ACI Release 3.13
Installation Manual

T · Systems

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Brief details

Installation manual for ACI.

This guide describes the installation and configuration of ACI.

Before using this guide, be sure you understand:

- the administration of 3DEXPERIENCE,
- the administration of Aras Innovator.

Trademarks

3DEXPERIENCE is a registered trademark of Dassault Systèmes.

Aras and Aras Innovator are registered trademarks of Aras Corporation.

Oracle is a registered trademark of Oracle Corporation.

Names of other products mentioned in this manual are used only for identification purpose and may be trademarks of their companies.

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1 Overview

1.1 System and Software Requirements

ACI Installation on the following minimum operation systems and software prerequisites:

- Windows Server 2016
- Java runtime environment 17 for Windows x64
- Apache Tomcat 9.0.x

For the file cache, at least 500GB of disk space are recommended.

Each 3DEXPERIENCE batch server must have a graphics card, please consult the Dassault Systèmes recommendations:

http://media.3ds.com/support/certified_hardware/Windows_10_64-bit.html

https://media.3ds.com/support/certified_hardware/Windows_11_64-bit.html

The following systems are supported:

- 3DEXPERIENCE R2022x
- 3DEXPERIENCE R2023x
- 3DEXPERIENCE R2024x
- 3DEXPERIENCE R2024x
- 3DEXPERIENCE Public Cloud
- Aras Innovator 12 and above
- Aras Innovator Community Edition
- Aras Innovator Cloud

The following DBMS are supported:

- Oracle Database 11g Release 2 and above
- H2 DB 1.4
- MS SQL Server 2012 and above

1.1.1   3DEXPERIENCE licenses and user rights

Required licenses depend on use case and 3DEXPERIENCE technology used.

1.1.1.1   On Premise: Licenses

Product	Trigram
Collaborative Business & Industry Innovation, includes: CSV (Platform Contributor) IFW (Platform Member)	PCS
Engineering Adapter for X-PDM	MUX (not required for XPDM import with POWER'BY)
Engineering Data Exchange Manager	EXH (not required for XPDM import with POWER'BY)
Optional	
Product Manager	PDM (for Configuration / Variant Management) (required for authoring only)
Collaborative Designer for CATIA V5	UE5 (for CATIA V5 POWER'BY import)
Conversion Data Integrator	FO* (for XCAD conversion of specific format, e.g. FOJ for JT support)

Table 1: Required 3DEXPERIENCE licenses.

1.1.1.2   On Premise: User rights

The 3DEXPERIENCE user executing the import and export operations needs to have Leader role assigned in the Collaborative Spaces to / from which data is transferred.

The user needs business and system administrator privileges as required by Dassault Systèmes. These rights can only be assigned using MQL:

```
modify person username access all admin all type system type business;
```

1.1.1.3   On Public Cloud: licenses

Required licenses depend on use case and 3DEXPERIENCE technology used.

Product	Trigram
Collaborative Business & Industry Innovator Package: IFW-OC (Collaborative Business Innovator) CSV-OC (Collaborative Industry Innovator)	PCS-OC
Enterprise IP Exchange Manager	XXH-OC (only for EIF STEP export/import)
Enterprise IP Exchange Package	XXK-OC (only for EIF STEP export)
Engineering Data Exchange Manager	EXH-OC (only for file batch export)

Table 2: Required 3DEXPERIENCE licenses in Public Cloud environment

1.1.1.4 CATIA V5 CAD Pre- and Postprocessing

Batch processing of native CAD file data may be required for 3DEXPERIENCE Import (preprocessing) and 3DEXPERIENE Export (postprocessing). A CATIA V5 license for the respective CAD system e.g. for example HD2, M3D, PX1 (optional), EHI (optional for electric data support).

1.1.2 Software Requirements for Oracle Database

Copy the OJBDC driver matching your database version (e.g. ojdbc8.jar) from your Oracle installation or download it from Oracle website. Place the driver in the lib folder of the Tomcat that runs ACI.

The recommended database character set is **al32utf8**.

1.1.3 Software Requirements for MS SQL Server

Download the JDBC driver for your database and Java runtime version from Microsoft (e.g. mssql-jdbc-11.2.1.jre8.jar) and place the .jar file in the lib folder of the Tomcat that runs ACI.

MS SQL Server must be configured with TCP connections enabled.

1.2 Shipment

The software delivery contains the following:

- ACI
- ACI Converter Server (XCI_CS)
- ACI File Cache (XCI_FC)
- ACI Aras Data Model Extension (ACI_ARAS_DM)
- ACI 3DEXPERIENCE Web Client Extension (ACI_3DX_UI)
- XCI 3DEXPERIENCE Batch (XCI_3DX_BATCH)
- COM/ReconV5 (COMReconV5)
- Licman21
- ACI documentation

The product makes use of 3rd Party and Open Source Software. A list of the used products and its licenses is distributed with the software.

2 Infrastructure Overview

2.1 Overview
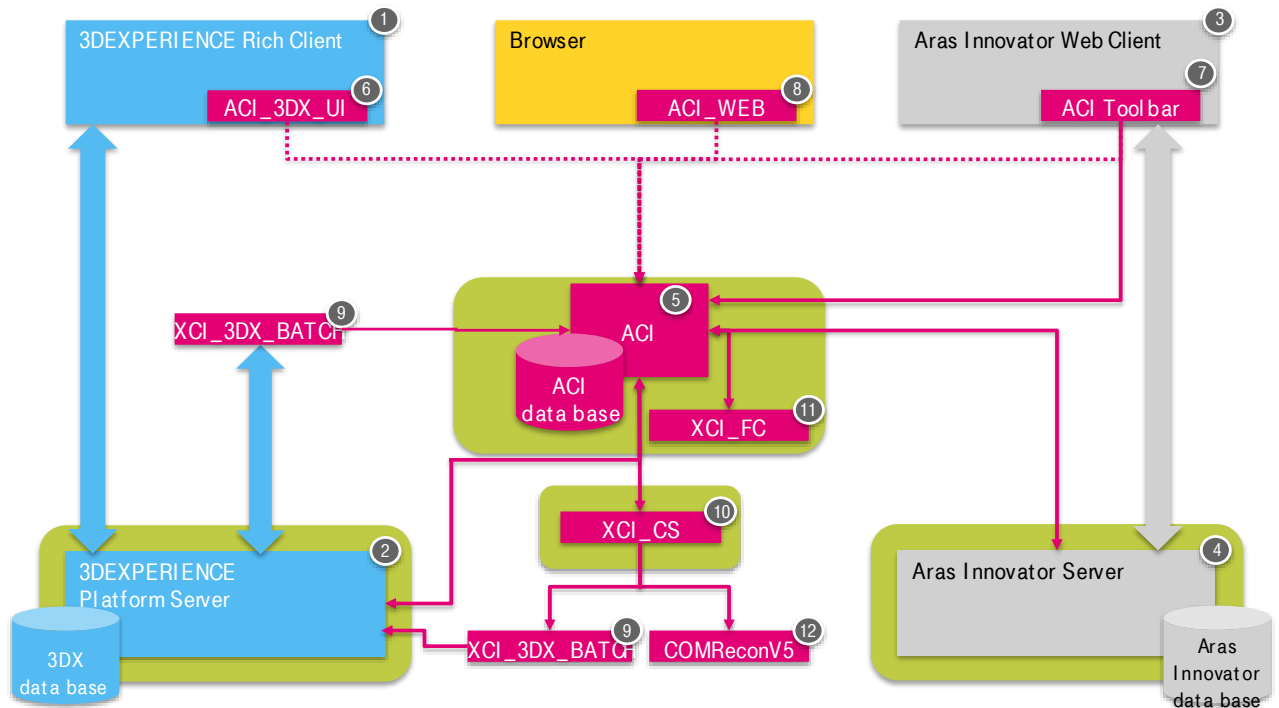
Figure 1: ACI Infrastructure Overview

1. 3DEXPERIENCE Rich Client
2. 3DEXPERIENCE Server
3. Aras Client
4. Aras Server
5. ACI
6. ACI 3DEXPERIENCE Web Client Extension
7. ACI Aras Data Model Extension (ACI_ARAS_DM)
8. ACI Web Client
9. XCI 3DEXPERIENCE Batch
10. ACI Converter Server (XCI_CS)
11. ACI File Cache (XCI_FC)
12. CATIA V5 CAD data processing (COM/ReconV5) Batch
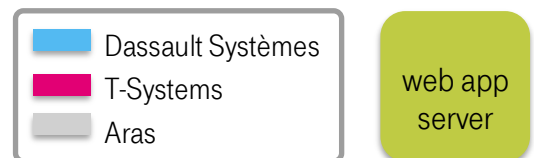
2.2 Infrastructure Remarks

The XCI 3DEXPERIENCE Batch must be installed at each ACI Converter Server that is used to run 3DEXPERIENCE utilities. A 3DEXPERIENCE rich client environment (CATIA V6) is a prerequisite.

If CATIA V5 Preprocessing or CATIA V5 Postprocessing is enabled, the COMReconV5 package must be installed at the configured hosts. A CATIA V5 client environment with the same CATIA V5 version is a prerequisite.

3   Installing ACI

3.1   Prerequisites

3.1.1   Enable secure communication via https

You can skip this step if no secure communication (HTTP) is used.

It is recommended to setup ACI application servers with HTTPS to secure communication between ACI components.

For secure communication (HTTPS) with the connected servers (Aras Innovator and 3DEXPERIENCE) make sure that the necessary certificates are installed at the ACI host. The certificates must be copied from the Aras Innovator server and the 3DEXPERIENCE server respectively and imported into the Java installation.

Open a command shell as administrator and check or set the proper Java home directory:

Use the keytool.exe in your Java installation. The default password is "changeit".

```
set JRE_HOME=<yourJreDir>
"%JRE_HOME%\bin\keytool.exe" -import -keystore
"%JRE_HOME%\lib\security\cacerts" -storepass changeit -noprompt -
trustcacerts -alias <yourAlias> -file <yourFile.crt>
```

3.1.2   Aras Innovator

The Aras Innovator server has been installed.

3.1.2.1   Prerequisite Configuration of MS Internet Information Services

The ACI Aras Innovator Connectivity module sends files via a HTTP Post request to Aras Innovator. The Microsoft IIS Server has a default size limit for Post requests of roughly 30 MB. If a larger file is transferred, a HTTP 413 error is returned.

To change the size limit of Post requests:

- Open Internet Information Services (IIS) Manager

- Navigate to the connection, site and application

- Open the Request Filtering and click 'Edit Feature Settings' in the Action Pane

- Change the value of `'maxAllowedContentLength'` to the desired limit in bytes. For example, 2147483648 allows files of up to 2 GB.

For further information refer to the Microsoft documentation: https://docs.microsoft.com/en-us/iis/configuration/system.webserver/security/requestfiltering/requestlimits/

3.1.2.2   ACI Aras Data Model Extension (ACI_ARAS_DM)

The ACI Aras Data Model Extension (ACI_ARAS_DM) must be installed. The Extension extends the data model and provides a UI Extension in the Aras Innovator Client.

3.1.3   3DEXPERIENCE

3.1.3.1   Direct access to 3DEXPERIENCE server (On Premise)

ACI requires access to the 3DEXPERIENCE server. As a prerequisite the following libraries must be copied from the 3DEXPERIENCE server installation:

```
<3DEXPERIENCE install path>\3DSpace\win_b64\docs\javaserver\
  eMatrixServletRMI.jar
<3DEXPERIENCE install path>\3DSpace\win_b64\docs\javaserver\
  FcsClient.jar
```

to a directory on the TCI server host, for example `C:\ACI\3dexp-lib`. This directory will be called `<3DEXP-LIB>` in this document.

3.2   ACI setup

This section describes how you should install the ACI, XCI_FC, and XCI_CS.

3.2.1   Setup ACI as web application

ACI will be deployed to a web application server.

ACI will be installed in a directory on the host machine. This directory will be called `<ACI_INSTALL_DIR>` in the following steps.

For example:

```
C:\ACI
```

The web application server Tomcat must be installed to a known directory. We recommend installing Tomcat and other packages (e.g. XCI 3DEXPERIENCE Batch) in `<ACI_INSTALL_DIR>` to keep all components in one place.

For example, for Tomcat this is then:

```
C:\ACI\apache-tomcat-9.0.89.
```

The Tomcat installation directory will be called `<CATALINA_HOME>` in this document.

3.2.1.1   Package

Locate the package `XCI_Aras_3DX_<3DX Version>-<ACI Version>.zip` (for example `XCI_Aras_3DX_2023x-3.11.0.0.01.zip`) and unzip to temporary location.

In the next steps we will move and edit some of the delivered files.

3.2.1.2   XCI_HOME directory

Copy the XCI_HOME directory from the software package to `<ACI_INSTALL_DIR>` and remove the `.sample` from `XCISettings.xml.sample` and `XCIAdminSettings.xml.sample`.

This directory will be the main working directory for ACI. The settings file controls behavior of ACI.

3.2.1.3   Tomcat: 3DEXPERIENCE libraries

The web application must have access to 3DEXPERIENCE libraries in the classpath (see section 3.1.3.1). The following lines must be added to the Tomcat configuration file **<CATALINA_HOME>/conf/context.xml** in the Resources section:

```
<Resources>
  <PostResources
      className="org.apache.catalina.webresources.JarResourceSet"
      base="<3DEXP-LIB>/eMatrixServletRMI.jar"
      webAppMount="/WEB-INF/classes">
  </PostResources>
  <PostResources
      className="org.apache.catalina.webresources.JarResourceSet"
      base="<3DEXP-LIB>/FcsClient.jar"
      webAppMount="/WEB-INF/classes">
  </PostResources>
</Resources>
```

Where **<3DEXP-LIB>** needs to be replaced by the absolute or relative path to the 3DEXPERIENCE library locations.

If ACI has been customized using the Java customization endpoints, please add additional entry pointing to the directory containing the customization .jar file.

```
<PostResources
      className="org.apache.catalina.webresources.DirResourceSet"
      base="<XCI_HOME>/custom"
      webAppMount="/WEB-INF/lib">
</PostResources>
```

3.2.1.4   Tomcat: database connection

ACI makes use of a database to store and keep track of required data. The used database must be configured using the resource definition of the application server. ACI will read the resource defined as **jdbc/xciDB**.

The resource must be configured at the Tomcat application server in **<CATALINA_HOME>/conf/context.xml**.

Database drivers should be copied to **<CATALINA_HOME>/lib.** See 1.1.2 for Oracle database and 1.1.3 for MS SQL Server.

If the resource is not defined at the application server, a local and file based H2DB will be created in the home directory.

Example resource definition for Oracle:

```
<Resource name="jdbc/xciDB"
          type="javax.sql.DataSource"
          auth="Container"
          driverClassName="oracle.jdbc.OracleDriver"
```

```
        maxTotal="100"
        maxIdle="10"
        maxWaitMillis="-1"
        url="jdbc:oracle:thin:@my.db-server-url.com:1521:orcl"
        username="XCI"
        password="XCI" />
```

Example resource definition for MS SQL:

```
<Resource name="jdbc/xciDB"
        type="javax.sql.DataSource"
        auth="Container"
        driverClassName="com.microsoft.sqlserver.jdbc.SQLServerDriver"
        maxTotal="100"
        maxIdle="10"
        maxWaitMillis="-1"
        url="jdbc:sqlserver://my.db-server-url.com\SQLEXPRESS;databaseName=XCI"
        username="XCI"
        password="XCI" />
```

Example resource definition for H2:

```
<Resource name="jdbc/xciDB"
        type="javax.sql.DataSource"
        auth="Container"
        driverClassName="org.h2.Driver"
        maxTotal="100"
        maxIdle="10"
        maxWaitMillis="-1"
        url="jdbc:h2:C:\XCI\XCI_HOME\xciDB\xciDB;AUTO_SERVER=TRUE"
        username="XCI"
        password="XCI" />
```

3.2.1.5   Tomcat: start script

Copy the sample start script **start-tomcat.bat.sample** from the software package to **<ACI_INSTALL_DIR>** and remove the **.sample** file extension. This script is used to start Tomcat.

Environment Variable	Example Value	Description
XCI_HOME	C:\ACI\XCI_HOME	XCI home directory
CATALINA_HOME	C:\ACI\apache-tomcat-9.0.89	Tomcat Catalina home directory
JRE_HOME	C:\Program Files\Java\jre-17.0.11+9	JRE home directory
JAVA_OPTS	%JAVA_OPTS% -Xms256m -Xmx2048m	Append additional Java options

Table 3: ACI web application environment variables

3.2.1.6   Deploy ACI web application

From the software package, copy the main application `XCI.war`, to the `webapps` directory of the web application server: `<CATALINA_HOME>\webapps`.

3.2.2   Setup XCI_FC as web application

The XCI_FC module provides a file cache for 3DEXPERIENCE export.

If 3DEXPERIENCE export file caching is configured, XCI_FC must be deployed to a web application server as described in the next steps.

3.2.2.1   Package

Locate the package `XCI_FC-<ACI Version>.webapp.zip` (for example `XCI_FC-3.9.0-01.webapp.zip`) and unzip to temporary location.

In the next steps we will move and edit some of the delivered files.

3.2.2.2   XCI_FC_HOME directory

Copy the XCI_FC_HOME directory from the software package to `<ACI_INSTALL_DIR>`.

This directory will be the main working directory for the file cache.

3.2.2.3   Tomcat: start script

If XCI_FC is deployed in the same Tomcat as ACI, then edit the Tomcat start script described in previous chapter and set the `XCI_FC_HOME` variable.

If XCI_FC is deployed in a different Tomcat, create the start script as described next.

Copy the sample start script `start-fc-tomcat.bat.sample` from the software package to `<ACI_INSTALL_DIR>` and remove the `.sample` file extension. This script is used to start Tomcat.

Set the following environment variables in the start script.

Environment Variable	Example Value	Description
XCI_FC_HOME	C:\ACI\XCI_FC_HOME	XCI_FC home directory
CATALINA_HOME	C:\ACI\apache-tomcat-9.0.89	Tomcat Catalina home directory
JRE_HOME	C:\Program Files\Java\jre-17.0.11+9	JRE home directory
JAVA_OPTS	%JAVA_OPTS% -Xms128m -Xmx512m	Additional Java Options

Table 4: XCI_FC web application environment variables

3.2.2.4   Deploy XCI_FC web application

From the XCI_FC software package, copy the main application `XCI_FC.war`, to the `webapps` directory of the web application server: `<CATALINA_HOME>\webapps`.

3.2.3   Setup XCI_CS as web application

The XCI_CS module is used to distribute batch processing loads like COMRecon or XCI 3DEXPERIENCE Batch to different hosts.

3.2.3.1   Package

Locate the package `XCI_CS-<ACI Version>.webapp.zip` (for example **XCI_CS-3.11.0.0.01.zip**) and unzip to temporary location.

In the next steps we will move and edit some of the delivered files.

3.2.3.2   XCI_CS_HOME directory

Copy the XCI_CS_HOME directory from the software package to **<ACI_INSTALL_DIR>**.

This directory will be the main working directory for the file cache.

3.2.3.3   Tomcat: start script

If XCI_CS is deployed in the same Tomcat as ACI, then edit the Tomcat start script described in previous chapter and set the **XCI_CS_HOME** variable.

If XCI_CS is deployed in a different Tomcat, create the start script as described next.

Copy the sample start script **start-cs-tomcat.bat.sample** from the software package to **<ACI_INSTALL_DIR>** and remove the **.sample** file extension. This script is used to start Tomcat.

Set the following environment variables in the start script.

Environment Variable	Example Value	Description
XCI_CS_HOME	C:\ACI\XCI_CS_HOME	XCI_CS home directory
CATALINA_HOME	C:\ACI\apache-tomcat-9.0.89	Tomcat Catalina home directory
JRE_HOME	C:\Program Files\Java\jre-17.0.11+9	JRE home directory
JAVA_OPTS	%JAVA_OPTS% -Xms128m -Xmx512m	Additional Java Options

Table 5: XCI_CS web application environment variables

3.2.3.4   Deploy XCI_CS web application

From the XCI_CS software package, copy the main application **XCI_CS.war**, to the **webapps** directory of the web application server: **<CATALINA_HOME>\webapps**.

4 Installing the COMReconV5 package

If V5ToV6Preprocessing or V6ToV5Postprocessing for CATIA V5 data is enabled, the COMReconV5 package must be installed.

4.1 Installation

The COMReconV5 package is delivered as a zip file (e.g. `191118_COMReconV5_R34.zip`).

4.1.1 Unzip the COMReconV5 package

Unzip the package to disk (e.g. `C:\ACI\191118_COMReconV5_R34` see Figure 2: COMReconV5 package content) at the ACI install host (where the XCI web application is installed).
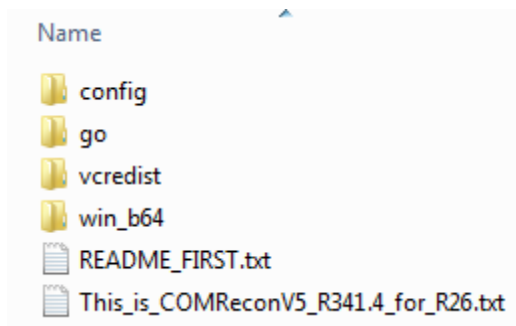
Figure 2: COMReconV5 package content

4.1.2 Create CATIA V5 environment file

Copy the CATIA V5 environment file to the config folder. Open the copied Environment file and enhance the PATH variable with the win_b64 folder as shown in the following example.

```
PATH=C:\ACI\191118_COMReconV5_R34\win_b64;C:\Program Files\Dassault
Systemes\B34\win_b64\code\bin;…
```

4.1.3 Configuration

Then open the go\COMReconV5.bat file for edit and customize the 4 environment variables to your environment and save the file.

```
rem --------------------------------------------------------------------
rem Please customize following variables for your environment.
rem
rem Installation directory of COMReconV5.
rem Example: C:\ACI\191118_COMReconV5_R34
set COMRECONV5_INSTALL_DIR=C:\ACI\191118_COMReconV5_R34
rem
rem Installation directory of CATIA.
rem Example: C:\Program Files\Dassault Systemes\B34
set CATIA_BASEDIR=C:\Program Files\Dassault Systemes\B34
```

```
rem
rem Directory where to find CATIA env-files.
rem Example: C:\TSI\CATEnv
set CONVERTER_ENVDIR=C:\ACI\191118_COMReconV5_R34\config
rem
rem Filename (without extension) that will be used by CATIA batch
client.
rem Example: COMReconV5_R34
set CONVERTER_ENVFILE=COMReconV5_R34
…
```

4.1.3.1 Option File in 3DEXPERIENCE Cloud import scenario

Settings for COMReconV5 are configured in two option files in the go subdirectory in the COMReconV5 installation. If data is imported into 3DEXPERIENCE Cloud, an additional option must be set tin the XCI_V5_V6.opt file preprocessgin V5 files before 3DEXPERIENCE import:

```
# import stepx file – cloud
# set the Name (title as partnumber in the V5 file
# the Importer uses the partnumber for the Title
-MetaDataAddtlPropsProduct=(Name::<Part Number>)
```

4.1.4 Install Microsoft Visual C++ Redistributable Packages

Login as user with administrative rights and install all the Microsoft Visual C++ Redistributable Packages from the vcredist folder.

5   Installing the XCI 3DEXPERIENCE Batch

The XCI 3DEXPERIENCE Batch must be installed on any host that you configure to export or import from 3DEXPERIENCE.

As a prerequisite the 3DEXPERIENCE Rich Client needs to be installed.

The XCI 3DEXPERIENCE Batch utility requires Licman21 as its license manager.

For detailed information about configuration of the XCI 3DEXPERIENCE Batch also see after installation the Readme files in the doc directory of the installation.

5.1   Installation

You should perform the following steps with your 3DEXPERIENCE administrator.

Locate the downloaded archive file **(XCI_3DX_BATCH_R[xxxxx]_V[xxx].zip**). Extract the content of the archive file to a temporary location, e.g. "**C:\temp\XCI_3DX_BATCH_R2024x_V3.11.0.0**".

Inside the temporary installation location, locate the folder "**XCI_3DX_BATCH_R[xxxxx]_V[xxx]\install\windows_64**" for the installation.

Start the installation by double-clicking "**Setup.exe**" and follow the instructions. The 3DEXPERIENCE values will be received from the registry if possible.

In the installation directory the file **Report.txt** is stored. It describes where the customized 3DEXPERIENCE environment for the batch can be found.

Make sure that the %JAVA_HOME% in your 3DEXPERIENCE environment is set correctly and points to a valid Java runtime.

You should add the following best practice settings to the environment:

XPG_ACTIVATE_3DPART=1	activate the 3D Part support
XPG_ACTIVATE_NONCADDOC=1	activate the non-CAD document support
XPG_ACTIVATE_MAPPED_REVISIONFAMILY=1	activate the mapped Revision Family support
ENABLE_DETAILED_REPORT=1	enable a detailed report
CATForceNotCertifiedGraphics=1	ignore outdated graphic card driver warning

5.2   Additional Configuration for Post Processing for XPDM (3DX OnPremise only)

Additional configuration steps are required if you import any files to 3DEXPERIENCE or export via XPDM.

5.2.1   Copy required library from the 3DEXPERIENCE environment

This is only needed if "Set Maturity of Rep Children", "Set Maturity of Rep" or "Add configured material" is configured.

Copy the file **eMatrixServletRMI.jar** to

```
...\XCI_3DX_BATCH_R<XXXX>_V<XXX>\win_b64\fromServer\docs\java
```

You can find this file on the 3DEXPERIENCE server host:

```
<3DEXPERIENCE installation directory>\server\win_b64\docs\java
```

In some cases, the following files in

```
...\XCI_3DX_BATCH_R<XXXX>_V<XXX>\win_b64\fromServer\code\bin
```

may have to be replaced with updated files from your 3DEXPERIENCE Server installation after installation of a 3DEXPERIENCE Fix Pack (you can check the installation with CheckServerConnection.bat):

- **mxUtil.dll**, **vgalaxy7k.dll** from **<3DEXPERIENCE installation directory>\studio\win_b64\code\bin**
- **eMatrixMqlU.dll** from **<3DEXPERIENCE installation directory>\adk\win_b64\code\bin**

5.2.2 Configuration of the TSI 3DEXPERIENCE xPDM Post Process behavior

TSI 3DEXPERIENCE xPDM Post Process comes with the configuration file

```
...\XCI_3DX_BATCH_R<XXXX>_V<XXX>\win_b64\reffiles\TCIXpgConfig.xml
```

The TCI Server URL must be configured in **TCIXpgConfig.xml** file. The **TCIXpgPostProcess_SERVERURL** attribute must point to the TCI installation:

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<TCIXpgConfig>
<Attribute name="TCIXpgPostProcess_SERVERURL"
     value="http://my.tci-integration-server.url:port/XCI"/>
</TCIXpgConfig>
```

The following connectivity information for the Enovia server must be provided is specific options are used (eg. **TCIXpgPostProcess_REPAIRINSTANCE=ON**):

Server URL of 3DEXPERIENCE server (https://enovia-server.url:port/3dspace)

```
TCIXpgPostProcess_ENOVIASERVERURL=<3DEXPERIENCE Server URL>
```

  o It is mandatory to include the port in the URL. :443 for https and :80 for http if you did not choose a different port.

3DEXPERIENCE username

This 3DEXPERIENCE user has to be ENOVIA business and system administrator. You should use the same 3DEXPERIENCE user that is used for the XPDM import.

```
TCIXpgPostProcess_ENOVIAUSER=<3DEXPERIENCE username>
```

Encrypted 3DEXPERIENCE password

```
TCIXpgPostProcess_ENCRYPTEDENOVIAPASSWORD=<encrypted password>
```

3DEXPERIENCE Vault (optional)

```
TCIXpgPostProcess_ENOVIAVAULT=<3DEXPERIENCE Vault>
```

If 3DPassport is used to check the 3DEXPERIENCE credentials:

```
TCIXpgPostProcess_USE3DPASSPORT=ON
```

5.2.3 Encrypting the password for the TSI 3DEXPERIENCE xPDM Post Process

This step is only required if "Repair Instance" or "Set Maturity of Rep Children" is configured in the TSI 3DEXPERIENCE xPDM Post Process.

The TSI 3DEXPERIENCE xPDM Post Process needs a direct (MQL) login to the 3DEXPERIENCE server. To use the post-processing it is necessary to store the login information in the environment. As it is not allowed to store a plain password, TSI 3DEXPERIENCE xPDM Post Process uses an encrypted password.

Use the script "`EncryptPassword.bat`" to encrypt the 3DEXPERIENCE password. If you use the 3DEXPERIENCE environment file `<Your Path>\XCI_3DX_BATCH_<3DX-version>_<XCI-version>\config\XCI_3DX_BATCH_Env.txt` (created during the installation of this batch utility collection) you can just double click the batch file. If you use a different environment file you drag and drop your environment file on the script "EncryptPassword.bat", or use a command window:

```
C:\<Your Path>\XCI_3DX_BATCH_<3DX-version>_<XCI-
version>\config\EncryptPassword.bat <path>\<your env-file.txt>
```

You must encrypt the password using the same Windows OS user that runs the XPDM import/export (XPGClientBatch service, or TSI3DXBatch). The encrypted password can be used on different hosts, as long as the import uses the same Windows user.

You will be asked for the password to encrypt:

```
Encrypt 3DEXPERIENCE password
type password:
```

After typing in your password the encryption is executed:

```
starting encryption ...
Encrypting password: *************************************************
Encrypted  password: <26e5d4eencrpted331846533ppassworddcbe21975ssample>
Insert encrypted password in TCIXpgConfig.xml
Press any key to continue . . .
```

Insert the password in the configuration file TCIXpgConfig.xml.

5.2.4   Test the TSI 3DEXPERIENCE xPDM Post Process environment

This step is only required if "Repair Instance" or "Set Maturity of Rep Children" is configured in the TSI 3DEXPERIENCE xPDM Post Process!

Use the script "`CheckServerConnection.bat`" to test your installation.

If you use the 3DEXPERIENCE environment file **<Your Path>\TCI_3DX_XPP_<3DX-version>_<XCI-version>\config\XCI_3DX_BATCH_Env.txt** (created during the installation of this batch utility collection) you can just double click the batch file. If you use a different environment file you drag and drop your environment file on the script "`EncryptPassword.bat`", or use a command window:

```
C:\<Your Path>\XCI_3DX_BATCH_<3DX-version>_<XCI-
version>\config\EncryptPassword.bat <path>\<your env-file.txt>
```

You will get a warning if a needed library could not be loaded, or if one of the following settings is missing in the TCIXpgConfig.xml

- TCIXpgPostProcess_ENOVIASERVERURL

- TCIXpgPostProcess_ENOVIAUSER

- TCIXpgPostProcess_ENCRYPTEDENOVIAPASSWORD

If you get the message „login: Cannot get instance of matrix/db/Context", please check the following settings:

- wrong setting TCIXpgPostProcess_ENOVIASERVERURL

- wrong TCIXpgPostProcess_ENOVIAUSER /
  TCIXpgPostProcess_ENCRYPTEDENOVIAPASSWORD combination

- wrong / missing certificate (in case of https)

- wrong setting TCIXpgPostProcess_USE3DPASSPORT

This command also warns if the 3DEXPERIENCE user does not have the 3DEXPERIENCE privileges "system administrator" and "business administrator". These 3DEXPERIENCE privileges are required to repair an instance and to set the maturity of an imported object to a specified state:

```
TCIMQL Library build:   Mar 31 2016 16:18:16
3DEXPERIENCE server version:   3DEXPERIENCE R2015x HotFix 5
!!! User MigratUsr does not have required ENOVIA business privileges !!!
!!! User MigratUsr does not have required ENOVIA system privileges !!!
```

6 ACI configuration

This section covers initial configuration based on the .sample settings that are part of the software package. For a reference of available settings, please check the separate "Settings Reference Manual".

6.1 Password encryption

Passwords and Login Tickets need to be configured for accessing Aras Innovator and 3DEXPERIENCE or the ACI web client.

To encrypt these passwords:

- create below sample batch file in XCI_HOME, you may need to run Tomcat once in order to unpack the CLASSPATH folders

- run batch file and encrypt password

- add the password to settings and remove the plaintext="true" on password settings

```
set XCI_HOME=<XCI_HOME_PATH>
set JAVA_HOME=C:\apps\Java\jdk17
set JAVA_OPTS=%JAVA_OPTS%
set CLASSPATH=<TOMCAT_INSTALL_DIR>\webapps\XCI\WEB-
INF\lib\*;<TOMCAT_INSTALL_DIR>\webapps\XCI\WEB-INF\classes
set PATH=%JAVA_HOME%\bin;%PATH%


java com.tsystems.xci.Main --encryptPassword


pause
```

6.2 Administration settings

In XCIAdminSettings.xml provide connection information for Aras Innovator, 3DEXPERIENCE and any batch installations.

When connecting to 3DEXPERIENCE Cloud, use the .3dx-cloud.sample file as basis.

In Administration define whether Aras Innovator uses an **alphabetical** (A, B, C, …), **numerical** (1, 2, 3, …) or **system** (revision sequence associated with type in Aras) revision scheme. This will be used for mapping revisions between Aras Innovator and 3DEXPERIENCE. If Aras Innovator has a custom revision scheme, a customization of ACI needs to be implemented to map revisions correctly.

```
<Administration>
  <PdmRevisionMapping>alphabetical</PdmRevisionMapping>
  <PdmDocumentRevisionMapping>alphabetical</PdmDocumentRevisionMapping>
</Administration>
```

In the Aras section:

- Aras Innovator server URL
- User and Password credentials for the integration user
- name of Aras Innovator database to connect to
- name of Aras Innovator vault to connect to

```
<Aras>
  <Server>
    <Url>
      [http://aras-host/InnovatorServer/Server/InnovatorServer.aspx]
    </Url>
    <Username>[aras-user]</Username>
    <Password>[aras-password]</Password>
    <Database>[InnovatorSolutions]</Database>
    <Vault>Default</Vault>
  </Server>
</Aras>
```

3DEXPERIENCE OnPremise: in the Enovia section:

- 3DSpace and 3DPassport URLs
- User / Password / Security Context for the integration user
- vault

```
<Enovia>
  <Server>
    <SpaceUrl>[https://enovia-server-and-enovia-port/3dspace]</SpaceUrl>
    <PassportUrl>[https://enovia-server-and-enovia-
port/3dspace]</PassportUrl>
    <Username>[v6-user]</Username>
    <Password plaintext="true">[enovia-password]</Password>
    <SecurityContext>[VPLMProjectLeader.Company Name.Common
Space]</SecurityContext>
    <Vault>vplm</Vault>
  </Server>
</Enovia>
```

3DEXPERIENCE Cloud: in the Enovia section:

- 3DSpace, 3DPassport and Enterprise IP Exchange URLs
- User / Password / Security Context for the integration user
- tenant ID of 3DEXPERIENCE cloud tenant

```
<Enovia>
  <Server webServiceOnly="true">
    <SpaceUrl>[https://tenant-region-space.3dexperience.3ds.com/enovia]
```

```
    </SpaceUrl>
    <PassportUrl>[https://region-ds.iam.3dexperience.3ds.com]
    </PassportUrl>
    <ExchangeUrl>[https://tenant-region-exchange.3dexperience.3ds.com/
    exchange]</ExchangeUrl>
    <Username>[v6-user]</Username>
    <Password plaintext="true">[enovia-password]</Password>
    <SecurityContext>[VPLMProjectLeader.Company Name.Common Space]
    </SecurityContext>
    <Tenant>[tenant ID]</Tenant>
  </Server>
</Enovia>
```

In the COMReconV5 section, provide the base path to the COMReconV5 installation.

Additionally, when connecting to 3DEXPERIENCE cloud make sure you have set corresponding settings in COMReconV5 option file as described in 4.1.3.1.

```
<COMReconV5>
  <InstallationList>
    <Installation id="comrecon-v5-local-1">
      <COMReconPath>[path-to\191118_COMReconV5_R27]</COMReconPath>
    </Installation>
  </InstallationList>


  <V5ToV6Preprocessing />
  <V6ToV5Postprocessing />
</COMReconV5>
```

In the TSI3DXBatch section, provide

- path to 3DEXPERIENCE CATSTART.exe
- name of environment file for XCI_3DEXPERIENCE_Batch without file extension
- path to directory where environment file is located
- LoginTicket
- 3D and 2D FileFormat CATIA V5 format to export, XPDMExport only required for 3DEXPERIENCE OnPremise

```
<TSI3DXBatch>
  <InstallationList>
    <Installation id="tsi3dxbatch-local-1">
      <CatStartPath>[path-
to\B419\win_b64\code\bin\CATSTART.exe]</CatStartPath>
      <CatStartEnv>[XCI_3DX_BATCH_Env]</CatStartEnv>
      <CatStartDirEnv>[path-to-cat-env]</CatStartDirEnv>
```

```
        <LoginTicket
plaintext="true">xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxx</LoginTicket>
      </Installation>
  </InstallationList>

  <XPDMExport>
    <FileFormat3D>[V5-6R2017]</FileFormat3D>
    <GeometryType3D>AsSpecification</GeometryType3D>
    <FileFormat2D>[V5-6R2017]</FileFormat2D>
  </XPDMExport>

  <FileExport>
    <DownwardCompatibility>
      <Format>[CATIAV5-6R2017]</Format>
      <GeometryType3D>AsSpecifications</GeometryType3D>
    </DownwardCompatibility>
  </FileExport>
</TSI3DXBatch>
```

6.3 General settings

In XCISettings.xml provide 3DEXPERIENCE related PnO information.

When connecting to 3DEXPERIENCE cloud, use the .3dx-cloud.sample file as basis.

In the Conversion section, add target Owner, Organization and Collaborative Space for data imported to 3DEXPERIENCE.

```
<Conversion>
  <Projects>
    <DefaultProject name="Default">
      <ProjectName>[Common Space]</ProjectName>
      <Organization>[Company Name]</Organization>
      <Owner>[v6-user]</Owner>
      ...
    </DefaultProject>
  </Projects>
</Conversion>
```

3DEXPERIENCE OnPremise: in the Enovia section, add the default security context for executing queries:

```
<Enovia>
    <QuerySettings>
    <DefaultEnoviaRole>[ctx::VPLMProjectLeader.Company Name.Common
Space]</DefaultEnoviaRole>
  …
```

```
   </QuerySettings>
</Enovia>
```

7   Installing the ACI Aras Data Model Extension

7.1   Installation

The "ArasAciDM_PLM.zip" and "ArasAciDM_UI.zip" file need to be unpacked.

The ArasAciDM_PLM package needs to be imported to Aras Innovator with the Aras Innovator import utility.

The ArasAciDM_UI is optional and contains the Aras Innovator client extension for ACI.
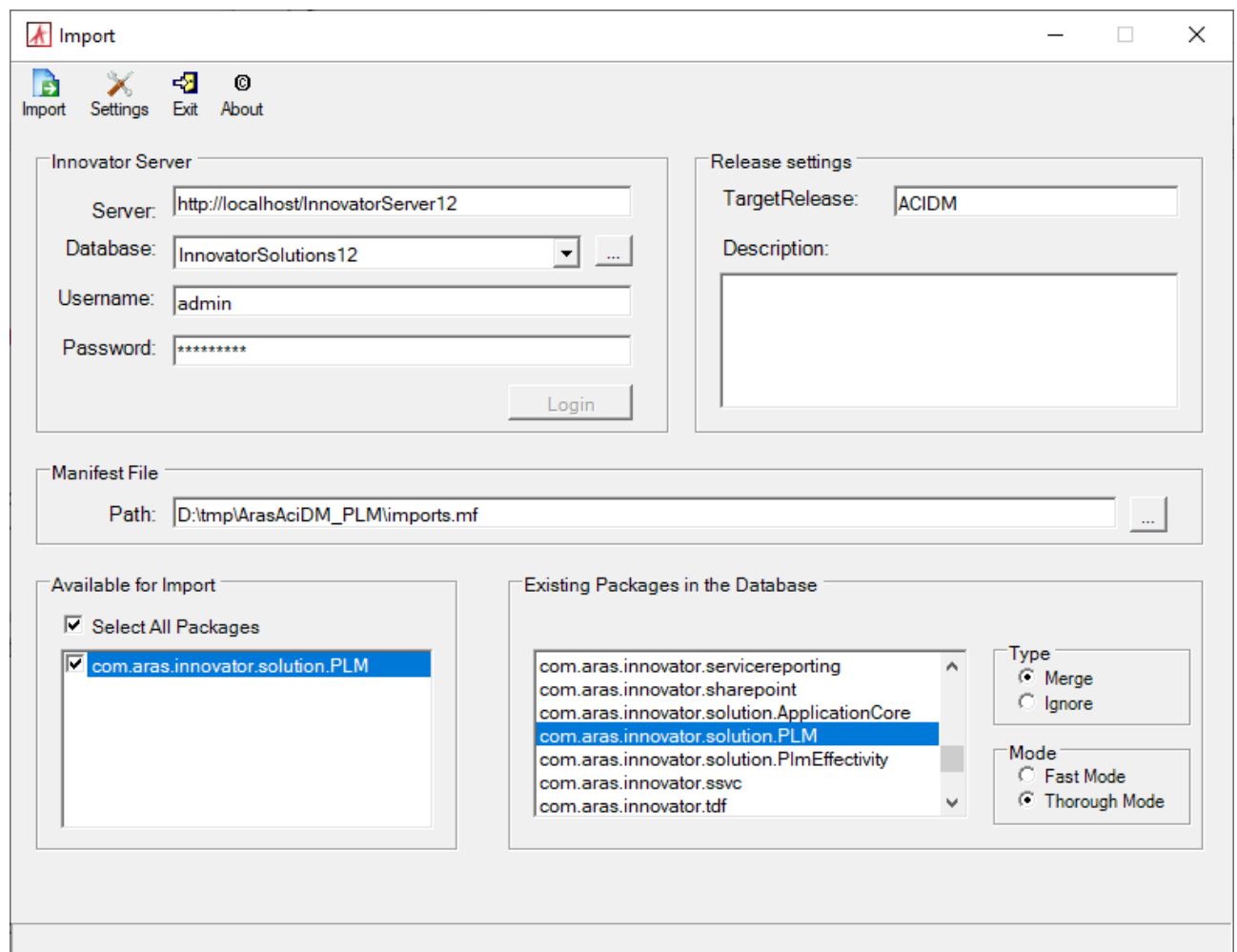
The package import utility can be downloaded from Aras: https://aras.com/en/support/downloads

Figure 3: Import ArasAciDM_PLM package

7.2   Aras Innovator variables

The installation of the ArasAciDM_UI package creates the AciServerUrl variable in the Aras Innovator Administration section. The AciServerUrl must be configured to the XCI server URL, e.g:

```
http://my.aci-integration-server.url:port/XCI
```
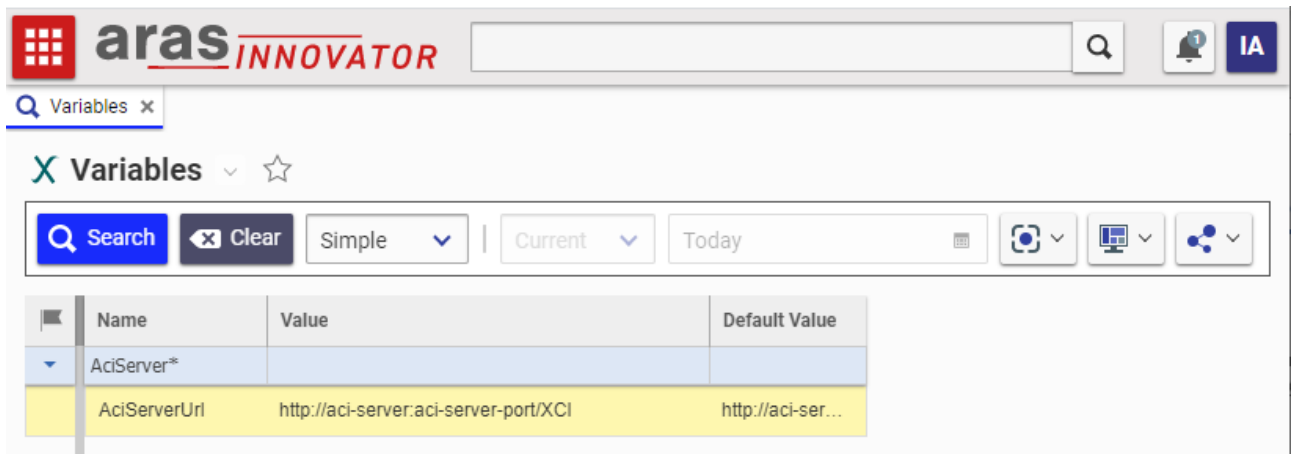
Figure 4: AciServerUrl variable in Aras Innovator

Optional Aras variables for specific functionality:

If "Open in 3DEXPERIENCE Rich Client" functionality is used, the **AciListenerServicePort** variable contains the port on which the Listener Service listens to Aras. The default port is 9191. See chapter 8.5.

If "Open in 3DEXPERIENCE Dashboard" functionality is used, the **Aci3DXDashboardUrl** must be configured to point to your 3DDashboard (e.g. https://my.dashboard.url:port/3ddashboard). If 3DEXPERIENCE cloud environment is used, the tenant must also be configured in variable Aci3DXTenant. Variable **Aci3DXDashboardApp** controls which dashboard app to open (default is ENOSCEN_AP for the Product Structure Explorer).

7.3   Additional Aras Configuration (Optional)

Using the ACI 3DEXPERIENCE command Open related Object in Aras Web Client an additional "helper window" or tab in the web browser. It is possible to close this window automatically after the Item is opened, if Aras is already open in another window or tab.

Modify the file

```
\Innovator\Client\Modules\aras.innovator.core.MainWindow\deepLinking.js
```

in your Aras code tree. Around line 24 you can add an additional snippet of code to close the window:

```
if (!deepWindowIframe.src)
{
   deepWindowIframe.src = 'deepLinking.aspx';

   // Close this window if Innovator is already open
   var objWin = window.self;
   objWin.open('','_self','');
   objWin.close();
}
```

After changing the file restart the IIS.

The browser cache on the client must be cleared for the change becomes available.

8 Installing the ACI 3DEXPERIENCE Rich Client Extension

8.1 Installation

The ACI 3DEXPERIENCE Rich Client Extension extends the 3DEXPERIENCE Rich Client UI with ACI commands.

The extension additionally installs the Windows service "ACI Listener Service" used to communicate with 3DEXPERIENCE from the Aras web client, e.g. opening a Part in 3DEXPERIENCE from the Aras client.

You should perform the following steps with your 3DEXPERIENCE administrator.

Locate the downloaded archive file (`ACI_3DX_UI_R[xxxxx]_V[xxx].zip`). Extract the content of the archive file to a temporary location, e.g. `C:\temp\ACI_3DX_UI_R2024x_V3.11.0.0`.

Inside the temporary installation location, locate the folder `ACI_3DX_UI_R[xxxxx]_V[xxx]\install\windows_64` for an installation on a client with Windows 64-bit.

Start the installation by double-clicking `Setup.exe` and follow the instructions. The 3DEXPERIENCE values will be received from the registry if possible.

8.1.1 Installation in a 3DEXPERIENCE cloud environment

If both a Cloud and OnPremise 3DEXPERIENCE Rich Client is detected on the machine, the user must confirm with a checkbox if the installation is for Cloud or for OnPremise. Otherwise, the installer automatically detects the Cloud environment.

An additional installer page is presented where these necessary values must be set.:

- 3DSpace URL
- Cloud Tenant

For example, the 3DSpace URL and the Cloud tenant can be easily identified by starting the "Collaborations & Approvals" App from the 3D Compass menu:
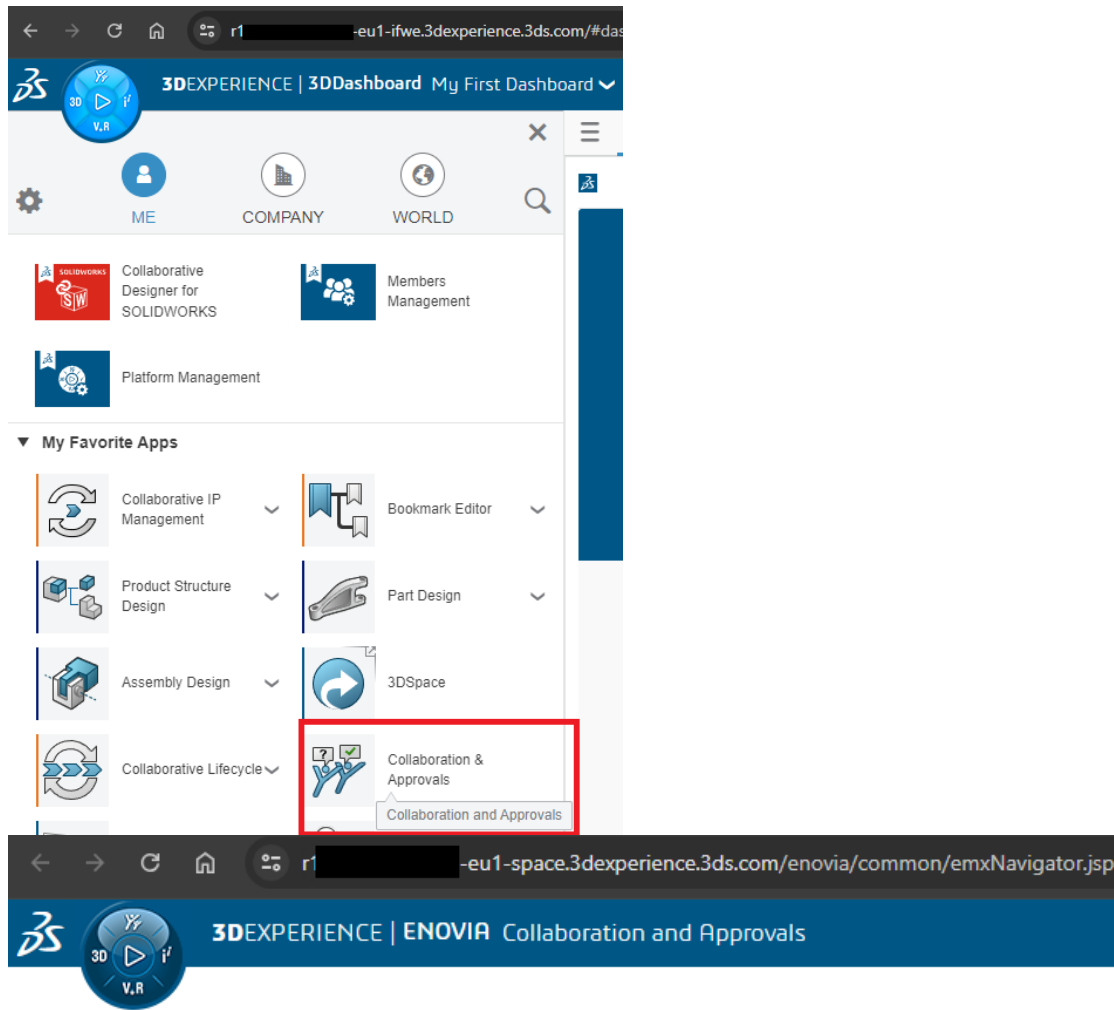
Figure 5: 3DEXPERIENCE Cloud 3DSpace URL

3DSpace URL: **`https://r1234567890123-eu1-space.3dexperience.3ds.com`**

The 3DSpace URL also contains the name of the Cloud Tenant, but with lower-case "r"!

Note: Change the starting letter "r" to upper-case letter "R" for the Cloud Tenant name!

```
tenant=R1234567890123
```

8.2   Silent Installation

It is possible to use a silent installation for the extension installation.

8.2.1   Parameters

The following parameters are available for the silent installation:

Parameter Name	Example Value	Description
/S		Activates the silent mode.
/User= value	Admin	Installation only for yourself ("User") or for all users of the computer ("Admin"). Default is the highest possible value.
/3DXInstDir= (Directory path)	C:\Program Files\Dassault Systemes\B426	The directory of the 3DEXPERIENCE installation.
/3DXEnvFile= (File full path)	C:\Program Files\Dassault Systemes\B426\CATEnv\Env.txt	The full path of the 3DEXPERIENCE environment file.
/XciServerURL= (URL)	http://my.aci-integration-server.url:port/XCI	The ACI Server URL. <must be set>
/Tenant= (tenant name)	R1234567890123	Cloud only: mandatory
/3DSpaceURL= (3DSPACE URL)	https://r1234567890123-eu1-space.3dexperience.3ds.com:443/enovia	Cloud only: mandatory
/D=(Directory path)	C:\ACI\ACI_3DX_UI_R2024x_V3.11.0.0	The target directory of the installation.

Table 6: Silent installation parameters for 3EXPERIENCE Rich Client Extension

ACI server URL must be set.

The parameter `/S` is required.

The parameter `/User` is optional. The highest possible value will be used as default value.

Both values for the 3DEXPERIENCE installation directory and environment file are optional; the values can be fetched from the Windows registry.

The parameter `/D` is optional. A part of the value will be taken from the current directory. It must be the last parameter used in the command line and must not contain any quotes, even if the path contains spaces. Only absolute paths are supported.

If one value is not given and it is not possible to fetch a value from the system the installation process will be stopped and the error message can be found in the file `install.log`.

8.2.2   Usage

For the silent installation please open a command line window as administrator.

Inside the temporary installation location, locate the folder **`ACI_3DX_UI_R[xxxxx]_V[xxx]\install\windows_64`** for an installation on a client with Windows 64-bit.

Start the silent installation with a command line like this example:

```
Setup.exe /S /User= Admin /3DXInstDir= "C:\Program Files\Dassault
Systemes\B426" /3DXEnvFile= "C:\Program Files\Dassault
Systemes\B426\CATEnv\Env.txt" /XciServerURL= "http://my.aci-integration-
server.url:port/XCI" /D=C:\ACI\ACI_3DX_UI_R2024x_V3.11.0.0
```

Start the silent installation for the cloud installation with a command line like this example:

```
Setup.exe /S /User= Admin /3DXInstDir= "C:\Program Files\Dassault
Systemes\B426_Cloud" /3DXEnvFile= "C:\Program Files\Dassault
Systemes\B426_Cloud\CATEnv\Env.txt" /XciServerURL= "http://my.aci-
integration-server.url:port/XCI" /Tenant= "R1234567890123" /3DSpaceURL=
"https://r1234567890123-eu1-space.3dexperience.3ds.com:443/enovia"
/D=C:\ACI\ACI_3DX_UI_R2024x_V3.11.0.0
```

The log file **`install.log`** of the installation will be stored in the current directory. There you can find the information about the installation process.

When the installation ended successful you will find the success message in this file.

8.3   Environment variables

The installation creates the start script **`ACI_3DX_UI_Start.bat`**.

Here you can find an overview of the possible environment variables in this start script.

Parameter Name	Example Value	Description
XCI_DEBUG	ON	Enable the ACI debug.
XCI_ENABLE_OPENINPDMCMD	ON	Enable command to open selected Item in Aras Innovator Client
XCI_ARAS_URL	http://my.aras.host/InnovatorServer2023	Aras Innovator client URL required by XCI_ENABLE_OPENINPDMCMD
XCI_SERVER_URL	See Client extensions configuration	Path to the ACI integration server

Table 7: ACI 3DEXPERIENCE Rich Client Extension environment variables

Please note: to omit the Aras html helper window that pops up when a selected Item is opened in the Aras Innovator web client apply the setting at the Aras server as described in chapter "7.3 Additional Aras Configuration (Optional)".

8.4 Client extensions configuration

The client must be configured using the 3DEXPERIENCE options dialog.

The *ACI* configuration dialog under *Options → General → Compatibility* shows some version information of the integration, and the server URL can be configured to connect to the ACI integration server. The client supports the encryption of the communication channel using SSL. To enable this feature, the client must be configured to connect a https URL.

Examples:

```
http://my.aci-integration-server.url:port/XCI
```

Instead of using the preference you can also set the following variable in the start script

```
ACI_3DX_UI_Start.bat:
```

```
set XCI_SERVER_URL=http://my.aci-integration-server.url:port/XCI
```

This URL will be used if the preference is not set.

To verify the connectivity to the configured server the *Check Server* button can be used. A message will be shown to indicate successful or unsuccessful connection.

8.5 ACI Listener service configuration

The "ACI Listener Service" is a Windows service that enables communication between the Aras ACI plugin and the 3DEXPERIENCE ACI plugin. For example, opening a Part in 3DEXPERIENCE from the Aras web client.

The service listens by default on port 9191 on messages from the ACI plugin. If necessary, the port and other options can be changed in a configuration file.

If the port is changed, the port must also be changed for the Aras Variable **AciListenerServicePort** in Aras.

The configuration file for the service is stored in the installation directory of the ACI 3DEXPERIENCE plugin at **ACI_3DX_UI_R[xxxxx]_V[xxx]\config\ XciListenerService.cfg**

Parameter Name	Example Value	Description
PORT	9191	The port on which the service listens for messages.
3DEXPERIENCE_DIR	C:\Program Files\Dassault Systemes\B426	The directory of the 3DEXPERIENCE installation.
3DEXPERIENCE_ENV_FILE	C:\Program Files\Dassault Systemes\B426\CATEnv\Env.txt	The full path of the 3DEXPERIENCE environment file.
LOG_LEVEL	INFO	Optional. The detail level for logging. One of ERROR, INFO, DEBUG. Default level is INFO.
LOG_DIR	C:\Temp	Optional. Full path of a directory for storing log files. The directory must exist. Default directory is %TEMP%.

Table 8: Configuration parameters for the Windows Service "ACI Listener Service".

9 Installing the license manager

9.1 Remarks

The ACI requires Licman21 as its license manager.

During the installation of the Licman, you must specify a temporary working directory. Choose a directory where the user has full access rights.

9.2 Running Licman as a regular executable on Windows

If you install Licman with the setup program on Windows, it will be run as a service and require administrator rights. Beginning with ptf19, it is possible to launch Licman as a regular executable when the ACI is started.

You need to set the license path variable:

```
SET LICMAN_LICENSE_PATH=<port>@<host>
```

Then call **licman21_lld.exe** as a regular executable.

No execution of the setup routine is required in this case.

For more information, see *Licman User Manual*.