



ARIS SERVER **UPDATE INSTALLATION GUIDE**

VERSION 10.0 - SERVICE RELEASE 12

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This document applies to ARIS Version 10.0 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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1 Text conventions

Menu items, file names, etc. are indicated in texts as follows:

- Menu items, key combinations, dialogs, file names, entries, etc. are displayed in **bold**.
- User-defined entries are shown as **<bold text in angle brackets>**.
- Example texts that are too long to fit on a single line, such as a long directory path, are wrapped to the next line by using ↵ at the end of the line.
- File extracts are shown in this font format:
This paragraph contains a file extract.
- Warnings have a colored background:

Warning

This paragraph contains a warning.

2 Update installation

The update installation setup is available for ARIS 10 servers that have been installed by a setup program. So each ARIS server is installed on one machine (single-node installation). Locally installed ARIS Clients can be updated as described in the ARIS Client Installation Guide. The update setup also updates ARIS Risk & Compliance Manager installations with customizing. If the customizing contains unsupported changes or additional files, the warning **Update/patch setup not supported** and a list containing the affected files are output in the log file. To ensure that all customized files are available, the customizing must be enhanced again. For detailed information, refer to **ARCM – Installation Guide > Installation of a customer-specific version (Customizing)**. The ARIS Risk & Compliance Manager server update procedure is described in the ARIS Risk & Compliance Manager Installation Guide. On Linux systems you must first update ARIS Cloud Controller (ACC) and ARIS Agent. Then perform an update setup (page 10).

The **default** tenant will be updated and migrated automatically. All other tenant's system databases must be updated manually (page 10) to get the most current script and method update.

To update customized installations, for example, multi-node systems, when an ARIS installations spans across several computers, please contact your local Software AG sales organization.

When you update or uninstall ARIS by an ARIS setup, the current installation will automatically be backed up. This process takes additional time and requires additional disk space while the setup is running. Make sure that the size of the free disk space is at least 15 GB larger than the folder size of the working directories <ARIS installation path>\server\bin\work (Windows®) or /home/ARIS10/cloudagent/work (Linux). The update will fail if there is insufficient free disk space. If the update process fails, all ARIS components will be rolled back automatically.

If you use an external database management system backup these systems before running an update setup. In case of a failed update you will be able to restore the external database systems, too.

Before updating backup all tenant's data (page 4) (see: **ARIS Cloud Controller Command-Line Tool.pdf**) and read the **ARIS Release Notes.pdf** for last-minute information which couldn't be included in this document anymore. Documents can be installed locally (see **ARIS Client Installation Guide**), downloaded from Empower (<https://empower.softwareag.com/>), where a login is required, or downloaded from the ARIS Download Center (<https://aris.softwareag.com/>).

Restrictions

- Due to the current Tomcat (Ghostcat) vulnerability, block (page 14) all ports except the load balancer HTTPS port.
- In the highly unlikely event of running reports during an update, the system database might fail to be updated. Make sure to lock scheduled reports before starting the update.
- Use the **reconfigure** ACC command to change settings, such as ports or ARIS Publisher settings (page 22).

If you have customized your ARIS Publisher Server manually by modifying **XML** and **CFG** files these modifications will be lost.

Save modified configuration files locally and document your modifications. After an update installation you can easily compare your saved file and copy the modified line into the updated configuration file.

- Make sure that no file in the installation directory is locked. Therefore, close all Command Prompts pointing into the ARIS installation folder.
- Make sure to exit ACC before running the update setup.
- If the ARIS help link does not work anymore (404 error) after the update of a custom configuration, the help URL is broken. You can easily fix it by modifying the **useraction_default.xml** file (<ARIS installation directory>\server\bin\work\work_copernicus_<s, m or l>\base\webapps\ROOT\WEB-INF\config\<customization>\instances\UserAction\).

In the broken URL the **/connect/** entry is missing, for example:

```
/static/help/{locale}/handling/ca/index.htm#52910.htm
```

Add **/connect/**. The URL must look like in this example:

- /static/help/{locale}/handling/**connect**/ca/index.htm#52910.htm.

2.1 Backup and restore data

Before you perform an update installation (page 2), please make sure to save all tenant's important data before starting the setup process. Administrators can save tenant data in different ways.

- Using the Tenant Management tool is a way to backup and restore the infrastructure tenant (master) as well as all productive tenants.

By default, backups are stored in the ARIS Server installation directory (`..\server\bin\work\work_umcadmin_<s, m or l>\backup`). If you have not yet defined a different folder on a physical drive, make sure to save the backup folder. As the default **backup** folder is overwritten by the update, all backups are lost.

- Using the ACC command **backup tenant** will save all important data of a specific tenant at once. Tenants can be restored using the **restore tenant** command.

If you use an external database management system, backup these systems before running an update setup. If the update process fails all ARIS runnables will be restored automatically. In case of a failed update you will be able to restore the ARIS content managed from the external database systems, too. We recommend making a backup of your ARIS related relational database management system.

You can also save data individually:

DATABASE

In ARIS Architect on the **Administration** tab, using the  **Backup** functionality.

On the command line tool ARIS Server Administrator, using the **backup** or **backupasn** commands.

In ARIS Server Administrator, use the **backupsystemdb** command to backup filters, method modifications (such as user defined attributes, model types etc.), configuration, queries, report scripts, macros and semantic checks. Alternatively, you can back up the data mentioned before individually as follows.

FILTER

In ARIS Architect on the 'Administration' tab, using the function  **Export**.

METHOD, CONFIGURATION, AND QUERIES


In ARIS Server Administrator, using the **backupsystemdb** command.

REPORT SCRIPTS, MACROS AND SEMANTIC CHECKS

In ARIS Architect on the **Administration** tab individually backup scripts with the function **Export** in the pop-up menu for a script. If you have adapted standard scripts and standard files instead of copies the individual backup is mandatory. All standard scripts and standard files will be overwritten by an updated. Modifications will be lost.

