software AG

ARIS
SERVER INSTALLATION GUIDE - LINUX

VERSION 10.0 - SERVICE RELEASE 1F

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Document content not changed since release 10.0.10. It applies to the current version without changes.

Contents

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 Installation

This chapter describes the single node installation of ARIS Connect/ARIS Design Server or ARIS Publisher Server using the setup program. On Linux systems ARIS Agent must be provided (page 5) first. The required files are available on DVD 2 (Linux) (see ARIS Server Installation Guide - Linux.pdf). Then you can run an ARIS Server setup remotely from a Windows machine.

If you run an ARIS Connect/ARIS Design Server setup, the following components are installed:

- **ARIS Cloud Controller (ACC)**
- **ARIS Agent**
- **ARIS Server** comprises of 100% of **ARIS Design Server** coming with the standard database system*.
- **ARIS Connect Viewer***
- **ARIS Connect Designer***: The functionalities **ARIS Connect workflows**, **Share model**, **Change request** and **Approve model** are available using an ARIS Server license. For full ARIS Process Governance functionality you need to purchase and import an ARIS Process Governance license.
- **ARIS Download Client**: Authorized users can start ARIS Download Client within their browsers. All necessary files are downloaded from the ARIS Server to a local directory. Users do not need a local ARIS Client installation.
- The **default** tenant for all user data.
- The **master** infrastructure tenant.
- **ARIS Risk & Compliance Manager server** (optionally): The installation procedure is described in the ARIS Risk & Compliance Manager Installation Guide (see installation media).
- **ARIS Aware** (optionally)*

*If you have purchased an ARIS Design Server license (YDS), ARIS Connect components are not available and ARIS document storage provides only basic functionality. ARIS Connect and the full range of ARIS document storage are only available if you are using an ARIS Connect Server License (YCS).

You can install ARIS Connect/ARIS Design Server along with ARIS Risk & Compliance Manager on one machine. The ARIS Risk & Compliance Manager installation procedure is described in the **ARIS Risk & Compliance Manager Installation Guide**. ARIS Publisher Server must be installed on a dedicated machine, if required. For advanced 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. This is of particular importance when you intend to install ARIS across several computers/VMs (distributed installation). Such a specific scenario requires profound knowledge of the technical ARIS infrastructure and environment. This cannot be provided in the product documentation. 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).

Setup activities are logged in the files **%temp%\ARIS_install_log** and **%temp%\aris_install_full.log**.

REMOTE INSTALLATION

On Linux systems ARIS Agent must be provided (page 5) first. The required files are available on DVD 2 (Linux) (see ARIS Server Installation Guide - Linux.pdf). Then you can run an ARIS Server setup remotely from a Windows machine.

TECHNICAL DOCUMENTS

To avoid redundancies this document does not re-iterate information available in other technical documents. The documents are available on the installation media (see **Documents > English** folder structure) 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/).

For more details please review relevant documents. For example, the **ARIS Release notes** provide last-minute information that could not be included in the documents anymore. The **ARIS Guidelines for the Usage of Technical Documents guide** explains where to find relevant information, for example:

- **ARIS System Requirements**: Provides information about hardware and software requirements.

- **ARIS for SAP® Solutions**: Provides information on how to configure ARIS for SAP Solutions.

- **SAP Requirements**: Provides information about SAP software requirements (needed for ARIS for SAP® Solutions).

- **ARIS Update Cookbook**: This document is meant for ARIS administrators who are experienced in manually installing ARIS only. Knowing just how to install ARIS by using the provided ARIS standard setups is insufficient.

- **ARIS Client Installation Guide**: Describes how to install a local ARIS Client and ARIS Administrator Tools locally.

- **Functional Product Matrix**: Gives an overview on features and functionalities.

- **Technical Product Matrix**: For an overview on supported interfaces, methods, languages, and compatibilities.

  ARIS Release notes: Provides detailed information on new or changed features in this ARIS version.

2.1   Setup scenarios

This chapter describes the installation processes of ARIS products using different database management systems on Linux operating systems (page 5).

Before installing an ARIS server on a Linux operating system you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

All required **rpm** files are available on the ARIS DVD 2 (Linux). Setup programs and documents are available on ARIS DVD. The documents can be downloaded from Empower (https://empower.softwareag.com/), where a login is required, or downloaded from the ARIS Download Center (https://aris.softwareag.com/).

ARIS DVD 2 (LINUX)

Folder	Content
Documents > English	Legal documents. Technical documents in multiple languages are available on ARIS DVD.
Setups	All required setup files.
Linux <system>	Required files to install ARIS Agent and several tools for administration on SUSE and RedHat Linux systems.
ARIS_Admin	Provides ARIS Server Administrator on a Linux system (see ARIS Server Administrator Command-line Tool.pdf).
ARIS_Agent	Provides ARIS Agent. After ARIS Agent is provided, you can install an ARIS server remotely (page 5) from a Windows machine.
ARIS_Cloud_Controller	Provides ARIS Cloud Controller on a Linux system (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf).
ARIS_Scriptrunner	Provides ARIS Scriptrunner on a Linux system (see ARIS Architect online help).

After ARIS Agent was installed on the Linux machine, start the setup remotely from a Windows machine.

If you are going to use ARIS Connect/ARIS Design Server and ARIS Risk & Compliance Manager along with ARIS Publisher Server, ARIS Publisher Server must be installed on a different machine.

The ARIS Risk & Compliance Manager server installation procedure is described in the ARIS Risk & Compliance Manager Installation Guide (see ARIS DVD).

You find all setup programs within the **ARIS_Server** folder or the **ARIS_Publisher_Server** folder on the installation media 1. If you do not use the installation media to setup ARIS, copy

the whole content to a directory of your choice. This will make available all documents needed to setup ARIS as well as the database scripts. These scripts are needed to setup your external database management system for the use of ARIS.

If you only copy a single ARIS setup, make sure to copy the content of the folder containing the **setup.exe** file as well as the **Setup_Data** folder.

ARIS DVD

Folder	Content
Add-ons	Required files needed to connect third-party tools, for example, Microsoft SQL server, Oracle databases or SAP tools.
Content	ARIS databases, method filters and templates, the system database and queries, report scripts and macros that can be imported.
Documents	All required documents, guides (pdf) and ARIS Interactive Guides in different languages. All documents can be downloaded from Empower (https://empower.softwareag.com/) (login required) or from the ARIS Download Center (https://aris.softwareag.com/).
Setups	All required setup files.
Windows	All setup programs to be run on Windows machines. Files required for Linux installations are available on DVD 2 (Linux).
ARIS_Agent	Installs ARIS Agent. ARIS Agent will be installed on all Windows machines that will have an ARIS Server. It provides basic components, for example, ARIS Cloud Controller (ACC) and handles internal communication processes.
	ARIS Cloud Controller can be used in multiple modes.
	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.
	To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.
	If you are about to install an ARIS Server remotely, please make sure to first install ARIS Agent locally on that machine.
ARIS_Client	Installs an ARIS Client.

Folder	Content
ARIS_Server	Installs ARIS Connect.
	This setup will install **ARIS Agent**, **ARIS Server** comprises of 100% of **ARIS Design Server**, **standard database system (optional)**, **ARIS Connect Viewer**, **ARIS Connect Designer** and **ARIS download clients**. It provides the **default** tenant for all user data. The functionalities **ARIS Connect workflows**, **Share model**, **Change request** and **Approve model** are available using an ARIS Server license. For full ARIS Process Governance functionality you need to purchase and import an ARIS Process Governance license.
	ARIS Risk & Compliance Manager server can be installed optionally. The ARIS Risk & Compliance Manager server installation procedure is described in the ARIS Risk & Compliance Manager Installation Guide (see installation media).
	You can optionally install ARIS Aware. It provides dashboards in ARIS Connect.
	This setup can be run on Windows operating systems using the standard database system, your Microsoft SQL Server or your Oracle database. You can also install it on a Linux operating system.
ARIS_Publisher_Server	Installs ARIS Publisher Server or ARIS Publisher Report Server.
	This setup will install **ARIS Agent** and **ARIS Publisher Server**.
	Installation procedures are available for Windows operating system and Linux operating systems (page 5).
Setup_Data	Folder content needed for all setups.
	If you only copy one ARIS server setup, please make sure to copy the content of the folder containing the **setup.exe** file as well as the **Setup_Data** folder.

INSTALLING ARIS CONNECT/ARIS DESIGN SERVER

- Using the standard database
- Using a Microsoft SQL Server® (mixed mode)
- Using a Microsoft SQL Server® (Windows authentication)
- Using an Oracle® database

INSTALLING ARIS PUBLISHER SERVER

- As a Demo System
- Using a Microsoft SQL Server®
- Using an Oracle® database

2.1.1   General prerequisites

For each setup procedure described in this document, the following general prerequisites must be met. Additional prerequisites are listed in related procedure descriptions.

Prerequisites

- Make sure that the hard and software requirements are met (see: **ARIS System Requirements.pdf**).

- Make sure that the **FONTCONFIG** Linux package is installed on the Linux operating system together with all required fonts. Otherwise fonts are not visible in ARIS and unreadable text is displayed.

- It is a good idea to read the **ARIS Release Notes.pdf** for last-minute information which could not be included in this document anymore.

