



ARIS

SERVER INSTALLATION GUIDE - LINUX

Version 10.0 - Service Release 4

April 2018

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

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

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1 Installation

This chapter describes the single node installation of ARIS Connect/ARIS Design Server/ARIS Risk & Compliance Manager Server or ARIS Publisher Server using the setup program. On Linux systems ARIS Agent must be provided (page 4) 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. The ARIS Connect/ARIS Design Server installation makes ARIS Download Client available.

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

You can install ARIS Connect/ARIS Design Server and ARIS Risk & Compliance Manager on one machine. 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>).

SETUPS

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

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://www2.softwareag.com/corporate/services/support/default.aspx>). 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 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. 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 4) 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. 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 (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 - Process-driven Management for SAP**
Provides information on how to configure Process-Driven Management for SAP® Solutions.
- **SAP Requirements**
Provides information about SAP software requirements (needed for Process-Driven Management for SAP® Solutions).
- **Technical Whitepaper**
Gives an overview on the product and software architecture of ARIS and non-functional and provisioning aspects of typical ARIS installations.
- **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.

1.1 Setup scenarios

This chapter describes the installation processes of ARIS products using different database management systems on Linux operating systems (page 4).

Before installing an ARIS server on a Linux operating system you must provide ARIS Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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 (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 4) 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 (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. 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	<p>Installs ARIS Connect.</p> <p>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.</p> <p>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.</p> <p>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.</p>
ARIS_Publisher_Server	<p>Installs ARIS Publisher Server or ARIS Publisher Report Server.</p> <p>This setup will install ARIS Agent and ARIS Publisher Server.</p> <p>Installation procedures are available for Windows operating system and Linux operating systems (page 4).</p>
Setup_Data	<p>Folder content needed for all setups.</p> <p>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.</p>

INSTALLING ARIS CONNECT/ARIS DESIGN SERVER

- Installing ARIS Connect/ARIS Design Server on a Linux operating system using the standard database (page 8)
- Installing ARIS Connect/ARIS Design Server on a Linux operating system using a Microsoft SQL Server® (page 13)
- Installing ARIS Connect/ARIS Design Server on a Linux operating system using an Oracle® database (page 21)

ARIS PUBLISHER SERVER

- Installing ARIS Publisher Server on a Linux operating system using a Microsoft SQL Server® (page 29)
- Installing ARIS Publisher Server on a Linux operating system using an Oracle® database (page 35)
- The demo system, using Derby as database system, is not available on Linux systems.

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

Before installing an ARIS server on a Linux operating system you must provide ARIS Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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.

The remote setup will install:

- **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**
- 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 only have purchased an **ARIS Design Server** license ARIS Connect components will not be available.

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 unlimited
aris10 hard nproc unlimited
```
- **/etc/pam.d/su**

```
session required pam_limits.so
```

Prerequisites

- 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://www2.softwareag.com/corporate/services/support/default.aspx>). 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 would like to import the ARIS license file during the setup procedure, please 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 42).

Procedure

1. 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).

Please note that ACC must be installed before ARIS Cloud Agent can be installed.

2. 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.

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 would like 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.

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 add **<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.
13. To import the ARIS license file, click **Change** to navigate to the license zip file. Otherwise licenses must be imported after the installation.
14. Select the **Standard** database system.
15. Enter the SMTP mail processing parameters of an existing account.
If you don't, ARIS will not send any notifications, due to the missing mailing functionality.
But you can configure SMTP mail processing 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.
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.
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.
21. Configure the system, once after the installation process is completed. Settings entered during the setup process can be adjusted. Use the **reconfigure ACC** command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) document) to change settings.
22. Start **ARIS Cloud Controller** (acc10.sh).
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 41).
23. Enter **startall**. This process will take a while.

24. Enter **list** to check the status of all runnables.
25. After the ARIS Server is running 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.
26. Enter the user name **superuser** and the password **superuser**. This user only has access to the server's ARIS Administration.
27. The ARIS Administration's **Configuration > User management** tab opens.
28. Click  **Licenses** and check whether the licenses were properly imported during setup.
29. Create users and user groups and assign privileges and licenses for the **default** tenant. If you have created additional tenants, users and licenses must be managed for each additional tenant.
30. Create additional system users and superusers holding all required administrator permissions. This will allow access to the ARIS system in case of password loss.

To prevent unauthorized access to the ARIS system, after installation or data migration, always change the 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.

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

ARIS Server is installed, customized and running.

You can stop the server by entering **stopall** in the **ARIS Cloud Controller**. For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or Process-Driven Management 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 - Process-driven Management for SAP** (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). You can also change settings entered during the setup process using the administration tools.

To obtain information on system requirements and required settings please refer to the related documents in the **Administration** folder on DVD. 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 (aris.softwareag.com).

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

1.1.2 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 Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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.

The remote setup will install:

- **ARIS Cloud Controller (ACC)**
- **ARIS Agent**
- **ARIS Server** comprises of 100% of **ARIS Design Server**.
- **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**
- 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 only have purchased an **ARIS Design Server** license ARIS Connect components will not be available.

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 unlimited
aris10 hard nproc unlimited
```
- **/etc/pam.d/su**

```
session required pam_limits.so
```


Prerequisites

- Make sure that the hard and software requirements are met (see: **ARIS System Requirements.pdf**).
- 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://www2.softwareag.com/corporate/services/support/default.aspx>). 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.
- 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 need to know the port number, the database name of the new database 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\ARIS Server\mssql) or they can be downloaded from the ARIS Download Center (aris.softwareag.com).
- If you would like to import the ARIS license file during the setup procedure, please 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 42).

Procedure

1. 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).

Please note that ACC must be installed before ARIS Cloud Agent can be installed.

2. 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.

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 would like 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**.

- 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:

```
@ECHO OFF
REM
REM You may edit this section for customizing purposes.
REM

REM If you use named instances then append a "\" and the name of your instance
SET MSSQL_SAG_MSSQL_SERVER_NAME=localhost

REM The login name that is used to execute this script
SET MSSQL_SAG_MSSQL_LOGIN_NAME=localhost\username

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
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
...
```

- 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.
- 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 have created empty schemes for additional tenants, you must assign additional tenants (page 44) 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.
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 add **:<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.
15. To import the ARIS license file, click **Change** to navigate to the license zip file. Otherwise licenses must be imported after the installation.
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 where 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 schema

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.

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

But you can configure SMTP mail processing 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.

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.

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.

If you have changed the ARIS Agent's default user credentials during this procedure, you will be prompted for that password you have chosen.

25. Configure the system, once after the installation process is completed. Settings entered during the setup process can be adjusted. Use the **reconfigure ACC** command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) document) to change settings.

26. Start **ARIS Cloud Controller** (acc10.sh).

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 41).


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

28. Enter **list** to check the status of all runnables.

29. After the ARIS Server is running 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.

30. Enter the user name **superuser** and the password **superuser**. This user only has access to the server's ARIS Administration.

31. The ARIS Administration's **Configuration > User management** tab opens.

32. Click  **Licenses** and check whether the licenses were properly imported during setup.

33. Create users and user groups and assign privileges and licenses for the **default** tenant. If you have created additional tenants, users and licenses must be managed for each additional tenant.

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

To prevent unauthorized access to the ARIS system, after installation or data migration, always change the 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.

35. Click **Logout**.

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

ARIS Server is installed, customized and running.

You can stop the server by entering **stopall** in the **ARIS Cloud Controller**.

If you have created empty schemes for additional tenants, you must assign additional tenants (page 44) to these schemes after the ARIS Server setup is completed. The **default** tenant and the **master** tenant were assigned automatically.

For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or Process-Driven Management 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 - Process-driven Management for SAP** (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). You can also change settings entered during the setup process using the administration tools.

To obtain information on system requirements and required settings please refer to the related documents in the **Administration** folder on DVD. 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 (aris.softwareag.com).

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

1.1.3 Installing ARIS Connect using an Oracle® database

Before installing an ARIS server on a Linux operating system you must provide ARIS Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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.

The remote setup will install:

- **ARIS Cloud Controller (ACC)**
- **ARIS Agent**
- **ARIS Server** comprises of 100% of **ARIS Design Server**.
- **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**
- 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 only have purchased an **ARIS Design Server** license ARIS Connect components will not be available.

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 unlimited
aris10 hard nproc unlimited
```
- **/etc/pam.d/su**

```
session required pam_limits.so
```


Prerequisites

- Make sure that the hard and software requirements are met (see: **ARIS System Requirements.pdf**).
- 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://www2.softwareag.com/corporate/services/support/default.aspx>). 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.
- 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 need to 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\ARIS Server\oracle) or they can be downloaded from the ARIS Download Center (aris.softwareag.com).
- If you would like to import the ARIS license file during the setup procedure, please 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 42).

Procedure

1. 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).

Please note that ACC must be installed before ARIS Cloud Agent can be installed.

2. 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.

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 would like 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 schemas 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 have created empty schemes for additional tenants, you must assign additional tenants (page 44) 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.

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

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 where 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 47).

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

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

But you can configure SMTP mail processing 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.

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.

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.

31. Configure the system, once after the installation process is completed. Settings entered during the setup process can be adjusted. Use the **reconfigure ACC** command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) document) to change settings.

32. Start **ARIS Cloud Controller** (acc10.sh).

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 41).

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

34. Enter **list** to check the status of all runnables.

35. After the ARIS Server is running 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.

36. Enter the user name **superuser** and the password **superuser**. This user only has access to the server's ARIS Administration.

37. The ARIS Administration's **Configuration > User management** tab opens.

38. Click  **Licenses** and check whether the licenses were properly imported during setup.

39. Create users and user groups and assign privileges and licenses for the **default** tenant. If you have created additional tenants, users and licenses must be managed for each additional tenant.
40. Create additional system users and superusers holding all required administrator permissions. This will allow access to the ARIS system in case of password loss.

To prevent unauthorized access to the ARIS system, after installation or data migration, always change the 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.

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

ARIS Server is installed, customized and running.

You can stop the server by entering **stopall** in the **ARIS Cloud Controller**.

If you have created empty schemes for additional tenants, you must assign additional tenants (page 44) to these schemes after the ARIS Server setup is completed. The **default** tenant and the **master** tenant were assigned automatically.

For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or Process-Driven Management 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 - Process-driven Management for SAP** (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). You can also change settings entered during the setup process using the administration tools.

To obtain information on system requirements and required settings please refer to the related documents in the **Administration** folder on DVD. 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 (aris.softwareag.com).

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.

1.1.4 Installing ARIS Publisher Server using a Microsoft SQL Server®

Before installing an ARIS server on a Linux operating system you must provide ARIS Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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 unlimited
aris10 hard nproc unlimited
```

- **/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

- 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.
- Make sure that the hard and software requirements are met (see: **ARIS System Requirements.pdf**).
- 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://www2.softwareag.com/corporate/services/support/default.aspx>). 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.

- 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 49).
- If you would like to import the ARIS license file during the setup procedure, please make sure to have the zip file saved on this computer. Otherwise licenses must be imported after the installation.

Procedure

1. 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).
Please note that ACC must be installed before ARIS Cloud Agent can be installed.
2. 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.
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 would like 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 <http://support.microsoft.com/kb/914277/en-us> (<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...** to navigate to the license 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 49).

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.
 28. Configure the system (see **ARIS Publisher Specifics and IT Inventory Guide**), once after the installation process is completed. Settings entered during the setup process can be adjusted. Use the **reconfigure ACC** command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) document) to change settings.
 29. Start **ARIS Cloud Controller** (acc10.sh).

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 41).
 30. Enter **startall**. This process will take a while.
 31. Enter **list** to check the status of all runnables.
 32. After ARIS Publisher Server is running open your browser and enter:
http://<IP address or fully-qualified host name>:<port number>/businesspublisher, for example,
http://arispublishersrv:14500/businesspublisher
 33. Start the ARIS Administration of the ARIS Server and import the ARIS Publisher Server license file.
- ARIS Publisher Server is installed, customized and running.

You can stop the server by entering **stopall** in the **ARIS Cloud Controller**. For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or Process-Driven Management 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 - Process-driven Management for SAP** (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). You can also change settings entered during the setup process using the administration tools.

To obtain information on system requirements and required settings please refer to the related documents in the **Administration** folder on DVD. 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 (aris.softwareag.com).

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.

1.1.5 Installing ARIS Publisher Server using an Oracle® database

Before installing an ARIS server on a Linux operating system you must provide ARIS Cloud Controller (ACC) and ARIS Agent to your Linux Red Hat or SUSE system. To allow customizing activities additionally provide the command-line tools **ARIS Server Administrator**, 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 unlimited
aris10 hard nproc unlimited
```

- **/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

- 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.
- Make sure that the hard and software requirements are met (see: **ARIS System Requirements.pdf**).
- 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://www2.softwareag.com/corporate/services/support/default.aspx>). 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.
- 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 49).
- If you would like to import the license file right now please make sure to have the ARIS Publisher Server license zip file saved on this computer. Otherwise licenses must be imported after the installation.

Procedure

1. 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).

Please note that ACC must be installed before ARIS Cloud Agent can be installed.

2. 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.

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 would like 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...** to navigate to the license zip 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 49).

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 49).

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.
19. Configure the system, once after the installation process is completed. You may change the standard database connection parameters (page 48). You can adjust (page 50) all parameters that have been entered during the setup process.
20. Start **ARIS Cloud Controller** (acc10.sh).
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 41).
21. Enter **startall**. This process will take a while.
22. Enter **list** to check the status of all runnables.
23. After ARIS Publisher Server is running open your browser and enter:
http://<IP address or fully-qualified host name>:<port number>/businesspublisher, for example:
http://arispublishersrv:14500/businesspublisher
24. Start the ARIS Administration of the ARIS Server and import the ARIS Publisher Server license file.

ARIS Publisher Server is installed, customized and running.

You can stop the server by entering **stopall** in the **ARIS Cloud Controller**. For some functionalities and extension packs, for example, ARIS Publisher/IT Inventory or Process-Driven Management 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 - Process-driven Management for SAP** (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). You can also change settings entered during the setup process using the administration tools.

To obtain information on system requirements and required settings please refer to the related documents in the **Administration** folder on DVD. 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 (aris.softwareag.com).

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.

1.1.6 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**.

Procedure

1. Start ARIS Cloud Controller (ACC). Relative to your Linux system you need to redirect different ports one after another.
2. To redirect ports to be accessed from external clients enter the commands using the following syntax:

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

This example redirects port **80** to port **1080**:

```
iptables -t nat -A PREROUTING -i eth0 -p tcp --dport 80 -j REDIRECT --to-ports 1080
```

3. To redirect ports to be accessed from internal web browsers enter the commands using the following syntax:

```
iptables -t nat -A OUTPUT -p tcp -d <server IP address>/<bit number netmask> --dport <port number to redirect> -j REDIRECT --to-port <port number>
```

This example redirects port **80** to port **1080** using **127.0.0.1** for **localhost** and **/8** using netmask 255.255.255.0:

```
iptables -t nat -A OUTPUT -p tcp -d 127.0.0.0/8 --dport 80 -j REDIRECT --to-port 1080
```

In order to use personal computer names too please enter this command again using the IP address of the personal computer, for example:

```
iptables -t nat -A OUTPUT -p tcp -d 10.128.33.176/8 --dport 80 -j REDIRECT --to-port 1080
```

4. Redirect other ports, for example, port **443**.
5. Enter **startall**.

ARIS runnables run using the redirected ports.

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

1.1.7 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
```

1.1.8 Configure database connection

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

1.1.8.1 Configure the database connection for additional schemes

ASSIGN TENANT TO DATABASE SCHEMA

During the setup process you have created an empty Oracle or Microsoft SQL schema for an additional tenant (see ARIS Server Installation Guide (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Server Installation - Windows.pdf)). Additionally created tenants must be assigned to the database schema.

1. Start ARIS Cloud Controller (ACC).

Discover the database service ID (<dbserviceID>):

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 and characters, for example, in Chinese, Cyrillic or Arabic cannot be used.

2. Create the new tenant:

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
logAbandoned=true
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
logAbandoned=true
defaultAutoCommit=false
rollbackOnReturn=true
host=<target_host>
jmxEnabled=true
validationQuery="select 1 from dual"
testOnBorrow="true"
```


ENABLE VALIDATIONQUERY FOR EXTERNAL POSTGRESQL CONNECTION

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

The database connection is configured.

1.1.8.2 Update external service (database clusters)

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

This procedure shows an example for an Oracle database.

Procedure

1. Start ARIS Cloud Controller (ACC).
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.

1.1.8.3 Change database connection parameters (ARIS Publisher)

After the installation of ARIS Publisher Server you might adjust the current database connection parameters stored in the **context.xml** file (<ARIS installation path>...\server\bin\work\work_businesspublisher_<size>\base\webapps\businesspublisher\META-INF). Do not modify this XML file. Use the **reconfigure** ACC command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) 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 49).)
```

```
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.

1.1.8.4 Encrypt passwords

During the setup procedure of ARIS Publisher Server the password of the application user is automatically encrypted. The application user is used to perform the database connection. You can also 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 would like to change settings of an installed ARIS Publisher Server, you can use the encrypted passwords to reconfigure ARIS Publisher settings (page 50).

1.1.8.5 Reconfigure ARIS Publisher settings

Settings entered during the setup process can be adjusted. Use the **reconfigure** ACC command (page 50) (see ARIS Cloud Controller (ACC) Command-Line Tool.pdf (../../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/ARIS Cloud Controller (ACC) Command-Line Tool.pdf) 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 on your ARIS Publisher Server.
2. Reconfigure **businesspublisher_<s,m or l>** and force that runnable to use the ARIS Administration of your ARIS Server installation.

Ensure that all values used in the **reconfigure** command, for example, for the keys **username** or **password** actually match to the values used in the <ARIS installation path>\server\bin\work\work_businesspublisher_<s, m or l>\base\webapps\businesspublisher\config\webappserver.cfg file and the **umconfig.cfg** file. If 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 49).)
```

```
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 49)** (see ARIS Server Administrator Command-Line Tool.pdf (.../documents/3 Installation/31 Initial installation/312 Server/3121 Basic (Single node)/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 I>
```

```
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"
```

```
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 I>** 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 Disclaimer

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

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

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

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

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

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

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