In ARIS Server Administrator, using the **backupsystemdb** command.


QUERIES AND AD HOC ANALYSES

In ARIS Architect on the **Administration** tab with the  **Back up analysis data** function.

When you perform an update installation, add languages, or uninstall a component, the relevant files and directories are backed up automatically. A selection of files is listed here to provide examples for server installations:

- <ARIS installation directory>\server\backup
- <ARIS installation directory>\server\data (saved databases after uninstallation)
- <ARIS installation directory>\server\sysconfig
- <ARIS installation directory>\server\templates

PORTAL CONFIGURATION AND MODIFICATION SETS

You can back up the configurations that you configured via the graphical user interface in ARIS Administration on the **Configuration** tab with the  **Backup** function (Portal > Manage views).

The **default** and the **classic** configuration set must not be modified. These sets, holding all new features, are used as template for all future modification sets. The **default** and the **classic** configuration sets are automatically updated.

If the **default** or the **classic** configuration set was modified on file level, all changes are lost after the update. To keep the modifications, proceed as follows:

Copy the folders of the modified default or custom configuration sets from <ARIS installation path>\server\bin\work\, for example:

- **work_copernicus_<s, m or l>\base\webapps\ROOT\WEB-INF\config\default**
- **work_abs_<s, m or l>\base\webapps\abs\WEB-INF\config\default**
- If a Heavy-duty Server (HDS) is in use, the related folder of the **hds_<s, m or l>** runnable must be copied as well.

After the update, the content of the **default** and the **classic** folders are updated, and your modifications are lost. Paste the copied folders into the <ARIS installation path>\server\bin\work\ subfolders, for example:

- **work_copernicus_<s, m or I>**\base\webapps\ROOT\WEB-INF\config\<>name of the customized **default** configuration set<>
- **work_abs_<s, m or I>**\base\webapps\abs\WEB-INF\config\<>name of the customized **default** configuration set<>
- If a Heavy-duty Server (HDS) is in use, the related folder of the **hds_<s, m or I>** runnable must be copied as well.

To make the content update-proof, the folder must be named other than **default**, for example, **customized_default**.

New ARIS functionality will not be available in the copied configuration sets. You can manually copy additional lines from the updated **default** or **classic** configuration sets and paste them to the related customized configuration sets.

This advanced configuration requires high knowledge on XML configuration, that can be acquired in the 742-<ID> ARIS Connect Portal Configuration training (<https://learning.softwareag.com/enrol/index.php?id=198>). Errors in XML configuration files may cause strong impact. You might not be able to start ARIS Connect again.

Depending to the level of customization, you are recommend using a prepared customization package obtained by the original customizer. If you need help, contact Software AG (<https://empower.softwareag.com/>) for a customization request. Customization and training services are not subject to the standard Software AG software maintenance agreement. Configuration changes can only be performed by Software AG if you requested and agreed on them.

2.2 Update ARIS Connect/ARIS Design Server

To update the installed version run the most recent ARIS Server installation program.

When you update or uninstall ARIS by an ARIS setup, the current installation will automatically be backed up. This process takes additional time and requires additional disk space while the setup is running. Make sure that the size of the free disk space is at least 15 GB larger than the folder size of the working directories <ARIS installation path>\server\bin\work (Windows®) or /home/ARIS10/cloudagent/work (Linux). The update will fail if there is insufficient free disk space. If the update process fails, all ARIS components will be rolled back automatically.

Restrictions

- If you use an external database management system backup these systems before running an update setup. In case of a failed update you will be able to restore the external database systems, too.
- If you update ARIS make sure to exit ACC before running the update setup.
- During the update, you will in general need the following credentials:
Username/password of the ARIS Agent (default values are **Clous/g3h31m**)
The password of the **superuser** user (default: **superuser**), or alternatively, the password of a user with all functional privileges for each tenant.

Warning

Process Governance backup archives greater than 2 GB might lead to insufficient TEMP space issue when restoring them into ARIS with Oracle back end. For such large backups, extend the temp tablespace size before restoring operation executed.

To avoid data inconsistencies and possible data loss, you must not perform any of the following activities in parallel, neither manually nor scheduled:

- Deleting any Process Governance process instance, process version, or process
- Archiving Process Governance process instances
- Backup/restore tenant (containing Process Governance or ARIS document storage data)

Procedure

1. Back up all tenants data (page 4).
2. Exit ACC.
3. Start the update setup as the same administrator that has installed ARIS.
4. Enter the ARIS agent user's credentials. The update process starts. The **default** tenant's system database is updated automatically.
5. When the setup is completed
 - a. Re-index modeling data for each tenant (page 12).
 - b. Update the system databases for all additional tenants (page 10).

6. If you previously had added certificates to your current system in order to allow SSL connections between ARIS Server and external systems, you must make these certificates available again after each update of ARIS Agent. Certificates stored in the JRE of ARIS Agent are used, for example, if you use SSL access and ARIS Aware Dashboards or LDAP. These certificates are overwritten by an update. If you update ARIS Server, the latest JRE will be installed with its own cacert keystore.

7. If you use ARIS document storage, adjust timestamps manually.

In previous ARIS versions, ARIS document storage stored timestamps, for example **Creation time** and **Update time**, referred to documents and folders in local server time and without any time zone information. If data was moved between ARIS Servers or if a tenant was restored from a backup file, timestamps were likely adjusted using a wrong time offset.