- If virus scanners are active on application servers used by ARIS, the performance of Java-based ARIS software is seriously reduced by on-access scanning. By automatically removing suspicious files mandatory for ARIS operations, quarantining can lead to malfunctions or a complete failure of ARIS. We therefore strongly recommend that you exclude the ARIS installation directory from on-access scanning to prevent performance impact. Scan the directory on a regular basis using a schedule. The scan should run outside of typical working hours. As some virus scanners detect false-positives, we recommend that you limit the scan to executable files only, for example, ***.exe** and ***.jar**. Known cases of false-positives are, for example, **Windows Defender Antivirus** blocking ***.pos** files (**elastic** runnable) or **McAfee**™ slowing down report execution and failing ARIS setups. Make sure that the overnight scan does not quarantine suspicious files immediately so that further inspection can be performed by ARIS Global Support (http://www.softwareag.com/premiumsupport). If you scan network traffic, this can also result in performance problems with ARIS. To prevent this, exclude the IP addresses of the ARIS Server nodes or the ARIS processes from these network scans.

- If you want to import the ARIS license file during the setup procedure, make sure to have the zip file saved on this computer. Otherwise licenses must be imported after the installation.

- You need access to the ***.rpm** files (DVD (Linux) folder **Setups\Linux <system>\ARIS_Admin**, **ARIS_Agent**, **ARIS_Cloud_Controller**, and **ARIS_Scriptrunner**).

- In the Linux operating system the port **14000** must be open.

- In the Windows operating system the ports **13131-13140** must be open to give access to the setup repository server.

- Ensure that the virtual memory available on your Linux operating system is set to **262144** (page 41).

2.1.2 Installing ARIS Connect/ARIS Design Server using the standard database

Before installing an ARIS server on a Linux operating system, you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

In **RedHat** and **SUSE** systems ***.rpm** files will perform these actions automatically:

- **/etc/sysctl.conf**

```
kernel.shmmax:
if "kernel.shmmax < 629145600" then "kernel.shmmax = 629145600"
max_file_max:
if "max_file_max < 200000" then "fs.file-max = 200000"
```

- **/etc/security/limits.d/40-aris.conf**

```
$max_file_max = "ulimit -n"
If "$max_file_max > 2^20" then max_file_max = 2^20
aris10 soft nofile $max_file_max
aris10 hard nofile $max_file_max
aris10 soft nproc 12204
aris10 hard nproc 12204
```

- **/etc/pam.d/su**

```
session required pam_limits.so
```

Prerequisites

Make sure that the general prerequisites are met (page 9).

Procedure

1. Copy the file **aris10-cloud-agent-<number>-1.x86_64.rpm** or **aris10-cloud-agent-SLES-<number>-1.x86_64.rpm** from the installation media to the hard drive of your Linux system.

   This file provides ARIS Agent. ARIS Agent is needed to perform a remote server installation.

2. Optionally copy the file **aris10-acc_<number>-1.x86_64.rpm** from the installation media (Linux) to the hard drive of your Linux system.

   This file provides ARIS Cloud Controller (ACC).

3. Optionally copy the files for installing ARIS Server Administrator and ARIS Scriptrunner. These files are not mandatory for ARIS Server to be installed.

4. Depending on the files you have copied and the type of the Linux system enter the relevant command to install the files. By default, these installations will create an unprivileged and locked user **ARIS** which uses **/home/ARIS10** to install ARIS itself. If you want to use different settings make sure to change them before installing the first **rpm** file.

   rpm –i aris10-acc-<number>-1.x86_64.rpm

   This command installs ARIS Cloud Controller (ACC) (/bin/acc10.sh) to your Red Hat and SUSE system.

   rpm –i aris10-cloud-agent-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your Red Hat system.

   rpm –i aris10-cloud-agent-SLES-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your SUSE system.

   rpm –i aris10adm-<number>-1.x86_64 and **rpm –i aris10-scriptrunner-<number>-1.x86_64**

   These commands optionally install the administrator tools **ARIS Server Administrator** and **ARIS Scriptrunner**.

5. Perform the ARIS Server installation from a machine running a Microsoft Windows operating system (DVD 1, folder **Setups\Windows\ARIS_Server**).

6. Start the **setup.exe** file as an administrator.

7. Select the **Perform installation on a remote server** option and enter the name of your Linux system.

8. Only if you need to specify an external IP address for incoming requests please enter the server name or server IP.

9. Change the ARIS Agent user's credentials to prevent unauthorized access to your ARIS system. Make sure to store the credentials on a save place. If you forget the credentials, you can no longer update the system or modify the configuration.

   If you change the credentials, you will be further on prompted to enter that password you've chosen whenever you start/stop the ARIS Server or access your ARIS installation using ARIS Cloud Controller.

10. If the ports **1080** or **1443** are already in use, specify the port numbers to be used. If you change the default port numbers users must ad **:<this port number>** to the URL (see below).

11. To force secure connections uncheck **ARIS Server port**. If you do so, please make sure to make a valid SSL server certificate available.

12. Select the suitable system settings option. You need to take the RAM required and the number of users who will be accessing the ARIS Server into account. For a productive system it is recommended to select the **Medium** or **Large** option.

    The Demo scenario option is recommended for demonstration purposes (laptop) only.

    Warning

    If the hardware does not fit the system requirements, a warning is prompted. In this case do not proceed the setup. Otherwise ARIS might not work reliably.

13. To import the ARIS license file, click **Change** to navigate to the license zip file. Otherwise licenses must be imported after the installation.

    Make sure this file contains the required ARIS Server license. If you have purchased an ARIS Design Server license (YDS), ARIS Connect components are not available and ARIS document storage provides only basic functionality. ARIS Connect and the full range of ARIS document storage are only available if you are using an ARIS Connect Server License (YCS).

14. Select the **Standard** database system.

15. Enter the SMTP mail processing parameters of an existing account.

    Warning

    If you don't, ARIS will not send any notifications, due to the missing mailing functionality.

    But you can configure SMTP mail processing (page 59) at any later point of time. Some parameters can also be managed using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

16. Activate **Use TLS/SSL encryption** to prevent password sniffing.

17. Only if your mail server requires SMTP authentication, select the option **SMTP authentication** and enter the user's credentials.

    Warning

    If you enter these parameters but your mail server does not require SMTP authentication, the connection will be rejected.

18. If you are about to use a proxy server, please enter all proxy processing parameters. You can also enter them later, using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

    You can specify a URL to be used for validating the proxy server settings.

19. Configure the start option:

    Select **Start automatically** if you want to have the server started up with every restart of your operating system.

    Select **Start manually** if you want to start/stop the server on the active computer manually.

20. Start the installation process.

This process takes some time. Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. After the ARIS Server installation has completed, you must check the installation and configure the system (page 39).

To ensure optimum performance when you are using ARIS with the standard database system, we recommend that you regularly shrink the database. This prevents that the free disk space constantly increases. To do so, execute the **vacuumdb.exe** file (<ARIS installation directory>\server\bin\agentLocalRepo\.unpacked\<build number>_PostgreSQL-run-prod-<ARIS version>-windows64-runnable.zip\postgresql\bin). For detailed information, read the instructions provided by the manufacturer (https://www.postgresql.org/docs/9.2/routine-vacuuming.htm).

To uninstall ARIS from a Red Hat or a SUSE system enter, for example, **rpm –e aris10-cloud-agent** and **rpm –e aris10-acc**.

2.1.3 Installing ARIS Connect/ARIS Design Server using a Microsoft SQL Server

Before installing an ARIS server on a Linux operating system you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

In **RedHat** and **SUSE** systems ***.rpm** files will perform these actions automatically:

- **/etc/sysctl.conf**

```
kernel.shmmax:
if "kernel.shmmax < 629145600" then "kernel.shmmax = 629145600"
max_file_max:
if "max_file_max < 200000" then "fs.file-max = 200000"
```

- **/etc/security/limits.d/40-aris.conf**

```
$max_file_max = "ulimit –n"
If "$max_file_max > 2^20" then max_file_max = 2^20
aris10 soft nofile $max_file_max
aris10 hard nofile $max_file_max
aris10 soft nproc 12204
aris10 hard nproc 12204
```

- **/etc/pam.d/su**

```
session required pam_limits.so
```

Prerequisites

- Make sure that the general prerequisites are met (page 9).

- An operating Microsoft SQL Server database. If you have not yet installed the Microsoft SQL Server, please follow the instructions in the Microsoft installation program, as well as the documentation provided by the manufacturer. The external database management system is not included in this package. If you need help in setting up ARIS using your external database system, please contact Software AG (https://empower.softwareag.com/). Please note that this service is not subject to the standard Software AG software maintenance agreement and that these changes can only be performed if you requested and agreed on them.

- The **SQL Server and Windows authentication mode** (mixed mode) option is selected (Microsoft SQL Console > **Security** tab).

- You must know the port number, the database name of the new database instance if it was not configured as a default instance, and also the user name and the password of the application user.

- You have downloaded the latest version of the Microsoft SQL Server JDBC driver, for example, **sqljdbc4-4.0.2206.100.jar** from the Microsoft Download Center to a directory of your choice.

- SQL scripts and all additional files. All scripts and files are located on the installation medium (Add-ons\DatabaseScripts\Design&ConnectServer\mssql) or they can be downloaded from the ARIS Download Center (https://aris.softwareag.com/).

Procedure

1. Copy the file **aris10-cloud-agent-<number>-1.x86_64.rpm** or
   aris10-cloud-agent-SLES-<number>-1.x86_64.rpm from the installation media to
   the hard drive of your Linux system.

   This file provides ARIS Agent. ARIS Agent is needed to perform a remote server
   installation.

2. Optionally copy the file **aris10-acc_<number>-1.x86_64.rpm** from the installation
   media (Linux) to the hard drive of your Linux system.

   This file provides ARIS Cloud Controller (ACC).

3. Optionally copy the files for installing ARIS Server Administrator and ARIS Scriptrunner.
   These files are not mandatory for ARIS Server to be installed.

4. Depending on the files you have copied and the type of the Linux system enter the
   relevant command to install the files. By default, these installations will create an
   unprivileged and locked user **ARIS** which uses **/home/ARIS10** to install ARIS itself. If
   you want to use different settings make sure to change them before installing the first
   rpm file.

   rpm –i aris10-acc-<number>-1.x86_64.rpm

   This command installs ARIS Cloud Controller (ACC) (/bin/acc10.sh) to your Red Hat and
   SUSE system.

   rpm –i aris10-cloud-agent-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your Red Hat system.

   rpm –i aris10-cloud-agent-SLES-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your SUSE system.

   rpm –i aris10adm-<number>-1.x86_64 and **rpm –i
   aris10-scriptrunner-<number>-1.x86_64**

   These commands optionally install the administrator tools **ARIS Server Administrator**
   and **ARIS Scriptrunner**.

5. Adjust the settings used by all configuration scripts.

   Edit the **envset.bat** file to specify the connection data of the Microsoft SQL server
   instance. It's a good idea to write down the credentials. They must be entered later during
   the ARIS setup process.

To specify the connection data of the Microsoft SQL instance, modify the highlighted parameters and refer to the comments:

```
REM
REM You may edit this section for customizing purposes.
REM
REM This script is intended to be executed on the Microsoft SQL server machine,
therefore the default value is 'localhost'
REM If the MSSQL_SAG_FILEGROUP_FILE_DIR directory exists on the Microsoft SQL
server machine, you can run the script remotely. When executed locally, the script
creates this mandatory directory.
REM If you use a default instance, an instance name is not required.
REM If you use named instances, enter a backslash '\' followed by the instance
name.
SET MSSQL_SAG_MSSQL_SERVER_NAME=localhost
REM This script is configured for the use of Windows authentication by default.
REM Windows authentication uses the user account running this script and does
not require user credentials to be specified in this script.
REM If you want to use user/password authentication instead, uncomment the following
lines and modify the settings for use by the SQL Server command line tool (sqlcmd).
REM SET SQLCMDUSER=sa
REM SET SQLCMDPASSWORD=manager
REM name of database that will be created by the script.
SET MSSQL_SAG_DATABASE_NAME=ARIS10DB
REM folder in which the database files should be stored.
SET MSSQL_SAG_FILEGROUP_FILE_DIR=F:\msqldata\ARIS10DB
REM credentials of the login that is used by the application.
SET MSSQL_SAG_APP_USER=ARIS10
REM If using % character in your password: Write %% to yield a single % character.
SET MSSQL_SAG_APP_PWD=*ARIS!1dm9n#
REM schema names for the default and master tenants
SET MSSQL_SAG_TENANT_DEFAULT=ARIS_DEFAULT
SET MSSQL_SAG_TENANT_MASTER=ARIS_MASTER
REM
REM The rest of the script must not be modified.
....
```

6. Execute the **inst.bat** file. This will create the database including the two mandatory tenants and the application user. The application user (APP_USER) is the Microsoft SQL user connecting ARIS and the Microsoft SQL database. The default user name is **ARIS10**. But you may have changed that name in the **envset.bat** earlier. Two schemes are mandatory. One for the **master** tenant and one for the **default** tenant. The values must be entered later during the ARIS Server setup process.

7. If you need additional tenants, you must create additional schemes for each new tenant. If you are going to create additional tenants for ARIS10.0 in order to migrate data from ARIS 9.8.7 or later, make sure to use identical names in both ARIS versions.

   Run the script **create_schema_for_tenant.bat** and pass the schema name as parameter, for example:

create_schema_for_tenant.bat <schema name for additional tenant>

If the schema already exists it will be dropped and recreated automatically. If you do not use the scripts you can also setup the database and create an empty schema for each tenant manually.

If you use an external database management system and you have created empty schemes for additional tenants, you must assign additional tenants (page 47) to these schemes after the ARIS Server setup is completed. The **default** tenant and the **master** tenant were assigned automatically.

8. Perform the ARIS Server installation from a machine running a Microsoft Windows operating system (DVD 1, folder **Setups\Windows\ARIS_Server**).

9. Start the **setup.exe** file as an administrator.

10. Select the **Perform installation on a remote server** option and enter the name of your Linux system.

11. Only if you need to specify an external IP address for incoming requests please enter the server name or server IP.

12. Change the ARIS agent user's credentials to prevent unauthorized access to your ARIS system. Make sure to store the credentials on a save place. If you forget the credentials, you can no longer update the system or modify the configuration.

    If you change the credentials, you will be further on prompted to enter that password you've chosen whenever you start/stop the ARIS Server or access your ARIS installation using ARIS Cloud Controller.

13. If the ports **1080** or **1443** are already in use, specify the port numbers to be used. If you change the default port numbers users must ad **:<this port number>** to the URL (see below).

14. Select the suitable system settings option. You need to take the RAM required and the number of users who will be accessing the ARIS Server into account. For a productive system it is recommended to select the **Medium** or **Large** option.

    The Demo scenario option is recommended for demonstration purposes (laptop) only.

    Warning

    If the hardware does not fit the system requirements, a warning is prompted. In this case do not proceed the setup. Otherwise ARIS might not work reliably.

15. To import the ARIS license file, click **Change** to navigate to the license zip file. Otherwise licenses must be imported after the installation.

    Make sure this file contains the required ARIS Server license. If you have purchased an ARIS Design Server license (YDS), ARIS Connect components are not available and ARIS document storage provides only basic functionality. ARIS Connect and the full range of ARIS document storage are only available if you are using an ARIS Connect Server License (YCS).

16. Select **MSSQL**.

17. Select the required JDBC driver for the Microsoft SQL database management system.

18. Enter the connection parameters used in the **envset.bat** file and exactly the values used by the **Microsoft SQL server**.

    The values shown are the default values used in the **envset.bat** file and the default parameters used when setting up the Microsoft SQL server.

    - **Server**: Fully qualified name or IP address of the Microsoft SQL server. The default parameter used in the **envset.bat** file is **localhost**. The default name works only if you run that script from the machine were the Microsoft SQL server is installed.
    - **Port**: Port addressing the SQL server instance running over TCP. The default port number used in the **envset.bat** file is **1433**.
    - **Instance name**: When setting up a Microsoft SQL server, the default instance name is **MSSQLSERVER**. If you use named instances, enter the used named instance name instead.
    - **Database name**: Name of the database that was created by the **envset.bat** script. The default value is **ARIS10DB**.
    - **Application user**: Login user name that is used by the application. The default value used in the from **envset.bat** file is **ARIS10**.
    - **Password**: The application user's password. The default value used in the from **envset.bat** file is ***ARIS!1dm9n#**.
    - **Default schema**: Schema name for the **default** tenant and user name for that schema's owner. The default value used in the from **envset.bat** file is **ARIS_DEFAULT**.
    - **Master scheme**: Schema name for the **master** tenant and user name for that schema's owner. The default value used in the from **envset.bat** file is **ARIS_MASTER**.

19. Enter the SMTP mail processing parameters of an existing account.

    Warning

    If you don't, ARIS will not send any notifications, due to the missing mailing functionality

    But you can configure SMTP mail processing (page 59) at any later point of time. Some parameters can also be managed using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

20. Activate **Use TLS/SSL encryption** to prevent password sniffing.

21. Only if your mail server requires SMTP authentication, select the option **SMTP authentication** and enter the user's credentials.

    Warning

    If you enter these parameters but your mail server does not require SMTP authentication, the connection will be rejected.

22. If you are about to use a proxy server, please enter all proxy processing parameters. You can also enter them later, using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

    You can specify a URL to be used for validating the proxy server settings.

23. Configure the start option:

    Select **Start automatically** if you want to have the server started up with every restart of your operating system.

    Select **Start manually** if you want to start/stop the server on the active computer manually.

24. Start the installation process.

This process takes some time. Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. After the ARIS Server installation has completed, you must check the installation and configure the system (page 39).

To uninstall ARIS from a Red Hat or a SUSE system enter, for example, **rpm –e aris10-cloud-agent** and **rpm –e aris10-acc**.

