software AG

ARIS System Monitoring

MONITORING

Version 10.0 - Service Release 5

July 2018

Document content not changed since release 10.0.2. It applies to version 10.0.5 without changes.

Contents

1   Monitoring health

The monitoring of physical resources is important to keep ARIS running properly. You can monitor the system using the ACC interface (page 4) or ACC commands (page 9).

FILE SPACE

Monitor the file system of the ARIS installation. When the usage exceeds 85%, increase the disk space.

If the space is consumed by normal usage of the application, e. g. many databases, many documents, etc., the available disk space must be increased. Check whether disc space can be made available. Call the **deleteLogFiles.bat** script (<drive>:\<ARIS installation directory>\ARIS10\support). This ensures that current log files are written properly. A maintenance window for the runnable should be used, so that it can be stopped while the script is running. Also check, whether heap dumps have been created. They can consume a large part of disc space. There is one directory where special attention to the free disk space is recommended (/home/ARIS/cloudagent/work/work_cloudsearch_l/rsindex/). The folder size depends on the size and the structure of the ARIS user data, actually stored in the connected database management system. We recommend increasing the available disk space, if the used space exceeds 75 % of the available disk space.

If ARIS document storage is used extensively, these runnables should be actively monitored, too. Depending on the number and size of the documents, it might be needed to increase the available disk space regularly.

MEMORY USAGE

Every runnable has a **JAVA-Xmx** configuration parameter. It has to be monitored, if the memory usage is rising over time.

Peaks are not a problem, if they do not break the limit. If the system is suffering over a longer time, e. g. the memory usage is higher than 70% for more than one hour, check for rarely occurring use cases. They might explain the high memory consumption. This can be:

- an exceptional number of parallel running Process Governance processes

- more users accessing as usual

- expensive reporting

- running database maintenance operations

- assigning user access right over the whole database etc.

If the defined limit for memory consumption is exceeded, there are two possible measures:

- Extend the heap size for the concerned runnable. This can be done in ACC with a configure command for the **JAVA-Xmx** parameter. But this step only makes sense, if enough additional memory is available.

- Scale up by increasing the resources, e.g. adding a new node/runnable of the same type or assigning more memory to the virtual machine and increasing the **JAVA-Xmx** parameter for the runnable to use this memory.

  For advanced ARIS server installations Software AG strongly recommends that you request an installation service by Global Consulting Services. You can order that service from your Software AG sales representative.

CPU LOAD

A continuous high level of CPU usage can be an indicator that it might be necessary to scale up/out the system.

For the CPU load the same arguments as for the heap usage regarding peaks are true. So if a high CPU load is detected (> 60% for more than one hour), first it should be analyzed, if short peaks or exceptional use cases are the reason. If this is the case no direct reaction is needed.

If the defined limit for CPU usage is exceeded, there are two possible measures:

- Extend the number of CPU's available for the runnable.

- Scale up by increasing the resources of the current node, i. g. assigning more CPU cores to the virtual machine or scale out by adding a new node/runnable of the same type.

  For advanced ARIS server installations Software AG strongly recommends that you request an installation service by Global Consulting Services. You can order that service from your Software AG sales representative.

THREAD POOL SIZE

For most runnables the **ajpNumWorkerThreads** parameter and the **httpNumWorkerThreads** parameter are set. Those values should be monitored.

If they regularly exceed 80% of the configuration parameter of the runnable, it has to be scaled out by adding a new runnable of the same type.

For advanced ARIS Server installations Software AG strongly recommends that you request an installation service by Global Consulting Services. You can order that service from your Software AG sales representative.

1.1 Using ACC interface

To have a clear picture of all runnable's states, check whether the system works properly. The checks can be executed instantly to identify possible issues.

Procedure

1. Make sure that the ARIS server has been started.
2. Open your browser and enter the URL:

   syntax: **http://<server name>:<port>/acc/ui**

   e. g.

   http://aris10srv.eur.co.umg:1080/acc/ui

   The infrastructure tenant's **login** dialog opens. The tenant cannot be changed. Having performed a standard installation, the **master** tenant is the infrastructure tenant by default.
3. Select the interface language.
4. Enter the **system** user's or the superuser's credentials.
5. Click **Log in**. The infrastructure tenant's **node** view is displayed. It gives an overview on the node's runnables.
6. Add the desired node, if it is not on display (page 4).

The node's information is displayed as a table. For the **runnables** view, use the top slider.

The health status will be shown for those runnables providing such information. The checks (page 7) are executed on-demand (page 5). Thus it can take a moment until the result is shown. You can either start single health checks or check all possible runnables at once.

The state of each check is displayed. Hovering over a check field enables a **Show details** link. It shows the complete result of this specific check. To see detailed result information on all checks, click the **Show info for support** link.

1.1.1 Adding nodes

If no node information is displayed or a node is missing administrators can add them.

1. Open the ACC interface (page 4).
2. Click **+ Add node**. The **Add node** dialog opens.
3. Enter the logical name of the node, as it should be displayed.
4. Enter the server name. This is the host name of the machine where the ARIS server is installed.
5. The valid port is shown. Do not change that number.
6. Enter the ARIS agent user's credentials.
7. Click **Add**.

The node's information is shown.

1.1.2   Executing health checks on all nodes

To have a clear picture of all runnable's states on all nodes, check whether the system works properly. The checks can be executed instantly to identify possible issues.

Procedure

1. Open the ACC interface (page 4).

2. Click **Run health checks on all nodes** .

The result is displayed in the **Health** column.

If you click on the result, e. g. **OK**, detailed results of all performed checks (page 7) are shown. Detailed information on specific check results are available on click, as well as the JSON results.

1.1.3   Executing health checks on one node

To have a clear picture of all runnable's states on one node, check whether the system works properly. The checks can be executed instantly to identify possible issues.

Procedure

1. Open the ACC interface (page 4).

2. Click   **More >**   **Run healthchecks on this node**.

The result is displayed in the **Health** column.

If you click on the result, e. g. **OK**, detailed results of all performed checks (page 7) are shown. Detailed information on specific check results are available on click, as well as the JSON results.

1.1.4   Executing health checks for a runnable

To have a clear picture of one runnable's states, check whether the system works properly. The checks can be executed instantly to identify possible issues.

Procedure

1. Open the ACC interface (page 4).

2. Move the mouse pointer to the desired runnable and click   **Run healthcheck**.

The result is displayed in the **Health** column.

If you click on the result, e. g. **OK**, detailed results of all performed checks (page 7) are shown. Detailed information on specific check results are available on click, as well as the JSON results.

1.1.5 Show health check results

If health checks have been performed (page 5), you can review these results.

1. Open the ACC interface (page 4).

2. Move the mouse pointer to the desired runnable and click the health check result in the **Health** column. The ARIS Healthcheck page is shown. All results of the specific checks are displayed.

3. Click one of the results for more detailed information.

The test results are shown.

If you click **Copy support information**, details can be copied and send to the ARIS support.

1.1.6 What checks are performed?

For each runnable providing health information, a different set of checks is performed. As an example the set performed for the **abs** runnable is described here:

- **Read Lock**

  This check compares the average time it takes to access a synchronized resource, to the average time it takes to access a non-synchronized resource on the system. From the measured times it calculates a ratio. A high ratio means that access to synchronized resources is relatively slow which could have a negative effect on the computation speed of ARIS.

  The check fails if the ratio is greater than 30. As a large set of test data objects is necessary to accurately calculate the result, the check is only executed once an hour in the background.

- **Threads**

  This check detects threads running longer than 5 minutes. This could indicate an infinite loop. It constantly monitors all AJP and HTTP threads currently running.

- **JIT Compiler**

  This check detects whether the JIT compiler is active. If active, it also monitors the state of the used code cache volume.

  The check fails if the JIT compiler is not active or if the used code cache volume is at 90% of its maximum.

- **CPU Loop**

  This helps to identify JIT & VM performance problems. It executes a short but expensive computation and measures the time needed to calculate the result.

  The check fails if this takes more than 2,5 seconds.

- **Self Host Lookup**

  This check looks up the machine's host name via its IP address.

  The check fails if the host name cannot be resolved or if the call takes longer than 30 milliseconds.

- **ZooKeeper Connection**

  Checks whether the server is connected to ZooKeeper. If not, the check fails.

- **ZooKeeper Leader**

  Ensures that there is a leading **abs** runnable instance for the abs application type registered in ZooKeeper.

- **DB Query**

  Checks whether a database connection can be created and measures the time for executing a set of standard database queries.

  The test fails if the database connection cannot be created or if the average execution time is bigger than a calculated threshold.

- **DB Latency**

  This check tests whether a valid database connection can be created and measures the latency between the ARIS system and the database backend via multiple ping requests.

  The check fails if the database cannot be reached or if the average response time is above 300 milliseconds.

- **Database Connection Pool**

  The check detects the number of active database connections and the maximum number of active database connections in the system.

  The check fails if the number of active connections is equal or above 95% of its maximum.

- **CloudSearch Access**

  This check obtains all registered CloudSearch instances in the system and sends a ping request to them.

  The check fails if there are no CloudSearch instances registered or if no CloudSearch can be reached.

1.2   Using ACC commands

You can monitor the health of a specific runnable as well as the health of the whole system.

- Monitor runnable's health (page 10)
- Show node (page 11)

1.2   Using ACC commands

1.2.1 Monitor runnable's health

The **health** command determines a variety of health values for each runnable.

The exact list of health values available depends on the specific runnable. However, a few basic measurements are available to all runnables, in particular the CPU load and its memory usage. For all Java-based runnables, additional information is available.

Prerequisite

Health monitoring parameters are set.

Procedure

1. Start ARIS Cloud Controller (ACC).

2. Make sure that the runnable has been started.

3. Enter, e.g.:

   show instance zoo_m health

The output will look like this example:

```
ACC+ arissrv>show instance zoo_m health
Health attribute            Current Value  Value Range           Min        Max        Thrh.  State
CPU load (Percent)          0,00%          0,00% - 100,00%       0,00%      1,09%             -
JVM Committed Heap (Megabyte) 102,75MB     0,00MB - 455,13MB     102,75MB   121,50MB          -
JVM Committed Heap (Percent) 22,58%        0,00% - 100,00%       22,58%     26,70%            -
JVM Heap Usage (Megabyte)   43,13MB        0,00MB - 455,13MB     24,77MB    80,13MB           -
JVM Heap Usage (Percent)    9,48%          0,00% - 100,00%       5,44%      17,61%            -
Memory usage (Megabyte)     214,14MB       0,00MB - 16266,68MB   213,52MB   216,13MB          -
Memory Usage (Percent)      1,32%          0,00% - 100,00%       1,31%      1,33%             -
Avg. latency (milliseconds) -              0ms - -               0ms        449ms             -
Mode                        standalone     -                     -          -          -      -
Client connections          5                             0 - -            5                 6
Number of nodes             60                            0 - -            60                60 -
```

The first column shows the name of the measured value and its physical unit, e.g., megabytes, percent, etc.

The second column shows the current value of the health value. Note that this is not measured the moment the command is executed. The agent plugin will take measurements periodically, and this column will show the result of the last measurement.

The third column shows the range of possible values, e.g., minimum and maximum value. If no minimum or maximum value can be determined or the value does not have an ordinal value scale a **-** is shown instead.

The fourth and fifth column, respectively, show the minimum and maximum values, respectively, that have been observed for this measured health value since the runnable or the agent was last restarted. But only if the measured health value has an ordinal value scale. For measured values without an ordinal value scale, **-** will be shown.

The sixth column shows the low or high warning thresholds for the measured value, if the measured health value has an ordinal value scale and if thresholds have been configured.

The seventh column shows the state of the measured value if the measured health value has an ordinal value scale and if a low and/or high threshold has been configured. The state can be either **OK**, **LOW** or **HIGH**. If in **LOW** or **HIGH** state, the column will also show for how long the value has been in that state already.

1.2.2   Show node

The **show node** command shows machine monitoring information concerning CPU, memory and disk usage. If a threshold is violated, it will be shown.

Prerequisite

Health monitoring parameters are set.

Procedure

1. Start ARIS Cloud Controller (ACC).

2. Make sure that the runnables have been started.

3. Enter **show node**

The output will be in tabular format and look like this example:

```
Status: OK
Specified IP or host name: arissrv
Resolved IP or host name: arissrv/127.0.0.1
Agent port: 9001
Monitored Resource          Current Value  Value Range     Low Thrh.  High Thrh.  State  Last msrd. at  Msrd. evry
CPU Load                    11,36%         0,00%-100,00%   0,00%      80,00%      OK     08:05:39.844   1s 000ms
Memory Usage (Percent)      36,81%         0,00%-100,00%   0,00%      80,00%      OK     08:05:39.844   1s 000ms
Memory Usage (Megabytes)    2980MB         0MB-8097MB      0MB        0MB         OK     08:05:39.844   1s 000ms
Free Disk Space (Percent)   63,40%         0,00%-100,00%   3,00%      0,00%       OK     08:05:39.845   1s 000ms
Free Disk Space (Megabytes) 302361MB       0MB-476938MB    1000MB     0MB         OK     08:05:39.846   1s 000ms
Known used ports:
   Port  Runnable  Port Parameter
   2181  zoo_m     clientPort
   9001  (AGENT)   rest.port       DEFAULT
ACC+ arissrv>
```

2 Disclaimer

ARIS products are intended and developed for use by persons. Automated processes, such as the generation of content and the import of objects/artifacts via interfaces, can lead to an outsized amount of data, and their execution may exceed processing capacities and physical limits. For example, processing capacities are exceeded if models and diagrams transcend the size of the modeling area or an extremely high number of processing operations is started simultaneously. Physical limits may be exceeded if the memory available is not sufficient for the execution of operations or the storage of data.

Proper operation of ARIS products requires the availability of a reliable and fast network connection. Networks with insufficient response time will reduce system performance and may cause timeouts.

If ARIS products are used in a virtual environment, sufficient resources must be available there in order to avoid the risk of overbooking.

The system was tested using scenarios that included 100,000 groups (folders), 100,000 users, and 1,000,000 modeling artifacts. It supports a modeling area of 25 square meters.

If projects or repositories are larger than the maximum size allowed, a powerful functionality is available to break them down into smaller, more manageable parts.

Some restrictions may apply when working with process administration, ARIS Administration, ARIS document storage, and ARIS Process Board, and when generating executable processes. Process Governance has been tested and approved for 1000 parallel process instances. However, the number may vary depending on process complexity, e.g., if custom reports are integrated.

ARIS document storage was tested with 40.000 documents. We recommend monitoring the number and overall size of stored documents and if needed some documents should be archived.