, and curve C. You can select
   one of them to monitor.

   C. In the PromQL field, edit or enter a new PromQL statement.

   Notice:
   The "$" symbol in the PromQL statement can lead to an error. You must delete
   the "=" symbol and the parameters on both sides of it in the statement containing
   the "$" symbol. For example, modify sum (rate (container_network_receive_bytes_total{instance=~"^$HostIp.*"}[1m])) to sum (rate (container_network_receive_bytes_total[1m]))

   f) Set Notification Mode. For example, select SMS.
   g) Set Notification Receiver. In the Contact Groups box, click the name of a contact
      group. If the contact group appears in the Selected Groups box, the setting is
      successful.

Description of basic fields

The following table describes the basic fields of the Create Alert dialog box.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Site</td>
<td>The monitoring job that has been created.</td>
<td>Select a value from the drop-down list.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Type</td>
<td>The type of the metric.</td>
<td>The types for the three alerts are different:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Application monitoring alerts: This displays application entry calls, the statistics of application call types, database metrics, JVM monitoring, host monitoring, and abnormal interface calls.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Browser monitoring alerts: This shows page metrics, interface metrics, custom metrics, and page interface metrics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Custom monitoring alerts: This creates alerts based on existing drilled-down datasets and existing general datasets.</td>
</tr>
<tr>
<td>Dimension</td>
<td>The dimensions for alert metrics (datasets). You can select None,&quot;=&quot;, or Traverse.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When it is set to None, the alert content shows the sum of all values of this dimension.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When it is set to &quot;,&quot;, you need to enter the specific content.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When it is set to Traverse, the alert content shows the dimension content that actually triggers the alert.</td>
</tr>
<tr>
<td>Last N Minutes</td>
<td>The system checks whether the data results in the last N minutes meet the trigger condition.</td>
<td>Range of N: 3 to 3600 minutes.</td>
</tr>
<tr>
<td>Notification Mode</td>
<td>Email, SMS, and DingTalk chatbot are supported.</td>
<td>You can select multiple modes. If you want to choose DingTalk chatbot, see Set DingTalk chatbot alerts. Set DingTalk chatbot alerts</td>
</tr>
</tbody>
</table>
### Field | Description | Remarks
--- | --- | ---
**Alert Quiet Period** | You can enable or disable Alert Quiet Period. By default, it is enabled. | - When it is enabled: if data remains in the triggered state, the second alert message will only be sent 24 hours after the first alert is triggered. When data recovers, you will receive a data recovery notification and the alert will be cleared. If the data triggers the alert one more time, the alert message is sent again.  
- When it is disabled: if the alert is continually triggered, the system sends the alert message every minute. 

**Alert Severity** | Valid values include Warn, Error, and Fatal. | None. 

**Notification Time** | The time when the alert was sent. No alert notification is sent out of this time period, but alert events are recorded. | For more information about how to view alert event records, see Manage alerts. 

**Notification Content** | The custom content of the alert. | You can edit the default template. In the template, the four variables, $AlertName, $AlertFilter, $AlertTime, and $AlertContent, are preset. (Other preset variables are not supported currently.) The rest of the content can be customized. 

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**Description of complex general fields: Period-over-period comparison**

- **N-minute-on-N-minute comparison**: Assume that $\beta$ is the data (optionally average, sum, maximum, or minimum) in the last $N$ minutes, and $\alpha$ is the $N$-minute data starting from $2N$ minutes ago. The $N$-minute-on-$N$-minute comparison is the percentage increase or decrease of $\beta$ as compared to $\alpha$. 

![N-minute-on-N-minute comparison diagram]

- **N-minute-on-N-minute hourly comparison**: Assume that $\beta$ is the data (optionally average, sum, maximum or minimum) in the last $N$ minutes, and $\alpha$ is the $N$-minute data starting from $2N$ minutes ago. The $N$-minute-on-$N$-minute hourly comparison is the percentage increase or decrease of $\beta$ as compared to $\alpha$. 