Since ARIS 10 SR6, **Coordinated Universal Time** (UTC) is mandatory for timestamps stored by ARIS document storage. Because time zone information in existing data is not available, the timestamps of existing documents and folders cannot be adjusted automatically. After the update to ARIS 10 SR6, you must manually adjust timestamps. In a Windows-based installation with local time UTC-2, for example, use the **y-admintool.bat** command-line tool and, considering UTC offset of your ARIS Servers>, enter the following:

```
y-admintool.bat -s https://localhost -t default adjustTimestamps -offset "-120" -u system -p manager
```

If you have restored a tenant from backup file created with ARIS 10 SR5 or earlier, you must adjust the timestamps as well.

8. Make sure that all fonts are available (page 25).

ARIS is up to date.

Make sure that you also update locally installed clients.

If the update process has failed all ARIS runnables will be restored automatically. Please restore your external database system using the backup.

2.3 Update ARIS Publisher Server

To update the installed version run the current ARIS installation program.

Procedure

1. Save modified configuration files locally, if you have customized your ARIS Publisher Server manually by modifying **XML** and **CFG** files. These modifications will be lost after the update. When you update ARIS Publisher Server by an ARIS setup, the current installation will automatically be backed up.
2. Make sure to have all runnables activated.
3. Start the **setup.exe** as the same administrator that has installed this ARIS Publisher Server. The runnables will be stopped. After the system has been updated all runnables will be started automatically.
4. If you have customized your system in a way that these modifications have been lost after the update please compare the affected **CFG** and **XML** files and copy the modified lines into the updated files.

After you have updated the ARIS Publisher Server you must import the ARIS Publisher Server license again. The user authentication must be handled by the administration.

You may change the standard database connection parameters (page 20). You can adjust (page 22) all parameters that have been entered during the setup process. For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or ARIS for SAP® Solutions you must customize ARIS depending on the functionality to be provided.

To obtain information on additional settings required refer to the related documents in the **Administration** folder on DVD. Documents can also be downloaded from Empower (<https://empower.softwareag.com/>), where a login is required, or from the ARIS Download Center (<https://aris.softwareag.com/>).

2.4 Update Linux installation

To update one ARIS version to the next you must update ARIS Cloud Controller (ACC) and the ARIS Agent. After ACC and ARIS Agent are up to date, you must run the update setup remotely from a Windows machine.

Prerequisites

- Make sure to copy the new installer packages from ARIS DVD 2 (Linux) to the Linux system's hard drive that fit to your system:

ARIS Agent

Red Hat: aris10-cloud-agent-<version>.x86_64.rpm

SUSE: aris10-cloud-agent-SLES<version>.x86_64.rpm

Optionally copy aris10adm-<number>-1.x86_64 and aris10-scriptrunner-<number>-1.x86_64 and aris10-acc-<version>-1.x86_64.rpm

- Ensure that the virtual memory available on your Linux operating system is set to **262144** (page 11).

Procedure

- Update ARIS Cloud Controller (ACC):

rpm -Uvh aris10-acc-<version>-1.x86_64.rpm

- When ACC is updated, run the commands depending on the Linux operating system.

- Using **Red Hat**, run:

rpm -Uvh aris10-cloud-agent-<version>.x86_64.rpm

- Using **SUSE**, run:

rpm -Uvh aris10-cloud-agent-SLES<version>.x86_64.rpm

Due to changed paths warnings are logged. These warnings can be ignored, for example:

```
Cleaning up / removing...
2:aris10-cloud-agent-10.0.1.1168090warning: file /home/ARIS10/support.xml:
remove failed: No such file or directory
warning: file /home/ARIS10/jre/plugin/desktop/sun_java.png: remove failed:
No such file or directory
...
```

- If you update ARIS version **10.0.0** or **10.0.1**, start ARIS Agent, enter:

service ArisCloudagent10 start

- Start the update setup remotely from a Windows machine. Start the update setup as the same administrator that has installed ARIS.
- Select the **Perform installation on a remote computer** option and enter the name of the remote server.
- If you have changed the remote access credentials you must enter the new credentials using the **Enter changed credentials** option. Once after the installation process is completed, re-index modeling data for each tenant (page 12), update the system databases for all additional tenants (page 10), and configure the system if requires (see: **ARIS Cloud Controller (ACC).pdf**)
- Make sure that all fonts are available (page 25).

2.4.1 How to check the virtual memory setting

From ARIS 10 SR4, the **elastic** runnable (elastic search) requires more virtual memory on your Linux operating system in order to prevent indices from causing out-of-memory exceptions. On the machine where the **elastic** runnable is installed, check which value the **vm.max_map_count** system parameter is currently set to.

For this, use the **sysctl vm.max_map_count** command. If the value is lower than **262144**, change it to **262144**.

To change the value for this session only, use the following command (root access permissions required):

```
sudo sysctl -w vm.max_map_count=262144
```

This command changes the value for the current session only. After a reboot, this change is undone.

To change the value persistently, add this line to the **sysctl.conf** configuration file that is available in the ARIS installation directory on your machine:

```
vm.max_map_count=262144
```

2.5 Re-index modeling data for each tenant (optional)

This step is optional, but highly recommended, when updating from ARIS **10.0.9** or an older version to an ARIS **10.0.10** service release or a newer ARIS **10** version.

By default, re-indexing is started automatically at the first login to each database. This causes some delay and the delayed login may bother users. Therefore we recommend you to re-index all databases on each tenant within the update maintenance window.

Warning

Do not use ARIS while databases are re-indexed using the **maintainAll** ACC command. Make sure that no scheduled tasks are running, such as, backups or reports. During **maintainAll** users cannot log into a database.

If you attempt an update without backing up your data, you run the risk of system outages and/or data loss, for which Software AG assumes no responsibility.

The syntax of the ACC command is as follows:

```
on <node name> invoke maintainAll on <abs instance ID> tenant.name="<tenant ID>" tenant.user.name="<user name>" tenant.user.pwd="<password>"
```

- **<node name>**: Name of a node that contains an ABS instance.
- **<abs instance ID>**: Instance ID of this ABS instance.
- **<tenant ID>**: ID of the related tenant.
- **<user name>** and **<password>**: User credentials of a user related to the specified tenant. This user must have either have the Database administrator or the Server administrator function privilege. You can also enter the credentials of the superuser user. Make sure to use quotes to avoid any problems with special characters.

EXAMPLE (ACC)

If you want to re-index your databases contained in the **mycompany** tenant on node **n1** that contains the **abs_m** instance, and you use the **system** user (password is **1234ArisAdmin**), enter:

```
on n1 invoke maintainAll on abs_m tenant.name="mycompany" tenant.user.name="system" tenant.user.pwd="1234ArisAdmin"
```

EXAMPLE (ARISSERVER> ADMINISTRATOR)

As an alternative to the **maintainAll** ACC command, after login to each tenant, you can use the **maintain all** ARIS Server Administrator command:

INTERACTIVE MODE

```
server <server name>:<port> <tenant> <user> <password> maintain all
```

BATCH MODE

```
arisadm.bat -s <server name>:<port> -t <tenant> -u <user> <password> maintain all
```

2.6 Update additional tenants

When you update (page 2) the ARIS Server using the update setup, the **default** tenant's system database is updated automatically. For all additional tenants you must update the system databases with the provided database manually. If you do not update system databases, all updates, for example, ARIS method extensions, concerning scripts, filters and templates will not be available.

Prerequisites

- **ARIS Server Administrator** is installed.
- You know the credentials of the superuser, or you have the Server administrator function privilege.
- You have access to the most recent system database (<**installation DVD**>/Content/SystemDB/<**ADB file**>)
- You have backed up all data that will be overwritten during the update (page 4).

Procedure

1. Click **Start > Programs > ARIS > Administration > ARIS Server Administrator 10.0** if you accepted the program group suggested by the installation program. Under a Linux operating system, execute the **arisadm.sh** shell script instead. To do so, enter: **su - c arisadm.sh aris10**. The command prompt opens and ARIS Server Administrator is launched in interactive mode.
2. Establish a connection to the server and tenant:
Syntax: **server <server name>:<port number> <tenant> <user name> <password>**
Example: **server arissrv:1080 default system manager**
3. Enter **updatesystemdb <name of ADB file on DVD>**.

The system configuration of this tenant, managing, for example, ARIS method extensions, report scripts, scheduled reports, macros, semantic checks, filters, and templates, will be updated. User defined changes made in the configuration will remain.

2.7 Security advice

Due to the Tomcat (Ghostcat) vulnerability, you are recommended to block (page 14) access to all **AJP** ports if you use an ARIS version prior to **10.0.12.0**.

2.7.1 Safety recommendation: Block AJP ports

The **Apache JServ Protocol** (AJP) is a binary protocol that can proxy incoming requests from a web server to an application server behind the web server. AJP is a highly trusted protocol. It must not be made available to untrusted clients because they could gain access to confidential information or execute code on the application server.

ARIS uses AJP for communication between the **loadbalancer** runnable that bases on Apache HTTPD and ARIS applications that base on Apache Tomcat. The vulnerable Tomcat AJP connector is mandatory and must stay active for ARIS applications.

If you have installed ARIS Server according to our recommendations, you can block access to the ports of all runnables except the HTTP and HTTPS ports used by the **loadbalancer** runnable by setting appropriate firewall rules. By default these HTTP and HTTPS ports are **80** and **443** on Windows operating systems and **1080** and **1443** on Linux operating systems.

To prevent unauthorized access, check that the **AJP** ports of your ARIS installations are only accessible from networks from which users access ARIS (page 15). The **show node ACC** command gives an overview of open **AJP** ports by. It lists all ports used by ARIS runnables. The **connector.ajp.port** parameter (in former ARIS versions called **CATALINA_AJP_PORT**) identifies **AJP** ports. If any of these ports are accessible from an external network, you must block access immediately by your firewall.

Important: If your ARIS system is a multiple node installation, the **AJP** ports must remain open for data transfer between multiple nodes. These open **AJP** ports do not represent a security gap, because distributed ARIS installations must always be protected by a firewall.

2.7.2 Check open AJP ports (Ghostcat vulnerability)

To prevent unauthorized access, check that the **AJP** ports of your ARIS installations are only accessible from networks from which users access ARIS (page 15).

Procedure

1. Start ARIS Cloud Controller (ACC) (page 27).
2. To check ports used by runnables, enter: **show node**

The list is displayed. Navigate to the **Known used ports section**.

Port	Runnable	Port Parameter	
443	loadbalancer_m	HTTPD.ssl.port	Set explicitly
1080	loadbalancer_m	HTTPD.port	Set explicitly
14200	cloudsearch_m	zookeeper.application.instance.port	Set explicitly
14201	cloudsearch_m	JAVA-DCSHTTTPORT	Set explicitly
14206	cloudsearch_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14220	elastic_m	ELASTICSEARCH.http.port	Set explicitly
14226	elastic_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14230*	elastic_m	ELASTICSEARCH.transport.tcp.port	Set explicitly
14240	postgres_m	postgresql.port	Set explicitly
14250	cdf_m	connector.http.port	Set explicitly
14251	cdf_m	connector.ajp.port	Set explicitly
14256	cdf_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14281	zoo_m	clientPort	DEFAULT
14296	zoo_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14400	abs_m	connector.http.port	Set explicitly
14401	abs_m	connector.ajp.port	Set explicitly
14406	abs_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14410	adsadmin_m	connector.http.port	Set explicitly
14411	adsadmin_m	connector.ajp.port	Set explicitly
14416	adsadmin_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14420	apg_m	connector.http.port	Set explicitly
14421	apg_m	connector.ajp.port	Set explicitly
14426	apg_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14430	copernicus_m	connector.http.port	Set explicitly
14431	copernicus_m	connector.ajp.port	Set explicitly
14436	copernicus_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14440	ecp_m	connector.http.port	Set explicitly
14441	ecp_m	connector.ajp.port	Set explicitly
14446	ecp_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14450	hds_m	connector.http.port	Set explicitly
14451	hds_m	connector.ajp.port	Set explicitly
14456	hds_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14460	octopus_m	connector.http.port	Set explicitly
14461	octopus_m	connector.ajp.port	Set explicitly
14466	octopus_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14470	simulation_m	connector.http.port	Set explicitly
14471	simulation_m	connector.ajp.port	Set explicitly
14476	simulation_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14480	umcadmin_m	connector.http.port	Set explicitly
14481	umcadmin_m	connector.ajp.port	Set explicitly
14486	umcadmin_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14490	dashboarding_m	connector.http.port	Set explicitly
14491	dashboarding_m	connector.ajp.port	Set explicitly
14496	dashboarding_m	JAVA-Dcom.sun.management.jmxremote.port	Set explicitly
14497	dashboarding_m	JAVA-Xrunjdpw\transport	Set explicitly

The highlighted **connector.ajp.port** Port parameter indicates all open AJP ports.

3. If any of these ports are accessible from an external network, you must block access immediately by your firewall.

You have secured the system.

Important: If your ARIS system is a multiple node installation, the **AJP** ports must remain open for data transfer between multiple nodes. These open **AJP** ports do not represent a security gap, because distributed ARIS installations must always be protected by a firewall.

2.8 Database connection

This chapter provides information on configuring ARIS Server in order to use an external database management system.

2.8.1 Configure the database connection for additional schemes

ASSIGN TENANT TO DATABASE SCHEMA

During the setup process you have created an empty Oracle or Microsoft SQL schema for an additional tenant (see ARIS Server Installation Guide). Additionally created tenants must be assigned to the database schema.

1. Start ARIS Cloud Controller (ACC) (page 27).
2. To discover the database service ID (<dbserviceID>, such as db000000000), enter:

list external services

```
assign tenant <tenant name> to service <dbserviceID> com.aris.cip.db.schema  
=<schema name>
```

For tenant names please only use up to 25 lowercase ASCII characters and numbers. The name must begin with a character. Special characters, such as _ and characters, for example, in Chinese, Cyrillic or Arabic cannot be used.

3. To create a new tenant, enter:

create tenant <tenant name>

The new tenant is available on ARIS Server.

ADDITIONAL SETTINGS

To enable **validationQuery** for external database connections (Oracle & Microsoft SQL) please use the correct validation query for the DBMS.

For Oracle use:

```
validationQuery="select 1 from dual" and testOnBorrow=true
```

For Microsoft SQL use:

```
validationQuery="select 1" and testOnBorrow=true
```

For better readability, the parameters of the command are shown with line-wraps. For execution you must enter a single-line command.

During registration of external service add parameters, for example, for Oracle:

```
register external service db
url="jdbc:oracle:thin:@<target_host>:<target_port>:<oracle_sid>"
driverClassName="oracle.jdbc.OracleDriver"
username="<cip_app_user>"
password="<cip_app_pwd>"
maxIdle=15
maxActive=100
maxWait=10000
removeAbandoned=false
removeAbandonedTimeout=600
defaultAutoCommit=false
rollbackOnReturn=true
host=<target_host>
port=<target_port>
jmxEnabled=true
validationQuery="select 1 from dual"
testOnBorrow="true"
```

After the external service was already registered, for example, for Oracle:

```
update external service <dbserviceID>
url="jdbc:oracle:thin:@<target_host>:<target_port>:<oracle_sid>"
driverClassName="oracle.jdbc.OracleDriver"
username="<cip_app_user>"
password="<cip_app_pwd>"
maxIdle=15
maxActive=100
maxWait=10000
removeAbandoned=false
removeAbandonedTimeout=600
defaultAutoCommit=false
rollbackOnReturn=true
host=<target_host>
jmxEnabled=true
validationQuery="select 1 from dual"
testOnBorrow="true"
```

ENABLE VALIDATIONQUERY FOR EXTERNAL POSTGRESQL CONNECTION

1. Enter: **stopall**
2. Enter: **reconfigure <postgres_runnable> dbsp.validationQuery="select 1"
dbsp.testOnBorrow=true**
3. Enter: **startall**

The database connection is configured.

2.8.2 Update external service (database clusters)

If you have performed an installation using an Oracle or Microsoft SQL database cluster you need to reconfigure the external service after the installation process.

This procedure shows an example for an Oracle database.

Procedure

1. Start ARIS Cloud Controller (ACC) (page 27).
2. To connect to an Oracle cluster using a JDBC URL you may use this example:

```
update external service <dbserviceID>  
url="jdbc:oracle:thin:@(DESCRIPTION=ADDRESS_LIST=(ADDRESS=(PROTOCOL  
=TCP) (HOST=<virtual-ip-oracle-cluster>)(PORT = <target  
port>))) (CONNECT_DATA=(SERVICE_NAME=cluster-database-name)))"  
driverClassName="oracle.jdbc.OracleDriver" username="<cip_app_user>"  
password="<new_cip_app_pwd>" maxIdle=15 maxActive=100 maxWait=10000  
removeAbandoned=false removeAbandonedTimeout=600 logAbandoned=true  
defaultAutoCommit=false rollbackOnReturn=true host=<target_host>  
jmxEnabled=true validationQuery="select 1 from dual" testOnBorrow=true
```

ARIS Server can be started using the Oracle cluster.

2.8.3 Change database connection parameters (ARIS Publisher)

After the installation of ARIS Publisher Server you might adjust the current database connection parameters stored in the **context.xml** file (<ARIS installation path>...\server\bin\work\work_businesspublisher_<size>\base\webapps\businesspublisher\META-INF). Do not modify this XML file. Use the **reconfigure** ACC command to change settings, such as ports or ARIS Publisher settings (page 22). When performing an update setup all modifications made manually in CFG or XML files will be lost.

This example shows the affected parameters when using an Oracle system with a ARIS Publisher Server installation for a medium number of users.

Example

The following values will be changed within the **businesspublisher_m** runnable:

- <DBMS-Hostname>=**ora-server.domain.tld**
- <TCPIP PORT>=**1521**
- <SERVICE-NAME>=**ARIS**
- <DBMS-USERNAME>=**ARISBP**
- <DBMS-PASSWORD>=**ARISBP**
- <DATA-TABLESPACE>=**ARISBPDATA**
- <INDEX-TABLESPACE>=**ARISBPINDEX**

To change the settings in the server configuration follow this procedure:

1. Start ARIS Cloud Controller (ACC) on your ARIS Publisher Server.
2. To stop all runnables, enter:

stop all

3. Reconfigure the **businesspublisher** runnable, enter:

```
bp.ado.database="com.idsscheer.aris.businesspublisher.application.dao.database.AOracleDAO"
```

```
bp.db.driver="oracle.jdbc.OracleDriver"
```

```
bp.db.url="jdbc:oracle:thin:@//oracle-srv.domain.tld:1521:oracle_sid"
```

```
bp.db.validation.query="select 1 from dual"
```

```
bp.db.username="ARISBP"
```

```
bp.db.passwd="ARISBP" (You can also enter encrypted passwords (page 21).)
```

```
bp.arisbpdata="ARISBPDATA"
```

```
bp.arisbpindex="ARISBPINDEX"
```

For execution you must enter a single-line command.

4. Start all runnables, enter:

start all

The properties are changed.

2.8.4 Encrypt passwords

During the setup procedure of ARIS Publisher Server the password of the application user is automatically encrypted. The application user is used to perform the database connection. You can also encrypt passwords, such as the **superuser** password. The command line tool **ARIS Server Administrator** is available if you have installed ARIS Server or the ARIS Administrator Tools (see **ARIS Client Installation Guide**).

If you have installed ARIS Server, navigate to **ARIS installation**

path>\server\bin\work\work_abs_<s, m, or l>\tools\arisadm and run the batch file.

Prerequisites

Make sure that ARIS Publisher Server and ARIS Connect Server/ARIS Design Server have the same version.

Procedure

1. Start **ARIS Server Administrator**. This command line tool is available, if you have installed ARIS Server, or the ARIS Administrator Tools (see **ARIS Client Installation Guide**).

If you have installed ARIS Server, navigate to **ARIS installation**

path>\server\bin\work\work_abs_<s, m, or l>\tools\arisadm and run the batch file. Under a Linux operating system, execute the **arisadm.sh** shell script instead. The command prompt opens and ARIS Server Administrator is launched in interactive mode.

If you accepted the program group suggested by the installation program, click **Start > Programs > ARIS > Administration > ARIS Server Administrator 10.0**.

2. Establish a connection to the server using the server command:

syntax: server <server name>: <port number> <tenant> <user name> <password>

example: server localhost:80 default system manager

3. Enter command: **encrypt <pwd_to_be_encrypted>**

Example

encrypt databaseuser

encrypted password:{ crypted} 123456789abcdefg

4. Copy the encrypted password, such as **{ crypted} 123456789abcdefg** to a text editor file.

5. Encrypt the next password, for example:

encrypt ARISBP

encrypted password:{ crypted} 1a2b3c4d5e6f7g8h9i

6. Copy the encrypted password to the text editor file.

You can use these encrypted passwords during the ARIS Publisher Server setup process. If you want to change settings of an installed ARIS Publisher Server, you can use the encrypted passwords to reconfigure ARIS Publisher settings (page 22).

2.8.5 Reconfigure ARIS Publisher settings

Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command to change settings, such as ports or ARIS Publisher settings (page 22). When performing an update setup all modifications made manually in CFG or XML files will be lost. In this example, the Oracle connection parameters of ARIS Publisher Server will be modified and the user management of another ARIS Server will be used. Also, the connection parameters to Process Governance can be adjusted.

Procedure

1. Start ARIS Cloud Controller (ACC) (page 27).
2. Reconfigure **businesspublisher_<s, m, or l>** and force that runnable to use the ARIS Administration of your ARIS Server installation.

Ensure that all values used in the **reconfigure** command, for example, for the keys **username** or **password** actually match to the values used in the <ARIS installation path>\server\bin\work\work_businesspublisher_<s, m or l>\base\webapps\businesspublisher\config\webappserver.cfg file and the **umconfig.cfg** file. If typos were made during the setup process, the affected values must be adjusted.

For better readability, the parameters of the command are shown with line-wraps. For execution you must enter a single-line command.

#Database connection parameters (in this example an Oracle database system is used)

```
bp.ado.database="com.idsscheer.aris.businesspublisher.application.dao.database.AOracleDAO"
```

```
bp.db.driver="oracle.jdbc.OracleDriver"
```

```
bp.db.url="jdbc:oracle:thin:@//oracle-srv.domain.tld:1521:oracle_sid"
```

```
bp.db.validation.query="select 1 from dual"
```

```
bp.db.username="ARISBP"
```

```
bp.db.passwd="ARISBP" (You can also enter encrypted passwords (page 21).)
```

```
bp.arisbpdata="ARISBPDATA"
```

```
bp.arisbpindex="ARISBPINDEX"
```

#ARIS Administration connection parameters

```
bp.login.module="UMCLogin"
```

"**UMCLogin**" can be found in the **webappserver.cfg** file. This parameter value switches the ARIS Publisher Server's user management to the User Management of the defined ARIS Server ARIS Administration.

```
bp.umc.server.url="http://<aris-design-or-connect-srv>.domain.tld:<port number>/umc"
```

This URL can be found in the **umconfig.cfg** file. It directs to the user management of the ARIS Server ARIS Administration. Enter the port number used during setup. The **default** port number is 80 (Windows operating systems) or 1080 (Linux operating systems).

```
bp.umc.admin.login="superuser"
```

```
bp.umc.admin.passwd=" <superuser's password >"
```

The ARIS Administration user name and password can be found in the **umcconfig.cfg** file. By default the **superuser** user has access to the user management and holds all required permissions. For security reasons, you are recommended to encrypt the password using the ARIS Server Administrator command **encrypt (page 21)** (see ARIS Server Administrator Command-Line Tool.pdf).

APG

```
bp.age.host=" <aris-design-or-connect-srv>.domain.tld"
```

```
bp.age.port=80
```

3. For execution enter a single-line command. For better readability, the parameters of the reconfigure command are shown with line-wraps, for example:

```
reconfigure businesspublisher_<s, m, or l>
```

```
bp.ado.database="com.idsscheer.aris.businesspublisher.application.dao.database.AOracle  
DAO"
```

```
bp.db.driver="oracle.jdbc.OracleDriver"
```

```
bp.db.url="jdbc:oracle:thin:@//oracle-srv.domain.tld:1521:oracle_sid"
```

```
bp.db.validation.query="select 1 from dual"
```

```
bp.db.username="ARISBP"
```

```
bp.db.passwd="ARISBP"
```

```
bp.arisbpdata="ARISBPDATA"
```

```
bp.arisbpindex="ARISBPINDEX"
```

```
bp.login.module="UMCLogin"
```

```
bp.umc.server.url="http://<aris-design-srv>.domain.tld:<port number>/umc"
```

```
bp.umc.admin.login="superuser"
```

```
bp.umc.admin.passwd=" <superuser's password >"
```

```
bp.age.host=" <aris-design-srv>.domain.tld"
```

```
bp.age.port=80
```

This **businesspublisher_<s, m, or l>** runnable is reconfigured. Publisher users are authenticated via ARIS Administration and ARIS document storage will be available if it has been connected to the ARIS Publisher Server.

These modifications will not be affected by update setups. When performing an update setup all modifications made manually in CFG or XML files will be lost.

2.9 How to adjust timestamps related to ARIS document storage

In previous ARIS versions, ARIS document storage stored timestamps, for example **Creation time** and **Update time**, referred to documents and folders in local server time and without any time zone information. If data was moved between ARIS Servers or if a tenant was restored from a backup file, timestamps were likely adjusted using a wrong time offset.

Since ARIS 10 SR6, **Coordinated Universal Time** (UTC) is mandatory for timestamps stored by ARIS document storage. Because time zone information in existing data is not available, the timestamps of existing documents and folders cannot be adjusted automatically. After the update to ARIS 10 SR6, you must manually adjust timestamps. In a Windows-based installation with local time UTC-2, for example, use the **y-admintool.bat** command-line tool and, considering UTC offset of your ARIS Servers>, enter the following:

```
y-admintool.bat -s https://localhost -t default adjustTimestamps -offset "-120" -u system -p manager
```

If you have restored a tenant from backup file created with ARIS 10 SR5 or earlier, you must adjust the timestamps as well.

2.10 How to make fonts available

Fonts define the way how text attribute values are displayed, such as names or descriptions in models, tables, output files, print outs and PDF outputs. These fonts are related to languages used in ARIS. The fonts used are taken from different sources, such as the operating system (OS), the JRE used and the system database of the tenant.

Since ARIS version 10.0.6, **Azul Zulu** JRE is used as an internally used JRE. This JRE provides no fonts anymore.

Make sure that all needed fonts are available on the operating system of the machine where ARIS Server is installed or in the related tenant.

- To make fonts available server wide, use the tools and procedures related to the operating system in use.

If you add fonts to the operating system or delete fonts, you must restart ARIS Server so that the changes take effect.

- To make fonts available tenant wide, you must add (page 26) the missing fonts to the system database of each tenant.

Adding fonts to the system database has the advantages that font sets are update-proof and there is no need restarting ARIS Server to make changes available.

2.11 Add fonts

Fonts define the way how text attribute values are displayed, such as names or descriptions in models, tables, output files, print outs and PDF outputs. These fonts are related to languages used in ARIS. The fonts used are taken from different sources, such as the operating system (OS), the JRE used and the system database of the tenant.

When ARIS Server is installed on a Windows® operating system, all fonts saved in the **Fonts** folder of the operating system are available for report and model graphic generation. Linux operating systems usually provide a smaller set of fonts.

If you use additional fonts in report scripts or in models, you must add the missing fonts to the system database of this tenant. If a used font is missing, unreadable content appears in report output files or incorrect line breaks show up in model graphics. This can occur, for example, in Japanese, if the default attribute font **MS UI Gothic** is missing. In this case, add at least the **msgothic.ttc** font file.






Warning

If ARIS Server is installed on a Linux operating system, usually no Windows® standard fonts are available. To prevent unreadable content or incorrect line breaks, make sure to add all used fonts from your Windows® operating system to the system database of the tenant.

Prerequisite

- You are script administrator for this tenant.
- You have access to the required font file (*.ttf or *.ttc).


Procedure

1. Click **ARIS** >  **Administration**.
2. Click  **Navigation** in the bar panel if the **Navigation** bar is not activated yet.
3. In the navigation tree, click the folder  **Evaluations** >  **Fonts**. All additional fonts available in the system database of this tenant are listed. If no fonts are displayed, only the fonts of the Windows® operating system are in use. These fonts are not displayed here.
4. Click  **Add font**. The dialog for file selection opens.
5. Navigate to the required **ttf** or **ttc** file.

If you want to add fonts, such as the **msgothic.ttc** font file from your **Windows/Fonts** folder, you must first copy them to a different folder. The **Windows/Fonts** folder cannot be used as source folder because the Windows® operating system does not allow direct access.

6. Select the font files and click **Open**.

The fonts are added to the system database of this tenant. They are available for reports and model graphic generation.

If you want to delete a font, move the mouse pointer to the required font, right-click, and click  **Delete**.

2.12 How to start ARIS Cloud Controller (ACC)

ACC is a command-line tool (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf)) for administrating and configuring an ARIS installation. It communicates with ARIS Agents on all nodes.

Warning

Using ACC commands will deeply affect your system. This requires profound knowledge of the technical ARIS infrastructure and environment. The required know-how can be acquired only by attending the training course **ARIS Server Installation**, available via Global Education Services (<http://softwareag.com/training>). If you use ACC commands without this knowledge or without the services of Software AG, according to the standard Software AG software maintenance agreement, we cannot guarantee proper functioning.

ARIS Cloud Controller (ACC) can be used in three modes:

- **Interactive mode (default)**

ACC runs with an interactive shell, allowing you to manually issue commands.

- **Batch mode**

Activated by specifying a command file with the **-f** command line parameter (see ACC command line parameters below). ACC will execute the commands in the file in the given sequence and exit after execution or if one of the commands fails.

A command file line starting with **#** will be interpreted as a comment line and ignored by ACC.

- **Command mode**

You can directly pass a single command to ACC as a command line parameter. The command will be executed and ACC will exit afterwards.

When passing commands directly as an ACC command line parameter, you have to be careful when escaping strings in your command, for example, double-quote-delimited parameters. The operating system command **shell** will consume the double quotes, leaving your string parameter unescaped. So please escape the quote characters.

If you issue the command in command mode, for example:

```
set remote.repository.url="http://something.com/repo"
```

You should enter:

```
acc.bat -h localhost -u <user name> -pwd <remoteAccessPassword> set
remote.repository.url="\http://something.com/repo\"
```

If you enter:

```
acc.bat -h localhost -u <user name> -pwd <remoteAccessPassword> set
remote.repository.url="http://something.com/repo"
```

ACC will return an error message, for example:

```
line 1:52 mismatched character '<EOF>' expecting '\n'  
Invalid or erroneous command "set  
remote.repository.url=http://something.com/repo ": line 1:30 extraneous  
input ':' expecting EOF  
Use "help" to display a list of available commands.
```

To get information about the usage of ACC commands, enter **help** or **help <command>**.

WINDOWS OPERATING SYSTEM

To start ACC under a Windows operating system click **Start > All Programs > ARIS > Administration > Start ARIS Cloud Controller**. If you have changed agent user credentials you must enter the user name and/or the password.

LINUX OPERATING SYSTEM

To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead. To do so, enter: **su -c acc10.sh aris10**. After the ARIS Server installation has completed on a Linux operating system, the **aris10** user is locked and has no password. Command-line tools (**sh** files), such as **ARIS Server Administrator** or **ARIS Cloud Controller** can only be started by the **aris10** user related to the ARIS Agent.

- To unlock the **aris10** user, enter: **passwd -u aris10**
- To interactively enter a password, enter: **passwd aris10**
- To start the command-line tools, enter: **su -c acc10.sh aris10** or **su -c arisadm.sh aris10**
- To execute these command-line tools as an ARIS user that has no **root** privileges, you must enter the password of the **aris10** user.
- To copy files manually into the **ARIS** directory, as the **aris10** user use the commands: **su aris10** and **sudo aris10**

As an ARIS user that has no **root** privileges, you must make sure that the files have the correct ownership (**aris10**).

- To lock the **aris10** user again enter: **passwd -l aris10**

3 Legal information

3.1 Documentation scope

The information provided describes the settings and features as they were at the time of publishing. Since documentation and software are subject to different production cycles, the description of settings and features may differ from actual settings and features. Information about discrepancies is provided in the Release Notes that accompany the product. Please read the Release Notes and take the information into account when installing, setting up, and using the product.

If you want to install technical and/or business system functions without using the consulting services provided by Software AG, you require extensive knowledge of the system to be installed, its intended purpose, the target systems, and their various dependencies. Due to the number of platforms and interdependent hardware and software configurations, we can describe only specific installations. It is not possible to document all settings and dependencies.

When you combine various technologies, please observe the manufacturers' instructions, particularly announcements concerning releases on their Internet pages. We cannot guarantee proper functioning and installation of approved third-party systems and do not support them. Always follow the instructions provided in the installation manuals of the relevant manufacturers. If you experience difficulties, please contact the relevant manufacturer.

If you need help installing third-party systems, contact your local Software AG sales organization. Please note that this type of manufacturer-specific or customer-specific customization is not covered by the standard Software AG software maintenance agreement and can be performed only on special request and agreement.

If a description refers to a specific ARIS product, the product is named. If this is not the case, names for ARIS products are used as follows:

Name	Includes
ARIS products	Refers to all products to which the license regulations of Software AG standard software apply.
ARIS Client	Refers to all programs that access shared databases by using ARIS Server.
ARIS Download Client	Refers to an ARIS Client that can be accessed using a browser.

3.2 Data protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR).

Where applicable, appropriate steps are documented in the respective administration documentation.

3.3 Restrictions

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 your product contains ARIS document storage, the following applies:

ARIS document storage was tested with 40.000 document items. This includes documents, document versions or folders. We recommend monitoring the number and overall size of stored document items and archiving some document items if needed.

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 regarding the use of process administration, ARIS Administration, ARIS document storage, and ARIS Process Board, and the generation of executable processes. Process Governance has been tested and approved for 1000 parallel process instances. However, the number may vary depending on process complexity, for example, if custom reports are integrated.