2.1.4   Installing ARIS Connect/ARIS Design Server using an Oracle database

Before installing an ARIS server on a Linux operating system you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

In **RedHat** and **SUSE** systems ***.rpm** files will perform these actions automatically:

- **/etc/sysctl.conf**

```
kernel.shmmax:
if "kernel.shmmax < 629145600" then "kernel.shmmax = 629145600"
max_file_max:
if "max_file_max < 200000" then "fs.file-max = 200000"
```

- **/etc/security/limits.d/40-aris.conf**

```
$max_file_max = "ulimit -n"
If "$max_file_max > 2^20" then max_file_max = 2^20
aris10 soft nofile $max_file_max
aris10 hard nofile $max_file_max
aris10 soft nproc 12204
aris10 hard nproc 12204
```

- **/etc/pam.d/su**

```
session required pam_limits.so
```

Prerequisites

- Make sure that the general prerequisites are met (page 9).

- An operating Oracle database management system. If you have not yet installed the Oracle database management system, please follow the instructions in the Oracle installation program, as well as the documentation provided by the manufacturer. The external database management system is not included in this package. If you need help in setting up ARIS using your external database system, please contact Software AG (https://empower.softwareag.com/). Please note that this service is not subject to the standard Software AG software maintenance agreement and that these changes can only be performed if you requested and agreed on them.

- Ensure that **SQL*PLUS** is available. Therefore an ORACLE client or an ORACL server must be installed on the machine where the scripts are run.

- Use of the database character set **AL32UTF8** is mandatory.

- You must know the port number, the database/service name of the new database instance and also the credentials, for example, the user name and the password of the application user.

- You have downloaded the latest version of the Oracle JDBC driver, for example, **ojdbc7-12.1.0.1.jar** from the Oracle Web Site to a directory of your choice.

- SQL scripts and all additional files. All scripts and files are located on the installation medium (Add-ons\DatabaseScripts\Design&ConnectServer\oracle) or they can be downloaded from the ARIS Download Center (https://aris.softwareag.com/).

Procedure

1. Copy the file **aris10-cloud-agent-<number>-1.x86_64.rpm** or
    aris10-cloud-agent-SLES-<number>-1.x86_64.rpm from the installation media to
    the hard drive of your Linux system.

    This file provides ARIS Agent. ARIS Agent is needed to perform a remote server
    installation.

2. Optionally copy the file **aris10-acc_<number>-1.x86_64.rpm** from the installation
    media (Linux) to the hard drive of your Linux system.

    This file provides ARIS Cloud Controller (ACC).

3. Optionally copy the files for installing ARIS Server Administrator and ARIS Scriptrunner.
    These files are not mandatory for ARIS Server to be installed.

4. Depending on the files you have copied and the type of the Linux system enter the
    relevant command to install the files. By default, these installations will create an
    unprivileged and locked user **ARIS** which uses **/home/ARIS10** to install ARIS itself. If
    you want to use different settings make sure to change them before installing the first
    rpm file.

    rpm –i aris10-acc-<number>-1.x86_64.rpm

    This command installs ARIS Cloud Controller (ACC) (/bin/acc10.sh) to your Red Hat and
    SUSE system.

    rpm –i aris10-cloud-agent-<number>-1.x86_64.rpm

    This command installs ARIS Agent to your Red Hat system.

    rpm –i aris10-cloud-agent-SLES-<number>-1.x86_64.rpm

    This command installs ARIS Agent to your SUSE system.

    rpm –i aris10adm-<number>-1.x86_64 and **rpm –i
    aris10-scriptrunner-<number>-1.x86_64**

    These commands optionally install the administrator tools **ARIS Server Administrator**
    and **ARIS Scriptrunner**.

5. Adjust the settings used by all configuration scripts.

    Edit the file **envset.bat** to specify the connection data of the Oracle instance. It's a good
    idea to write down values and credentials. They must be entered later during the ARIS
    Server setup process.

6. Edit the **envset.bat** file and adjust the following lines replacing the **highlighted** parameters with the settings appropriate for your environment:

   REM The path to where sqlplus.exe can be found.

   SET CIP_ORA_BIN_PATH=**<enter the path>**

   REM hostname, port and service name

   SET TARGET_HOST=**localhost**

   SET TARGET_PORT=**1521**

   SET TARGET_SERVICE_NAME=**ARIS**

7. Edit the following lines to change the **highlighted** credentials of the application user:

   REM credentials of the user that is used by the application.

   SET CIP_APP_USER=**ARIS10**

   SET CIP_APP_PWD=***ARIS!1dm9n#**

   REM password of the tenant schemas.

   SET CIP_TENANT_SCHEMA_PWD=***ARIS!1dm9n#yy**

8. With the next two lines you specify the DBA user you intend to use to create the application user and this DBA user's password:

   REM credentials of the Oracle user that will be used to create the application schema.

   REM Note that this user must be endowed with DBA privileges such as user SYSTEM.

   SET CIP_INSTALL_USER=**system**

   SET CIP_INSTALL_PWD=**manager**

9. If your data tablespace name is different from **ARISDATA** respectively **TEMP** for temp tablespace, you will also need to modify these highlighted parameters accordingly:

   REM tablespace name of the tablespace in which the data of the application schema should be stored.

   SET CIP_TS_DATA=**ARISDATA**

   REM name of the temporary tablespace.

   SET CIP_TS_TEMP=**TEMP**

10. Save the **envset.bat** file. So you can use it for future update setups again.

11. Run the script **cip_create_app_user.bat**.

    This will create the application user. The application user (CIP_APP_USER) is the Oracle user connecting ARIS and the Oracle database. The default user name is **ARIS10**. But you may have changed that name in the **envset.bat** earlier.

12. Create an empty schema for each tenant. Two schemes are mandatory. One for the **master** tenant and one for the **default** tenant. The names, for example, **aris_master** and **aris_default** can be modified. These names must be entered later during the ARIS Server setup process. If you need additional tenants, you must create additional schemes.

   To create the schema objects, run these commands for each schema name **aris_master**, **aris_default** and additional tenants.

   Run the script **cip_create_schema_for_tenant.bat** and pass the schema name as parameter, for example:

   cip_create_schema_for_tenant.bat **aris_master** (mandatory)

   cip_create_schema_for_tenant.bat **aris_default** (mandatory)

   cip_create_schema_for_tenant.bat **<oracle schema name for additional tenant>** (optional)

   If you are going to create additional tenants for ARIS10.0 in order to migrate data from ARIS 9.8.7 or later, make sure to use identical names in both ARIS versions. If the schema already exists it will be dropped and recreated.

   If you use an external database management system and you have created empty schemes for additional tenants, you must assign additional tenants (page 47) to these schemes after the ARIS Server setup is completed. The **default** tenant and the **master** tenant were assigned automatically.

13. Perform the ARIS Server installation from a machine running a Microsoft Windows operating system (DVD 1, folder **Setups\Windows\ARIS_Server**).

14. Start the **setup.exe** file as an administrator.

15. Select the **Perform installation on a remote server** option and enter the name of your Linux system.

16. Select the installation directory.

17. Only if you need to specify an external IP address for incoming requests please enter the server name or server IP.

18. Change the ARIS agent user's credentials to prevent unauthorized access to your ARIS system. Make sure to store the credentials on a save place. If you forget the credentials, you can no longer update the system or modify the configuration.

   If you change the credentials, you will be further on prompted to enter that password you've chosen whenever you start/stop the ARIS Server or access your ARIS installation using ARIS Cloud Controller.

19. If the ports **1080** or **1443** are already in use, specify the port numbers to be used. If you change the default port numbers users must ad **:<this port number>** to the URL (see below).

20. Select the suitable system settings option. You need to take the RAM required and the number of users who will be accessing the ARIS Server into account. For a productive system it is recommended to select the **Medium** or **Large** option.

    The Demo scenario option is recommended for demonstration purposes (laptop) only.

    Warning

    If the hardware does not fit the system requirements, a warning is prompted. In this case do not proceed the setup. Otherwise ARIS might not work reliably.

21. To import the ARIS license file, click **Change** to navigate to the license zip file. Otherwise licenses must be imported after the installation.

    Make sure this file contains the required ARIS Server license. If you have purchased an ARIS Design Server license (YDS), ARIS Connect components are not available and ARIS document storage provides only basic functionality. ARIS Connect and the full range of ARIS document storage are only available if you are using an ARIS Connect Server License (YCS).

22. Select **Oracle**.

23. Select the required JDBC driver for the Oracle database management system.

24. Enter the connection parameters used in the **envset.bat** file and exactly the values used by the Oracle server.

    The values shown are the default values used in the **envset.bat** file and the default parameters used when setting up the Oracle server.

    Enter exactly the values used by the Oracle server, for example, **database name**. Use the **default** schema's name and the **master** schema's name that have been created earlier.

    - **Server**: Fully qualified name or IP address of the Oracle server. The default parameter used in the **envset.bat** file is **localhost**. The default name works only if you run that script from the machine were the Oracle server is installed.

    - **Port**: Port addressing the Oracle server instance running over TCP. The default port number used in the **envset.bat** file is **1521**.

    - **Database/Service name**: Oracle SID or Oracle service name. The default value used in the from **envset.bat** file is **ARIS**.

    - **Application user**: Login user name that is used by the application. The default value used in the from **envset.bat** file is **ARIS10**.

    - **Password**: The application user's password. The default value used in the from **envset.bat** file is ***ARIS!1dm9n#**.

    - **Default schema**: Schema name for the **default** tenant and user name for that schema's owner. Enter exactly the name used when you have created the schema (see step 6), for example, **aris_default**.

- **Master scheme**: Schema name for the **master** tenant and user name for that schema's owner. Enter exactly the name used when you have created the schema (see step 6), for example, **aris_master**.

  If you are about to use an Oracle cluster you must change the format string in the next dialog:

  syntax:
  jdbc:oracle:thin:@<ORACLE_SERVER>:<ORACLE_PORT>:<ORACLE_SID>.
  After the setup process is completed you need to update the external service (page 49).

25. Enter the SMTP mail processing parameters of an existing account.

    Warning

    If you don't, ARIS will not send any notifications, due to the missing mailing functionality

    But you can configure SMTP mail processing (page 59) at any later point of time. Some parameters can also be managed using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

26. Activate **Use TLS/SSL encryption** to prevent password sniffing.

27. Only if your mail server requires SMTP authentication, select the option **SMTP authentication** and enter the user's credentials.

    Warning

    If you enter these parameters but your mail server does not require SMTP authentication, the connection will be rejected.

28. If you are about to use a proxy server, please enter all proxy processing parameters. You can also enter them later, using the ARIS Administration of this server. Please refer to the online help of ARIS Administration.

    You can specify a URL to be used for validating the proxy server settings.

29. Configure the start option:

    Select **Start automatically** if you want to have the server started up with every restart of your operating system.

    Select **Start manually** if you want to start/stop the server on the active computer manually.

30. Start the installation process.

    If you have changed the ARIS Agent's default user credentials during this procedure, you will be prompted for that password you have chosen. Alternatively, you might want to modify the shortcut (**Start > All Programs > ARIS > Administration** >...). However, that bears the risk of a stolen password.

This process takes some time. Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. After the ARIS Server installation has completed, you must check the installation and configure the system (page 39).

To ensure optimum performance when you are using ARIS with an Oracle database, we recommend that you recalculate the database statistics regularly (https://docs.oracle.com/cd/B28359_01/server.111/b28274/stats.htm#PFGRF003).

To uninstall ARIS from a Red Hat or a SUSE system enter, for example, **rpm –e aris10-cloud-agent** and **rpm –e aris10-acc**.

Update installations are available. Components will be stopped. After the system has been updated all components will be started automatically.

2.1.5   Installing ARIS Publisher Server using a Microsoft SQL Server

Before installing an ARIS server on a Linux operating system, you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

In **RedHat** and **SUSE** systems ***.rpm** files will perform these actions automatically:

▪ **/etc/sysctl.conf**

```
kernel.shmmax:
if "kernel.shmmax < 629145600" then "kernel.shmmax = 629145600"
max_file_max:
if "max_file_max < 200000" then "fs.file-max = 200000"
```

▪ **/etc/security/limits.d/40-aris.conf**

```
$max_file_max = "ulimit -n"
If "$max_file_max > 2^20" then max_file_max = 2^20
aris10 soft nofile $max_file_max
aris10 hard nofile $max_file_max
aris10 soft nproc 12204
aris10 hard nproc 12204
```

▪ **/etc/pam.d/su**

```
session required pam_limits.so
```

This setup will install **ARIS Agent** and **ARIS Publisher Server**. The standard setup installs ARIS Publisher Server including Apache Tomcat™ Web Application Server. As the used Web Application Server version cannot be the most recent version a denial of service (DoS) vulnerability can occur. This vulnerability is not critical for intranet use. For Internet use please make sure to use the most recent web application server version that matches your security requirements.

For a productive ARIS Publisher system, you must select the **small** or **large** installation option. For these installation options an external database system is required. The external database system is not included in the package. Depending on the ARIS Publisher Server license purchased, the system enables all users to simultaneously work on exports.

Prerequisites

- Make sure that the general prerequisites are met (page 9).

- The file **create_db.sql** (<installation media\Add-ons\DatabaseScripts\PublisherServer\mssql) is copied to a directory of your choice. This script can be modified according to your security guide lines.

- You have installed Microsoft SQL Server under **Microsoft Windows**. Microsoft SQL Server is not included in the package. If you install or configure a database yourself, always follow the instructions provided by the respective manufacturer, or contact your local Software AG sales organization.

- You have downloaded the latest version of the Microsoft SQL Server JDBC driver, for example, **jTDS.jar** or **sqljdbc4-4.0.2206.100.jar** from the Microsoft Download Center to a directory of your choice.

- To encrypt passwords use the ARIS Server Administrator command **encrypt** (page 51).

Procedure

1. Copy the file **aris10-cloud-agent-<number>-1.x86_64.rpm** or **aris10-cloud-agent-SLES-<number>-1.x86_64.rpm** from the installation media to the hard drive of your Linux system.

   This file provides ARIS Agent. ARIS Agent is needed to perform a remote server installation.

2. Optionally copy the file **aris10-acc_<number>-1.x86_64.rpm** from the installation media (Linux) to the hard drive of your Linux system.

   This file provides ARIS Cloud Controller (ACC).

3. Optionally copy the files for installing ARIS Server Administrator and ARIS Scriptrunner. These files are not mandatory for ARIS Server to be installed.

4. Depending on the files you have copied and the type of the Linux system enter the relevant command to install the files. By default, these installations will create an unprivileged and locked user **ARIS** which uses **/home/ARIS10** to install ARIS itself. If you want to use different settings make sure to change them before installing the first **rpm** file.

   rpm –i aris10-acc-<number>-1.x86_64.rpm

   This command installs ARIS Cloud Controller (ACC) (/bin/acc10.sh) to your Red Hat and SUSE system.

   rpm –i aris10-cloud-agent-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your Red Hat system.

   rpm –i aris10-cloud-agent-SLES-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your SUSE system.

   rpm –i aris10adm-<number>-1.x86_64 and **rpm –i aris10-scriptrunner-<number>-1.x86_64**

   These commands optionally install the administrator tools **ARIS Server Administrator** and **ARIS Scriptrunner**.

5. Adjust the system as required to manage ARIS Publisher Server in combination with a Microsoft SQL Server database. For additional information about Microsoft SQL Server, visit the Microsoft SQL Server site (http://support.microsoft.com/kb/914277/en-us).

6. Open the Microsoft SQL Console.

7. Open the **Server properties** dialog.

8. On the **Security** tab, select the **SQL Server and Windows authentication mode** option (mixed mode).

9. Create a database using the **create_db.sql** script.

10. Note the database name, user name, and password. You must enter these values later during the setup process.

11. Ensure that **Latin1_General_CI_AI** sorting is selected for the **COLLATE** statement.

    The script creates the specified data groups. Note these values. You must enter the values later during the setup process.

    ARISBPDATA: contains all database objects

    ARISBPINDEX: contains all index data

12. Close the Microsoft SQL Console.

13. Start the ARIS Publisher Server installation as an administrator (DVD folder **Setups\Windows\ARIS_Publisher_Server**).

14. Start the ARIS Publisher Server installation from a machine running a Microsoft Windows operating system (DVD folder **Setups\Windows\ARIS_Publisher_Server**).

15. Start the **setup.exe** file as an administrator.

16. Select the **Perform installation on a remote server** option and enter the name of your Linux system.

17. To import the ARIS license file right now, click **Select file...** and navigate to the license archive file. Otherwise licenses must be imported after the installation.

18. Select the ARIS Publisher Server to be installed. A Report Server can only be installed on another machine. This is to optimize system performance when running reports.

19. If you retain the settings of the installation program, the context path and the default port **14500** to the web server are entered automatically. Either make sure that the default port is not used by other programs, or enter another free port number.

20. If you use Process Governance specify the IP address or fully-qualified ARIS Server name. Enter the port number only if it is another than the standard port.

    The **Process Governance** module and the **Start governance process** pop-up menu are only available in the Publisher exports if a Process Governance license is available for the connected ARIS Server and all Process Governance integration parameters have been entered during the ARIS Publisher Server setup process.

21. To use the user and license management of another ARIS server, select **Use the ARIS Administration of an existing ARIS server**.

    Enter the URL to that ARIS Server ARIS Administration:

    http://<IP address or fully-qualified host name>:<load balancer port>/umc

    You must enter the port number only if you have changed or redirected the standard port.

    Enter the ARIS Administration user's name **superuser** and the corresponding password.

22. If you are about to manage documents using ARIS document storage of another ARIS Server, enter the required parameters. Only in this case ARIS document storage will be available if customized.

23. Select the **Medium** or **Large** installation option. You need to take the memory requirement into account to ensure optimum load distribution and better protection against failure.

24. Select the **Microsoft SQL Server** as database system.

25. Select the required JDBC driver for the Microsoft SQL database management system.

26. Enter the connection parameters used in the **create_db.sql** file and exactly the values used by the **Microsoft SQL server**.

    The values shown are the default values used in the **create_db.sql** file and the default parameters used when setting up the Microsoft SQL server.

    - **Server**: Fully qualified name or IP address of the Microsoft SQL server.

    - **Port**: Port addressing the SQL server instance running over TCP. The default port number is **1433**.

    - **Instance name**: When setting up a Microsoft SQL server, the default instance name is **MSSQLSERVER**. If you use named instances, append a backslash and enter the used instance name instead.

    - **Database name**: Name of the database that was created by the **create_db.sql** script. The default value is **ARISBP10**.

    - **Application user**: Login user name that is used by the application. The default value used in the from **create_db.sql** file is **ARISBP10**.

    - **Password**: The application user's password. The default value used in the **create_db.sql** file is ***ARISBP!1dm95n#**. This password is automatically encrypted during the setup process. You can also enter encrypted passwords (page 51).

    - **Data file group**: Name of the tablespace for table data that had been created earlier. The default value used in the **create_db.sql** file is **ARISBPDATA**.

    - **Index file group**: Name of the tablespace for index data that had been created earlier. The default value used in the **create_db.sql** file is **ARISBPINDEX**.

27. Start the installation process.

This process takes some time. Settings entered during the setup process can be adjusted (page 52), such as standard database connection parameters. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. After the ARIS Server installation has completed, you must check the installation and configure the system (page 39).

After the installation, reports are run by ARIS Publisher Server. You can additionally install a Report Server to optimize system performance when running reports. To install ARIS Publisher Report Server, start this setup again and select the ARIS Publisher Report Server to be installed. After you have installed ARIS Publisher Report Server, exports are managed by ARIS Publisher Server and reports are run by ARIS Publisher Report Server.

To uninstall ARIS from a Red Hat or a SUSE system enter, for example, **rpm –e aris10-cloud-agent** and **rpm –e aris10-acc**.

Update installations are available. Components will be stopped. After the system has been updated all components will be started automatically.

2.1.6 Installing ARIS Publisher Server using an Oracle database

Before installing an ARIS server on a Linux operating system, you must provide ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, **ARIS Cloud Controller (ACC)**, and **ARIS Scriptrunner**. Use the ***.rpm** files for Red Hat or SUSE systems. After you have copied and installed the files start the remote installation from a Windows system.

In **RedHat** and **SUSE** systems ***.rpm** files will perform these actions automatically:

- **/etc/sysctl.conf**

```
kernel.shmmax:
if "kernel.shmmax < 629145600" then "kernel.shmmax = 629145600"
max_file_max:
if "max_file_max < 200000" then "fs.file-max = 200000"
```

- **/etc/security/limits.d/40-aris.conf**

```
$max_file_max = "ulimit -n"
If "$max_file_max > 2^20" then max_file_max = 2^20
aris10 soft nofile $max_file_max
aris10 hard nofile $max_file_max
aris10 soft nproc 12204
aris10 hard nproc 12204
```

- **/etc/pam.d/su**

```
session required pam_limits.so
```

This setup will install **ARIS Agent** and **ARIS Publisher Server**. The standard setup installs ARIS Publisher Server including Apache Tomcat™ 7.x Web Application Server. As the used Web Application Server version cannot be the most recent version a denial of service (DoS) vulnerability can occur. This vulnerability is not critical for intranet use. For Internet use please make sure to use the most recent web application server version that matches your security requirements.

For a productive ARIS Publisher system, you must select the **small** or **large** installation option. For these installation options an external database system is required. The external database system is not included in the package. If you have not yet installed the Oracle database management system, please follow the instructions in the Oracle installation program, as well as the documentation provided by the manufacturer.

Depending on the ARIS Publisher Server license purchased, the system enables all users to simultaneously work on exports.

Prerequisites

- Make sure that the general prerequisites are met (page 9).

- We recommend two separate Oracle database instances for ARIS Server and ARIS Publisher. This keeps the two systems from competing for resources, and you achieve better performance and higher availability.

- While creating the database instance used by ARIS Publisher, write down all defined connection parameters, for example, the database name, the tablespace names, the user name, and password. You must enter these values later during the setup process.

- Use of the database character set **AL32UTF8** is mandatory.

- We recommend a block size of **8K**.

- **query_rewrite_enabled=true**

- **query_rewrite_integrity=trusted**

- Two tablespaces, for example, **ARISBPDATA** (for table data) and **ARISBPINDEX** (for index data) have been created.

  We recommend setting the tablespaces for automatic, unlimited growth. Otherwise, you run the risk of completely exhausting the memory in the tablespaces, which may cause important functions of ARIS Server and ARIS Publisher to fail. If the option for automatic growth is not set, regular monitoring (example: weekly) of the Oracle instance is required to ensure that the tablespaces are manually increased on time.

- We recommend turning off the Oracle recycle bin because large quantities of tables accumulate there when exports are deleted.

- An Oracle user has been created using the **Create_db_and_user.bat** and **bpadduser.sql** scripts (<installation media\Add-ons\DatabaseScripts\PublisherServer\oracle). The **ORACLE_SID** and the **Oracle system user's password** must have been adapted in the **Create_db_and_user.bat** file. Prompted during script execution, the name of the Oracle user as well as the password is arbitrary. To encrypt passwords, use the ARIS Server Administrator command **encrypt** (page 51).

Procedure

1. Copy the file **aris10-cloud-agent-<number>-1.x86_64.rpm** or
   aris10-cloud-agent-SLES-<number>-1.x86_64.rpm from the installation media to
   the hard drive of your Linux system.

   This file provides ARIS Agent. ARIS Agent is needed to perform a remote server
   installation.

2. Optionally copy the file **aris10-acc_<number>-1.x86_64.rpm** from the installation
   media (Linux) to the hard drive of your Linux system.

   This file provides ARIS Cloud Controller (ACC).

3. Optionally copy the files for installing ARIS Server Administrator and ARIS Scriptrunner.
   These files are not mandatory for ARIS Server to be installed.

4. Depending on the files you have copied, and the type of the Linux system enter the
   relevant command to install the files. By default, these installations will create an
   unprivileged and locked user **ARIS** which uses **/home/ARIS10** to install ARIS itself. If
   you want to use different settings make sure to change them before installing the first
   rpm file.

   rpm –i aris10-acc-<number>-1.x86_64.rpm

   This command installs ARIS Cloud Controller (ACC) (/bin/acc10.sh) to your Red Hat and
   SUSE system.

   rpm –i aris10-cloud-agent-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your Red Hat system.

   rpm –i aris10-cloud-agent-SLES-<number>-1.x86_64.rpm

   This command installs ARIS Agent to your SUSE system.

   rpm –i aris10adm-<number>-1.x86_64 and **rpm –i
   aris10-scriptrunner-<number>-1.x86_64**

   These commands optionally install the administrator tools **ARIS Server Administrator**
   and **ARIS Scriptrunner**.

5. Start the ARIS Publisher Server installation from a machine running a Microsoft Windows
   operating system (DVD folder **Setups\Windows\ARIS_Publisher_Server**).

6. Start the **setup.exe** file as an administrator.

7. Select the **Perform installation on a remote server** option and enter the name of your
   Linux system.

8. To import the ARIS license file right now, click **Select file...** and navigate to the license
   archive file. Otherwise licenses must be imported after the installation.

9. Select the ARIS Publisher Server to be installed. A Report Server can only be installed on
   another machine. This is to optimize system performance when running reports.

10. If you retain the settings of the installation program, the context path and the default port
    14500 to the web server are entered automatically. Either make sure that the default port
    is not used by other programs, or enter another free port number.

11. If you use Process Governance please specify the IP address or fully-qualified ARIS Server name. Enter the port number only if it is another than the standard port.

    The **Process Governance** module and the **Start governance process** pop-up menu are only available in the Publisher exports if a Process Governance license is available for the connected ARIS Server and all Process Governance integration parameters have been entered during the ARIS Publisher Server setup process.

12. To use the user and license management of another ARIS Server, select **Use the ARIS Administration of an existing ARIS Server**.

    Enter the URL to that ARIS Server ARIS Administration:

    http://<IP address or fully-qualified host name>:<load balancer port>/umc

    You must enter the port number only if you have changed or redirected the standard port.

    Enter the ARIS Administration user name **superuser** and the corresponding password. You can also enter encrypted passwords (page 51).

13. If you are about to manage documents using ARIS document storage of another ARIS Server, enter the required parameters. Only in this case ARIS document storage will be available if customized.

14. Select the **Medium** or **Large** installation option. You need to take the memory requirement into account to ensure optimum load distribution and better protection against failure.

15. Select **Oracle** as database system.

16. Select the required JDBC driver for the Oracle database management system.

17. Enter the connection parameters you have defined while creating the Oracle database.

    ▪ **Server**: Fully qualified name or IP address of the Oracle system.

    ▪ **Port**: Port addressing the Oracle server instance running over TCP. The default port number is **1521**.

    ▪ **Database instance name**: Oracle SID or Oracle service name.

    ▪ **Application user**: Login user name that is used by the application. This is the name of the Oracle user created by the **Create_user.bat** and **bpadduser.sql** scripts.

    ▪ **Password**: The application user password. This password is automatically encrypted during the setup process. You can also enter encrypted passwords (page 51).

    ▪ **Data tablespace name**: Name of the tablespace for table data that had been created earlier. The default value is **ARISBPDATA**.

    ▪ **Index tablespace name**: Name of the tablespace for index data that had been created earlier. The default value is **ARISBPINDEX**.

18. Start the installation process.

This process takes some time. Settings entered during the setup process can be adjusted (page 52), such as standard database connection parameters. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. After the ARIS Server installation has completed, you must check the installation and configure the system (page 39).

After the installation, reports are run by ARIS Publisher Server. You can additionally install a Report Server to optimize system performance when running reports. To install ARIS Publisher Report Server, start this setup again and select the ARIS Publisher Report Server to be installed. After you have installed ARIS Publisher Report Server, exports are managed by ARIS Publisher Server and reports are run by ARIS Publisher Report Server.

To uninstall ARIS from a Red Hat or a SUSE system enter, for example, **rpm –e aris10-cloud-agent** and **rpm –e aris10-acc**.

Update installations are available. Components will be stopped. After the system has been updated all components will be started automatically.

2.1.7   Configure ARIS Server

After the ARIS Server installation has completed, check the system. In order to prevent unauthorized access, you must change initial passwords and optionally define security settings for passwords. Depending on the features you want to use in ARIS additional modifications are required.

Procedure

1. If you use an external database management system and you have created empty schemes for additional tenants, you must assign additional tenants (page 47) to these schemes after the ARIS Server setup is completed. The **default** tenant and the **master** tenant were assigned automatically.

2. Make sure that all fonts are available (page 42).

3. To check the installation, start ARIS Server.

4. To do so, start **ARIS Cloud Controller** (acc10.sh). If you have changed the ARIS Agent's default user credentials during this procedure, you will be prompted for that password you have chosen.

   As the internal ARIS user running all runnables has no root privileges all privileged ports (<1024) cannot be used. To run ARIS under a privileged port you need to redirect the ports (page 44).

5. Enter **startall**. This process will take a while.

6. Enter **list** to monitor the status of all runnables.

   The state of all runnables represented by their instance IDs is listed. Possible states are:

   ▪ **UNKNOWN**

     The runnable state is not yet known. This state is shown directly after ARIS Agent was started.

   ▪ **STARTING**

     The runnable is starting, but this process is not complete yet.

   ▪ **STARTED**

     The runnable is running.

   ▪ **DEACTIVATED**

     The runnable is not in use. It has been deactivated manually and can be activated if necessary.

     This runnable is deactivated if ARIS Server was installed without ARIS Aware.

   ▪ **DOWN**

     This runnable started and crashed. ARIS Agent will attempt to automatically restart the runnable momentarily.

- **FAILED**

  This runnable has crashed. ARIS Agent has given up trying to restart the runnable.

  If you want more detailed information on health checks, please refer to the **ARIS System Monitoring** guide. If a runnable does not start properly, read the **Basic Troubleshooting** guide.

7. After all runnables have started, open your browser and enter **localhost** or **http://<IP address or fully-qualified host name>:<load balancer port>/#<tenant name>/adminSettings**. You must enter the port number only if you have changed or redirected the standard port. The login dialog opens.

8. Enter the user name **superuser** and the password **superuser**. This user only has access to the ARIS Administration of the server.

9. Click **OK**. ARIS Administration opens.

10. Click 🔷 **Licenses** and check whether the licenses were properly imported during setup. If you have not imported licenses during setup, do so now. For detailed information on license and user management and security settings refer to the **Manage ARIS Connect** online help chapter.

11. If you have installed ARIS Publisher Server, import the ARIS Publisher Server license file.

12. Click 👥 **User management**. The list of users is displayed. It contains all default users.

13. Make sure to assign all required license privileges to the **system** user, such as ARIS Architect. Otherwise the **system** user cannot perform administrative actions, such as running scheduled reports. For detailed information on license and user management and security settings refer to the **Manage ARIS Connect** online help chapter.

14. Change all default passwords.

    Warning

    To prevent unauthorized access to the ARIS system, after installation or data migration, always change the default passwords of the **arisservice** user, the **guest** user, the **system** user and the **superuser** user on all operational tenants, as well as on the infrastructure tenant (master). It is mandatory to provide administrator permissions to different users and/or make sure to not lose the superuser's password. Otherwise the system will not allow administrator access. If you did not change the **ARIS Agent** user's credentials during the setup process, please at least change the **ARIS Agent** user's password manually.

    By default, the **elastic_<s**, **m**, or **l>** runnable (Elasticsearch) uses generic user credentials required for communication with other ARIS runnables. You can check (page 54) and change (page 55) the user name and the password if required.

15. Create users or import LDAP users and assign privileges and licenses for the **default** tenant. For detailed information on user management and security settings refer to the **Manage ARIS Connect** online help chapter.

    If you have created additional tenants, users and licenses must be managed for each additional tenant.

16. Create additional system users and superusers for each tenant holding all required administrator permissions. This will allow access to the ARIS system in case of password loss.

17. Optionally customize the password policy. You can define passwords to expire after a period of time, define length or strength of a password or you can force users to change their passwords before first login.

18. If you use functionalities and extension packs, such as ARIS Publisher/IT Inventory or ARIS for SAP® Solutions, you must customize ARIS depending on the functionality to be provided. Refer to the documents **ARIS Publisher Specifics and IT Inventory** and **ARIS for SAP Solutions** (see \documents\4 Administration\41 Basic). Dashboards must be made available as well. Examples can be provided using the **United Motor Group** database (see **ARIS Aware - Configuration Guide**; ARIS Architect and ARIS Connect online help: ARIS Aware).

19. Click **Logout**.

20. Send the URL **http://<IP address or fully-qualified host name>:<load balancer port>/#<tenant name>/home** to all users.

ARIS Connect is installed and running.

You can stop ARIS Server using the **Stop ARIS Server** link in the Windows start menu or enter **stopall** in the **ARIS Cloud Controller** (see **ARIS Cloud Controller (ACC) Command-line Tool**).

2.1.7.1 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

2.1.7.2   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 were by 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 43) the missing fonts to the system database of each tenant.

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

2.1.7.3   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 >** F **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 F₊ **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**.

2.1.7.4   Redirect ports

If you have performed an ARIS installation on a Linux operating system the internal ARIS user running all runnables has no root privileges. So all privileged ports (<1024) cannot be used. To run ARIS under a privileged port, a user with root privileges must redirect the ports, for example, the HTTP port **80** or the HTTPS port **443**.

When installing ARIS on a Linux operating system, for security reasons, all ARIS components (runnables) are running under a user account that has no root privileges. Such NON-root users, cannot use privileged ports. Privileged ports are all ports <1024. This restriction in particular affects the **loadbalancer** runnable, through which all ARIS Clients access the application through **HTTP** and **HTTPS** protocol. The standard ports for these two protocols are **80** and **443**, respectively, but due to the restriction, the **loadbalancer** runnable will by default use ports **1080** and **1443**, respectively.

To allow users to access ARIS through the default ports of the respective protocol, a port redirect can be performed.

Procedure

1. To redirect ports, use the basic syntax of the **iptables** command:

    iptables -t nat -A PREROUTING -i <network interface> -p tcp --dport <port number to redirect> -j REDIRECT --to-ports <port number>

    Replace **<network interface>** with the name of the network interface through which ARIS Clients access the ARIS Server. You can use the **ip addr** command to get an overview of all network interfaces and their associated IP addresses.

    Replace **<port number to redirect>** with the port on which ARIS should be made accessible to clients. Usually this is the default port of the respective protocol: port **80** for HTTP and port **443** for HTTPS.

    Replace **<port number>** with the physical port used by the **loadbalancer** runnable, that is: port **1080** for HTTP and port **1443** for HTTPS, unless the load balancer port configuration was changed.

    This example redirects port **80** to port **1080** to allow HTTP access over the standard port for the network interface **enp0s8**:

    iptables -t nat -A PREROUTING -i enp0s8 -p tcp --dport 80 -j REDIRECT --to-ports 1080

    This example redirects port **443** to port **1443** to allow HTTPS access over the standard port, here for a network interface named **eth0**:

    iptables -t nat -A PREROUTING -i eth0 -p tcp --dport 443 -j REDIRECT --to-ports 1443

2. Start ARIS Cloud Controller (ACC).

ARIS Cloud Controller can be used in multiple modes.

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.

To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

3. Run a **reconfigure** command on the **loadbalancer** runnable.

To make the **loadbalancer** runnable know through which ports users are now accessing it, you need to run an ACC **reconfigure** command with the following syntax:

reconfigure loadbalancer_<SIZING> HTTPD.zookeeper.application.instance.http.port=<externalHttpPort> HTTPD.zookeeper.application.instance.port=<externalHttpsPort>

Replace **<SIZING>** with the sizing you used to install ARIS Server, such as **s**, **m**, or **l**.

Replace **<externalHttpPort>** with the port from which you redirect to the physical HTTP port of the **loadbalance**r runnable (usually port **80**).

Replace **<externalHttpsPort>** with the port from which you redirect to the physical HTTPS port of the **loadbalance**r runnable (usually port **443**).

This example, tells the **loadbalancer** runnable in an **m** size installation that users are now accessing it through the redirected ports **80** and **443**:

reconfigure loadbalancer_m HTTPD.zookeeper.application.instance.http.port=80 HTTPD.zookeeper.application.instance.port=443

ARIS users acces ARIS using the redirected ports.

If runnables do not start up properly, resolve possible port conflicts.

2.1.7.5   Redirect HTTPS port

To make ARISaccessible under a privileged port on a Linux system, a user with root privileges has redirect the ports (page 44), for example, the HTTP port **80** or the HTTPS port **443**.

If you have forced the **loadbalancer** runnable to use HTTPS using an ACC command, such as:

reconfigure loadbalancer_m +HTTPD.EnforceHTTPS="true"

connections cannot be established. This is because users are forwarded to **https://<server name>:1443/** instead of **https://<server name>**.

You must redirect the HTTPS port to **443**.

Procedure

1. Start ARIS Cloud Controller (ACC).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

2. Enter:

   reconfigure loadbalancer_m HTTPD.redirect.https.port=":443"

   You must enter a colon followed by the port number.

Users are forwarded correctly.

2.1.7.6 Database connection

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

2.1.7.6.1 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).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

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 DB 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

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"

1. Enter: **stopall**

2. Enter: **reconfigure <postgres_runnable> dbsp.validationQuery="select 1" dbsp.testOnBurrow=true**

3. Enter: **startall**

The database connection is configured.

2.1.7.6.2   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).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

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.

2.1.7.6.3   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 (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. 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 51).)

   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.

2.1.7.6.4   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 encrypted 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 52).

2.1.7.6.5   Reconfigure ARIS Publisher settings

Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command (page 52) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf document) to change settings. 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).

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 **umcconfig.cfg** file. If typing errors happened during the setup process the affected values must be adjusted.

   For better readability, the parameters of the reconfigure 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 51).)

   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 **umcconfig.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** 51**)** (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.

2.1.7.7 Elasticsearch authentication

The Document index (Elasticsearch) is a basic component that contains the full-text search index for documents and collaboration data. It also stores users, user groups, licenses, and privileges. By default, the **elastic_<s**, **m**, or **l>** runnable (Elasticsearch) uses generic user credentials required for communication with other ARIS runnables.

2.1.7.7.1 Check user name and password (Elasticsearch)

By default, the **elastic_<s**, **m**, or **l>** runnable (Elasticsearch) uses generic user credentials required for communication with other ARIS runnables. You can check the user name and password in use.

Procedure

1. Navigate to **<ARIS installation path>\server\bin\work\work_elastic_m**, for example, **C:\ARIS10.0\server\bin\work\work_elastic_m**.
2. Open the **instanceId.elasticsearch** file with a text editor.
3. Copy the instance ID, for example:

    elasticsearch0000000000
4. Start ARIS Cloud Controller (ACC).

    ARIS Cloud Controller can be used in multiple modes.

    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.

    To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.
5. Once ACC is initialized, enter **show service elastisearch<ID>**, for example:

    show service elasticsearch0000000000

User name and password are displayed.

```
ACC+ localhost>show service elasticsearch0000000000
Service elasticsearch0000000000 (Type ELASTICSEARCH)
Parameters:
Key        Value
ajpPort    8009
context    /
host       daetstdocu02.eur.ad.sag
password   ngCIolG6rcysQksQwWlhnsgpVmLQubei
port       14220
scheme     http
username   aris
```

You can change (page 55) the user name and the password if required.

2.1.7.7.2 Change user name and password (Elasticsearch)

By default, the **elastic_<s**, **m**, or **l>** runnable (Elasticsearch) uses generic user credentials required for communication with other ARIS runnables. You can check (page 54) and change the user name and the password if required.

Procedure

1. Start ARIS Cloud Controller (ACC).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

2. Once ACC is initialized, enter:

   reconfigure elastic_<s, **m**, or **l> +ELASTICSEARCH.aris.api.user.name="<new user name" +ELASTICSEARCH.aris.api.user.password="<new password>"**

   for example:

   reconfigure elastic_m +ELASTICSEARCH.aris.api.user.name="administrator" +ELASTICSEARCH.aris.api.user.password="Thssmynwpsswrd"

3. Stop the Collaboration runnable **ecp_<s**, **m**, or **l>**. Enter, for example:

   stop ecp_m

4. Restart the Collaboration runnable. Enter, for example:

5. **start ecp_m**

You have changed the user credentials required for the Elasticsearch.

2.1.7.7.3   Disable authentication for Elasticsearch

You can switch off the authentication for the Elasticsearch.

Warning
Disabling authentication is not recommended and must be considered carefully. It bears a potentially risk to data security.

Procedure

1. Start ARIS Cloud Controller (ACC).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

2. Once ACC is initialized, enter: **reconfigure elastic_<s**, **m**, or **l>**
   +ELASTICSEARCH.aris.api.deactivate.authentication="true"

   for example: **reconfigure elastic_m**
   +ELASTICSEARCH.aris.api.deactivate.authentication="true"

You have disabled the authentication for the Elasticsearch.

2.1.7.8   Mailing

This chapter provides information on configuring automatic mailing.

2.1.7.8.1   Configure ARIS Agent mail server connection

If only ARIS Agent is installed but no ARIS server you can activate automatic mailing in order to receive technical information from ARIS Agent. This will inform administrators, for example, about performance problems concerning ARIS Agent.

1. Start ARIS Cloud Controller (ACC) on the machine where ARIS Agent is installed.

2. Enter the following lines one after the other.

    Example:

    set mail.notification.enabled=true

    set mail.smtp.host=mailserver.us

    set mail.smtp.port=25

    set mail.smtp.username=<user name>

    set mail.smtp.password=<password>

    set mail.recipients=aris.administrator1@company.com

    set mail.recipients.cc=aris.administrator2@company.com

    set mail.sender.address=<COMPUTERNAME>@us.co

ARIS Agent mail server connection is set.

Mail notification can be configured by the following parameters:

Parameter	Description
mail.notification.enabled (default: **false**)	**true** enables automatic mailing.
mail.smtp.host	Qualified hostname or IP of the mail server.
mail.smtp.port (common: **25**)	Port of the mail server.
mail.smtp.username	User name on the mail server. If this parameter is set, the applications will implicitly enable SMTP authentication. There is **NO** dedicated parameter to explicitly enable SMTP authentication.
mail.smtp.password	Mail server password for the specified user.
mail.sender.address	Sender's e-mail address.
mail.sender.name	Sender's name.

Parameter	Description
mail.recipients	Recipient's e-mail address.
	This parameter is multivalued, specify several recipients separated with commas, for example:
	set mail.recipients = "a@abc.com","b@abc.com"
mail.recipients.cc	Recipient's e-mail address (**C**arbon **C**opy(CC)).
	This parameter is multivalued (see **mail.recipients**)
mail.on.system.events	Defining events triggering e-mail notification.
	This parameter is multivalued, specify several event types separated by comma, for example:
	set mail.on.system.events = MACHINE_STATE_CPU_LOAD_HIGH, MACHINE_STATE_
	Possible values:
	▪ MACHINE_STATE_LOW_DISK_SPACE_PERCENT
	▪ MACHINE_STATE_OK_DISK_SPACE_PERCENT
	▪ MACHINE_STATE_LOW_DISK_SPACE
	▪ MACHINE_STATE_OK_DISK_SPACE
	▪ MACHINE_STATE_CPU_LOAD_HIGH
	▪ MACHINE_STATE_CPU_LOAD_OK
	▪ MACHINE_STATE_MEMORY_USAGE_HIGH
	▪ MACHINE_STATE_MEMORY_USAGE_OK
mail.on.state.change (default: **FAILED**)	Defining events triggering e-mail notification if a runnable is in the state **FAILED**.
mail.on.runnable.monit oring.events	Defining events triggering e-mail notification.
	This parameter is multivalued (see **mail.on.system.events**).
	Possible values:
	▪ RUNNABLE_MONITORING_HIGH_THRESHOLD_EXCEEDED
	▪ RUNNABLE_MONITORING_LOW_THRESHOLD_EXCEEDED

2.1.7.8.2 Configure SMTP mail server connection

If you did not enter the SMTP server connection parameters during the setup process of a previous ARIS version you need to register your SMTP server manually.

1. Start ARIS Cloud Controller (ACC).

   ARIS Cloud Controller can be used in multiple modes.

   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.

   To start ACC under a Linux operating system, execute the **acc10.sh** shell script instead.

2. Enter, for example:

   register external service smtp host="YourMailServerAddressWithDomain" port=25

3. Check that setting entering:

   list external services

SMTP mail server configuration is set.

You can modify SMTP configuration parameters using the **update external service** command.

Parameter	Type	Default value	Description
Host host	String		Qualified hostname or IP of the SMTP server.
Port port	Integer	25	Port of the SMTP server.
User name username	String		User name on the SMTP server. If this parameter is set, the applications will implicitly enable SMTP authentication. There is **NO** dedicated parameter to explicitly enable SMTP authentication.
Password password	String		Password for the user on the SMTP server.
Sender address sender.address	String		Sender's e-mail address.
TLS use.tls	Boolean	false	Specifies if SMTP server is TLS enabled.

Parameter	Type	Default value	Description
TLS mode tls.mode	String	STARTTLS	Specifies the method used to secure the connection. Accepted values are **STARTTLS** and **SSL**. STARTTLS upgrades an initially insecure connection to an encrypted one without requiring a dedicated port for secure communication, whereas SSL immediately establishes a secured connection on a dedicated port.

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   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 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.

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.