![N-minute-on-N-minute hourly comparison diagram]
from an hour ago. The N-minute-on-N-minute hourly comparison is the percentage increase or decrease of \( \beta \) as compared to \( \alpha \).

- N-minute-on-N-minute daily comparison: Assume that \( \beta \) is the data (optionally average, sum, maximum or minimum) in the last N minutes, and \( \alpha \) is the N-minute data a day ago. The N-minute-on-N-minute daily comparison is the percentage increase or decrease of \( \beta \) as compared to \( \alpha \).

**Description of complex general fields: Alert Data Revision Strategy**

You can select "Zero fill", "One fill", or "Zero fill null" (default). This feature is generally used to fix anomalies in data, including no data, abnormal composite metrics, or abnormal period-on-period comparison.

- Zero fill: fixes the value checked to 0.
- One fill: fixes the value checked to 1.
- Zero fill null: does not trigger the alert.

**Scenarios:**

- **Anomaly 1: no data**

  User A wants to use the alert feature to monitor the page views. When creating the alert, user A selects Browser Monitoring Alert. User A sets the alert rule as follows: N is 5 and the sum of the page views is at most 10. If the page is not hit, no data is reported and no alert is sent. To solve this problem, you can select "Zero fill" as the alert data revision policy. If you do not receive any data, it considered that zero data is received. This meets the alert rule and an alert is sent.

- **Anomaly 2: abnormal composite metrics**

  User B wants to use the alert feature to monitor the real-time unit price of a product. When creating the alert, user B selects Custom Monitoring Alert. User B sets the dataset
of variable a to the current total price, and the dataset of variable b to the current total items. User B also sets the alert rule as follows: N is 3 and the minimum value of current total price divided by current total items is at most 10. If the current total of items is 0, the value of the composite metric, current total price divided by current total items, does not exist. No alert will be sent. To solve this problem, you can select "Zero fill" as the alert data revision policy. The value of the composite metric, current total price divided by current total items, is now considered as 0. This meets the alert rule and an alert will be sent.

- Anomaly 3: abnormal period-on-period comparisons

User C wants to use the alert function to monitor the CPU utilization of the node machine. When user C creates the alert, C selects Application Monitoring Alert, and sets the alert rule as follows: N is 3 and the average user CPU utilization of the node machine decreases by 100% compared with the previous monitoring period. If the user's CPU fails to work in the last N minutes, \( \alpha \) cannot be obtained. This means the period-on-period result does not exist. No alert will be sent. To solve this problem, you can select the alert data revision strategy as "One fill", and consider the period-on-period comparison result as a decrease of 100%. This meets the alert rule and an alert will be sent.

What's next

You can query and delete alert records in alert management.
3 Enable DingTalk robot alerts

ARMS allows you to receive alert notifications from DingTalk groups. After enabling the DingTalk robot alert function, you can receive alert notifications from DingTalk groups. This topic describes how to enable the DingTalk robot alert function.

1. Obtain the address of the DingTalk robot.
   a. Run the DingTalk client on a PC, click to enter the DingTalk group to which you want to add an alert robot, and click the Group Settings icon in the upper-right corner.
   b. In the Group Settings dialog box that appears, choose ChatBot.
   c. On the ChatBot page that appears, click + in the Add Robot section, and then click Custom.
   d. In the Add Robot dialog box that appears, edit the robot avatar and name, and click Finish.
   e. In the Add Robot dialog box that appears, copy the address that the system generates for the robot.

2. In the ARMS console, add the DingTalk robot as the contact. For more information about how to add a contact, see #unique_8.

3. Create a contact group, and add the contact that you created in the previous step as the alert contact. For more information about how to create a contact group, see #unique_9.

4. Set alert rules.
   - If you have not created an alert job yet, Create an alert, set the notification mode to DingTalk Robot, and set the notification receiver to the contact group that you created in Step 3.
   - If you have created an alert job, click Modify Alert Rules, set the notification mode to DingTalk Robot, and set the notification receiver to the contact group that you created in Step 3.

Now, you have enabled the DingTalk robot alert function. When an alert is triggered, you can receive the alert notification in the specified DingTalk group, for example: