



IT Administrator 2025



PolyWorks  
DataLoop™

# Setting up PolyWorks | DataLoop™

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## About this document

This document explains how to connect products of the PolyWorks Metrology Suite to PolyWorks | DataLoop using a PolyWorks | DataLoop license.

The main concepts covered in this guide include setting up Microsoft SQL Server, the file storage, the PolyWorks | DataLoop server system, and secure communications. This document also explains how to set up and upgrade the server and client applications, activate the PolyWorks | DataLoop license, as well as how to configure and manage a DataLoop server.

The appendices also provide more detailed information about the upload of existing data to PolyWorks | DataLoop, file storage management, and Microsoft SQL Server maintenance, as well as the authentication and configuration of compatible identity providers.

## Technical support

Aside from the present document, InnovMetric Software Inc. does not provide support to set up Microsoft SQL Server. For support on setting up Microsoft SQL Server, contact the Microsoft SQL Server support team.

Ongoing maintenance and backup of the database are also required. Note that InnovMetric Software Inc. does not offer this service.

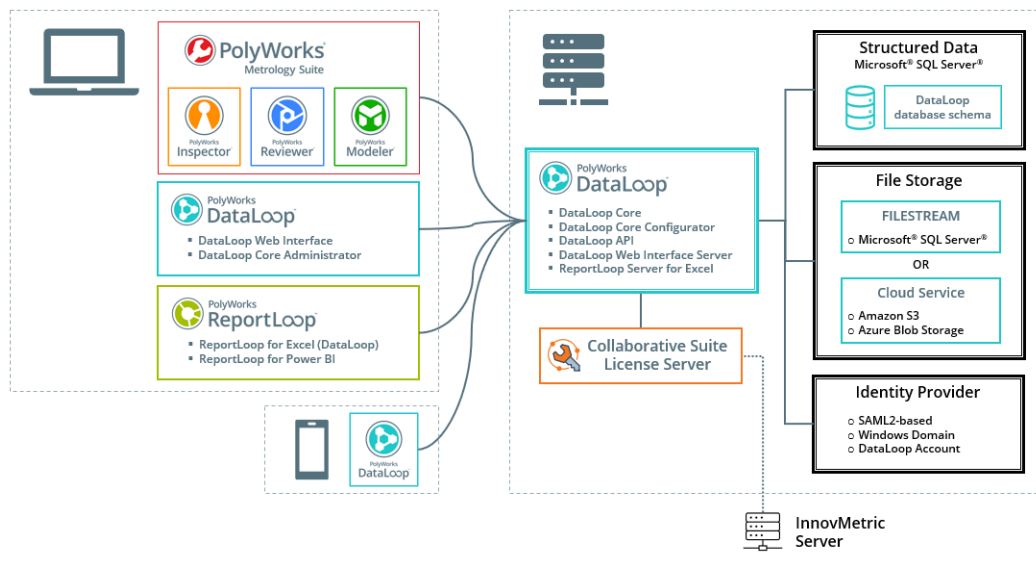
For information on functionalities offered in PolyWorks products, contact the Technical Support team of your PolyWorks provider.

# 1. Overview of PolyWorks | DataLoop

## 1.1 PolyWorks | DataLoop three-tier architecture

To use PolyWorks | DataLoop, a network infrastructure must be set up with potentially multiple servers. The number of servers and their configurations depend on the number of users that are expected to interact with the servers.

The following schema shows how PolyWorks applications communicate with one another as well as with Microsoft SQL Server.



## 1.2 Server applications

PolyWorks | DataLoop requires that certain server applications be installed and configured. The following subsections provide a description of each server application and information on how to obtain their requirements.

### 1.2.1 PolyWorks | DataLoop Core

PolyWorks | DataLoop Core enables PolyWorks Metrology Suite users to store and manage PolyWorks data, such as inspection projects, on the database server. PolyWorks Metrology Suite users must be connected to PolyWorks | DataLoop Core in order to have access to PolyWorks data stored on the server. Note that PolyWorks | DataLoop Web Interface Server and PolyWorks | ReportLoop for Excel (DataLoop) also connect to PolyWorks | DataLoop Core.

## 1.2.2 PolyWorks | DataLoop Web Interface Server

PolyWorks | DataLoop Web Interface Server is an application that allows users to access PolyWorks data stored on PolyWorks | DataLoop from their web browser and mobile device through the following client applications:

- PolyWorks | DataLoop Web Interface using their web browser
- PolyWorks | DataLoop Mobile Interface installed on a supported mobile device

## 1.2.3 PolyWorks | ReportLoop Server for Excel

PolyWorks | ReportLoop Server for Excel is an application that is used to give users of the PolyWorks | ReportLoop for Excel (DataLoop) client application access to PolyWorks data stored on PolyWorks | DataLoop.

## 1.2.4 PolyWorks Collaborative Suite License Server

PolyWorks Collaborative Suite License Server is a web-based application used to manage licenses for PolyWorks Collaborative Suite products (i.e., PolyWorks | PMI+Loop and PolyWorks | DataLoop).

To use PolyWorks | DataLoop, users need to obtain licenses from the license server and remain connected to the license server.

The current document presents the main instructions related to the installation and the online registration of the Collaborative Suite License Server. For more information on the requirements, the offline registration, or the administration instructions, see the *PolyWorks Collaborative Suite License Server Installation Guide (.pdf)* available on the Help menu of the application or on MyPolyWorks.

# 1.3 Client applications

## 1.3.1 The PolyWorks Metrology Suite

When the PolyWorks Metrology Suite is connected to PolyWorks | DataLoop, users have access to the PolyWorks data stored on PolyWorks | DataLoop (i.e., workspaces, projects, and pieces). This interconnects all the users to the 3D measurement data and results.

The main actions a user can perform with the data managed using PolyWorks | DataLoop are searching, opening, creating, viewing, editing, and uploading. The user can also specify the properties, security policy, maximum PolyWorks version, and data retention policy associated with the data.

Once created or modified data is uploaded to PolyWorks | DataLoop, other users can access it according to their permissions.

### 1.3.2 PolyWorks | DataLoop Web Interface

The PolyWorks | DataLoop Web Interface allows users to access and review all the PolyWorks inspection data stored in PolyWorks | DataLoop. Any device with access to the company network and to a web browser can be used to log in.

The interface centralizes data monitoring with the use of dashboards and widgets that are tailored to display key outputs. Users can search keywords related to the project properties or browse through all inspection projects to access completed inspections and review measurement results, along with reports and control views. Project discussions with colleagues can also facilitate collaborative work.

### 1.3.3 PolyWorks | DataLoop Mobile Interface

The PolyWorks | DataLoop Mobile Interface allows users to monitor 3D measurement activities and open any inspection project in 3D from a mobile device or tablet.

With PolyWorks | DataLoop Mobile Interface, users can log in and connect to PolyWorks | DataLoop Web Interface server to perform the following tasks:

- Search for inspection projects by name or property.
- View and search for piece inspection results and formatted reports.
- View and navigate the color-mapped 3D model.

### 1.3.4 PolyWorks | ReportLoop for Excel (DataLoop)

PolyWorks | ReportLoop for Excel (DataLoop) is an Excel-based reporting solution that integrates smart and updatable 3D inspection data within your preformatted corporate report spreadsheets by directly linking spreadsheet cells to PolyWorks | DataLoop.

With this add-in, users can inject PolyWorks formulas into Excel spreadsheet cells to retrieve data from PolyWorks | Inspector project, piece and object properties, as well as controls and control properties. Cells can then be updated when a new version of the object is uploaded. Powerful query functions also allow users to gain knowledge about the database, which offers key insights, and to create useful monitoring graph and dashboards.

### 1.3.5 PolyWorks | ReportLoop for Power BI

PolyWorks | ReportLoop for Power BI is a connector that allows users to bring inspection data from a PolyWorks | DataLoop server into Power BI, where they can use its powerful query editor to edit, format, and organize the data and display it using powerful visualization tools. In addition to that, PolyWorks | ReportLoop for Power BI is fully compatible with Microsoft's official on-premises data gateway, which allows users to perform periodic updates of their reports.

### 1.3.6 PolyWorks | DataLoop API

PolyWorks | DataLoop API can be used with almost every programming language that can support PolyWorks | DataLoop API calls, and allows you to access PolyWorks | DataLoop data by using HTTPS/REST principles. API clients have the possibility to have various data representations by using HTTP messages.

Like any other PolyWorks | DataLoop application, a valid license is required for the user to get access to the data, even through the API Endpoint. Authentication and authorization are required to protect data stored on PolyWorks | DataLoop. PolyWorks | DataLoop uses the OAuth 2.0 and OpenID Connect standard protocol to rely on proven techniques and allow external provider integration in the future. Personal access tokens (PAT) can also be generated. The system ensures that the data accessed through the PolyWorks | DataLoop API remains at the same security level as the other client applications.

## 1.4 How licenses are managed

A PolyWorks | DataLoop license is required for each user who connects to PolyWorks | DataLoop. A license that is assigned to a user can be taken back, if it is unused for 30 consecutive days, to make it available to other users.

## 1.5 How users are managed

PolyWorks | DataLoop users are defined and managed in PolyWorks | DataLoop Core Administrator. Only one list of users must be managed. PolyWorks | DataLoop currently supports Windows users (defined in the Active Directory domain), DataLoop users, created exclusively for PolyWorks | DataLoop, and users from compatible identity providers.

## 1.6 How security is managed

PolyWorks | DataLoop server applications should be installed on premises or on a trusted cloud provider (e.g., Azure, AWS, Google Cloud, etc.), and should be protected by a firewall to guarantee full security.

PolyWorks | DataLoop server applications connect using the standard HTTPS encrypted protocol. This protocol is used to manage transactions between applications.

PolyWorks | DataLoop server applications support the use of a reverse proxy with or without authentication.

## 1.7 Information collected by InnovMetric

When the PolyWorks Collaborative Suite License Server application is connected to the internet, InnovMetric Software Inc. retrieves information on the number of users and devices per country, as well as the number of licensed and occasional users, in order to distribute revenues with its subsidiaries. This is the only information that is collected, and it is solely used for that purpose.

## 2. Requirements

### 2.1 PolyWorks software program compatibility

PolyWorks|DataLoop is part of the PolyWorks ecosystem. Each software product included in this ecosystem has its own release, which may contain new tools, improvements to existing tools, and fixed issues.

Compatible versions of these software components must be installed.

#### 2.1.1 Interoperability with the PolyWorks Metrology Suite

To be able to connect to PolyWorks|DataLoop from a PolyWorks Metrology Suite application, you must ensure that your DataLoop server version is compatible with the version of your PolyWorks Metrology Suite applications. The interoperability matrix below shows which PolyWorks|DataLoop version is compatible with each PolyWorks Metrology Suite version.

			PolyWorks Metrology Suite					
			2021	2022	2023		2024	2025
			IR4 or later	IR0 or later	IR0 to IR10	IR11	IR0 or later	IR0 or later
PolyWorks DataLoop	2021	IR4 or later	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
	2022	IR0 or later	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
	2023	IR0 or later	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
	2024	IR0 or later	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	2025	IR0 or later				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

#### 2.1.2 Interoperability with PolyWorks|DataLoop Mobile Interface

PolyWorks|DataLoop Mobile Interface is compatible with PolyWorks|DataLoop 2021 IR3.1 or later.

#### 2.1.3 Interoperability with PolyWorks|ReportLoop for Excel (DataLoop)

There is no interoperability constraint.

## 2.2 Server pre-installation checklist

The following items must be deployed prior to performing the steps detailed in [Section 6. Installing the PolyWorks | DataLoop server applications](#).

### SQL Server

- SQL Server 2017 or later, Standard or Enterprise edition, is installed
  - FILESTREAM storage is enabled in the SQL server (if used)
  - The Connection account and the Service account are configured
- See [Section 3. Setting up Microsoft SQL Server](#)

### Cloud file storage (if used)

- The bucket or container is created
  - Access is configured in cloud services or the credentials are available
- See [Section 4.2 Cloud storage](#)

### Windows Server

- The IT resource has the Administrator privileges on the application server
  - The IIS web server role must be installed on the application server
  - An HTML5 web browser must be installed
  - The Windows Server is added to the Windows domain to enable Windows users (if used)
- See [Section 5.1.1 Administrator privileges for application installation](#), [Section 5.1.2 Installing the IIS server role](#), and [Section 5.1.3 Installing a supported web browser](#)

### SSL certificate

- The DataLoop domain name (FQDN) has been defined
  - The DNS record is configured
  - A certificate in PFX format has been obtained
  - A certificate obtained from a well-known Certificate Authority (recommended).
- See [Section 5.1.4 Adding a record in your DNS for the PolyWorks | DataLoop domain name](#), [Section 5.1.5 Obtaining an SSL certificate tied to the DataLoop domain name](#), and [Section 5.1.6 Adding an HTTPS binding using an SSL certificate](#)


### Network

- Ports requirements and firewall have been configured
- See [Section 5.2 Configuring port requirements](#)

## 2.3 Server requirements

### 2.3.1 Small team of up to 25 users (single machine)


If you expect that up to 25 users will use PolyWorks|DataLoop, you can install all server applications and the database server on a single machine that acts as a server:

Machine configuration	
<b>Operating system</b>	Microsoft Windows Server 2016, 2019, or 2022 only
<b>CPU</b>	4 cores
<b>RAM</b>	16 GB
<b>Primary disk space</b>	<ul style="list-style-type: none"><li>• 500 GB on a solid-state drive (SSD) for the operating system, all components to install, as well as for the Microsoft SQL Server instance and database files.<sup>1</sup></li></ul>
<b>Recommended cloud VM size</b>	<ul style="list-style-type: none"><li>• Azure: B4ms: 4 Cores, 16 GB RAM</li><li>• AWS: t3.xlarge: 4 Cores, 16 GB RAM</li></ul>
<b>File storage</b>	<ul style="list-style-type: none"><li>• Microsoft Azure Blob Storage or Amazon S3 Storage (Recommended)</li><li>• FILESTREAM: At least 1 TB on a hard disk drive (HDD) for the Microsoft SQL Server FILESTREAM data<sup>1</sup></li></ul>
<b>Components to install</b>	<ul style="list-style-type: none"><li>• Microsoft SQL Server 2017 or later</li><li>• Internet Information Services (IIS)</li><li>• SSL certificate - required for the HTTPS communication to the server<sup>2</sup></li><li>• Chrome 64-bit web browser</li></ul> 

1. The required size varies depending on the volume of data stored in the file system. A monitor software should be configured to send alerts when disk space is low.
2. SSL certificates issued from a well-known certification authority are recommended.

### 2.3.2 Growing team of 25-50 users (single machine)


If you expect that up to 50 users will use PolyWorks|DataLoop, you can still install all server applications and the database server on a single machine that acts as a server but with increased capacity:

Machine configuration	
<b>Operating system</b>	Microsoft Windows Server 2016, 2019, or 2022 only
<b>CPU</b>	4 cores
<b>RAM</b>	32 GB
<b>Primary disk space</b>	<ul style="list-style-type: none"><li>• 500 GB on a solid-state drive (SSD) for the operating system, all components to install, as well as for the Microsoft SQL Server instance and database files.<sup>1</sup></li></ul>
<b>Recommended cloud VM size</b>	<ul style="list-style-type: none"><li>• Azure: E4ads v5: 4 Cores, 32 GB RAM</li><li>• AWS: r5.xlarge: 4 Cores, 32 GB RAM</li></ul>
<b>File storage</b>	<ul style="list-style-type: none"><li>• Microsoft Azure Blob Storage or Amazon S3 Storage (Recommended)</li><li>• FILESTREAM: At least 4 TB on a hard disk drive (HDD) for the Microsoft SQL Server FILESTREAM data<sup>1</sup></li></ul>
<b>Components to install</b>	<ul style="list-style-type: none"><li>• Microsoft SQL Server 2017 or later</li><li>• Internet Information Services (IIS)</li><li>• SSL certificate - required for the HTTPS communication to the server<sup>2</sup></li><li>• Chrome 64-bit web browser</li></ul> 

1. The required size varies depending on the volume of data stored in the file system. A monitor software should be configured to send alerts when disk space is low.
2. SSL certificates issued from a well-known certification authority are recommended.

### 2.3.3 Large team of 50-250 users (two separate servers)

If you expect that 50 to 250 users will use PolyWorks | DataLoop, you must install server applications and the database server on two separate servers:

Server 1 configuration - Application Server	
<b>Operating system</b>	Microsoft Windows Server 2016, 2019, or 2022 only
<b>CPU</b>	4 cores
<b>RAM</b>	16 GB
<b>Primary disk space</b>	<ul style="list-style-type: none"> <li>250 GB on a solid-state drive (SSD) for the operating system and all the components to install</li> </ul>
<b>Recommended cloud VM size</b>	<ul style="list-style-type: none"> <li>Azure: B4ms: 4 Cores, 16 GB RAM</li> <li>AWS: m5.xlarge: 4 Cores, 16 GB RAM</li> </ul>
<b>Components to install</b>	<ul style="list-style-type: none"> <li>Internet Information Services (IIS)</li> <li>SSL certificate - required for the HTTPS communication to the server<sup>1</sup></li> <li>Chrome 64-bit web browser</li> </ul> 

1. SSL certificates issued from a well-known certification authority are recommended. Note that the two servers must be on the same Windows domain for authentication using the Active Directory to work properly.

Server 2 configuration - Database Server	
<b>Operating system</b>	Microsoft Windows Server 2012 R2 or later
<b>CPU</b>	4 cores
<b>RAM</b>	32 GB
<b>Primary disk space</b>	<ul style="list-style-type: none"> <li>500 GB on a solid-state drive (SSD) for the operating system, all components to install, as well as for the Microsoft SQL Server instance and database files.</li> </ul>
<b>Recommended cloud VM size</b>	<ul style="list-style-type: none"> <li>Azure: E4ads v5: 4 Cores, 32 GB RAM</li> <li>AWS: r5.xlarge: 4 Cores, 32 GB RAM</li> </ul>
<b>File storage</b>	<ul style="list-style-type: none"> <li>Microsoft Azure Blob Storage or Amazon S3 storage (recommended)</li> <li>FILESTREAM: At least 20 TB on a hard disk drive (HDD) for the Microsoft SQL Server FILESTREAM data.<sup>1</sup></li> </ul>
<b>Components to install</b>	<ul style="list-style-type: none"> <li>Microsoft SQL Server 2017 or later<sup>23</sup></li> </ul>

1. The required size varies depending on the volume of data stored in the file system. A monitor software should be configured to send alerts when disk space is low.
2. We recommend that you do not install Microsoft SQL Server on a domain controller (more information at [https://docs.microsoft.com/en-us/sql/sql-server/install/hardware-and-software-requirements-for-installing-sql-server?view=sql-server-2017#DC\\_support](https://docs.microsoft.com/en-us/sql/sql-server/install/hardware-and-software-requirements-for-installing-sql-server?view=sql-server-2017#DC_support)).
3. Microsoft SQL Server Enterprise Edition is recommended if 24/7 operation is required and no downtime is expected.

## 2.4 Client requirements

### 2.4.1 PolyWorks | DataLoop Web Interface

Computers used to access the PolyWorks | DataLoop Web Interface must meet the following requirements:

<b>Supported operating systems</b>	Windows 64-bit
<b>Supported web browsers</b>	Chrome 64-bit web browser
<b>RAM</b>	Minimum: 8GB
<b>Graphics card</b>	Must be compatible with WebGL <sup>1</sup>

1. Some websites can be used to automatically verify if your graphics card is compatible with WebGL.

### 2.4.2 PolyWorks | DataLoop Mobile Interface

Mobile devices used to access the mobile interface must meet the following requirements:

<b>Apple® mobile devices</b>	iOS 16.0 or later Compatible with iPhone
<b>Android mobile devices</b>	Android version 13 or later

### 2.4.3 PolyWorks | ReportLoop for Excel (DataLoop)

Computers used to access the PolyWorks | ReportLoop for Excel (DataLoop) application must meet the following requirement:

<b>Microsoft Excel</b>	Microsoft 365 Desktop (version 2101 or later) or Microsoft Office Web Apps (with Microsoft Edge (Chromium) or Google Chrome browser)
------------------------	--

## 2.5 Time synchronization

It is recommended to keep the time clocks of all computers that interact with the servers synchronized.

This can be achieved by synchronizing the clocks using NTP servers. Under Microsoft Windows, this can be automated across the domain by using the Windows Time service (W32Time).


Failure to keep the clocks synchronized might result in warnings in PolyWorks, as well as erratic behaviors during PolyWorks | DataLoop user authentication.

## 3. Setting up Microsoft SQL Server

Microsoft SQL Server must be installed and configured before setting up PolyWorks | DataLoop server. InnovMetric Software Inc. does not provide support with setting up Microsoft SQL Server.

For help on setting up Microsoft SQL Server, see the Microsoft website for SQL Server support.

### 3.1 Prerequisites

- Microsoft SQL Server 2017 or later, Standard or Enterprise edition. Microsoft SQL Server 2017 is the minimum version that is compatible with PolyWorks | DataLoop. For information on the minimum requirements for Microsoft SQL Server itself, see the Microsoft website for SQL Server support.
- Microsoft SQL Server Management Studio (SSMS) installed on the server or elsewhere. <https://learn.microsoft.com/en-us/sql/ssms/sql-server-management-studio-ssms>
- If you use SQL server logins, you must select the **SQL Server and Windows Authentication mode** option under server authentication, available on the **Security** page of the Microsoft SQL Server Properties.
-  If the server is a member of a domain, make sure it is not a domain controller to avoid potential issues. If the Microsoft SQL Server must be installed on a domain controller, you will need to install PolyWorks | DataLoop server applications on another non-domain controller server.

### 3.2 Activating the TCP/IP Protocol

Make sure that the TCP/IP Protocol is enabled in the Microsoft SQL Server Network Configuration. Follow the procedure available on the Microsoft website at: <https://learn.microsoft.com/en-us/sql/database-engine/configure-windows/enable-or-disable-a-server-network-protocol>

### 3.3 Configuring the SQL Server accounts

In order to setup PolyWorks | DataLoop, you will need two accounts on your SQL Server. You can use Windows or an SQL server login as an authentication method.

1. **SQL connection account:** This account will be used when creating the database and configuring the service account inside PolyWorks | DataLoop Core Configurator.
  - 1.1 The account must be a part of these server roles:
    - db\_creator
    - securityadmin (or have the ALTER ANY LOGIN permission)
2. **Service account:** This account will be used during the execution of PolyWorks | DataLoop Core to execute SQL queries in the database.

- 2.1 For security reasons, we recommend using Windows authentication with a service account (i.e., an account that does not have password expiration and prohibits interactive logins in Windows). A domain user or a managed service account created by the IT administrator are recommended.
- 2.2 The service account will be automatically added in the DataLoop database with the db\_datareader and db\_datawriter database roles.

## 4. Setting up file storage

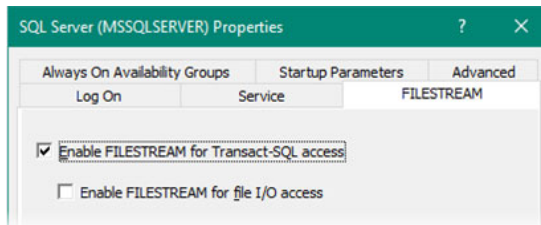
PolyWorks | DataLoop supports two types of file storage. The first one uses the FILESTREAM technology on the SQL server, while the other uses a cloud file storage. The supported cloud file storage options are Amazon S3 and Microsoft Azure Blob Storage.

### 4.1 Microsoft SQL Server FILESTREAM

FILESTREAM enables SQL Server-based applications to store data on the file system. It is not automatically enabled when you install or upgrade Microsoft SQL Server. To enable FILESTREAM, follow the procedure available on the Microsoft website at:

<https://learn.microsoft.com/en-us/sql/relational-databases/blob/enable-and-configure-filestream>

Note that on the **FILESTREAM** tab of the SQL Server (MSSQLSERVER) Properties dialog box, **Enable FILESTREAM for Transact-SQL access** must be selected.



1. In SQL Server Management Studio, click **New Query** to display the Query Editor.
2. In Query Editor, enter the following Transact-SQL code:  

```
EXEC sp_configure filestream_access_level, 1  
RECONFIGURE
```
3. Click **Execute**.
4. Restart the SQL Server service.

More information on FILESTREAM is available on the Microsoft website at:

<https://learn.microsoft.com/en-us/sql/relational-databases/blob/filestream-sql-server>

### 4.2 Cloud storage

The instructions below are indicative only. Please ensure that the configuration respects the IT security policies defined by your organization.



Be aware that the backup procedure must be adapted when using cloud storage, as the database backup will not include files. Verify with your cloud storage provider for instructions on how to obtain backups of files.

## 4.2.1 Amazon S3

Files stored in Amazon S3 use S3 Intelligent-Tiering. More information is available in the Amazon S3 documentation at:

<https://docs.aws.amazon.com/AmazonS3/latest/userguide/intelligent-tiering.html>.

Note that the Archive Access tier and Deep Archive Access tier must not be enabled.

### 4.2.1.1 Bucket creation

To create the bucket, proceed as follows:

1. Open the S3 console (<https://console.aws.amazon.com/s3/>).
2. Click **Create bucket**.
3. Enter a bucket name.
4. Click **Create bucket**.

### 4.2.1.2 DataLoop bucket access

The bucket must be accessible from the PolyWorks|DataLoop server. The configuration depends on whether PolyWorks|DataLoop is installed within an Amazon EC2 instance or on premises.

### 4.2.1.3 Configuration for an Amazon EC2 instance

#### Create a policy

1. Open the IAM console (<https://console.aws.amazon.com/iam>).
2. Click **Policies**, then click **Create policy**.
3. Click **JSON**.
4. Paste the following text, replacing *BUCKET\_NAME* with the name of the bucket created earlier.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
```

```

        "Action": "s3:ListBucket",
        "Resource": "arn:aws:s3::BUCKET_NAME"
    },
    {
        "Effect": "Allow",
        "Action": [
            "s3:PutObject",
            "s3:GetObject",
            "s3:DeleteObject"
        ],
        "Resource": "arn:aws:s3::BUCKET_NAME/*"
    }
]
}

```

5. Click **Next**.
6. Enter a name for the policy, such as *S3ForDataLoop*.
7. Click **Create policy**.

### Create a role

1. Open the IAM console (<https://console.aws.amazon.com/iam>).
2. Click **Roles**, then click **Create role**.
3. Select **EC2**, then click **Next**.
4. Select the previously created policy, then click **Next**.
5. Enter a name for the role, such as *DataLoopS3ForEC2*.

### Attach the IAM instance profile to the EC2 instance

1. Open the Amazon EC2 console (<https://console.aws.amazon.com/ec2>).
2. Click **Instances**.
3. Select the instance that you want to attach the IAM role to.
4. Click the **Actions** tab, click **Security**, then click **Modify IAM role**.

5. Select the IAM role that you just created, then click **Save**. The IAM role is assigned to your EC2 instance.

#### 4.2.1.4 Configuration for an on-premises server

The goal of this procedure is to give the PolyWorks | DataLoop service account user access to the bucket.

This can be achieved using one of two methods: IAM Everywhere or standard access keys. IAM Everywhere is more secure, but more involved.

Note that the PolyWorks | DataLoop Core Configurator and PolyWorks | DataLoop IIS application pools (in the IIS Manager) must be restarted for the changes to take effect.

##### Using IAM Everywhere

To configure the bucket access using IAM Everywhere, use the following guides:

<https://docs.aws.amazon.com/rolesanywhere/latest/userguide/introduction.html>

<https://aws.amazon.com/blogs/security/extend-aws-iam-roles-to-workloads-outside-of-aws-with-iam-roles-anywhere/>

The credentials file (*~/.aws/credentials*) must be copied to the following folders:

- The .aws folder of the user.
- With a Windows service account: *C:\Users\USER\_NAME\.aws* (replace USER\_NAME with the name of the service account without the domain).
- With a SQL Server login service account: *C:\users\DataLoopCoreAPIAppPool\.aws*.

##### Using access keys

1. Create a policy.
  - 1.1 Open the IAM console (<https://console.aws.amazon.com/iam>).
  - 1.2 Click **Policies**, then **Create policy**.
  - 1.3 Click **JSON**.
  - 1.4 Paste the following text and change BUCKET\_NAME for the name the bucket created earlier.

```
{  
  "Version": "2012-10-17",  
  "Statement": [  
    {
```

```

    "Effect": "Allow",
    "Action": "s3:ListBucket",
    "Resource": "arn:aws:s3:::BUCKET_NAME"
  },
  {
    "Effect": "Allow",
    "Action": [
      "s3:PutObject",
      "s3:GetObject",
      "s3:DeleteObject"
    ],
    "Resource": "arn:aws:s3:::BUCKET_NAME/*"
  }
]
}

```

- 1.5 Click **Next**.
- 1.6 Enter a name for the policy, such as *S3ForDataLoop*.
- 1.7 Click **Create policy**.
2. Create a user.
  - 2.1 Open the IAM console (<https://console.aws.amazon.com/iam>).
  - 2.2 Click **Users**, then **Add users**.
  - 2.3 Enter a name.
  - 2.4 Click **Attach policies directly**.
  - 2.5 Select the policy created earlier, then click **Next**.
  - 2.6 Click **Create user**.
3. Create an access key for the user.
  - 3.1 Click **Security credentials**.
  - 3.2 Click **Create access keys**.
  - 3.3 Click **Application running outside AWS**, then click **Next**.
  - 3.4 Click **Create access key**.

4. Set up credentials.
  - 4.1 Open a file browser in the Scripts folder inside the DataLoop Core installation folder.
  - 4.2 Right-click on the *SetupFileStorageCredentialsForOnPremisesServer-Amazon.cmd* file and select **Run as administrator**.
  - 4.3 Enter the requested information.
  - 4.4 If PolyWorks|DataLoop Core Configurator is currently running on the server, you will have to manually restart it for the changes to take effect.

## 4.2.2 Microsoft Azure Blob Storage

To use Microsoft Azure Blob Storage, you must have a storage account and a container. Azure must also be correctly configured to allow PolyWorks|DataLoop to access the container.

### 4.2.2.1 Storage account creation

You must have a storage account to store PolyWorks|DataLoop files in Azure Blob Storage. You can use an existing storage account or create a new one by following the instructions in this guide: <https://learn.microsoft.com/en-us/azure/storage/common/storage-account-create>.

### 4.2.2.2 Container creation

A new container must be created to store PolyWorks|DataLoop file data in Microsoft Azure Blob Storage. You can create the new container by following the instructions in this guide: <https://learn.microsoft.com/en-us/azure/storage/blobs/blob-containers-portal>.

### 4.2.2.3 Custom role creation

1. In your resource group Access control (IAM), click **Add** and then click **Add custom role**. If you cannot find the **Add custom role** option, follow the instructions in this guide: <https://learn.microsoft.com/en-us/azure/role-based-access-control/custom-roles-portal#start-from-scratch>.
2. On the **Basics** tab:
  - 2.1 Specify a name for the custom role in the **Custom role name** text box.
  - 2.2 From the **Baseline permissions**, select **Start from scratch**.
3. Click the **Permissions tab** and click **Add Permission**.
4. Navigate to the **Add Permissions** page and choose **Microsoft Storage** from the resource provider list.
5. On the **Microsoft.Storage** page:

- 5.1 Select the **Data Actions** radio button at the top of the page to show only the permissions that apply to **Data Actions**.
- 5.2 Choose the permissions **Read Blob**, **Write Blob**, and **Delete Blob**, then click **Add**.
6. Click **Review + create** to create the new custom roles.

#### 4.2.2.4 PolyWorks|DataLoop container access

The container must be accessible from the PolyWorks|DataLoop server. The configuration depends on whether PolyWorks|DataLoop is installed within an Azure-hosted virtual machine or on premises.

##### Configuration for an Azure-host virtual machine

You can follow steps 1 and 2 of this guide: <https://learn.microsoft.com/en-us/dotnet/azure/sdk/authentication/azure-hosted-apps>.

Please note that step 2 requires you to select the following values for the role and members when creating the role assignment:

- Role: The custom role created previously in the **Custom role creation** section.
- Members: The application service principal created in step 1.

##### Configuration for an on-premises server

You must start by creating the credentials that will be used by the PolyWorks|DataLoop server applications to connect to the Microsoft Azure Blob Service. Please follow steps 1 and 2 of this guide: <https://learn.microsoft.com/en-us/dotnet/azure/sdk/authentication/on-premises-apps>.

Please note that step 2 requires you to select the following values for the role and members when creating the role assignment:

- Role: The custom role created previously in the **Custom role creation** section.
- Members: The application service principal created in step 1.

Finally, you must set up the credentials on the PolyWorks|DataLoop server to connect to your container.

1. Open your file browser in the Scripts folder inside the DataLoop Core installation folder.
2. Right-click on the *SetupFileStorageCredentialsForOnPremisesServer-Azure.cmd* file and select **Run as administrator**.
3. Enter the requested information.
4. If PolyWorks|DataLoop Core Configurator is currently running on the server, you will have to manually restart it for the changes to take effect.

# 5. Setting up the PolyWorks | DataLoop application server and security

## 5.1 IT prerequisites

### 5.1.1 Administrator privileges for application installation

To be able to install the PolyWorks server applications, the IT resource needs *Administrator* privileges on the PolyWorks | DataLoop application server.

### 5.1.2 Installing the IIS server role

The IIS web server role must be installed on the application server. An IIS website named "Default Web Site" must also be present on the server.

Note that the web server should only be used for PolyWorks | DataLoop server applications.

### 5.1.3 Installing a supported web browser

An HTML5 web browser must be installed on the application server to run some PolyWorks server applications (e.g., Google Chrome).

### 5.1.4 Adding a record in your DNS for the PolyWorks | DataLoop domain name

To configure the secure communication, a PolyWorks | DataLoop domain name is required (i.e., *Dataloop.CompanyName.com*).

A record must be added in the DNS to associate this PolyWorks | DataLoop domain name with an application server IP address. This record must be added in the correct host zone of the domain.

### 5.1.5 Obtaining an SSL certificate tied to the DataLoop domain name

The PolyWorks | DataLoop server architecture requires an SSL certificate to encrypt and secure the communication between client and server. An SSL certificate from a well-known certificate authority is recommended.

If an SSL certificate for the PolyWorks | DataLoop domain name is not available, obtaining one is required.



Internet Information Services (IIS) require the SSL certificate in the PFX format. If necessary, a PFX file can be created from the server certificate file and private key file used to generate the certificate.

The type of SSL certificate selected must comply with the security policies of your company.

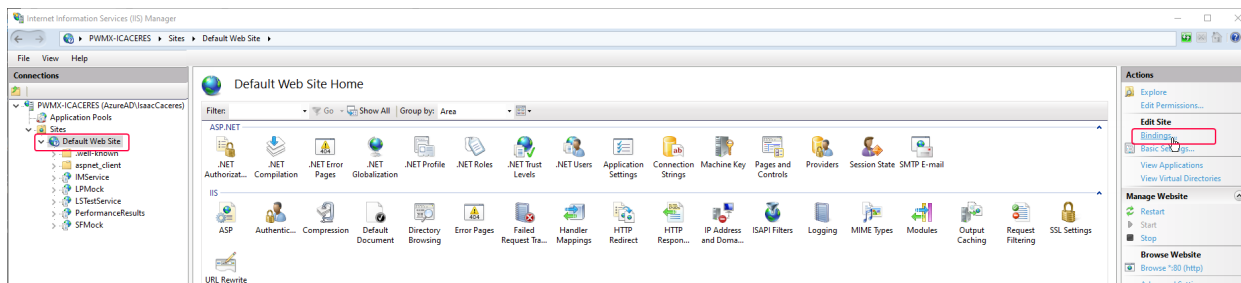
<b>Certificate from an external certificate authority (recommended)</b>	This type of certificate is very secure and can be used on production servers and in setups where suppliers will connect to the OEM PolyWorks   DataLoop server. You can obtain a certificate for free from the Let's Encrypt certificate authority. See <a href="https://letsencrypt.org/getting-started/">https://letsencrypt.org/getting-started/</a> for more details.
<b>Certificate from an internal certificate authority</b>	This type of certificate is generated by your company. It is included in your private IT infrastructure. If you need suppliers to connect to your PolyWorks   DataLoop server, the certificate might not be accepted by the supplier ITs.
<b>Self-signed certificate</b>	Self-signed certificates should be used only for test or proof of concept servers where a small number of internal users will connect to PolyWorks   DataLoop.

## 5.1.6 Adding an HTTPS binding using an SSL certificate

PolyWorks | DataLoop server applications connect using the standard HTTPS encrypted protocol. This protocol is used to manage transactions between applications. In order to enable using the HTTPS connections, an SSL certificate must be added.

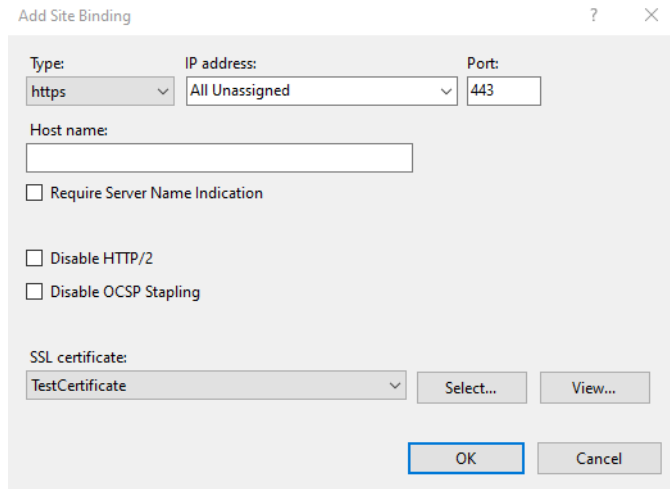
Proceed as follows:

1. Open the **IIS Manager** and navigate to *Sites > Default Web Site*. Then, click **Bindings**, located on the right panel.



2. In the **Site Bindings** window, click **Add**.

The **Add Site Binding** window is displayed.



The screenshot shows the 'Add Site Binding' dialog box. The 'Type' dropdown is set to 'https'. The 'IP address' dropdown is set to 'All Unassigned'. The 'Port' text box contains '443'. The 'Host name' text box is empty. There are three unchecked checkboxes: 'Require Server Name Indication', 'Disable HTTP/2', and 'Disable OCSP Stapling'. The 'SSL certificate' dropdown is set to 'TestCertificate', with 'Select...' and 'View...' buttons next to it. The 'OK' and 'Cancel' buttons are at the bottom.

3. Set the parameters as follows:
  - 3.1 Set the **Type** to **https**.
  - 3.2 Make sure that the **IP address** is set to **All Unassigned**.
  - 3.3 Make sure that the **Port** is set to **443**.
  - 3.4 Make sure that the **Host name** value is equal to your PolyWorks|DataLoop domain name.
  - 3.5 Make sure that the check boxes are cleared.
  - 3.6 Select the **SSL certificate** to use. Note that, if your certificate is not shown in the list, you must import the certificate in the server certificate store to make it accessible to IIS. Follow the import procedure available on the Microsoft website here: <https://learn.microsoft.com/en-us/troubleshoot/windows-server/windows-security/install-imported-certificates>
4. Click **OK**.
5. In the **Site Bindings** window, select the http binding and click **Remove**.
6. Close the **Site Bindings** window.
7. Restart the IIS server.

## 5.2 Configuring port requirements

Some PolyWorks products require ports to communicate. These ports are listed in the table below:

Source	Destination	Port	Notes
Metrology Suite Web browser - DataLoop Web Interface Web browser - DataLoop Core Administrator DataLoop Web Interface Server DataLoop Mobile Interface	DataLoop Core	443 TCP	<i>HTTPS</i>
Web browser - DataLoop Web Interface DataLoop Mobile Interface	DataLoop Web Interface Server	443 TCP	<i>HTTPS</i>
DataLoop Core DataLoop Web Interface Server Web browser - Collaborative Suite License Server	Collaborative Suite License Server	443 TCP	<i>HTTPS</i>
DataLoop Core	Microsoft SQL Server	1433 TCP	SQL Server default port
	Microsoft Active Directory (For Active Directory users)	389 TCP+UDP	LDAP default port
		88 TCP	Kerberos default port
		135 TCP	Microsoft RPC Endpoint Mapper
Collaborative Suite License Server	InnovMetric Subscription Server	443 TCP	<i>HTTPS</i> (An offline mode is also available)

## 6. Installing the PolyWorks | DataLoop server applications

The required DataLoop server installer is available on MyPolyWorks via the InnovMetric website. To obtain the installer, go to *Software Downloads > Data Management & Digital Connectivity*, select the *PolyWorks | DataLoop 2025 Setup Package*, and download the desired release. The downloaded package contains the DataLoop server installer.

To ensure that the applications are installed on the appropriate machine, see [Section 2.3 Server requirements](#).

### 6.1 Launch the DataLoop server installer

To install the DataLoop server applications as listed in [Section 1.2 Server applications](#) and required prerequisites, proceed as follows:

1. Launch the DataLoop server installer executable file (.exe).
2. Click **View license terms** to open and read the license agreement in a separate window.
3. Specify the installation folder.
4. Click **Agree and install** to continue.

A window is displayed to show the progress of the installation.

As a result of the installation:

- The DataLoop server applications will be installed under the specified folder.
- The required IIS application pools and web applications are created under “Default Web Site”.
- The PolyWorks | DataLoop Core Configurator is opened.

### 6.2 Setting up PolyWorks | DataLoop Core

#### 6.2.1 Configuring the essential PolyWorks | DataLoop Core Configurator parameters

1. A connection to Microsoft SQL server must be established. See [Section 8.1 Connect to Microsoft SQL server in PolyWorks | DataLoop Core Configurator](#).
2. A database must be created. See [Section 8.2 Create a database](#).
3. The service account, which connects to a database to execute SQL queries, must be configured. See [Section 8.3 Configure the service account](#).
4. The fully qualified domain name (FQDN) of the PolyWorks | DataLoop server and the PolyWorks Collaborative Suite License Server host must be configured. See [Section 8.4 Configure the server FQDN and the PolyWorks Collaborative Suite License Server host](#).

## 6.3 Setting up PolyWorks Collaborative Suite License Server

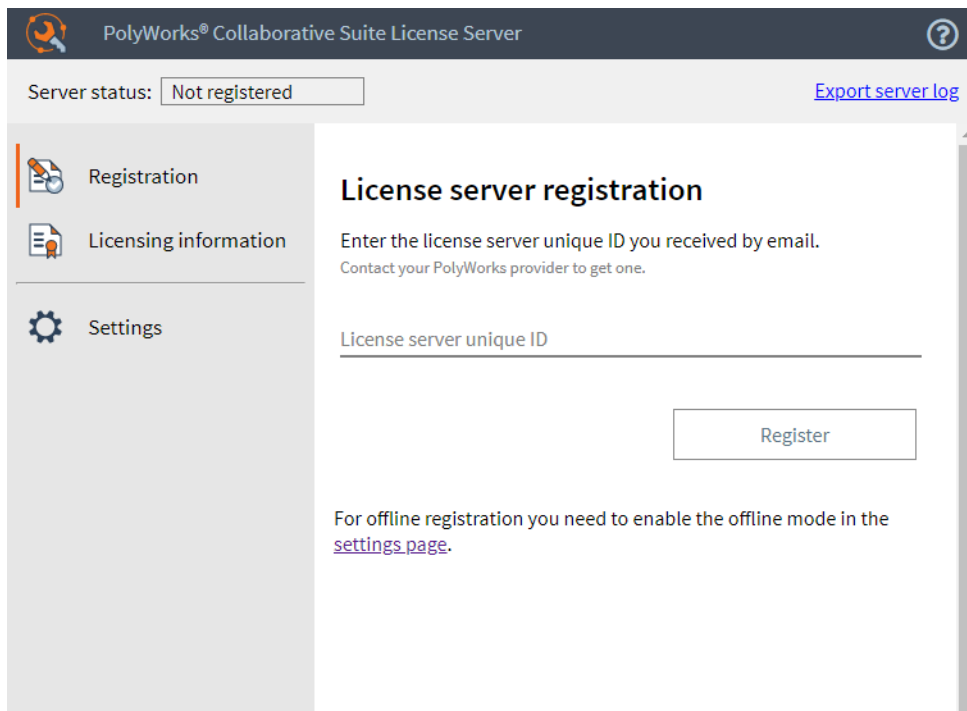
### 6.3.1 Registering the license server online

Once the Collaborative Suite License Server application is installed, it must be registered. The registration operation is used to identify the computer used to host the license server as well as obtain licenses. Once the license server is registered, the license server unique ID can only be used from that computer.

Before registering the license server, make sure that an internet connection is available.

To register the license server, proceed as follows:

1. Open the Collaborative Suite License Server application in your web browser.
2. On the left menu, click **Registration** to open the **License server registration** page.



The screenshot shows the PolyWorks Collaborative Suite License Server web interface. At the top, the title bar reads "PolyWorks® Collaborative Suite License Server" with a question mark icon on the right. Below the title bar, the "Server status" is displayed as "Not registered" in a text box, with a blue link "Export server log" to its right. On the left side, there is a vertical navigation menu with three items: "Registration" (with a document icon), "Licensing information" (with a document icon), and "Settings" (with a gear icon). The main content area is titled "License server registration" and contains the following text: "Enter the license server unique ID you received by email. Contact your PolyWorks provider to get one." Below this is a text input field labeled "License server unique ID" and a "Register" button. At the bottom of the main content area, there is a note: "For offline registration you need to enable the offline mode in the [settings page](#)."

3. Type in the license server unique ID that you received by email.

If you did not receive one, contact your PolyWorks provider.

4. Click **Register**.

A green icon and a message are displayed in the **License server registration** page to indicate that the license server has been registered successfully.



If the registration fails, a red icon is displayed in the **License server registration** page. In this case, make sure that you are connected to the internet and that you typed the unique ID properly (it is case sensitive and consists of 16 alphanumeric characters). If it still does not work, contact your PolyWorks provider.



When the registration is successful, you are automatically directed to the **Licensing information** page.

PolyWorks® Collaborative Suite License Server

Server status:  [Export server log](#)

- Registration
- Licensing information**
- Settings

### Licensing information

Last update: 03/16/2021, 15:08:00

Licensed product	Remaining licenses	Total number of licenses	Days remaining	Expiration date
PolyWorks DataLoop™ Core	10	10	77	05/31/2021

Licensed option	Days remaining	Expiration date
PolyWorks DataLoop™ PLM Connector for Siemens Teamcenter	77	05/31/2021

Note that the license server can also be registered offline. For more information, see the installation guide (*.pdf*) that is provided with the installation file (*.msi*) of the PolyWorks Collaborative Suite License Server application.

## 6.4 Setting up PolyWorks | DataLoop Web Interface Server (optional)

### 6.4.1 Changing the default language (optional)

To change the language used in PolyWorks | DataLoop Web Interface:

1. Open a file browser in the “rest” folder which can be found inside the PolyWorks | DataLoop Web Interface Server installation folder.
2. Open the “appsettings.json” file in a text editor.
3. In the AppSettings section, set the **Language** parameter to the desired value and save the file. Here is the list of all supported languages, the default one is English-EN:

German	DE
Japanese	JA
Chinese Traditional	ZH-rTW
Chinese Simplified	ZH-rCN
Korean	KO
Czech	CS

English	EN
French	FR
Hungarian	HU
Italian	IT
Polish	PL
Portuguese	PT
Russian	RU
Spanish	ES

- Restart the IIS server by calling the iisreset command in a Windows command prompt.

## 6.4.2 Adding global shortcuts (optional)

Global shortcuts that are visible to all users can be added to the PolyWorks | DataLoop Web Interface home page.

To create global shortcuts:

- Open a file browser in the "rest" folder which can be found inside the PolyWorks | DataLoop Web Interface Server installation folder.
- Open the "GlobalShortcutSettings.json" file in a text editor.
- Add global shortcut info, as in the example shown below.

```
[
{
  "DisplayName": "Google",
  "Link": "https://www.google.com"
},
{
  "DisplayName": "Microsoft 365",
  "Link": "https://www.office.com"
}
]
```

When the configuration is detected by PolyWorks | DataLoop Web Interface, the shortcut is added as a global shortcut.

# 7. Connecting an external identity provider to PolyWorks | DataLoop

In this section, you will find the steps to connect your organization's identity provider to PolyWorks | DataLoop.

## 7.1 SAML 2.0 identity provider

### 7.1.1 Prerequisites

- You must have an identity provider available in your organization that supports the SAML 2.0 protocol.
- Users and groups that need access to PolyWorks | DataLoop must already be present in the identity provider.
- Only the web browser SSO profile using SP-initiated flow is supported.

### 7.1.2 Setting up the SAML 2.0 service provider in your identity provider for the PolyWorks | DataLoop server

To connect your identity provider to PolyWorks | DataLoop, you will need to create a SAML service provider configuration in your identity provider. The steps for setting these SAML configurations will differ depending on your identity provider.

#### 7.1.2.1 Custom identity provider

##### SAML 2.0 configuration

1. Import the PolyWorks | DataLoop service provider metadata file in your identity provider. The metadata and the metadata location URL can be found in the **Identity providers** tab of the PolyWorks | DataLoop Core Configurator.



- If your identity provider does not support the automatic update of the service provider metadata file using the metadata location URL, the PolyWorks | DataLoop metadata file must be updated every year manually.
2. Set the callback URL (or reply URL) in your SAML 2.0 configuration to this value: *https://[DATALOOP\_SERVER\_FQDN]/dataloopcore/identity/Saml2/Acs*, where [DATALOOP\_SERVER\_FQDN] represents the fully qualified domain name of your PolyWorks | DataLoop server.

3. Validate that the following values are set in your SAML configuration, replacing [DATALOOP\_SERVER\_FQDN] by the fully qualified domain name of your PolyWorks | DataLoop server.

SAML configuration name	Value
Identifier (Entity ID)	<i>https://[DATALOOP_SERVER_FQDN]/dataloopcore/identity</i>
Reply URL (or Callback URL)	<i>https://[DATALOOP_SERVER_FQDN]/dataloopcore/identity/Saml2/Acs</i>
Sign on URL (or Login URL)	<i>https://[DATALOOP_SERVER_FQDN]/dataloopcore/identity/Account/Login</i>
Logout URL (optional)	<i>https://[DATALOOP_SERVER_FQDN]/dataloopcore/identity/Saml2/Logout</i>

### Mapping the user claims

Claims mapping is necessary to access user properties from PolyWorks | DataLoop. You will need to add the following claims to your SAML configuration:

PolyWorks   DataLoop claim type	Value	Requirement
urn:sub	The unique identifier of the user. Usually, it is a UUID.	Mandatory
urn:uniqueusername	The human-readable, unique name of the user. It can be an email or username.	Mandatory
urn:displayname	The name displayed for the user in PolyWorks   DataLoop user interfaces.	Recommended
urn:email	The email address to use to send email notifications to the user.	Recommended

### Manage user groups from the identity provider (recommended)

PolyWorks | DataLoop user groups can be managed from your identity provider. We recommend doing so, since it removes the need to add users individually in PolyWorks | DataLoop.

To use SAML groups in PolyWorks | DataLoop, you must first add a group claim in your SAML configuration. Note that groups can also be referred to as roles.

PolyWorks   DataLoop claims type	Value description
urn:groups	List of human-readable, unique group names

## Request signature validation (optional)

If your organization's security practices require the validation of all SAML requests made to your identity provider, you must add the PolyWorks | DataLoop service provider certificate in the configuration section of your identity provider. You can download the PolyWorks | DataLoop service provider certificate from the **Identity providers** tab in the PolyWorks | DataLoop Core Configurator. Keep in mind that the certificate is also included in the PolyWorks | DataLoop service provider metadata file.

## Adding the identity provider in PolyWorks | DataLoop Core Configurator

To add your identity provider to PolyWorks | DataLoop, open PolyWorks | DataLoop Core Configurator and follow the procedure outlined in [Section 8.8.1 Adding an SAML 2.0 identity provider to PolyWorks | DataLoop](#).

## Adding users and groups in PolyWorks | DataLoop Core Administrator

To grant access to PolyWorks | DataLoop to your identity providers groups and users (if necessary), you must add them manually in PolyWorks | DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

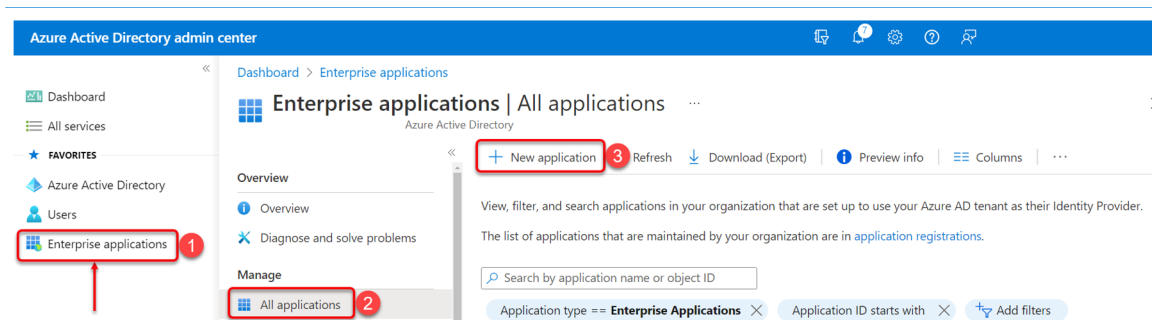
### 7.1.2.2 Azure AD

This is an overview of the procedure that allows the Azure Active Directory (AD) identity provider to connect to PolyWorks | DataLoop using the SAML protocol 2.0.

## Adding Azure AD SAML Toolkit to the enterprise application

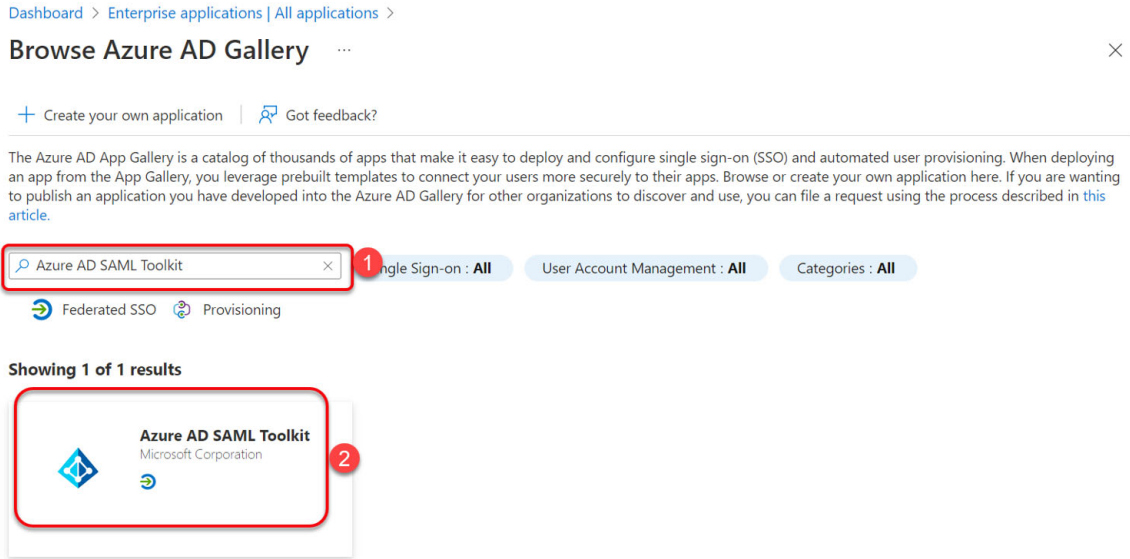
Once signed in to the Azure Portal using an admin user, proceed as follows:

1. On the left navigation pane, select the **Azure Active Directory** service.
  - 1.1 Navigate to **Enterprise applications**.
  - 1.2 Click **All applications**.
  - 1.3 Click **New application** to add a new application.

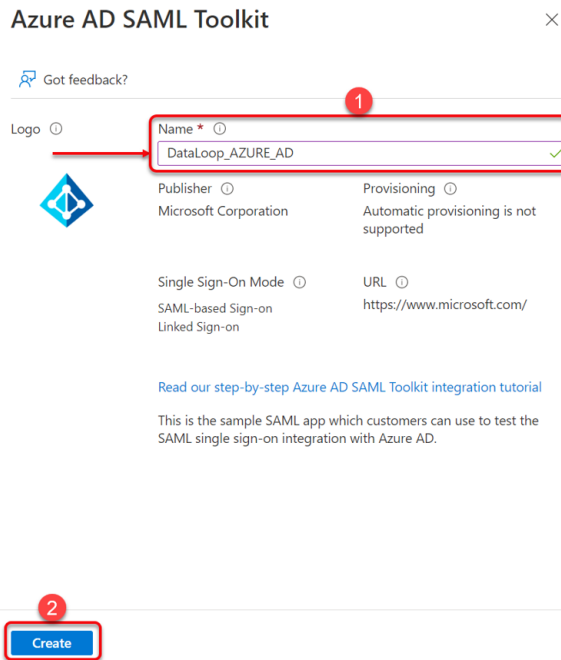


2. On the **Browse Azure AD Gallery** page:

- 2.1 Type *Azure AD SAML Toolkit* in the search box.
- 2.2 Select **Azure AD SAML Toolkit** from the results panel, then add the app. Wait a few seconds while the app is added to your tenant.



3. On the next window:
  - 3.1 Type a representative name in **Name**, for example *DataLoop\_AZURE\_AD* as shown in the image below.
  - 3.2 Click **Create**.

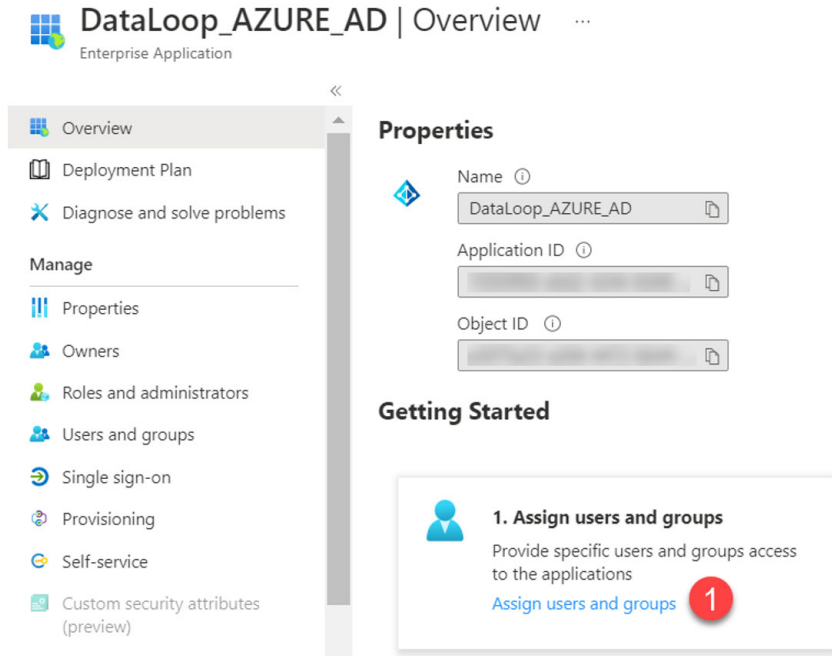


## Configuring the SAML toolkit for DataLoop Server

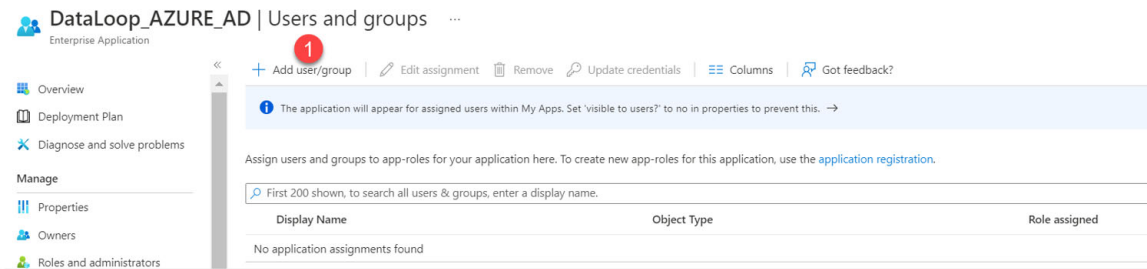
To configure Azure AD SSO with Azure AD SAML Toolkit, perform the following steps:

### Configuring users and groups

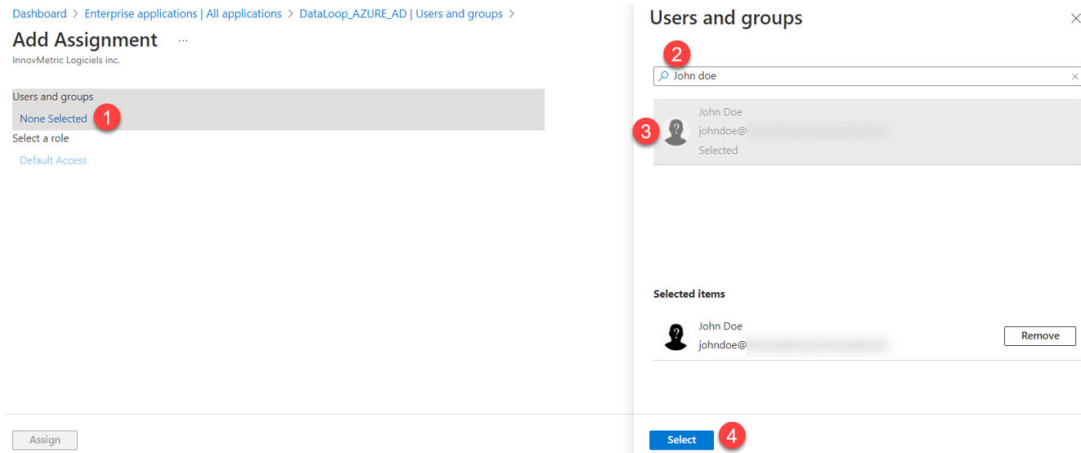
1. Configure Azure AD SSO to assign users to use this feature by clicking **Assign users and groups**.



2. To add users to the Azure AD Enterprise application, click **Add user/group**.



3. Click **None selected** to gain access to the **Users and groups** section. Search for the user to add and click it. Repeat the process for each user or group. When all desired users and groups have been added, click **Select**.



4. Click **Assign** on the window that is displayed to complete the process.

Dashboard > Enterprise applications | All applications > DataLoop\_AZURE\_AD | Users and groups >

## Add Assignment

InnovMetric Logiciels inc.

Users and groups

1 user selected.

Select a role

Default Access

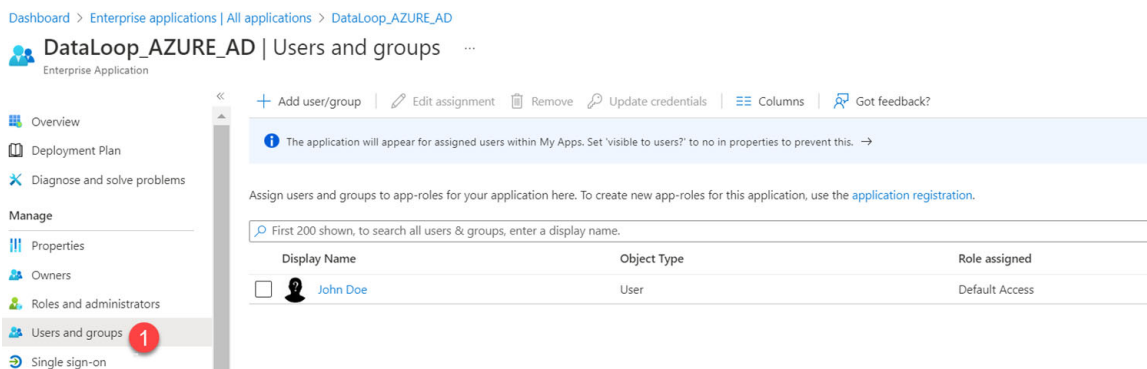
Assign

1

Those steps can be repeated as needed to add more users and groups.

Note the following:

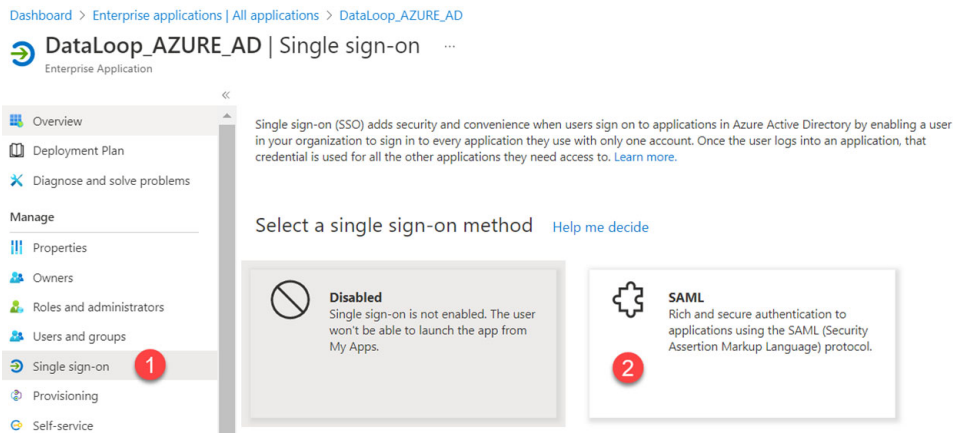
- Clicking **Users and groups** on the left action pane displays the users and/or groups already added and assigned to the enterprise application.



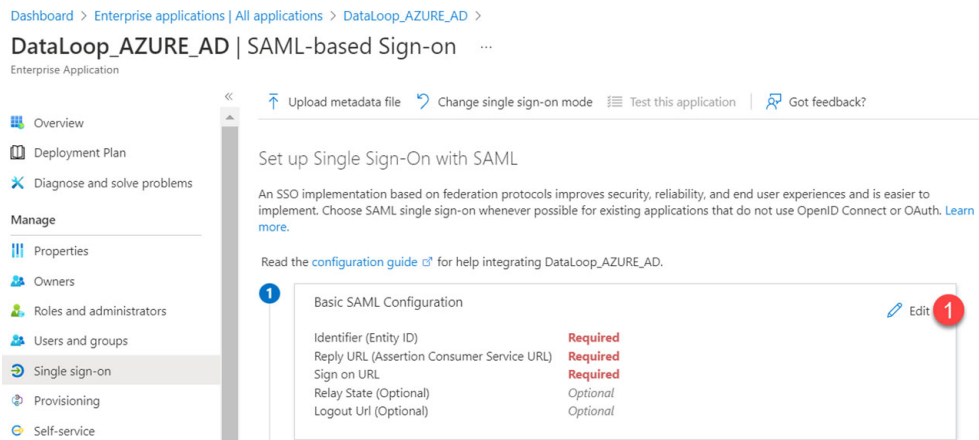
- For groups, only Azure AD security groups should be used.
- Users and groups need to be added to the Enterprise Application in Azure AD to be granted access to DataLoop. The users and/or groups that need access to DataLoop must also be added on the User Management page of the DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

## Configuring the SAML Single Sign-On

1. Click **Single sign-on**, then click **SAML** to begin the configuration.




2. Click **Edit** in the **Basic SAML Configuration** section.




3. Configure the SAML URLs as follows:

- 3.1 Type the URLs as shown below, replacing `DATALOOP_SERVER_FQDN` by the fully qualified domain name of the DataLoop Server.

### Basic SAML Configuration ×

 Save **5** Got feedback?

 Want to leave this preview of the SAML Configuration experience? Click here to leave the preview. →

**Identifier (Entity ID) \*** ⓘ

*The unique ID that identifies your application to Azure Active Directory. This value must be unique across all applications in your Azure Active Directory tenant. The default identifier will be the audience of the SAML response for IDP-initiated SSO.*

Default

**1** ✓ [checkbox] ⓘ [trash]

[Add identifier](#)

**Patterns:** https://samltoolkit.azurewebsites.net

**Reply URL (Assertion Consumer Service URL) \*** ⓘ

*The reply URL is where the application expects to receive the authentication token. This is also referred to as the "Assertion Consumer Service" (ACS) in SAML.*

Index Default

**2** ✓  [checkbox] ⓘ [trash]

[Add reply URL](#)

**Patterns:** https://samltoolkit.azurewebsites.net/SAML/Consume

**Sign on URL \***

*Sign on URL is used if you would like to perform service provider-initiated single sign-on. This value is the sign-in page URL for your application. This field is unnecessary if you want to perform identity provider-initiated single sign-on.*

**3** ✓

**Patterns:** https://samltoolkit.azurewebsites.net/

**Relay State (Optional)** ⓘ

*The Relay State instructs the application where to redirect users after authentication is completed, and the value is typically a URL or URL path that takes users to a specific location within the application.*

**Logout Url (Optional)**

*This URL is used to send the SAML logout response back to the application.*

**4** ✓

- 3.2 Click **Save** to save the changes made to the URLs.

Note the following:

- The URLs are case sensitive.
- The **Relay State** URL is not configured, as it is optional.

4. Add the claims into **Attributes & Claims**.

#### 4.1 Click **Edit**, in the **Attributes & Claims** section, as shown:

Dashboard > Enterprise applications | All applications > DataLoop\_AZURE\_AD >  
DataLoop\_AZURE\_AD | SAML-based Sign-on ...

Enterprise Application

Overview  
Deployment Plan  
Diagnose and solve problems  
Manage  
Properties  
Owners  
Roles and administrators  
Users and groups  
Single sign-on  
Provisioning  
Self-service  
Custom security attributes (preview)  
Security  
Conditional Access  
Permissions  
Token encryption  
Activity

### Set up Single Sign-On with SAML

An SSO implementation based on federation protocols improves security, reliability, and end user experiences and is easier to implement. Choose SAML single sign-on whenever possible for existing applications that do not use OpenID Connect or OAuth. [Learn more.](#)

Read the [configuration guide](#) for help integrating DataLoop\_AZURE\_AD.

#### 1 Basic SAML Configuration

Identifier (Entity ID)	https://DATALOOP_SERVER_FQDN/dataloopcore/identity	<a href="#">Edit</a>
Reply URL (Assertion Consumer Service URL)	https://DATALOOP_SERVER_FQDN/dataloopcore/identity/Saml2/Acs	
Sign on URL	https://DATALOOP_SERVER_FQDN/dataloopcore/identity/Account/Login	
Relay State (Optional)	Optional	
Logout URL (Optional)	https://DATALOOP_SERVER_FQDN/dataloopcore/identity/Saml2/Logout	

#### 2 Attributes & Claims

givenname	user.givenname	<a href="#">Edit</a>
surname	user.surname	<b>1</b>
emailaddress	user.mail	
name	user.userprincipalname	
Unique User Identifier	user.userprincipalname	

#### 4.2 Click **Add new claim**.

Dashboard >  
Attributes & Claims ...

**1** + Add new claim + Add a group claim Columns | Got feedback?

#### Required claim

Claim name	Value
Unique User Identifier (Name ID)	user.userprincipalname [nameid-format:emailAddress] ***

#### Additional claims

Claim name	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	user.mail ***
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	user.givenname ***
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	user.userprincipalname ***
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	user.surname ***

Advanced settings (Preview)

#### 4.3 Type *urn:uniqueusername* in **Name. Namespace** can be left blank. For the **Source attribute**, select **user.userprincipalname**. Click **Save**.

- 4.4 Repeat the two previous steps to add three more claims with the following name and source attribute: *urn:displayname/user.displayname*, *urn:email/user.mail*, and *urn:sub/user.objectid*. The claims should then appear as shown.

[Dashboard](#) >

## Attributes & Claims

[+](#) Add new claim [+](#) Add a group claim [☰](#) Columns | [🔗](#) Got feedback?

### Required claim

Claim name	Value
Unique User Identifier (Name ID)	user.userprincipalname [nameid-format:emailAddress] ...

### Additional claims

Claim name	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	user.mail ...
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	user.givenname ...
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	user.userprincipalname ...
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	user.surname ...
urn:displayname	user.displayname ...
urn:email	user.mail ...
urn:sub	user.objectid ...
urn:uniqueusername	user.userprincipalname ...

✓ Advanced settings (Preview)

- 4.5 To add the group claim to manage DataLoop users by group, click **Add a group claim**.

- 4.6 Fill the **Group Claims** section on the right as follows:

- For the groups associated with the user, select **Groups assigned to the application**.
- For **Source attribute**, choose **Cloud-only group display names (Preview)**.
- Select **Customize the name of the group claim**.
- Type *urn:groups* in **Name**.

- Click **Save**.

### Group Claims

Manage the group claims used by Azure AD to populate SAML tokens issued to your app

Which groups associated with the user should be returned in the claim?

None

All groups

Security groups

Directory roles

Groups assigned to the application

Source attribute \*

Cloud-only group display names (Preview)

Emit group name for cloud-only groups (Preview)

Advanced options

Filter groups

Attribute to match

Match with

String

Customize the name of the group claim

Name (required)

urn:groups

Namespace (optional)

Emit groups as role claims

Apply regex replace to groups claim content

Expose claim in JWT tokens in addition to SAML tokens

Save

The group claim is added to the list.

## Attributes & Claims ...

+ Add new claim + Add a group claim Columns | Got feedback?

### Required claim

Claim name	Type	Value
Unique User Identifier (Name ID)	SAML	user.userprincipalname [...]

### Additional claims

Claim name	Type	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	SAML	user.mail
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	SAML	user.givenname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	SAML	user.userprincipalname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	SAML	user.surname
urn:displayname	SAML	user.displayname
urn:email	SAML	user.mail
urn:groups	SAML	user.groups
urn:sub	SAML	user.objectid
urn:uniqueusername	SAML	user.userprincipalname

^ Advanced settings

#### Advanced SAML claims options [Edit](#)

Include attribute name format	Disabled
Issuer with application ID	Disabled
Audience override	None

## Adding the identity provider in PolyWorks | DataLoop Core Configurator

To add your identity provider to PolyWorks | DataLoop, open PolyWorks | DataLoop Core Configurator and follow the procedure outlined in [Section 8.8.1 Adding an SAML 2.0 identity provider to PolyWorks | DataLoop](#).

## Adding users and groups in PolyWorks | DataLoop Core Administrator

To grant access to PolyWorks | DataLoop to your identity providers groups and users (if necessary), you must add them manually in PolyWorks | DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

## 7.2 Windows Active Directory

This identity provider collects users and groups from the Windows Active Directory located inside the Windows Domain joined by the PolyWorks | DataLoop server.

### 7.2.1 Prerequisites

- The Active Directory must be located in one of the following:
  - The same Windows Domain as the PolyWorks | DataLoop server.
  - A trusted domain inside your organization (see [Section 7.2.3 Trust relationship between domains \(optional\)](#) for more information).
- Users and groups that need access to PolyWorks | DataLoop must already be present in the Windows Active Directory.

### 7.2.2 Manage user groups from Windows Active Directory (recommended)

Managing PolyWorks | DataLoop user groups using Windows Active Directory is recommended, since it removes the need to add users individually in PolyWorks | DataLoop.

To be added, the Windows Active Directory group type must be Security.

### 7.2.3 Trust relationship between domains (optional)

We support users provisioned from trusted domains inside your organization. To use these features, you must add the trust relationship between the PolyWorks | DataLoop server domain and the targeted trusted domain.

### 7.2.4 Hardened Active Directory configuration (optional)

The built-in group **Pre-Windows 2000 Compatible Access** must be enabled. In order for the PolyWorks | DataLoop server to be able to validate users and groups from the Active Directory, at least one of the following must be a member of that group:

- The computer object of the server where the PolyWorks | DataLoop server applications are installed.
- The Windows service account configured in PolyWorks | DataLoop Core Configurator that is used to execute the IIS application pools.

### 7.2.5 Adding users and groups in PolyWorks | DataLoop Core Administrator

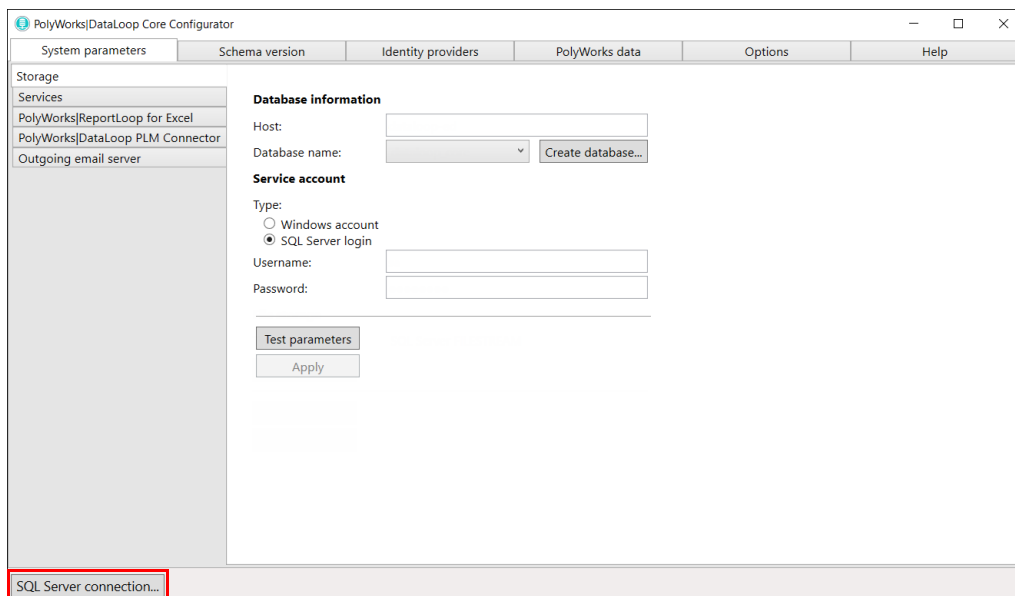
To grant access to PolyWorks | DataLoop to your identity providers groups and users (if necessary), you must add them manually in PolyWorks | DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

## 8. The PolyWorks | DataLoop Core Configurator

After the installation process is complete, the PolyWorks | DataLoop Core Configurator is launched. It allows creating databases and configuring parameters needed to use PolyWorks | DataLoop, as well as review information and test part of the system. Note that the PolyWorks | DataLoop system cannot be used until its essential parameters have been configured.

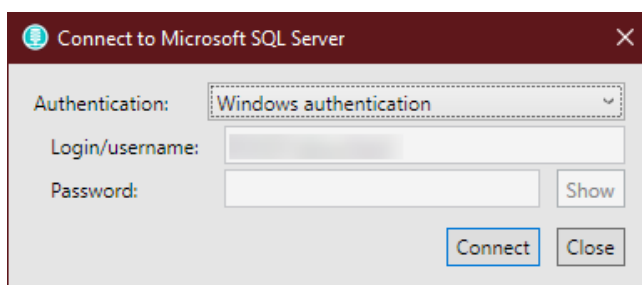
### 8.1 Connect to Microsoft SQL server in PolyWorks | DataLoop Core Configurator

Connection to the Microsoft SQL server is required for most operations in the PolyWorks | DataLoop Configurator. To connect:



1. Click **SQL Server connection** at the bottom of the PolyWorks | DataLoop Core Configurator.

The Connect to Microsoft SQL Server dialog box is displayed.



2. Select the type of authentication information to use from the following: **Windows authentication** or **SQL server login**.
3. Type in the username or login in the corresponding text box. When using Windows authentication, the current Windows user is entered by default. Note that the user must have elevated permissions to use some of the features of the PolyWorks | DataLoop Core Configurator.
4. If using Microsoft SQL server login credentials, type in the password in the corresponding text box. Note that the **Show** button next to it allows displaying the characters of the password.
5. Click **Connect**. If the connection is successful, the dialog box closes.

Note that the dialog box is also displayed automatically when attempting to perform an operation that requires a connection to the Microsoft SQL server without being connected.

## 8.2 Create a database

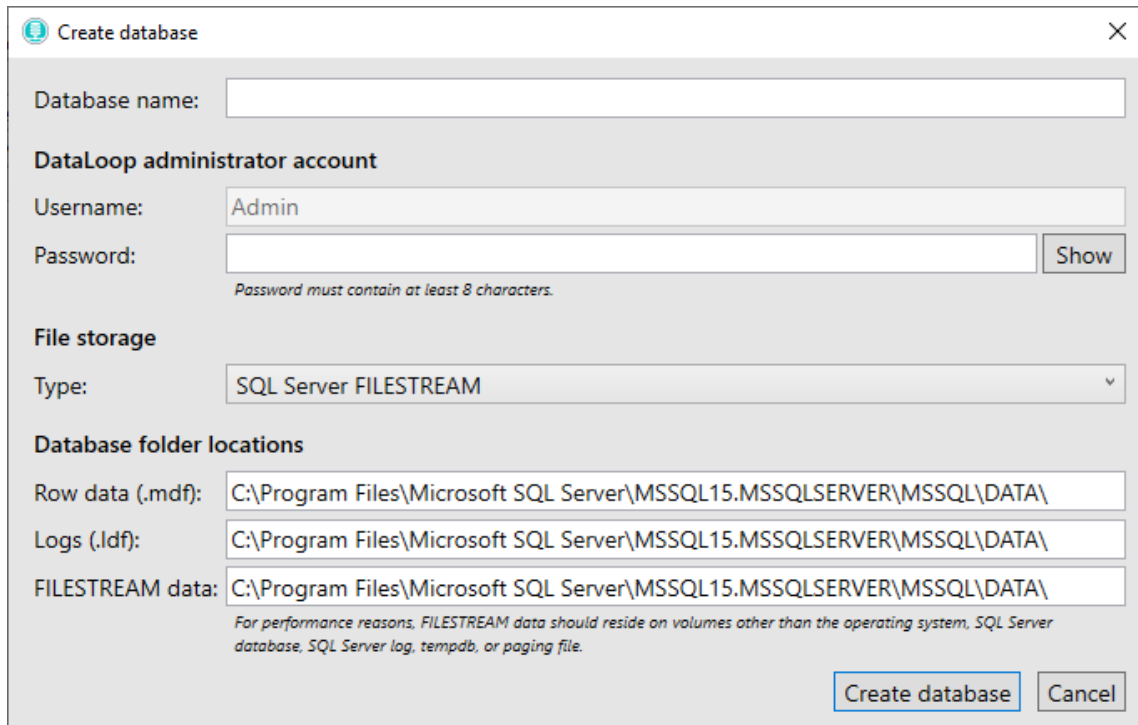


The SQL account used for the SQL connection must meet the requirements detailed in [Section 3.3 Configuring the SQL Server accounts](#).

Databases can be created in PolyWorks | DataLoop Core Configurator. When there is no existing database, proceed as follows:

The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'PolyWorks data' tab selected. The 'Database information' section is expanded, showing fields for 'Host' and 'Database name'. The 'Database name' dropdown menu is open, and the option 'Create database...' is highlighted with a red box. Below this, the 'Service account' section is visible, with 'SQL Server login' selected as the type. There are also 'Test parameters' and 'Apply' buttons at the bottom of the configuration area.

1. In the Storage page, click **Create database**. The Create database dialog box is displayed.



**Create database**

Database name:

**DataLoop administrator account**

Username:

Password:

*Password must contain at least 8 characters.*

**File storage**

Type:

**Database folder locations**

Row data (.mdf):

Logs (.ldf):

FILESTREAM data:

*For performance reasons, FILESTREAM data should reside on volumes other than the operating system, SQL Server database, SQL Server log, tempdb, or paging file.*

2. Type in the name of the new database in **Database name**.
3. Type in the password of the administrator user that will be created with the database. The password must be at least 8 characters long. Note that the **Show** button to its right allows displaying the characters of the password.
4. Select the type of file storage to use in **Type**. Choose from **SQL Server FILESTREAM**, **Amazon S3**, and **Microsoft Azure Blob Storage**. If **Amazon S3** is selected, specify the bucket name in **Bucket**. If **Microsoft Azure Blob Storage** is selected, specify the storage account name in **Storage Account**, and specify the container name in **Container**.
5. Specify the locations where the database files will be saved on the server, according to the type of file storage selected.

When using SQL Server FILESTREAM:

- Specify the path to the folder in which the rows files (.mdf) of the database will be saved on the server in **Rows data**. The default value is the value of the **SQL Server instance default data path** of the Microsoft SQL Server.
- Specify the path to the folder in which the log files (.ldf) of the database will be saved on the server in **Logs**. The default value is the value of the **SQL Server instance default data path** of the Microsoft SQL Server.
- Specify the path to the folder in which the FILESTREAM files that correspond to the files stored in the database will be saved on the server in **FILESTREAM data**. If left empty, the **SQL Server instance default data path** will be used. For better performance, the disk

where this data is saved should be different from the one where the operating system or Microsoft SQL Server is installed.

**Create database**

Database name:

**DataLoop administrator account**

Username:

Password:    
Password must contain at least 8 characters.

**File storage**

Type:

Bucket name:

**Database folder locations**

Row data (.mdf):

Logs (.ldf):

When using cloud file storage:

- Specify the path to the folder in which the rows files (.mdf) of the database will be saved on the server in **Rows data**. The default value is the value of the **SQL Server instance default data path** of the Microsoft SQL Server.
- Specify the path to the folder in which the log files (.ldf) of the database will be saved on the server in **Logs**. The default value is the value of the **SQL Server instance default data path** of the Microsoft SQL Server.

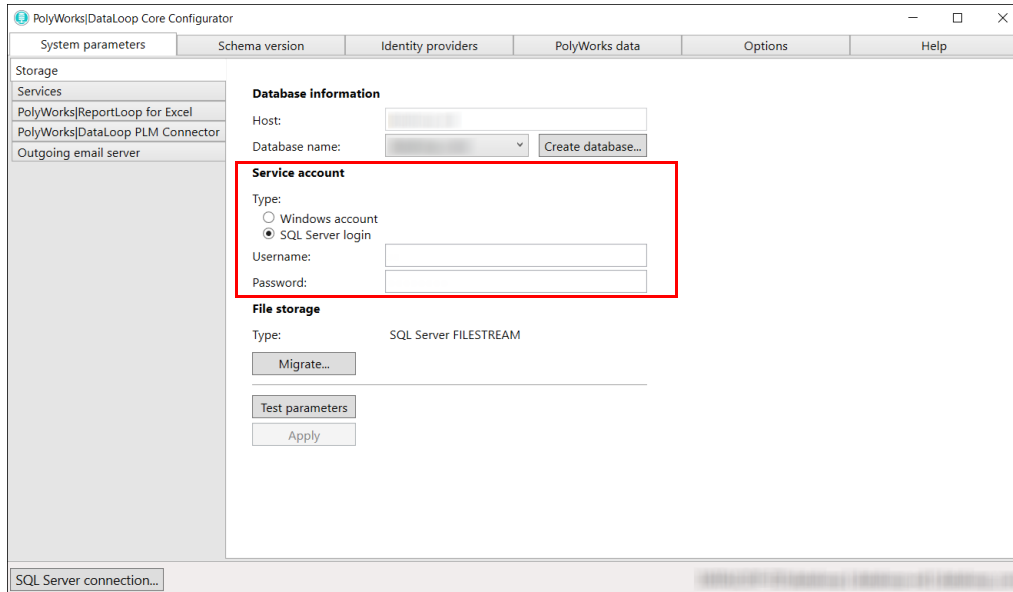
Note that, after the database is created, changing these locations is extremely difficult.

6. Click **Create database** to create the database. The dialog boxes close and the newly created database is automatically selected in the PolyWorks | DataLoop Core Configurator. Click **Apply** to save the configuration.

Note that, by default, the database is in simple recovery model mode.

## 8.3 Configure the service account

The service account, which connects to a database to execute SQL queries, can be configured on the Storage page of the **System parameters** tab. Note that the corresponding **Host** and **Database name** must already be specified.



The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'System parameters' tab selected. The 'Storage' section is active, and the 'Service account' configuration is highlighted with a red box. The 'Database information' section includes fields for 'Host' and 'Database name' with a 'Create database...' button. The 'Service account' section has radio buttons for 'Windows account' and 'SQL Server login' (selected), with 'Username' and 'Password' text boxes. The 'File storage' section shows 'Type' set to 'SQL Server FILESTREAM' and buttons for 'Migrate...', 'Test parameters', and 'Apply'.



The SQL account used for the SQL connection must meet the requirements detailed in [Section 3.3 Configuring the SQL Server accounts](#).

1. Select the type of authentication to use for the service account from the following:  
**Windows account** or **SQL Server login**. We recommend using Windows Authentication, as explained in [Section 3.3 Configuring the SQL Server accounts](#).
  - If **Windows authentication** is selected, the Windows account running the PolyWorks|DataLoop Core IIS application pools is used to connect to the database. This account is also configured as the identity of the application pools of the DataLoop Core web applications.
  - If **SQL Server login** is selected, the login name and the password of the account must also be typed in the corresponding text boxes. When this type of service account is used, the identity of the DataLoop Core IIS application pools is set to a built-in account.
2. Once all the parameters are entered, click **Test parameters**. If everything is working correctly, **Successful** is displayed next to it. If there is an issue, an error message is displayed.
3. Click **Apply** to add the service account as a database user with **db\_datareader** and **db\_datawriter** database roles.

## 8.4 Configure the server FQDN and the PolyWorks Collaborative Suite License Server host

The PolyWorks | DataLoop server fully qualified domain name (FQDN) and the PolyWorks Collaborative Suite License Server host can be managed from the Services page of the **System parameters** tab.

The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'System parameters' tab selected. The 'Fully qualified domain name' field contains 'metrology-lab.local'. Below this, there are three sections for application URLs, each with a 'Browse' button: 'Administrator' (https://metrology-lab.local/dataloopcore/admin), 'API' (https://metrology-lab.local/dataloopcore/api), and 'Web interface' (https://metrology-lab.local/polyworks/dataloop). A fourth section, 'PolyWorks Collaborative Suite License Server', has a 'Host' field containing 'metrology-lab.local'. At the bottom of the configuration area, there are 'Test parameters' and 'Apply' buttons. The status bar at the bottom left shows 'SQL Server connection...'.

A port number can be specified after the fully qualified domain name, preceded by a colon (i.e., *name:997*). The PolyWorks | DataLoop application URLs displayed on the page are automatically generated using the fully qualified domain name value. Note that any of the application URLs can be copied by clicking the adjacent button.

The following application URLs are displayed:

- **Administrator** - Displays the URL of the PolyWorks | DataLoop Core Administrator website. **Browse** opens the PolyWorks | DataLoop Core Administrator website in the default browser.
- **API** - Displays the URL of the PolyWorks | DataLoop Core API.
- **Web Interface** - Displays the URL of the PolyWorks | DataLoop Web Interface website. Click **Browse** to open the PolyWorks | DataLoop Web Interface website in the default browser.

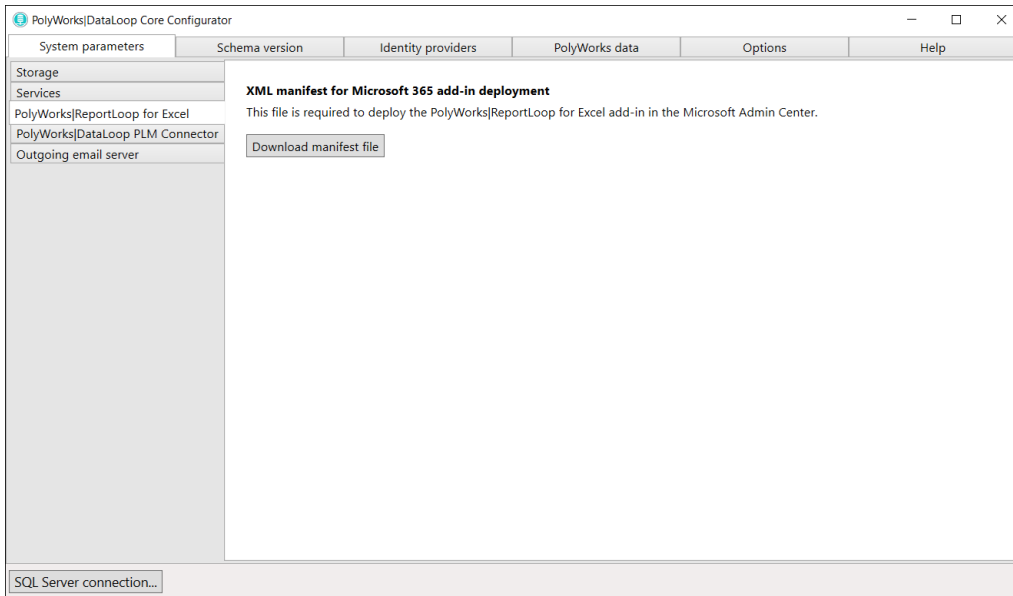
The host of the PolyWorks Collaborative Suite License server that validates access to PolyWorks | DataLoop users can be typed in **Host**. The default value for the host is the **Fully qualified domain name of the PolyWorks | DataLoop server** and can be edited, if needed.

Click **Test parameters** to test if all services are online. If a service does not respond, the test immediately ends and an error message is displayed. An icon will appear next to **Test parameters** indicating the success or failure of the test.

Click **Apply** to save any changes made to the URLs.

## 8.5 Obtain the XML manifest to deploy PolyWorks | ReportLoop for Excel

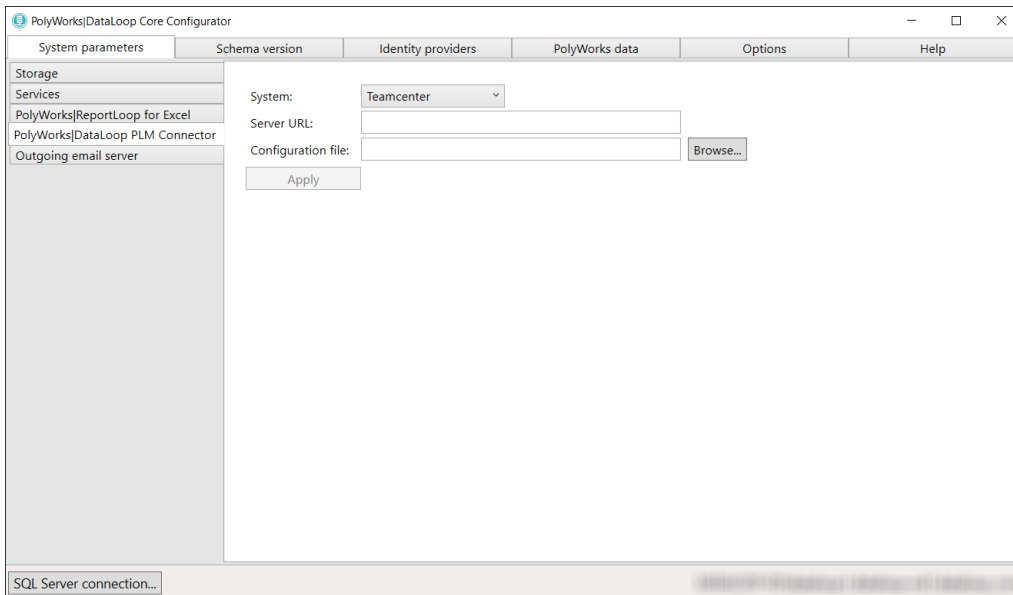
A file required for the deployment of the PolyWorks | ReportLoop for Excel add-in can be downloaded from the PolyWorks | ReportLoop for Excel page of the **System parameters** tab.



For more information, see [9.4.1 Deploying the add-in in the Microsoft 365 admin center](#).

## 8.6 Configure the PolyWorks | DataLoop PLM Connector

The parameters needed for PolyWorks products to communicate with a PLM can be specified on the PolyWorks | DataLoop PLM Connector page of the **System parameters** tab.

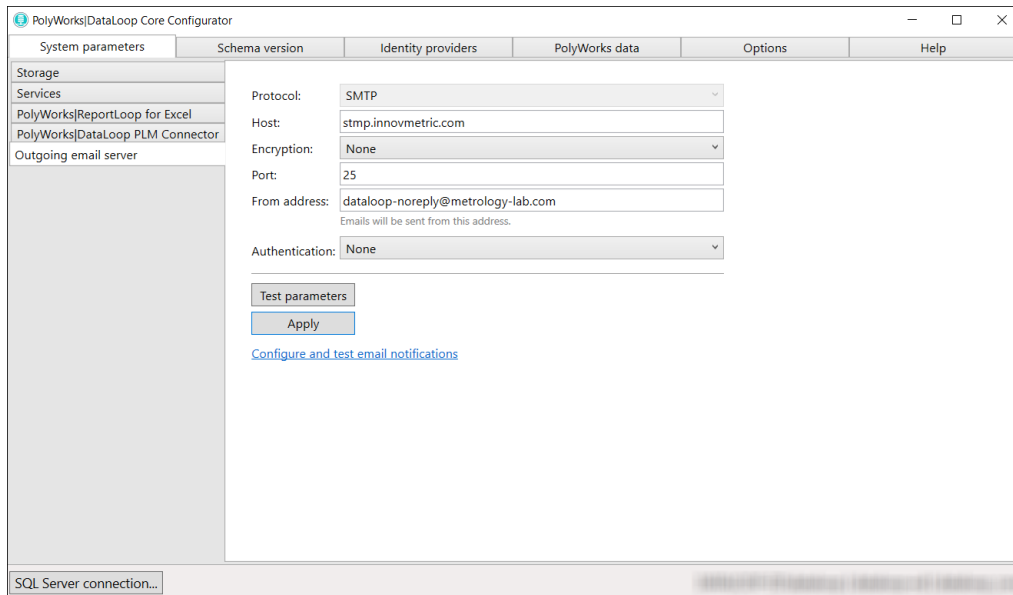


The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window. The 'System parameters' tab is active, displaying a list of services on the left and configuration fields on the right. The 'PolyWorks|DataLoop PLM Connector' service is selected. The configuration fields include a 'System' dropdown menu set to 'Teamcenter', empty text boxes for 'Server URL' and 'Configuration file', a 'Browse...' button next to the 'Configuration file' field, and an 'Apply' button. The bottom status bar shows 'SQL Server connection...'.

1. Specify the system to use in the **System** list. The following values are offered: **Teamcenter** and **Windchill**. If no value has previously been selected, Teamcenter is the default value.
2. Specify the API URL of the PLM in **Server URL**.
3. Specify the path to the file containing the description of the data structure of the PLM in **Configuration file**. The **Browse** button next to it opens a file browser that allows browsing for the file path.
4. Click **Apply** to save the changes.

## 8.7 Configure the outgoing email server

The parameters needed to configure the outgoing email server can be specified on the **Outgoing email server** page of the **System parameters** tab.



The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'System parameters' tab selected. The 'Outgoing email server' configuration page is displayed, featuring the following fields and controls:

- Protocol:** SMTP (dropdown menu)
- Host:** smtp.innovmetric.com (text box)
- Encryption:** None (dropdown menu)
- Port:** 25 (text box)
- From address:** dataloop-noreply@metrology-lab.com (text box) with a note: "Emails will be sent from this address."
- Authentication:** None (dropdown menu)
- Test parameters** button
- Apply** button
- [Configure and test email notifications](#) link

At the bottom of the window, there is a status bar with the text "SQL Server connection..." and a version number "1.0.0.0".

1. Type in the host of the SMTP server in **Host**.
2. Select the encryption used by the SMTP server in **Encryption**. Choose from **None**, **TLS** or **STARTTLS**. When an encryption method is selected, the port the most likely to be used is automatically displayed in **Port**. The port can also be manually edited if needed.
3. Type in the email address from which to send the emails from the DataLoop server in **From address**. Note that there is no warning if the email address is invalid.
4. Select the authentication method to use to connect to the SMTP server. Choose from **User credentials** or **None**. If User credentials is selected, type in the **Username** and **Password** to use for the authentication in the appropriate text boxes. Note that the **Show** button next to the **Password** text box is used to display the characters of the password.
5. Click **Test parameters** to test the parameters configured for the SMTP server. If there is an issue with the configuration, an error message is displayed. Note that no email is sent during this test.
6. Click **Apply**.

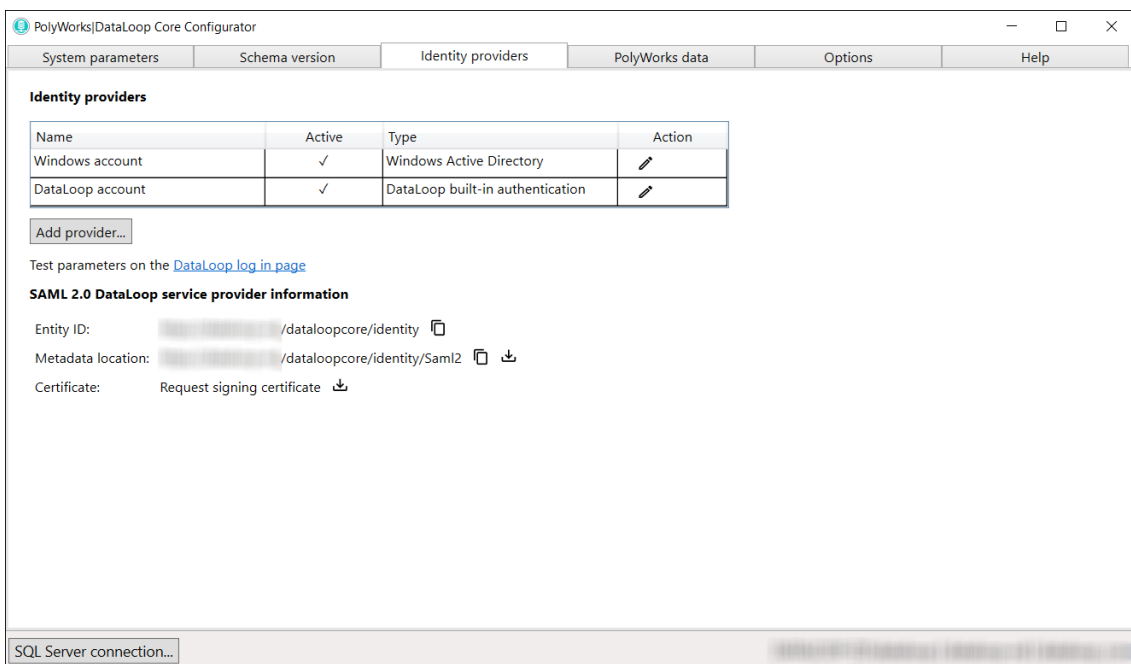
Note that the **Configure and test email notifications** link offers a shortcut to the Emails notifications page of the **Options** tab. For more information, see [Section 8.13 Configuring the email notifications](#).

## 8.8 Managing identity providers

Identity providers can be connected to PolyWorks | DataLoop to help manage users. They can be managed from the **Identity providers** tab of the PolyWorks | DataLoop Core Configurator.

PolyWorks | DataLoop currently supports the following identity provider types:

- **SAML 2.0:** Provisions users and groups from a SAML 2.0 compatible identity provider.
- **Windows Active Directory:** Provisions users and groups from a Windows Active Directory.
- **PolyWorks | DataLoop built-in authentication:** Stores users and group inside the PolyWorks | DataLoop database. This identity provider is used during the initial configuration of the PolyWorks | DataLoop server and is active by default in any new installation of PolyWorks | DataLoop.



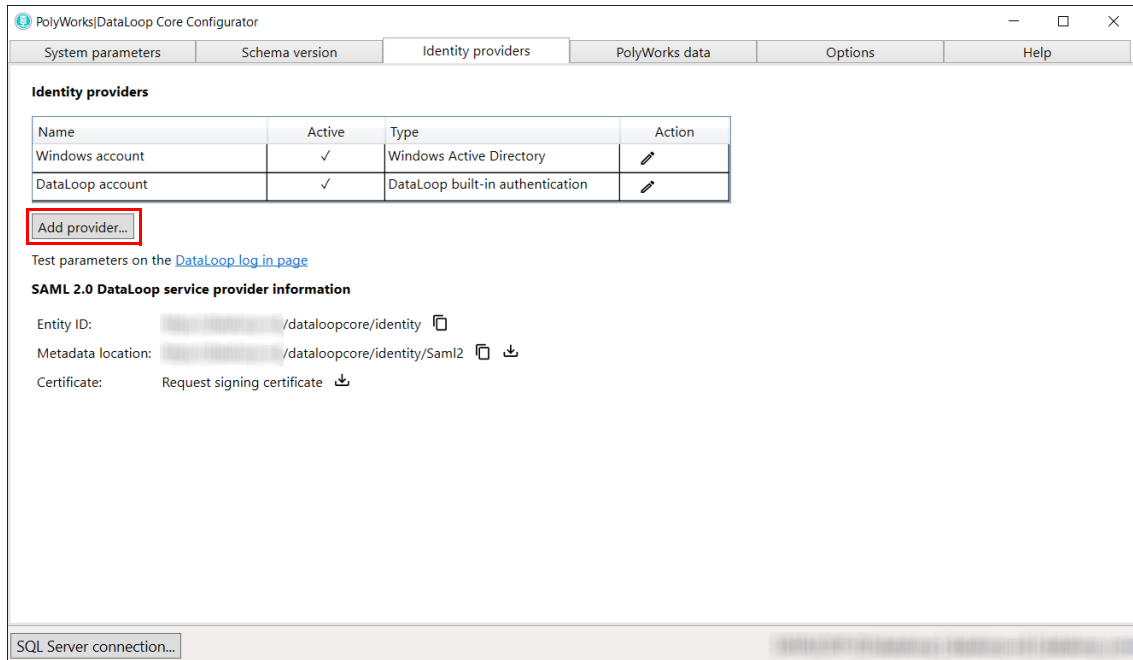
The **Identity providers** tab contains the following:

- A table to display and edit the list of currently configured identity providers as well as indicate their active status and the protocol they use.
- A button that can be used to add a new identity provider to PolyWorks | DataLoop.
- An hyperlink to the PolyWorks | DataLoop login page to test that the parameters configured for the identity providers function correctly.
- Information on the SAML 2.0 PolyWorks | DataLoop service provider that can be required to configure SAML 2.0 identity providers to function with PolyWorks | DataLoop. The **Entity ID**, **Metadata location**, and **Certificate** are available and can be copied and/or downloaded from this section.

## 8.8.1 Adding an SAML 2.0 identity provider to PolyWorks | DataLoop

To add an identity provider to PolyWorks | DataLoop, proceed as follows. Note that the identity provider must already have been configured. For more information, see [Section 7.1 SAML 2.0 identity provider](#).

1. Click **Add provider**.



2. In the dialog box that is displayed, enter the following required information from the identity provider:
  - **Name:** The display name to show on the PolyWorks | DataLoop login page for this identity provider.
  - **Base URL:** The base URL of your identity provider vendor.
  - **Entity ID:** The unique identifier of your identity provider.

- **Metadata location:** The location of the metadata of your identity provider. Specify either the path to the metadata file on the local computer or the URL that allows downloading the metadata file.

**Add identity provider**

Name:

Active

Type: SAML 2.0

**SAML provider information**

Base URL:

Entity ID:

**Metadata location**

File path:

For the provider to work, this file must not change location or be deleted.

URL:

3. Click **Add provider**. The identity provider is displayed in the **Identity providers** table. Users and groups can now be added manually to PolyWorks | DataLoop from the identity provider using the PolyWorks | DataLoop Core Administrator.

PolyWorks|DataLoop Core Configurator

System parameters | Schema version | **Identity providers** | PolyWorks data | Options | Help

**Identity providers**

Name	Active	Type	Action
External Provider	✓	SAML 2.0	
Windows account	✓	Windows Active Directory	
DataLoop account	✓	DataLoop built-in authentication	

Test parameters on the [DataLoop log in page](#)

**SAML 2.0 DataLoop service provider information**

Entity ID: <https://dataloop-ed/dataloopcore/identity>

Metadata location: <https://dataloop-ed/dataloopcore/identity/Saml2>

Certificate: Request signing certificate

SQL Server connection...

## 8.8.1.1 Finding the required information in Azure Active Directory

Display the Single sign-on page of the Azure Portal. The base URL (3), entity ID (4), and metadata location (2) are identified on the snapshot below.

Dashboard > Enterprise applications | All applications > DataLoop\_AZURE\_AD >  
DataLoop\_AZURE\_AD | SAML-based Sign-on ...

Overview  
Deployment Plan  
Diagnose and solve problems  
Manage  
Properties  
Owners  
Roles and administrators  
Users and groups  
Single sign-on 1  
Provisioning  
Self-service  
Custom security attributes (preview)  
Security  
Conditional Access  
Permissions  
Token encryption  
Activity

Upload metadata file | Change single sign-on mode | Test this application | Got feedback?

SAML Certificates

Token signing certificate	Active	Edit
Status	Active	Edit
Thumbprint		
Expiration		
Notification Email		
App Federation Metadata Url	https://login.microsoftonline.com	
Certificate (Base64)	Download	
Certificate (Raw)	Download	
Federation Metadata XML	Download	

Verification certificates (optional) (Preview) Edit

Required	No
Active	0
Expired	0

Set up DataLoop\_AZURE\_AD

You'll need to configure the application to link with Azure AD.

Login URL	https://login.microsoftonline.com
Azure AD Identifier	https://sts.windows.net
Logout URL	https://login.microsoftonline.com

## 8.8.2 Editing an identity provider in PolyWorks | DataLoop

To edit an identity provider that has already been added to PolyWorks | DataLoop, click the edit icon in the **Action** column of the desired identity provider.

PolyWorks|DataLoop Core Configurator

System parameters | Schema version | Identity providers | PolyWorks data | Options | Help

**Identity providers**

Name	Active	Type	Action
External Provider	✓	SAML 2.0	
Windows account	✓	Windows Active Directory	
DataLoop account	✓	DataLoop built-in authentication	

Add provider...

Test parameters on the [DataLoop log in page](#)

**SAML 2.0 DataLoop service provider information**

Entity ID: <https://dataloop-ed/dataloopcore/identity>

Metadata location: <https://dataloop-ed/dataloopcore/identity/Saml2>

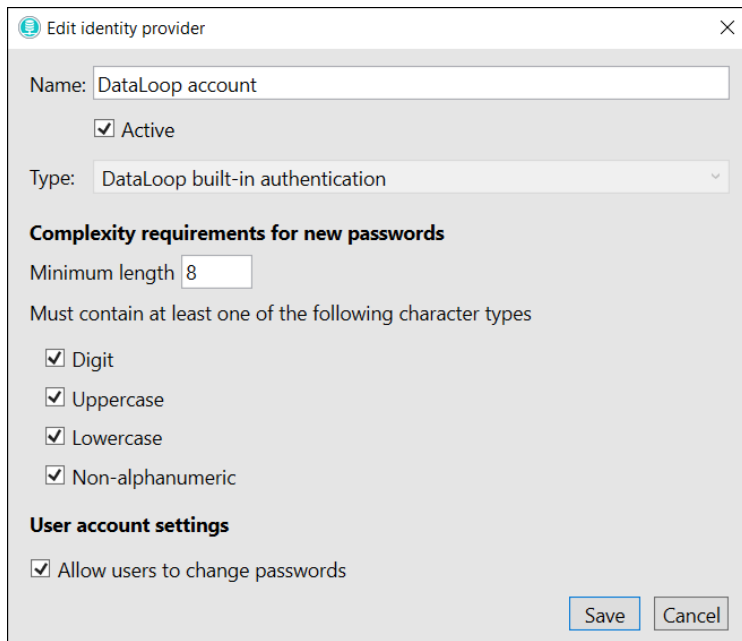
Certificate: Request signing certificate

SQL Server connection...

For each identity providers, different parameters are available to the user. These parameters are explained in the sections that follow.

## 8.8.2.1 PolyWorks|DataLoop built-in authentication

For the PolyWorks|DataLoop built-in authentication identity provider, the following parameters can be edited:



**Edit identity provider**

Name: DataLoop account

Active

Type: DataLoop built-in authentication

**Complexity requirements for new passwords**

Minimum length: 8

Must contain at least one of the following character types

Digit

Uppercase

Lowercase

Non-alphanumeric

**User account settings**

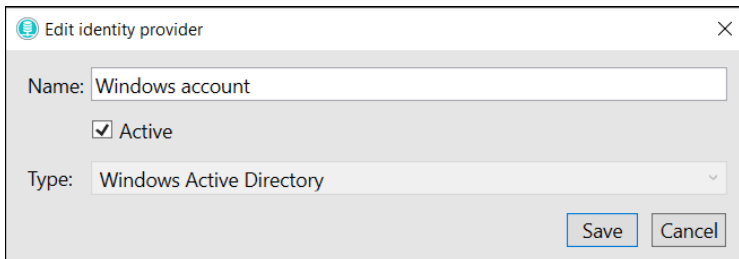
Allow users to change passwords

Save Cancel

- **Name:** The name displayed in the PolyWorks|DataLoop login page for the identity provider.
- **Active:** A check box that enables or disables the use of the identity provider in PolyWorks|DataLoop.
- **Complexity requirements for new passwords:** A section that allows setting up requirements for any new passwords of users in the identity provider. The minimum length of new passwords as well as the required character types can be specified.
- **User account settings:** A section that allows configuring whether users can change their own passwords for this identity provider. When selected, users can change their passwords from the Change Password page on the PolyWorks|DataLoop Account website.

## 8.8.2.2 Windows Active Directory

For the Windows Active Directory identity provider, the following parameters can be edited:



The screenshot shows a dialog box titled "Edit identity provider" with a close button (X) in the top right corner. It contains the following fields and controls:

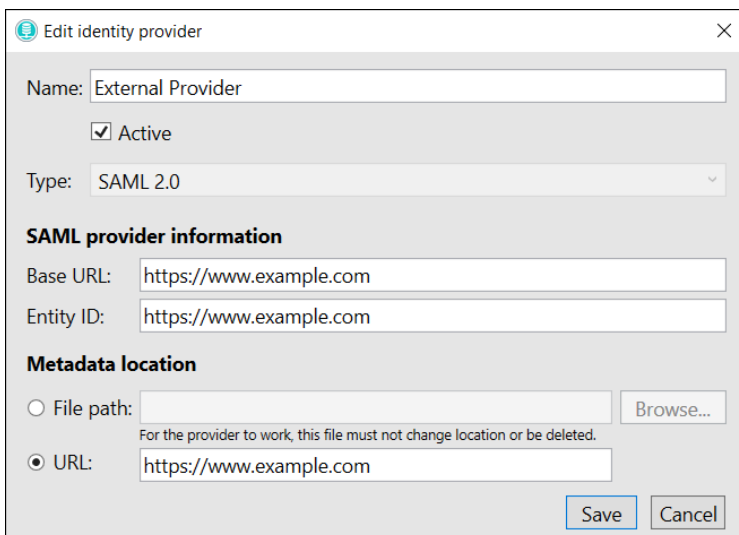
- Name:** A text input field containing "Windows account".
- Active:** A checked checkbox.
- Type:** A dropdown menu set to "Windows Active Directory".
- Buttons:** "Save" and "Cancel" buttons at the bottom right.

- **Name:** The name displayed in the PolyWorks | DataLoop login page for the identity provider.
- **Active:** A check box that enables or disables the use of the identity provider in PolyWorks | DataLoop.

Note that the users and groups from the identity provider that need access to PolyWorks | DataLoop must also be added manually on the User Management page of the PolyWorks | DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

## 8.8.2.3 SAML 2.0

For an SAML 2.0 identity provider, the following parameters can be edited:



The screenshot shows a dialog box titled "Edit identity provider" with a close button (X) in the top right corner. It contains the following fields and controls:

- Name:** A text input field containing "External Provider".
- Active:** A checked checkbox.
- Type:** A dropdown menu set to "SAML 2.0".
- SAML provider information:**
  - Base URL:** A text input field containing "https://www.example.com".
  - Entity ID:** A text input field containing "https://www.example.com".
- Metadata location:**
  - File path: A text input field with a "Browse..." button next to it.
  - URL: A text input field containing "https://www.example.com".
- Buttons:** "Save" and "Cancel" buttons at the bottom right.

- **Name:** The name displayed in the PolyWorks | DataLoop login page for the identity provider.
- **Active:** A check box that enables or disables the use of the identity provider in PolyWorks | DataLoop.

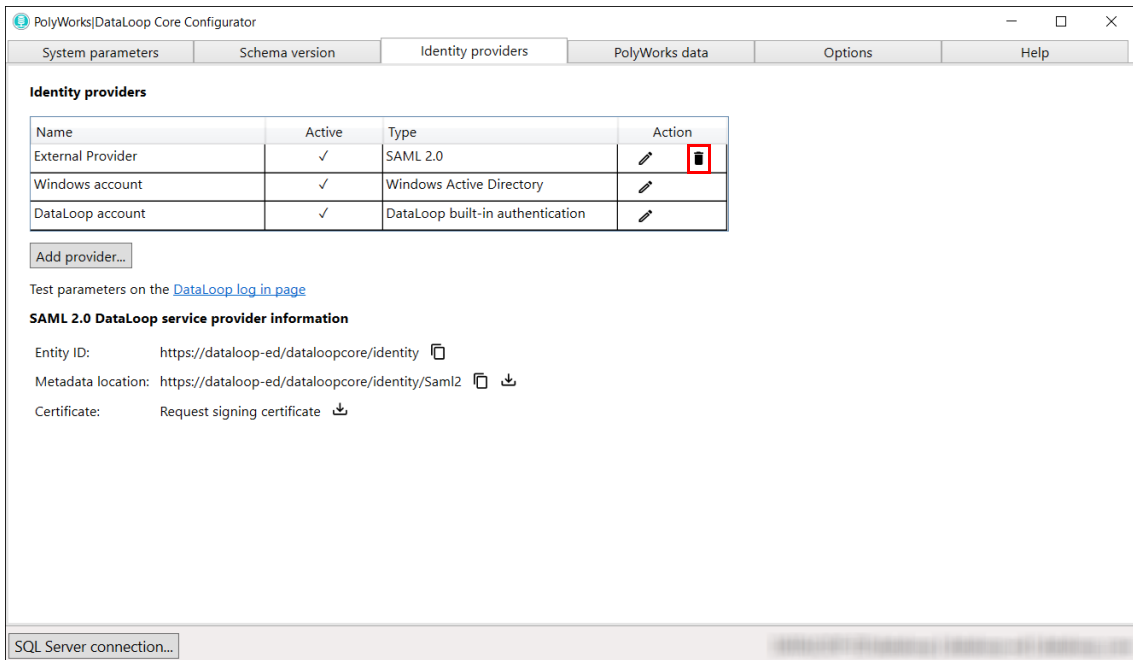
- **Base URL:** The base URL of your identity provider vendor.
- **Entity ID:** The unique identifier of your identity provider.
- **Metadata location:** The location of the metadata of your identity provider. It can be either a path to the metadata file on the local computer or the URL that allows downloading the metadata file.

Note that the users and groups from the identity provider that need access to PolyWorks | DataLoop must also be added manually on the User Management page of the PolyWorks | DataLoop Core Administrator. For more information, refer to the PolyWorks | DataLoop Core Administrator User Guide.

### 8.8.3 Deleting an SAML 2.0 identity provider from PolyWorks | DataLoop

To delete an SAML 2.0 identity provider from PolyWorks | DataLoop, proceed as follow:

1. Click the delete icon in the **Action** column of the desired identity provider.

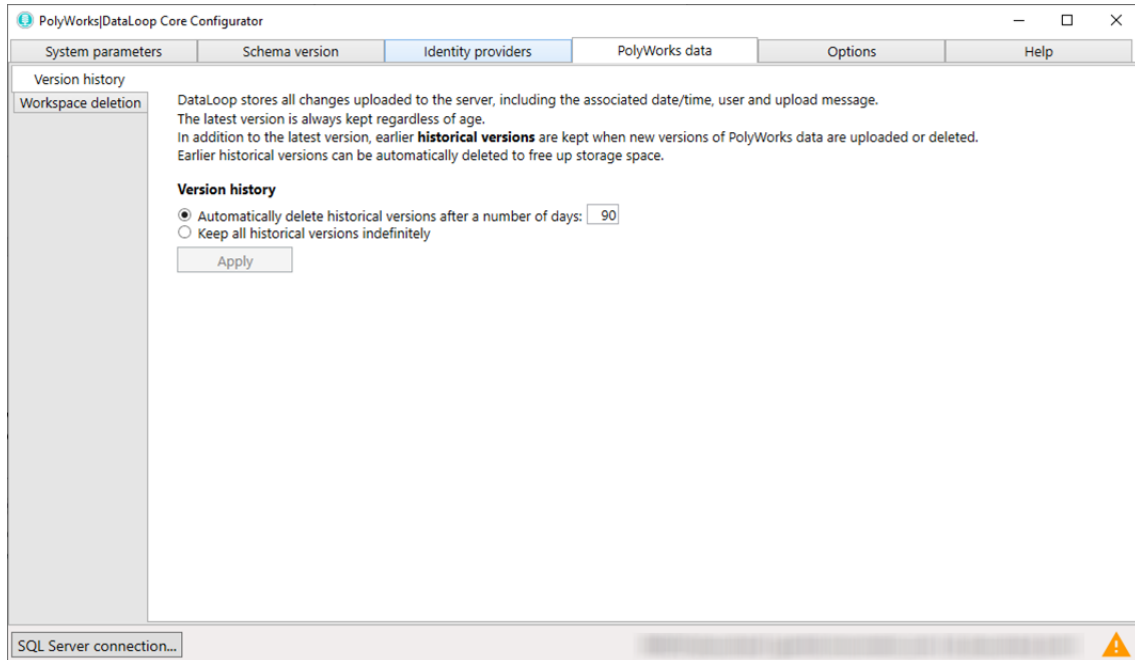


2. A confirmation message is displayed. Click **Delete provider** to confirm the operation. The identity provider is deleted and removed from the **Identity providers** table.

Note that, when an identity provider is deleted, its users that were added to PolyWorks | DataLoop still exist, but are no longer able to connect to PolyWorks | DataLoop.

## 8.9 Configuring the version history

The version history can be configured in the Version history page of the **PolyWorks data** tab. Deleting outdated data frees up storage space and helps improve performance. The section contains the following elements:



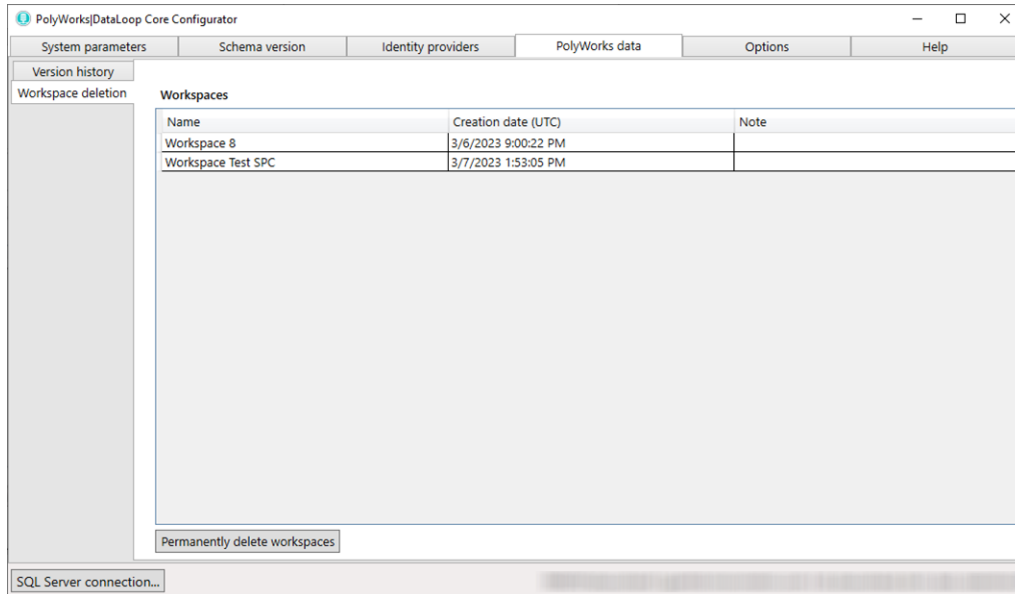
- **Version history** allows selecting how historical versions should be managed. Choose from:
  - **Automatically delete historical versions after a number of days** - Historical versions are automatically deleted after the number of days specified in the adjacent text box.
  - **Keep all historical versions indefinitely** - Historical versions are kept indefinitely.
- **Apply** allows saving changes made to the version history.

Note that, if the database is in full recovery model, a warning is displayed.

## 8.10 Permanently deleting workspaces

Workspaces can be deleted in PolyWorks Workspace Manager, but some data is kept for a certain time to make it possible to recover a version of the deleted workspace, if needed. To free up space, it is possible for the administrator to permanently delete a workspace in the PolyWorks|DataLoop Core Configurator. Since permanently deleting workspaces can be a long process and the database cannot be used in the meantime, it is recommended to delete workspaces in the PolyWorks Metrology Suite and configure the version history behavior.

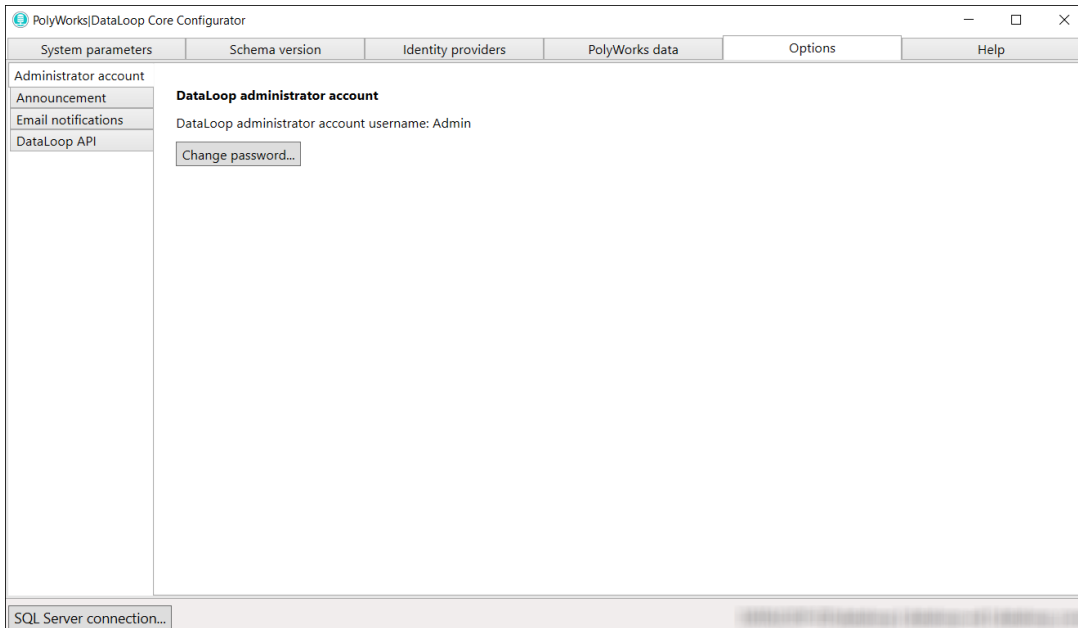
To permanently delete a workspace in the PolyWorks|DataLoop Core Configurator, proceed as follows:



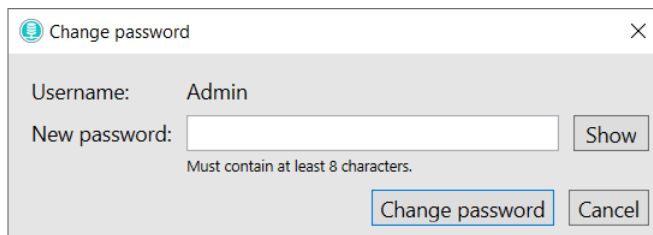
1. In the Workspace deletion page of the **PolyWorks data** tab, select the names of the workspaces to permanently delete in the **Workspaces** table.
2. When all desired workspaces are selected, click **Permanently delete workspaces**, then click **Yes** on the confirmation dialog box displayed. Note that the database will be taken offline while the workspaces are being deleted.

## 8.11 Changing the password of the PolyWorks | DataLoop administrator account

The password of the PolyWorks | DataLoop administrator account can be edited in the Administrator account page of the **Options** tab.



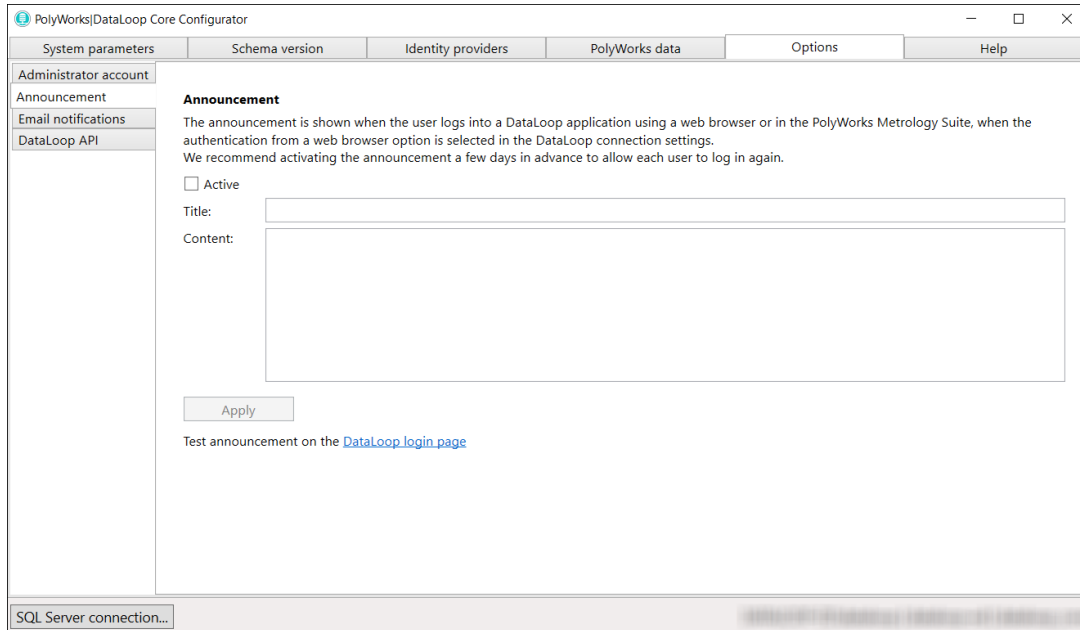
1. Click **Change password**. The Change password dialog box is displayed.



2. Type in the new password in **New password**. It must be at least 8 characters long. Note that the **Show** button next to it allows displaying the characters of the password.
3. Click **Change password**.

## 8.12 Adding announcements for users

Announcements can be added by the administrator in the Announcement page of the **Options** tab. The announcement is shown to users when they log in using web browsers. This can be used, for example, to warn users of planned maintenance periods.



The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'Options' tab selected. The left sidebar contains 'Administrator account', 'Announcement', 'Email notifications', and 'DataLoop API'. The main area is titled 'Announcement' and contains the following text: 'The announcement is shown when the user logs into a DataLoop application using a web browser or in the PolyWorks Metrology Suite, when the authentication from a web browser option is selected in the DataLoop connection settings. We recommend activating the announcement a few days in advance to allow each user to log in again.' Below this text is an unchecked checkbox labeled 'Active'. There are two input fields: 'Title:' and 'Content:'. An 'Apply' button is located below the 'Content' field. At the bottom, there is a link: 'Test announcement on the [DataLoop login page](#)'. The bottom status bar shows 'SQL Server connection...'.

To add an announcement, proceed as follows:

1. Select **Active** to display the announcement as soon as the changes are applied.
2. Type in the **Title** and the **Content** of the message to communicate to the users.
3. Click **Apply**.

4. To ensure the announcement is displayed correctly, click the test link at the bottom of the page to display a PolyWorks | DataLoop login page. The announcement is displayed, as shown in the example.



Note that it is recommended to activate the announcement at least a few days in advance to ensure users will see it.

## 8.13 Configuring the email notifications

The parameters of the email notifications can be configured on the Email notifications page of the **Options** tab.

The screenshot shows the 'PolyWorks|DataLoop Core Configurator' window with the 'Options' tab selected. The left sidebar contains a tree view with 'Email notifications' selected. The main content area is titled 'Email notifications' and contains the following sections:

- Technical contacts**: A text box for 'Emails:' with a 'Send test email' button below it.
- FILESTREAM storage space**: A checkbox for 'Send emails to technical contacts when used storage space is above limit'. Below it, 'Used space in GB:' is 192.695 and 'Size limit in GB:' is an empty text box.
- Users mentioned in project discussions**: A checkbox for 'Send emails for unread notifications'. Below it, 'Delay (minutes):' is 15.

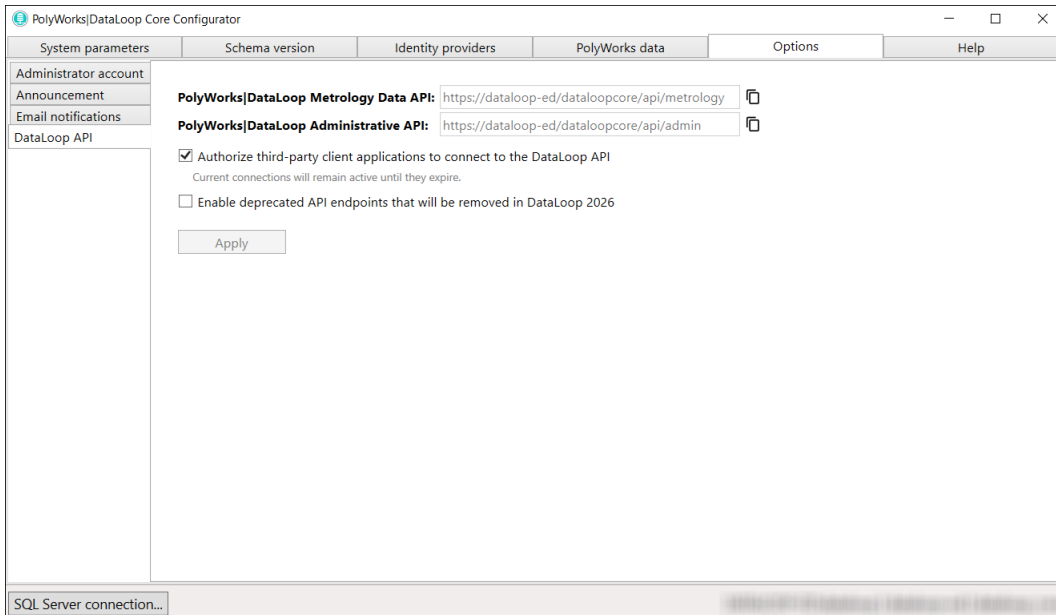
At the bottom of the main content area, there is an 'Apply' button and a link for 'Configure outgoing email server'. The status bar at the bottom of the window shows 'SQL Server connection...'.

1. In the **Technical contacts** section, type in the email addresses that are to receive the PolyWorks|DataLoop system error reports in **Emails**. Use a semicolon to separate the email addresses listed.
2. Click **Send test email** to send a test email using the configured outgoing email server address to all the emails listed in the **Technical contacts** section.
3. To send emails when the storage space used by the database exceeds a certain limit, go to the **FILESTREAM storage space** section to select **Send emails to technical contacts when used storage space is above size limit** and type in the desired size limit in **Size limit in GB**. The space currently used by the database is displayed. Note that this section is only available when using SQL Server FILESTREAM file storage.
4. In the **Users mentioned in project discussions** section, configure the emails sent for unread mention notifications in project discussions. The **Send emails for unread notifications** check box allows sending an email when a user is mentioned in a project discussion and does not read the notification for a certain number of minutes, as set in **Delay (minutes)**.
5. Click **Apply** to save the configuration.

Note that the **Configure outgoing email server** link offers a shortcut to the Outgoing email server page of the **System parameters** tab. For more information, see [Section 8.7 Configure the outgoing email server](#).

## 8.14 Configuring the access of third-party client applications to the PolyWorks | DataLoop API

The ability of third-party client applications to connect to the PolyWorks | DataLoop API can be configured in the DataLoop API page of the **Options** tab.



By default, third-party client applications are allowed to connect to the PolyWorks | DataLoop metrology data API. To prevent them from doing so, proceed as follows:

1. Clear **Authorize third-party client applications to connect to the DataLoop API**.
2. Click **Apply**.

After the change, current connections to third-party client applications will remain active until they expire. Afterward, when attempting a connection with a third-party client application, an error message is displayed.

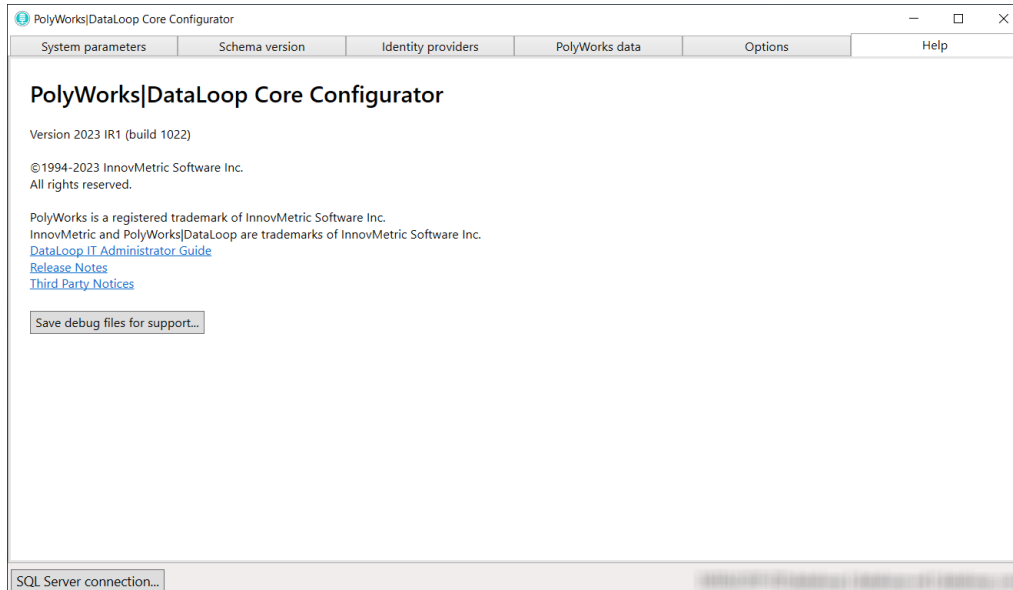
Some endpoints of the PolyWorks | DataLoop API are now deprecated and set to be removed in PolyWorks | DataLoop 2026. They are disabled by default, but can be enabled if some scripts have not yet been adapted. To enable them:

1. Select **Enable deprecated API endpoints that will be removed in DataLoop 2026**.
2. Click **Apply**.

Note that the **PolyWorks | DataLoop Metrology Data API** and **PolyWorks | DataLoop Administrative API** URLs are also displayed on this page and can be copied as needed using the adjacent buttons.

## 8.15 Getting help

The **Help** tab offers information about the current version of PolyWorks | DataLoop, copyright and trademarks, as well as links to pertinent technical documents and a way to save debug files.



Links to the following documents are offered:

- PolyWorks | DataLoop IT Administrator Guide
- PolyWorks | DataLoop Release Notes
- PolyWorks | DataLoop Core Third Party Notices

When investigating an issue, press **Save debug files for support** to create a zip file containing useful information that can be sent to support. It includes logs for all PolyWorks | DataLoop server applications.

## 9. Setting up client applications

Once the PolyWorks | DataLoop server applications have been installed and configured, users can now connect to PolyWorks | DataLoop when using client applications.



Note that users are created and managed in the PolyWorks | DataLoop Core Administrator. For information on how to create users, refer to the PolyWorks | DataLoop Core Administrator User Guide.

### 9.1 The PolyWorks Metrology Suite

To connect the PolyWorks Metrology Suite applications to PolyWorks | DataLoop, proceed using one of the following two methods.

#### 9.1.1 Creating a new PolyWorks | DataLoop connection automatically from the PolyWorks | DataLoop Web Interface

The connection parameters can be automatically specified in the Workspace Manager by opening a project in the PolyWorks Metrology Suite from the PolyWorks | DataLoop Web Interface.

To do so, click **Open in PolyWorks | Inspector** or **Open in PolyWorks | Reviewer** when viewing a project in PolyWorks | DataLoop Web Interface. When the project is opened in the corresponding module, a connection to PolyWorks | DataLoop is automatically established in the PolyWorks Metrology Suite, using the connection information from PolyWorks | DataLoop Web Interface.

This new connection is also added in the Workspace Manager and becomes the active connection. By default, the name of the connection is the **Fully qualified domain name** of the PolyWorks | DataLoop server and the specified connection method is **Authentication via Web browser**.

#### 9.1.2 Creating a new PolyWorks | DataLoop connection manually in the Workspace Manager options

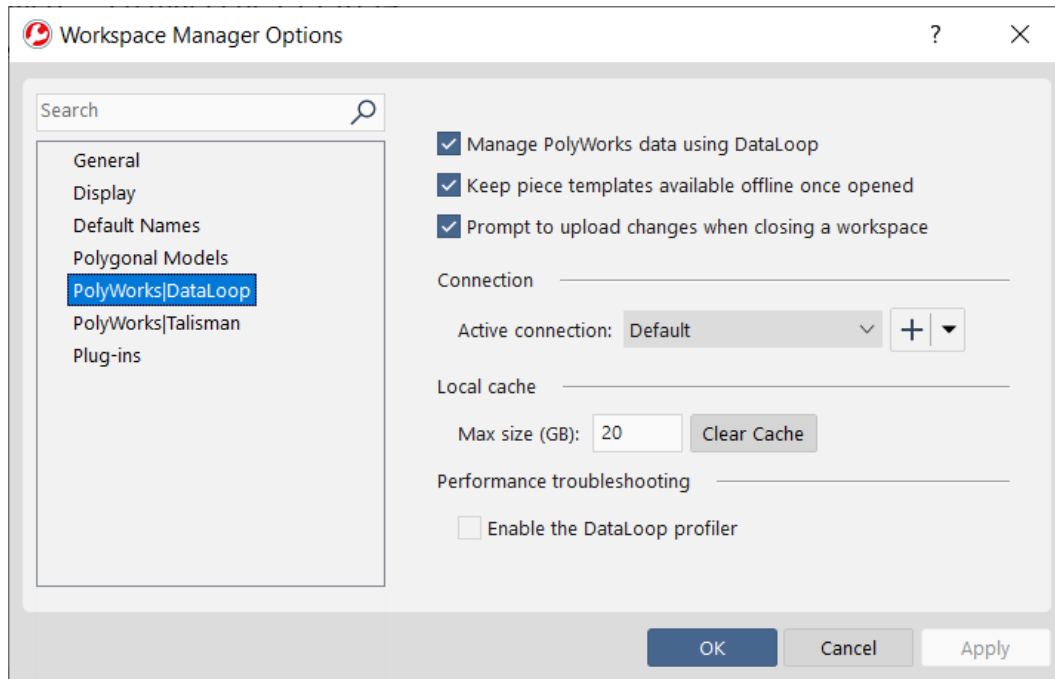
The connection parameters can also be specified manually in the options of the Workspace Manager so that users can be connected to PolyWorks when using products of the PolyWorks Metrology Suite.

To specify this connection parameter, proceed as follows:

1. In the Workspace Manager, choose *Tools > Options*.



The following dialog box is displayed.



2. Navigate to the **PolyWorks | DataLoop** page.
3. Select **Manage PolyWorks data using DataLoop**.
4. **Keep piece templates available offline once opened**, selected by default, allows keeping previously opened templates accessible even without a connection to PolyWorks | DataLoop. It is recommended to keep it selected.
5. **Prompt to upload changes when closing a workspace**, selected by default, allows receiving a warning message when closing a workspace that contains changes that were not uploaded to PolyWorks | DataLoop. It is recommended to keep it selected.
6. Create a new PolyWorks | DataLoop connection by clicking the **Add** button adjacent to the **Active connection** list, as shown to the right.





Note that, if a connection was already configured before the 2022 IR5 version of PolyWorks, it is automatically added to the **Active connection** list as **Default**.

The following dialog box is displayed.

The screenshot shows a dialog box titled "Add Connection". It features three input fields: "Connection name:", "Fully qualified domain name:", and "DataLoop API URL:". A "Test Connection" button is positioned to the right of the "DataLoop API URL" field. Below the input fields is a section titled "Log in using:" with four radio button options: "Authentication via Web browser" (selected), "Current Windows session credentials", "Reverse proxy with authentication", and "DataLoop account". At the bottom right of the dialog are "Add" and "Cancel" buttons.

7. Type in the name of the connection to be created in **Connection name**.
8. Type in the **Fully qualified domain name** of the PolyWorks | DataLoop server. This information can be obtained from PolyWorks | DataLoop Core Configurator. For more information, see [Section 8.4 Configure the server FQDN and the PolyWorks Collaborative Suite License Server host](#). Once it is entered, **DataLoop API URL** is automatically filled.
9. Click **Test Connection** to test if a connection can be established with the API. One of the following icons is displayed:

	Indicates that the connection parameter was specified properly and that a connection can be established with the API.
	Indicates that no connection could be established with the API. Make sure that you typed in the connection parameter properly. Then, try again.

10. Select the desired type of login from the following:
  - **Authentication via Web browser** - Connect to PolyWorks | DataLoop by entering the credentials on a page opened using the default Web browser.
  - **Current Windows session credentials** - Connect to PolyWorks | DataLoop automatically using the current Windows session credentials.
  - **Reverse proxy with authentication** - Connect to a PolyWorks | DataLoop server behind a reverse proxy with authentication by entering the credentials on a page opened using the default Web browser.

- **DataLoop account** - Connect to PolyWorks | DataLoop by entering the credentials of a DataLoop account.

By default, **Authentication via Web browser** is selected.

11. Click **Create**.

The connection is added to the **Active connection** list.

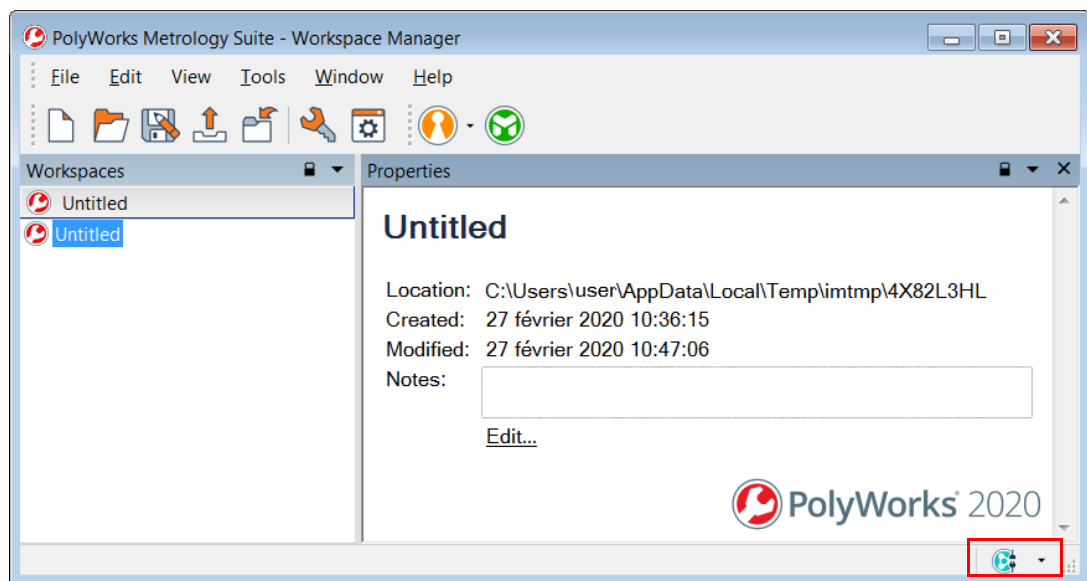
12. Select the newly created connection in **Active connection**.

### 9.1.3 Logging in to PolyWorks | DataLoop from PolyWorks

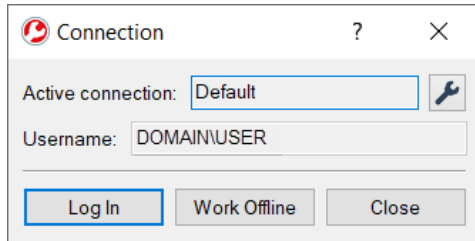
As a result of selecting **Manage PolyWorks data using PolyWorks | DataLoop** in the options of the Workspace Manager, additional items related to PolyWorks | DataLoop are offered in the PolyWorks Metrology Suite. One of these items is the dialog box used to log in to PolyWorks | DataLoop.

To log in to PolyWorks | DataLoop from the PolyWorks Metrology Suite, proceed as follows:

1. In the Workspace Manager, click the connection button, which is located on the status bar.

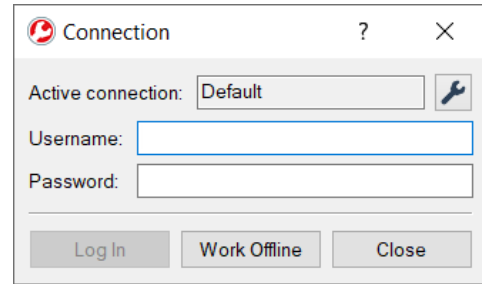


If the **Current Windows session credentials** or **PolyWorks | DataLoop account** login type has been selected in the options, one of the following dialog boxes is displayed.



The screenshot shows a 'Connection' dialog box with a title bar containing a red circular icon with a white arrow, a question mark, and a close button. The dialog has two input fields: 'Active connection:' with a dropdown menu set to 'Default' and a wrench icon to its right; and 'Username:' with a text box containing 'DOMAINUSER'. At the bottom, there are three buttons: 'Log In' (highlighted with a blue border), 'Work Offline', and 'Close'.

*With Windows session credentials*



The screenshot shows a 'Connection' dialog box with a title bar containing a red circular icon with a white arrow, a question mark, and a close button. The dialog has three input fields: 'Active connection:' with a dropdown menu set to 'Default' and a wrench icon to its right; 'Username:' with an empty text box; and 'Password:' with an empty text box. At the bottom, there are three buttons: 'Log In', 'Work Offline', and 'Close'.

*Without Windows session credentials*

If the **authentication via Web browser** or **Reverse proxy with authentication** login type has been selected in the **Options**, the default Web browser is opened and a page is displayed, such as the one shown below.



Choose how to log in to DataLoop.



The screenshot shows two buttons for login options. The top button is labeled 'Windows account' and has a blue square icon with a white grid pattern. The bottom button is labeled 'DataLoop account' and has a teal circular icon with a white arrow.

Note that, if an identity provider is configured, it is also offered on the page.

2. If needed, type in the user name and password in **Username** and **Password**.
3. Click **Log In**.

The connection button, located on the status bar, indicates that a connection is established. You remain connected until you log out or close the Workspace Manager.



If a connection cannot be established, contact your IT administrators. Your connection parameter may not be specified properly, or servers may be down.

## 9.2 PolyWorks | DataLoop Web Interface

### 9.2.1 Accessing the PolyWorks | DataLoop Web Interface

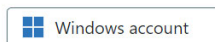
To access the web interface, users must type in the following URL in their web browser:

<FQDN>/polyworks/dataloop

where <FQDN> is the fully qualified domain name of the PolyWorks | DataLoop server.



Choose how to log in to DataLoop.



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## 9.3 PolyWorks | DataLoop Mobile Interface

### 9.3.1 Deploying the application on mobile devices

To obtain the application, download the PolyWorks | DataLoop application from the application store on your mobile device.

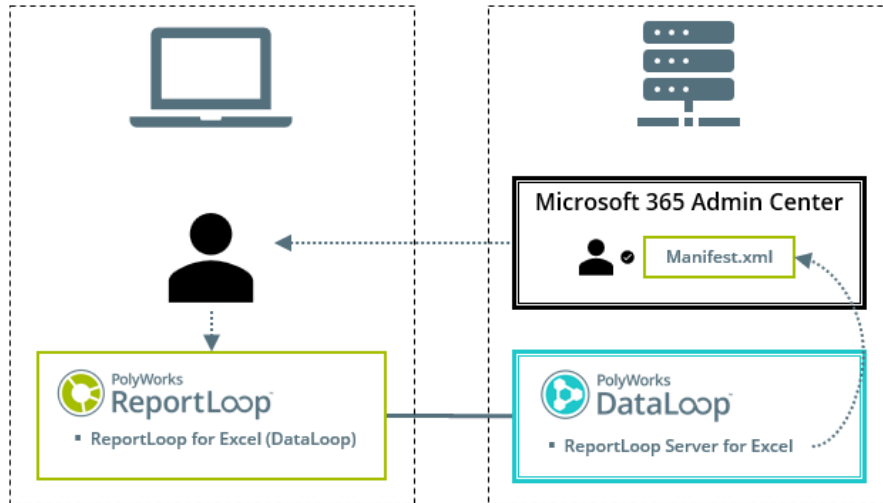
### 9.3.2 Configuring the connection parameters to the server

To configure the connection parameters in the PolyWorks | DataLoop mobile application, proceed as follows:

1. Open the PolyWorks | DataLoop application on your mobile device.
2. Specify the PolyWorks | DataLoop Web Interface Server URL. An information button in the application shows where to find it.
3. Click **Connect to server**.

## 9.4 PolyWorks | ReportLoop for Excel (DataLoop)

The following schema shows how the PolyWorks | ReportLoop for Excel (DataLoop) connects to PolyWorks | DataLoop.



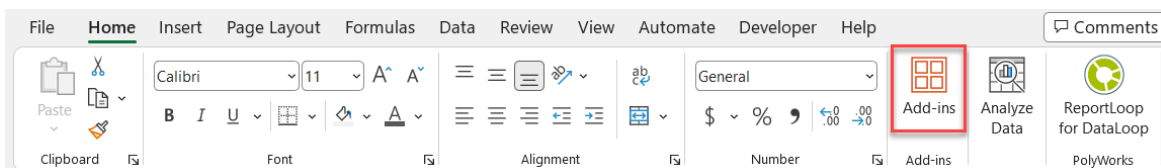
### 9.4.1 Deploying the add-in in the Microsoft 365 admin center

In order to be able to use PolyWorks | ReportLoop for Excel (DataLoop), the add-in must first have been deployed by the IT Team in the Microsoft 365 admin center.

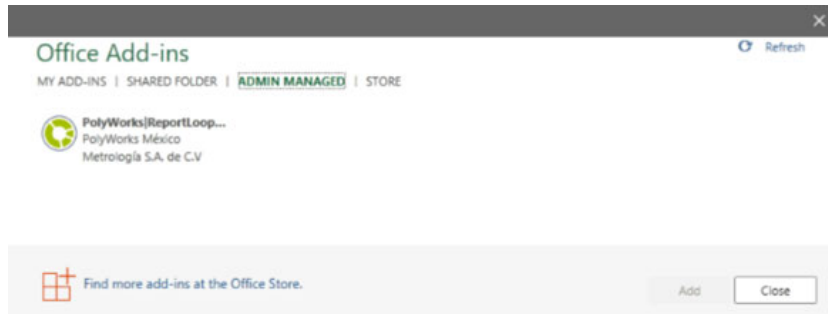
1. The XML file of the plug-in can be obtained in PolyWorks | DataLoop Core Configurator by opening the PolyWorks | ReportLoop for Excel page on the **System parameters** tab. Press **Download manifest file**.
2. Follow the Microsoft procedure described in the following link: <https://docs.microsoft.com/en-us/microsoft-365/admin/manage/manage-deployment-of-add-ins?view=o365-worldwide>. Note that the **Upload custom apps** option must be selected for the deployment.

### 9.4.2 Adding the add-in in Excel for Microsoft 365

1. Click **Add-ins** on the **Home** tab.

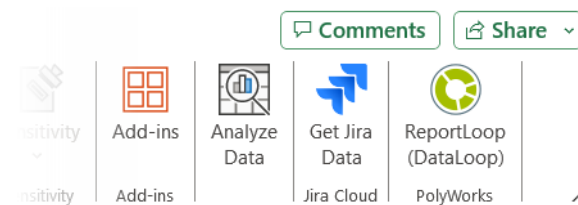


2. Click **More Add-ins**.
3. Go to the **Admin managed** tab and select the **PolyWorks | ReportLoop for Excel (DataLoop)** add-in in the list.



4. Click **Add**.

PolyWorks | ReportLoop for Excel (DataLoop) can now be accessed in Microsoft Excel with a button on the **Home** tab.



# 10. Upgrading PolyWorks | DataLoop server and client applications

## 10.1 Having a sandbox environment for testing (pre-production/staging)

Prior to deploying any version to end users in their production environment, it is recommended to deploy new versions of software programs in a non-production environment, where it is possible to validate that the new versions will work as expected with the different hardware and software dependencies.

## 10.2 Creating a system backup

Prior to upgrading PolyWorks | DataLoop, it is recommended to create a system backup (e.g., database backup or VM snapshot).

Prior to upgrading PolyWorks | DataLoop, it is recommended to back up your PolyWorks | DataLoop server, your database, and any cloud block storage used. You must also back up your SQL database before your cloud block storage if you cannot back up both at the same time.

## 10.3 Validating requirements

The requirements should be validated prior to the deployment, especially important requirements such as:

- Operating system requirements
- PolyWorks software program compatibility

All requirements are detailed in the section [2. Requirements](#).

Note that the user who does the upgrade must have a SQL server role that allows altering the database, such as **db\_owner**.

## 10.4 Scheduling and communicating the downtime

As deployments come with periods of downtime, users affected by the deployment should be warned in advance. Proactive deployment communications can confirm whether scheduled moments are good for users.

Moreover, affected users should be informed of the procedure to follow prior to the deployment. It is recommended that users disconnect from the PolyWorks | DataLoop server before the scheduled downtime.

## 10.5 Upgrading the PolyWorks | DataLoop server applications

The required DataLoop server installer for upgrading the DataLoop server applications is provided in a ZIP file that can be downloaded from MyPolyWorks.

### 10.5.1 Launch the DataLoop server installer

To upgrade the DataLoop server applications as listed in [Section 1.2 Server applications](#) and required prerequisites, proceed as follows:

1. Launch the DataLoop server installer executable file (.exe).
2. Click **View license terms** to open and read the license agreement in a separate window.
3. Click **Agree and update** to continue.

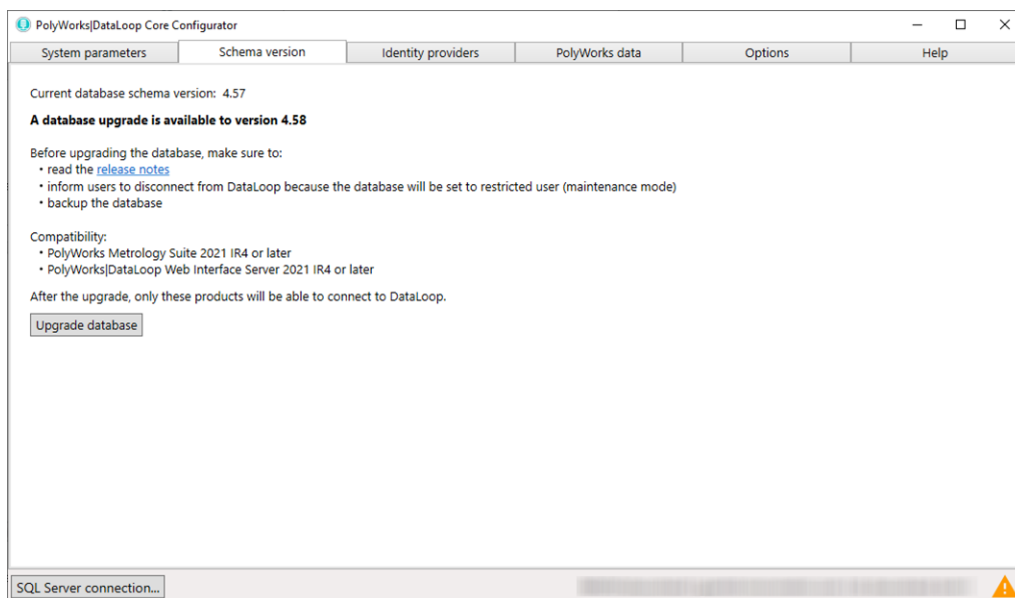
A window is displayed to show the progress of the installation.

As a result of the upgrade:

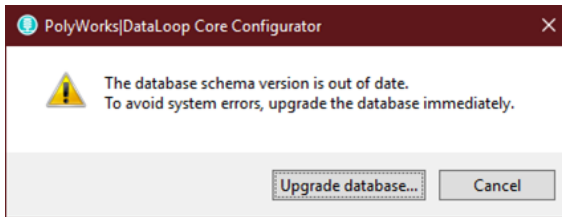
- The DataLoop server applications will be updated under the specified installation folder.
- The PolyWorks | DataLoop Core Configurator is opened.

## 10.6 Upgrading the schema using PolyWorks | DataLoop Core Configurator

The schema of the PolyWorks | DataLoop database must be upgraded after installing a new version of the PolyWorks | DataLoop server applications. This upgrade can be launched from the **Schema version** tab of the PolyWorks | DataLoop Core Configurator. It displays the current database schema version as well as information about a database upgrade when one is available. Note that the database cannot be accessed for the duration of the upgrade.



After the PolyWorks|DataLoop server application upgrade, the system may display a message indicating that the database needs to be upgraded.



To upgrade the database, proceed as follows:

1. Prepare for the database upgrade. This includes reading the PolyWorks|DataLoop Release Notes, linked in the page, informing users to disconnect from PolyWorks|DataLoop for the duration of the update, backing up the database, and checking the compatibility of the new schema version with other PolyWorks products, as displayed.



Note that it is very important to back up the database before upgrading.

2. Click **Upgrade database** to launch the upgrade.

## 10.7 Updating client applications

### 10.7.1 Updating the PolyWorks Metrology Suite client applications

The PolyWorks Metrology Suite applications should be upgraded following a DataLoop server upgrade. This will ensure that all the newest DataLoop features and security fixes are integrated in the PolyWorks Metrology Suite applications.

Upgrading the PolyWorks Metrology Suite and PolyWorks|Reviewer consists of upgrading the application on all required client computers. If floating licenses are used and a new major version is deployed, the PolyWorks Metrology Suite License Server must be upgraded beforehand.

For more information, refer to the “PolyWorks Installation Guide” PDF which is available on the MyPolyWorks customer portal or in the PolyWorks Metrology Suite ZIP package.

Note that you can use an older release of PolyWorks Metrology Suite applications with the latest release of the PolyWorks|DataLoop server application if the PolyWorks|DataLoop and PolyWorks Metrology Suite versions are compatible, as shown in [Section 2.1.1 Interoperability with the PolyWorks Metrology Suite](#).

### 10.7.2 Updating PolyWorks|DataLoop Mobile Interface

The PolyWorks|DataLoop Mobile Interface for Apple is automatically updated on the mobile devices on which the application was installed, if the device has access to internet and can connect to the App Store.

The PolyWorks|DataLoop Mobile Interface for Android is automatically updated on the mobile devices on which the application was installed, if the device has access to internet and can connect to the Play Store.

### 10.7.3 Updating PolyWorks | ReportLoop for Excel (DataLoop)

PolyWorks | ReportLoop for Excel (DataLoop) is automatically updated in the Excel application on which the add-in was installed.

# 11. PolyWorks | DataLoop Frequently Asked Questions (FAQ)

The following sections provide common questions and answers for PolyWorks | DataLoop requirements, security and authentication, licensing, and log files.

## 11.1 DataLoop requirements

### 1. What do we need to set up a PolyWorks | DataLoop environment?

Besides a server (see [Chapter 1. Overview of PolyWorks | DataLoop](#)), PolyWorks | DataLoop requires an instance of Microsoft SQL Server 2017 or later, standard or enterprise version (see [Chapter 3. Setting up Microsoft SQL Server](#)).

### 2. We already have an SQL Server instance, but of an older version. Will it work?

No, because we use features that are only available in the 2017 version or later.

### 3. Is SQL Server Express edition a possible option for us?

We do not support the use of SQL Server Express edition, because of its performance limitations.

### 4. Is there a difference between the Enterprise and the Standard editions of SQL Server besides the licensing cost?

Yes there is a difference between the two. The performance is not limited in Enterprise. But the main difference is the maintenance of your database. Enterprise edition will allow you to complete recurring maintenance of your PolyWork | DataLoop database without downtime. You will need to plan a time frame window with Standard edition for your recurring maintenance. The database will need to be locked until a specific task is complete. The time needed will depend on many factors.

### 5. Do you support SQL Server Always On?

SQL Server Always On is supported when file storage is using cloud services like AWS or Azure.

### 6. In terms of server storage, what provision should I make for PolyWorks | DataLoop?

Database and FILESTREAM storage depend essentially on the amount of data that you need to manage and how it will grow according to the future measurements and all uploads. For example, if you inspect many pieces using point cloud data, you will need more space.

### 7. Can we use virtual environments?

Of course. You can use virtualization on premises or on the cloud. You can also use Amazon Web Services (AWS) or Microsoft Azure.

### 8. Can we use an RDS database on Amazon Web Services (AWS)?

Yes, but the file storage must not be FILESTREAM. Usually, Amazon S3 is used.

## 9. Do you recommend a specific instance of Amazon Web Services (AWS) for PolyWorks|DataLoop?

Yes, see [Section 2.3 Server requirements](#) for more details.

## 10. Do you have a mobile application?

Yes, we have a mobile application for iOS and Android devices. Note that on any mobile device you can review the measurement results in a mobile HTML version of our web interface. This application allows you to view projects according to your privileges and lets you interact with others through the discussion feature.

# 11.2 Security and authentication

## 1. How does user authentication work in PolyWorks|DataLoop?

We currently offer three ways to connect:

- **SAML2-compatible identity provider users:** A centralized identity provider (like Microsoft Entra ID) can be used to allow single sign-on (SSO) access to PolyWorks|DataLoop. It allows leveraging the existing user accounts and group architecture. Access and permissions are configured using the groups already defined in the identity provider. A built-in Multiple Factor Authentication (MFA) is usually offered for increased security. The identity provider can also be used to provide access to people outside of the main organization, such as suppliers.
- **Windows Domain users:** A Windows domain must already be set up to use Windows domain users. The user will use their own credentials to log into PolyWorks|DataLoop. You will be able to manage them by group through your Active Directory. It will be easier for access and permissions. The security is increased since the password is never stored in SQL Server; it uses the current Windows session credentials to authenticate.
- **DataLoop users:** These are basic users. This type of user authentication is suitable if a Windows domain is not implemented in your enterprise or if you want to give access to non-domain users, such as suppliers or consultants.

## 2. Are you storing usernames and passwords?

Username are logged into log files of the application for debugging purposes.

Passwords for users are encrypted on the database using industry standards.

## 3. Can we use a SSO authentication?

We support this type of authentication for PolyWorks|DataLoop via SAML identity providers.

## 4. Can we make our PolyWorks|DataLoop accessible from another location?

Yes, you can. But make sure your environment is secured. Here are examples of techniques used to secure an environment:

- IP filtering
- Reverse proxy with authentication



NOTE: PolyWorks | DataLoop is transferring data, so the performance can be altered if connected to through a VPN connection.

## 5. Can I leave the firewall on?

Yes, you can leave the firewall on, but you must authorize some ports for PolyWorks | DataLoop data exchange. PolyWorks | DataLoop server applications need to communicate through port 443 (see [Section 5.2 Configuring port requirements](#)).

## 6. Do PolyWorks | DataLoop users have all the same rights?

By default, yes, but you will be able to narrow the permissions, rights, and privileges according to your enterprise needs. It is only a matter of defining them. Once defined, the PolyWorks | DataLoop Core Administrator, our web-based tool, will help you apply these specific permissions, rights, and privileges to users. Those permissions and privileges are based on the active directory users/groups or on the SQL Server users.

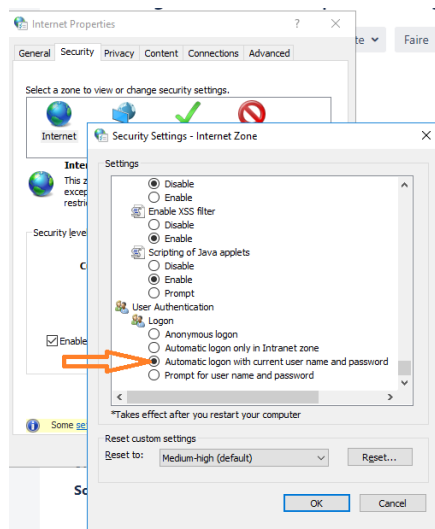
## 7. Is there any risk of losing metrology data with PolyWorks | DataLoop?

There is always a data loss risk. But with PolyWorks | DataLoop, the risk is minimal if the basic SQL Server maintenance plan that we detailed is implemented. The data is stored in the database, but every metrology station can also have a part of the data stored in a cache on its computer.

## 8. Why does PolyWorks | DataLoop Web Interface require credentials for domain users; shouldn't these users be automatically connected?

Yes, using the domain users of your Active Directory should automatically log the user into PolyWorks | DataLoop Web Interface.

In some circumstances, however, it does not. Validate in the intranet zone security settings that the **User Authentication Logon** is set to **Automatic logon with current user name and password** as follows:



This will need to be done on each computer, unless it is part of a group policy of your company.

## 11.3 Licensing

### 1. Does PolyWorks | DataLoop refer to PolyWorks Metrology Suite License Server?

No, PolyWorks | DataLoop has its own license server, called the Collaborative Suite License Server. The license server is installed automatically by the DataLoop server installer alongside other DataLoop server applications

### 2. What is the licensing mechanism to be able to use DataLoop?

Once you get your PolyWorks | DataLoop registration license key, you will need to enter the license key in the Collaborative Suite License Server registration page. This license server will distribute license tokens to your users.

### 3. How do I register my license?

You will need to enter your registration key into the web-based server, and it will communicate with the InnovMetric server through the internet to make sure your license is valid and get all the information related to it, such as number of seats, products that are accessible and expiration date. Any changes to your license will be effective almost instantly. Increasing the number of seats or the new expiration date after renewal will be done by itself.

### 4. My organization does not authorize internet access on servers, will I be able to register?

Yes, letting the server access the internet for a minute while the server validates the license is an option. If it is still not possible, an offline registration is possible following the steps into the license server. A file exchange will be done between your organization and ours.

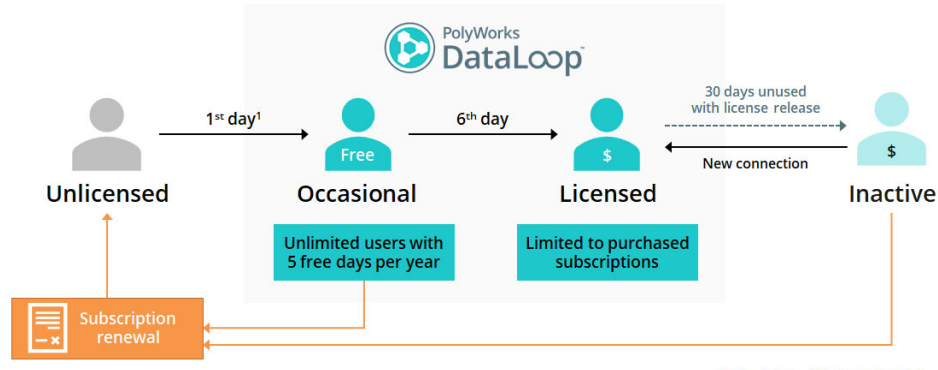
NOTE: For these two alternative ways of registration, the process will need to be done once more if any changes are made to your license, and at least once a year for renewal.

### 5. Can I be connected to PolyWorks | DataLoop more than once?

Yes, the Collaborative Suite License Server allows concurrent connections for each user account. The same user account can be logged in on a maximum of two devices simultaneously. The users will be informed when they are about to reach the limit and the access will be refused if it exceeds the maximum number of concurrent connections allowed. A connection is considered active when the user logs in. When the user logs out, that connection is released and is no longer considered active. A connection is also automatically released after one hour of inactivity.

### 6. What is your licensing model?

Here is a diagram that illustrates how the licenses are managed in the server:



For more information on the requirements, the offline registration, or the administration instructions, see the *PolyWorks Collaborative Suite License Server Installation Guide (.pdf)* available on the Help menu of the application or on MyPolyWorks.

## 11.4 DataLoop information (log files)

### 1. How can we trace or resolve a possible problem with our PolyWorks | DataLoop ecosystem?

Every PolyWorks | DataLoop server application logs specific information such as warnings and errors. Those are log files and they can be accessed through the PolyWorks | DataLoop server itself. Some server applications log information by default, others need to be activated.

Note that the log files for PolyWorks | DataLoop Core are limited to around 10 MB in size for each of its components.

The log file folders for each application can be found under C:\ProgramData\InnovMetric.

### 2. Does PolyWorks | DataLoop transmit any information to InnovMetric?

No, all your data is at the security level that you wanted to give them. No data will be transmitted without your consent. Your data is your property, never ours. If you want to transmit data to us, it will be done manually. No logs or configurations will be transmitted to us, except a statistic log of the license server for our revenue-sharing program.

# Appendix A: Transition

This appendix is intended for organizations that were already using the PolyWorks Metrology Suite before purchasing PolyWorks|DataLoop. It explains the steps that must be followed to upload existing PolyWorks data to PolyWorks|DataLoop once IT administrators have set up PolyWorks|DataLoop.



Existing PolyWorks data must be uploaded to PolyWorks|DataLoop before anyone can start using the PolyWorks Metrology Suite with PolyWorks|DataLoop.

## Nominate a transition team

Before proceeding with the transition to PolyWorks|DataLoop, you need to nominate a team to oversee the transition. This team should at least include the following members:

- **IT administrator** – An IT administrator is required to install and manage the infrastructure. Access to the original files should be limited once duplicates are uploaded to the server.
- **PolyWorks administrator** – A PolyWorks administrator is someone who has an advanced understanding of how the PolyWorks Metrology Suite is used within your organization. This person must be able to locate where workspaces are stored in your organization, and can decide what to do with them. This person will be responsible to manage users, permissions and workspaces on DataLoop.
- **Manager** – A manager is required to represent PolyWorks|DataLoop users who are not users of the PolyWorks Metrology Suite within your organization. This manager needs to be informed of where projects are stored and how to access them, and is responsible for sharing this information with other users.

## Prepare a transition plan

PolyWorks data that must be uploaded to the server is stored in workspaces. To perform the upload operation, the first step is to locate where existing workspaces are stored in your organization and to identify which ones you want to upload to the server.

If your organization has a large number of workspaces, you need to plan the transition to PolyWorks|DataLoop carefully. This will avoid confusion as well as the potential duplication of workspaces on the server.

If desired, you can upload your workspaces progressively, meaning that you can upload one set of workspaces at one point, and another one later. If you do this, make sure that PolyWorks Metrology Suite users within your organization are aware of your plan, and that they know which workspaces are shared using PolyWorks|DataLoop, and which ones are not.



It is not possible to merge pieces into the same inspection project if they are stored in different workspaces. For instance, it is not possible to upload a piece from a workspace that has never been uploaded to the server into another workspace that has already been uploaded, even if the workspaces or projects have the same name.



If you have a huge number of workspaces and do not want to upload each workspace manually, it is recommended to use a script to automatically upload all your workspaces. For help on creating such a script, contact the Technical Support team of your PolyWorks provider.

## Limit access to the original copies

Duplicate copies of workspaces may be created as part of the upload operation. In such cases, the original copies, which are the ones that are not uploaded to the server, must no longer be used. Users must always open files from the server in order to ensure that they collaborate on the same files.

As part of your transition plan, you must therefore limit access to the original copies once duplicates are uploaded to the server. It is recommended to limit access as follows:

- For users, completely remove access to the original copies
- For a limited group (such as IT administrators), give read-only access to the original copies

In addition, it is good practice to keep the original copies as a backup, in case a mistake is made during the transition period (for example, a workspace is deleted from the server by mistake). Once you have thoroughly verified your PolyWorks | DataLoop setup, you may delete the original copies from your servers and store them on an external drive or on a tape drive.

## Specify the Workspace folder

Once you have identified which workspaces you want to upload, you must specify the Workspace folder—a dedicated folder whose purpose is to share data with the server—on the computer from which you want to perform the upload operation.

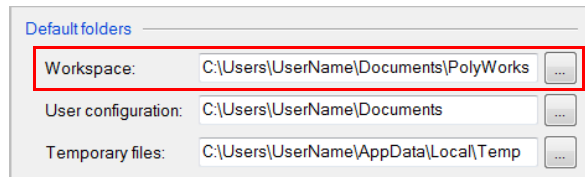
To specify the Workspaces folder, proceed as follows:

1. In the Workspace Manager, choose *Tools > Options*.



The **General** options page is displayed.

2. Type in the Workspace folder name in **Workspace**, or click the adjacent button to browse for the desired folder.



- This folder must not be shared with multiple users using a network drive, as it could lead to data loss and corruption. Choosing a folder on a local drive is therefore a good practice.
- Better performance can be achieved by choosing a folder on a solid-state drive (SSD).

## Specify the connection parameters

A connection to the server is required in order to upload workspaces to the server. To establish a connection, you must specify connection parameters on the computer from which you want to perform the upload operation.



This step should be performed by IT administrators, or they should provide you with the required connection information.

For detailed information, see [Section 9.1 The PolyWorks Metrology Suite](#).

## Establish a connection with PolyWorks | DataLoop

Once connection parameters are specified, a connection must be established with the server in order to upload workspaces. To establish a connection with the server, [Section 9.1.3 Logging in to PolyWorks | DataLoop from PolyWorks](#).

## Upload workspaces to the server

Once a connection is established with the server, you must upload your workspaces. To do so, you must follow different steps depending on whether your workspaces are stored in the Workspace folder, or elsewhere. The subsections that follow provide a procedure for each case.



If required during the upload operation, the PolyWorks Metrology Suite automatically creates copies of workspaces in the Workspace folder. It is recommended to let the PolyWorks Metrology Suite copy and duplicate your workspaces. If, however, you want to copy them manually before proceeding with the upload operation, proceed with caution to avoid corrupting workspaces. To do so, choose *File > Save As* in the Workspace Manager, and save a copy in the Workspace folder.

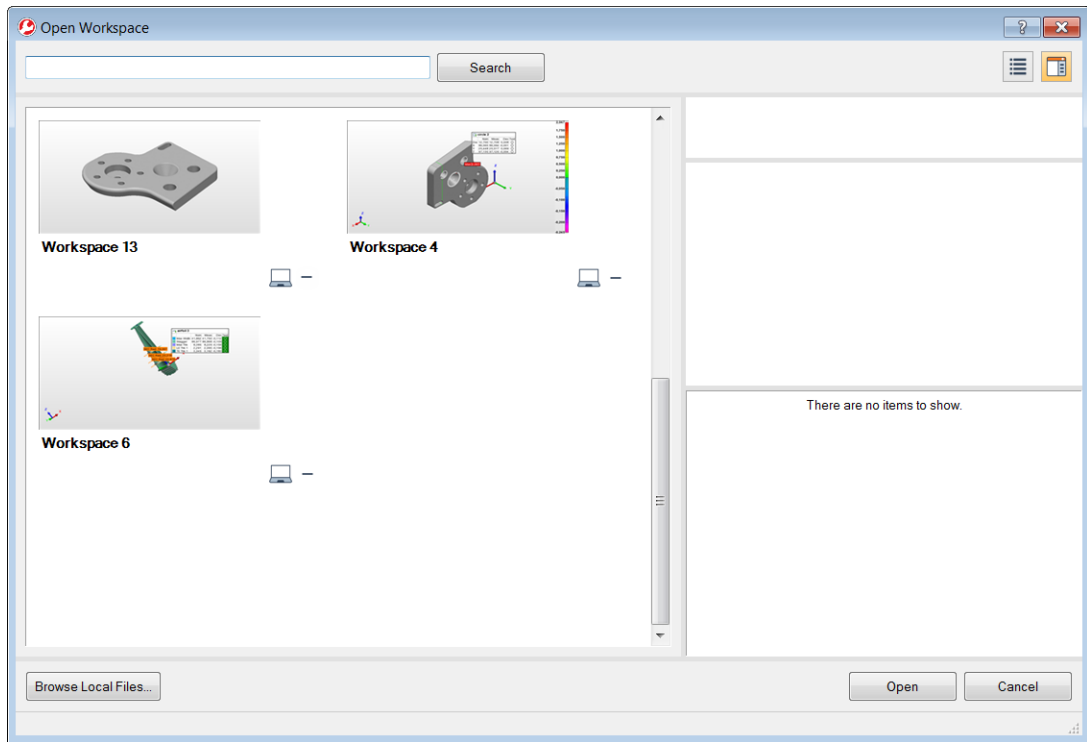
## Workspaces already stored in the Workspace folder

To upload workspaces that are already stored in the Workspace folder, proceed as follows:

1. In the Workspace Manager, choose *File > Open*.

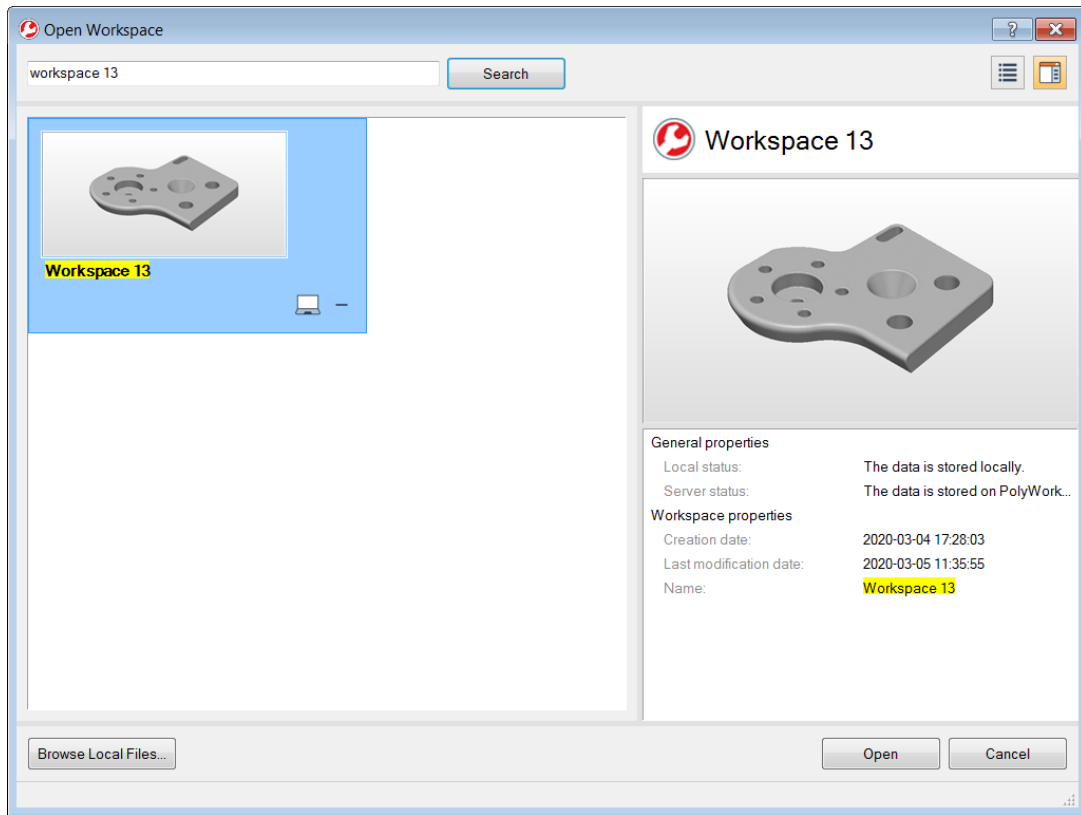


The following dialog box is displayed.



2. In the search box, located in the top-left corner of the dialog box, type in information to find your workspace, such as its name.
3. Click **Search**.

Results are displayed for workspaces stored in the Workspace folder (as well as for workspaces already uploaded to the server).



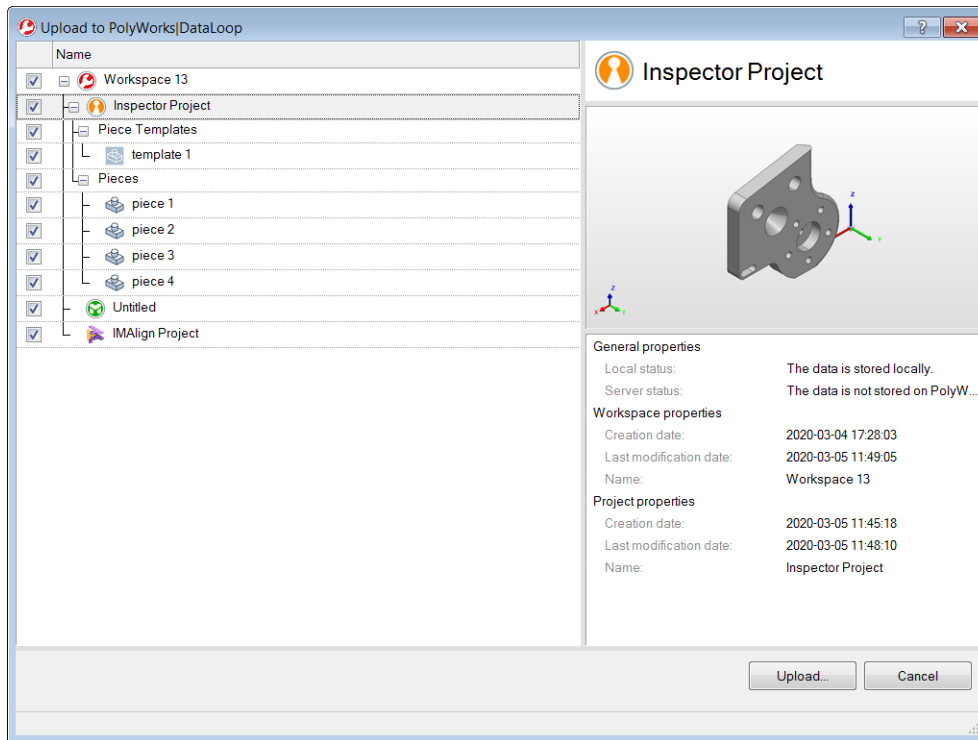
4. Select the thumbnail that corresponds to your workspace.
5. Click **Open**.

The workspace is opened in the Workspace Manager.

6. In the Workspace Manager, choose *File > Upload to PolyWorks | DataLoop*.

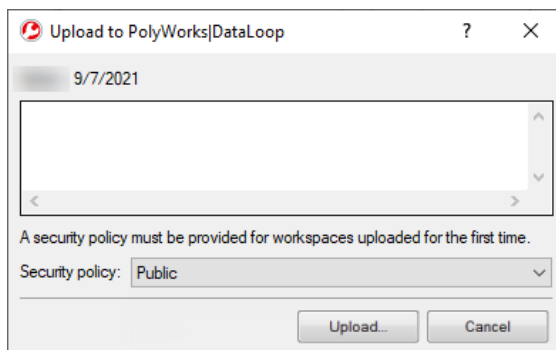


The following dialog box is displayed.



7. Make sure that all check boxes are selected.
8. Click **Upload**.

The following dialog box is displayed.



9. If desired, type in a message to be attached with the uploaded data.
10. If desired, change the security policy to assign to the workspace.
11. Click **Upload**.

The workspace is uploaded to the server.

12. Close the workspace.

- Repeat steps [1.](#) to [12.](#) for each workspace stored in the Workspace folder that you want to upload.

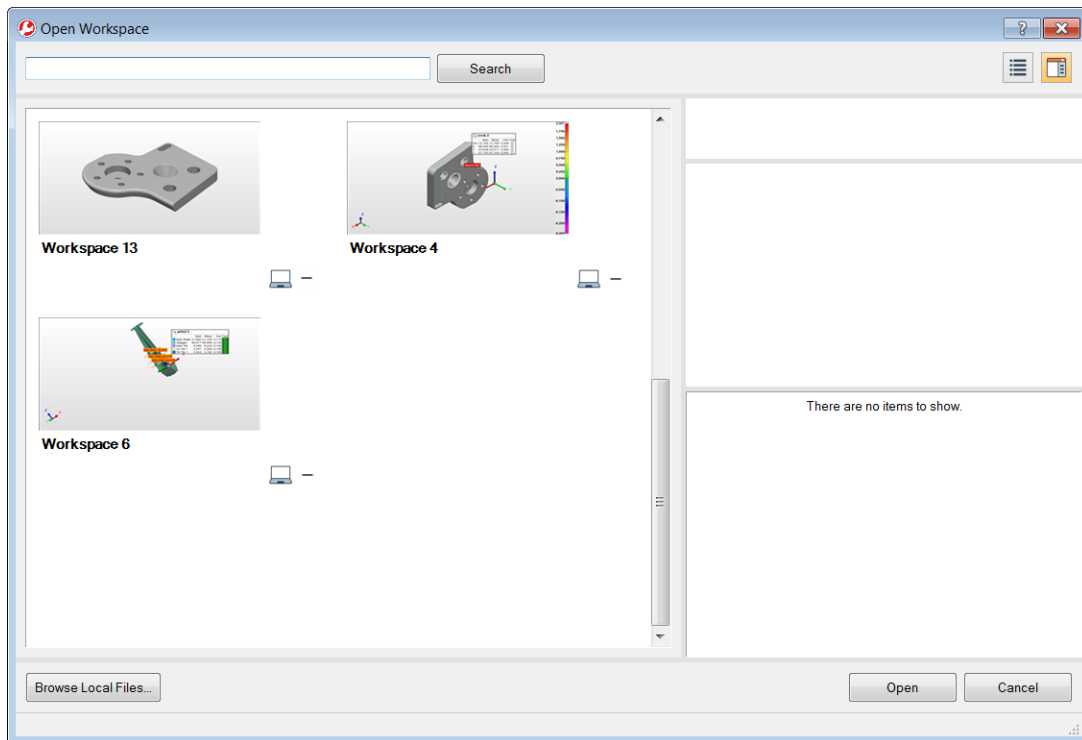
## Workspaces stored in a different folder

To upload workspaces that are stored in a different folder than the Workspace folder, proceed as follows:

- In the Workspace Manager, choose *File > Open*.

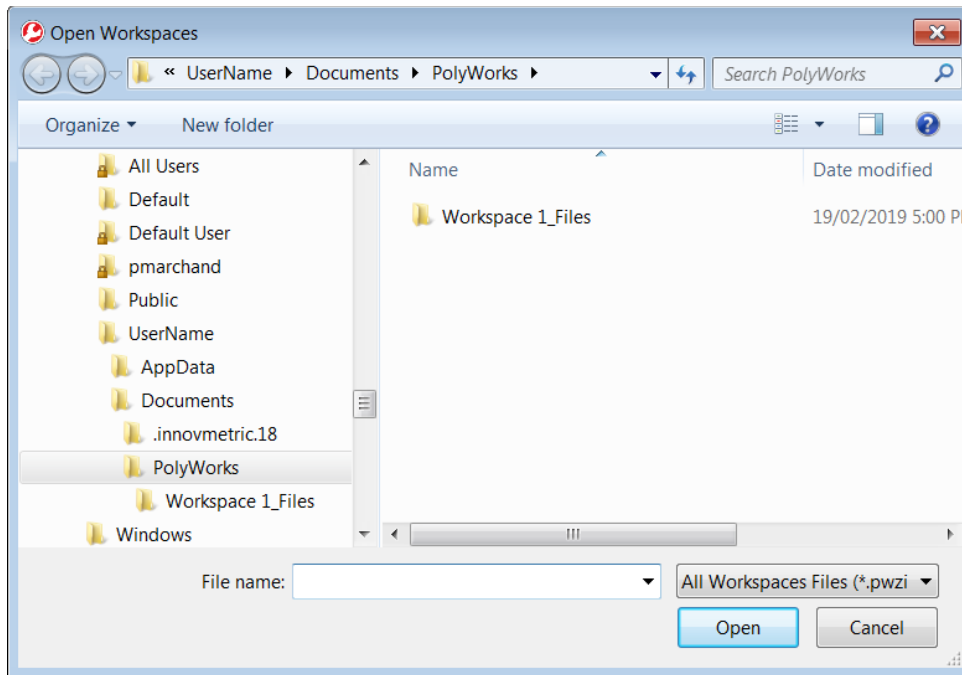


The following dialog box is displayed.



- In the bottom-left corner, click **Browse Local Files**.

A file browser is displayed.



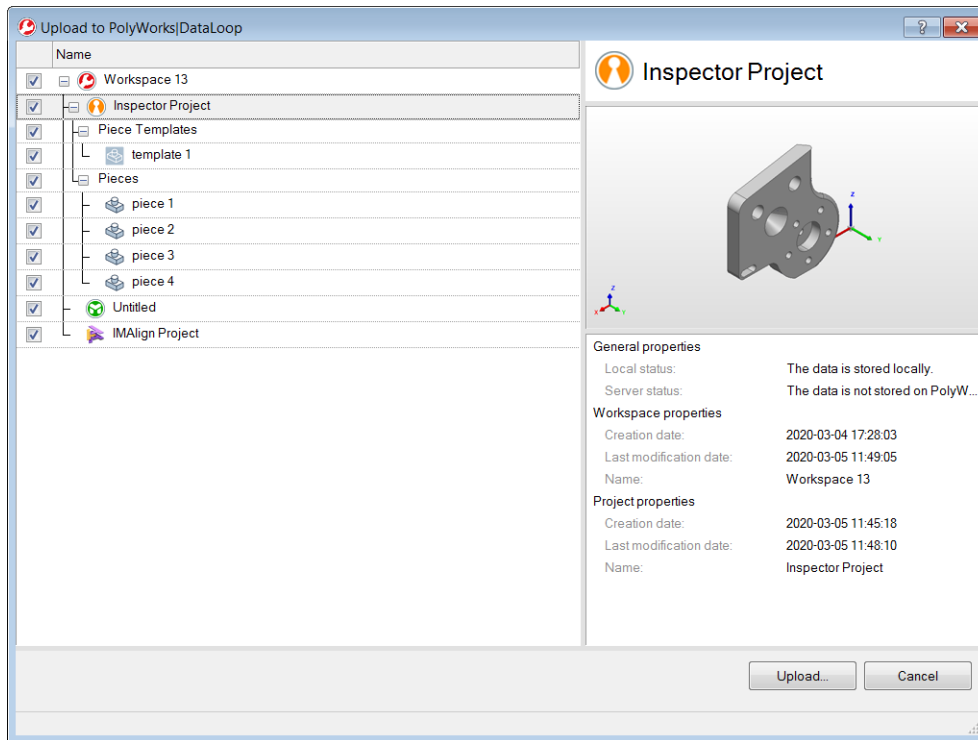
3. Browse for the desired workspace, then select it.
4. Click **Open**.

The workspace is opened in the Workspace Manager.

5. In the Workspace Manager, choose *File > Upload to PolyWorks | DataLoop*.

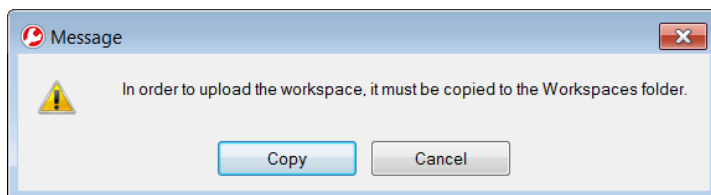


The following dialog box is displayed.



6. Make sure that all check boxes are selected.
7. Click **Upload**.

The following dialog box is displayed.

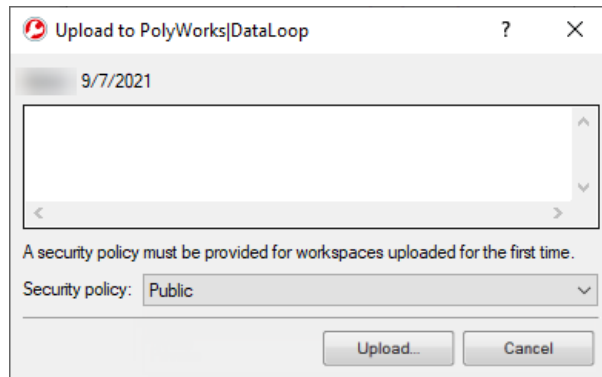


8. Click **Copy**.

A duplicate of the workspace is copied to the Workspaces folder, and the original copy is kept in its original location.

9. Limit access to the original copy (see [Limit access to the original copies](#)).

10. In the following dialog box that is displayed, type in a message to be attached with the uploaded data and change the security policy to assign to the workspace, if desired.



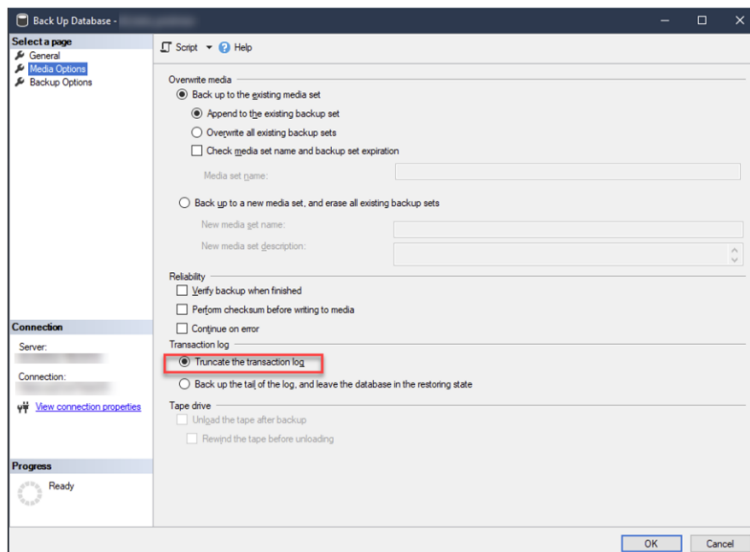
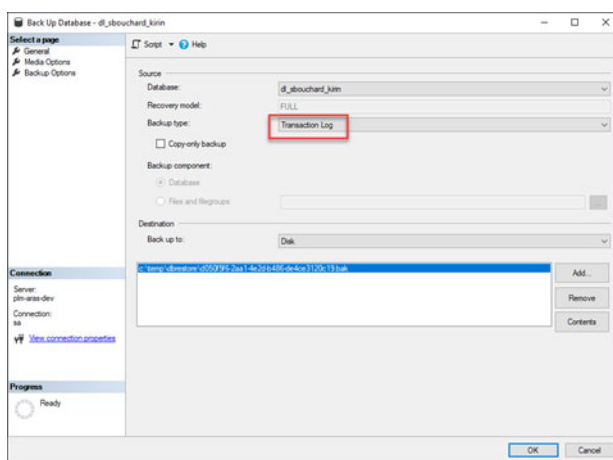
11. Click **Upload**.  
The workspace is uploaded to the server.
12. Close the workspace.
13. Repeat steps [1.](#) to [12.](#) for each workspace stored in a different folder than the Workspace folder that you want to upload.

# Appendix B: Procedures to modify the database recovery model and manually free up space

## Freeing up space when using a database in full recovery model

It is possible to recover storage space with a database in full recovery model when deleting historical versions or permanently deleting workspaces. A backup with log truncation of the transaction log needs to be performed to remove the file references from the transaction logs.

Note that this functionality does not apply when using cloud storage, such as Amazon S3.



After the backup has been performed, the following commands must be executed in SQL Server on the database:

```
CHECKPOINT
```

```
EXEC sp_filestream_force_garbage_collection
```

Consult the following Microsoft SQL documentation before using these commands:

[Microsoft SQL Server - Checkpoint](#)

[Microsoft SQL Server - Filestream garbage collection](#)

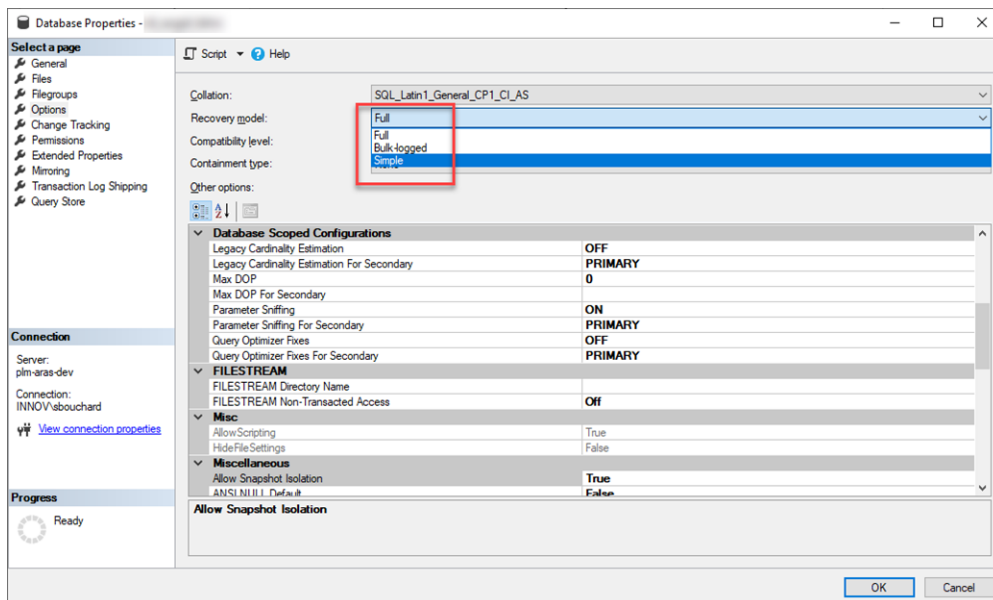
Note that Microsoft recommends running the `sp_filestream_force_garbage_collection` procedure twice in a row.

## Changing the database recovery model from full to simple

In versions of PolyWorks | DataLoop earlier than 2022 IR5, the database was created using the full recovery model. To help recover storage space, the default recovery model is now simple.

The recovery model of an existing database can be changed in Microsoft SQL Server Management Studio. Proceed as follows:

1. In the Object Explorer tree view, right-click the database and click **Properties**.
2. In the Options page, change the recovery model from **Full** to **Simple**.
3. Click **OK**.



## Manually freeing up space when using a database in simple recovery model

Given as a Stored Procedure, the *dl\_mark\_unused\_files* procedure requires no argument and can be run either manually or as part of a maintenance plan (see the [Microsoft SQL documentation](#) for more information). This procedure prepares unused files for their deletion.

Note that, for this procedure to work, the **Version history** must be enabled and the files to delete must have been unused for at least the number of days specified in the version history. Otherwise, the procedure cannot delete those files. The **Version history** can be set in the PolyWorks | DataLoop Core Configurator on the Version history page of the **PolyWorks data** tab.



No data must be uploaded while this procedure is being performed.

Unused files are deleted during the normal operations of the Microsoft SQL Server. However, if space needs to be freed up immediately, the operation can be executed manually with the following Microsoft SQL commands:

*CHECKPOINT*

*EXEC sp\_filestream\_force\_garbage\_collection*

Consult the following Microsoft SQL documentation before using these commands:

[Microsoft SQL Server - Checkpoint](#)

[Microsoft SQL Server - Filestream garbage collection](#)

Note that Microsoft recommends running the *sp\_filestream\_force\_garbage\_collection* procedure twice in a row.

# Appendix C: SQL Server Maintenance Plan for PolyWorks | DataLoop Database

There are multiple ways to perform an SQL Server maintenance plan. The following is a basic minimal maintenance plan for your PolyWorks | DataLoop SQL Server database. It is intended for your company's ITs and/or database administrator. It requires elevated privileges to complete each step. Before proceeding with the maintenance, make sure that you:

- Identify the SQL Server version you are using for the DataLoop database.
- Determine the best timeframe for the maintenance.
- Identify the maintenance operator to whom failure notifications will be sent.
- Obtain the maintenance plan credentials required to execute the plan's steps.

Note that we support the Standard and the Enterprise SQL Server editions. The major difference between the two, with respect to the maintenance plan, is that with the Enterprise edition, the maintenance can be performed online, without downtime. If you are on a 24/7 schedule, this version is recommended. The Standard edition will entail some downtime during the indexes maintenance.

## Maintenance plan steps

1. Check Database Integrity task
2. Indexes maintenance:
  - Rebuild Indexes task
  - Reorganize Indexes task
3. Update Statistics task
4. Backup steps:
  - Full Backup Database task
  - Differential Backup Database task
  - Database Checkpoint
  - Transaction Log Backup Database
5. Cleanup tasks:
  - Backup files disk cleanup
  - Transaction Log disk cleanup
  - Job History cleanup

# PolyWorks | DataLoop SQL Server Database maintenance plan

Before performing the SQL Server maintenance, you must add the maintenance plan for your PolyWorks|DataLoop database. This plan will be used to add the following steps.

To create a maintenance plan, proceed as follows:

1. In a new Subplan, add the **Check Database Integrity** task:

- Schedule: Once a week
- The run as credentials need to have enough privileges.
  - Apply to System and DataLoop Database.
  - Add a **Notify Operator** task upon failure.

\*\* Note that this task validates checksums and indexes, no corrections will be made.

2. Indexes maintenance tasks:

2.1 In another Subplan, add a **Rebuild Indexes** task:

- Schedule: Daily, according to your maintenance timeframe (depending on the length of the operation; it will need to be executed once to know how long it will take).
  1. Apply to the DataLoop Database.
  2. **Sort results in tempdb** option: Enable this option only if the PolyWorks|DataLoop database is on a different disk than the tempdb.
  3. **Keep index online while reindexing** option: Enable this option only if the running instance of SQL Server is an Enterprise edition. If you enable this option with a Standard Edition of SQL Server, the maintenance plan will fail.
  4. Scan Type: Fast
  5. Fragmentation: 30%
  6. Page Count: 1000
  7. Add a **Notify Operator** task upon failure.

2.2 In the same Subplan, add a **Reorganize Indexes** task (upon completion of the **Rebuild Indexes** task):

1. Apply to DataLoop Database.
2. Scan Type: Fast
3. Fragmentation: 15%
4. Page Count: 1000
5. Add a **Notify Operator** Task upon failure.

3. In a new Subplan, add an **Update Statistics** task:

- Schedule: Monthly (for example: on the first Saturday of each month, at midnight).
  1. Apply to **msdb, master** and **DataLoop Database**.

2. Update: All existing statistics.
  3. Scan type: Full Scan.
  4. Add a **Notify Operator** task upon failure.
4. Backup plan.



Be aware that the backup procedure must be adapted when using cloud storage, as the database backup will not include files. Verify with your cloud storage provider for instructions on how to obtain backups of files.

4.1 In a new maintenance plan, add a **Backup Database** task (Full):

- Schedule: Weekly
  1. Backup type: FULL
  2. Apply to DataLoop Database
  3. Enable Create sub directories option.
  4. Option: Compress Backup.
  5. Can enable Verify backup Integrity (if enough time)
  6. Add a **Notify Operator** task upon failure.

4.2 In a new maintenance plan, add **Backup Database** task (Differential):

- Schedule: Weekly (except the day of the full backup)
  1. Backup type: Differential
  2. Apply to DataLoop Database
  3. Enable Create sub directories option.
  4. Option: Compress Backup.
  5. Can enable Verify backup Integrity (if enough time)
  6. Add a **Notify Operator** task upon failure.

4.3 In a new maintenance plan, add a **T-SQL Statement** task:

- Schedule: Daily, every 15 minutes
  1. Add the query: use dataloop\_database 'checkpoint'
  2. Needed to perform an effective transaction log backup.

4.4 In the same maintenance plan, add **Backup Database** task (Transaction Log):

1. Backup type: Transaction Log
2. Apply to DataLoop Database
3. Enable Create sub directories option.
4. Option: Compress Backup.
5. Disable Verify backup Integrity (the faster, the better)

6. Add a **Notify Operator** task upon failure.
5. Cleanup tasks:
    - 5.1 In a new maintenance plan, add **Maintenance Cleanup** task (Backup files):
      - Schedule: Daily at midnight
        1. Select the database backup folder.
        2. Files extension: *.bak*
        3. Include first-level sub folders.
        4. Delete files older than: Select twice the length of your full backup, here in the example, it will be 2 weeks.
        5. Add a **Notify Operator** task upon failure.
    - 5.2 In the same maintenance plan, add a **Maintenance Cleanup** task (Transaction Log):
      1. Select the database backup folder.
      2. Files extension: *.trn*
      3. Include first-level sub folders.
      4. **Delete files older than:** Select twice the length of your differential backup, here in the example, it will be 2 days.
      5. Add a **Notify Operator** task upon failure.
    - 5.3 In a new maintenance plan, add a **History Cleanup** task (Backup files):
      - Schedule: Monthly at midnight.
      - Keep default settings:
        1. Backup and restore history.
        2. SQL Server Agent job history.
        3. Maintenance plan history.
        4. Remove older than 4 weeks.

These are the basic, but essential steps to follow in order to have a healthy effective database and be safe if a database restoration is ever needed.

## References

More information is available at the following links:

<https://docs.microsoft.com/en-us/sql/relational-databases/maintenance-plans/maintenance-plans?view=sql-server-ver15>

<http://assets.red-gate.com/community/books/sql-server-maintenance-plans-brad-ebook.pdf>

# Appendix D: FILESTREAM Split Storage

There are two ways of performing a FILESTREAM split storage:

- By adding Filestream\_data files to an existing filegroup
- By adding FILESTREAM filegroups

The physical location where all these files and folders reside must be configured as High Availability, meaning at least be under failover power (battery backup) to be accessible at all times. Corruption may occur if the high availability is not met at all times.

## Adding files to the existing filegroup

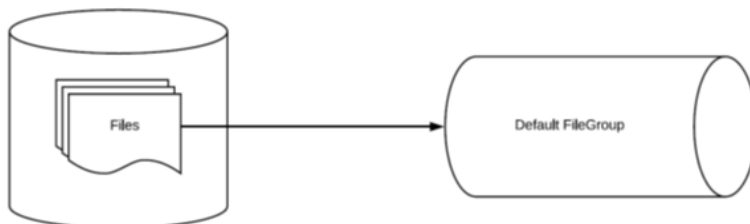
By default, the DataLoop database is set with 4 Filestream\_data files. They are filled according to the SQL Server algorithm that ensures that they are filled linearly, as equally as possible. When adding a new Filestream\_data file to your database, SQL Server will try to fill the new file to be equal to the existing files.

A network drive for the new file is not recommended for performance reasons. Only local drive locations should be used.

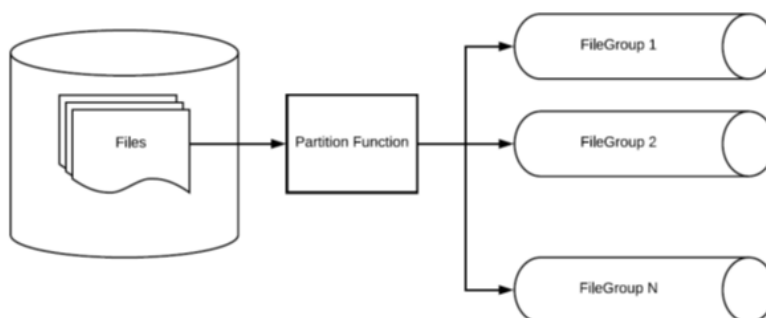
## Adding FILESTREAM filegroups

When adding a new FILESTREAM filegroup, a partition function can be created. Partitioning allows to determine where the files should go. If the current filegroup has exceeded a certain threshold, the file will be sent to the newly added filegroup; this can affect the performance if performed over the network on a NAS (enabling the UNC path will be needed). Do not forget to meet the high availability for this network drive.

This is the pattern of a standard DataLoop configuration:



With the new filegroup, it will interact as shown below:



The simple partitioning strategy here is to add a new filegroup to store large files.

We developed two scripts to create the new partitioning.



Note: These scripts should only be executed by your database administrator (DBA) or by an IT resource who understands all the implications of each script. A full backup of your DataLoop database should be done prior to executing the scripts.

### First script: Creating a new filegroup

```
-- =====  
  
-- Activate a partition scheme based on filesize to affect files to filegroups  
  
--  
  
-- Use the Specify Values for Template Parameters command (Ctrl-Shift-M) to fill in the  
parameter values below.  
  
=====
```

USE <Database, sysname, DataLoop DB>

GO

-- Creation of a FileGroup containing a folder

```
ALTER DATABASE <Database, sysname, > ADD FILEGROUP [BIGFILES] CONTAINS FILESTREAM;
```

```
ALTER DATABASE <Database, sysname, > ADD FILE(NAME = N'dl_0_big_files', FILENAME = N'<Big  
files folder, ,existing_folder>\<Database, sysname, >_0_big_files') TO FILEGROUP [BIGFILES];
```

GO

-- Add filesize column to the File table

```
ALTER TABLE [dl].[File] ADD filesize BIGINT;
```

GO

-- Compute size of files

```
UPDATE [dl].[File] set filesize = DATALENGTH(filedata)
```

GO

-- Create partition based on filesize, moving files over newly created filegroup if needed

```
CREATE PARTITION FUNCTION FileSizePartFN(BIGINT) AS RANGE RIGHT FOR VALUES(<Size  
threshold in bytes, INTEGER ,100000>);
```

```
CREATE PARTITION SCHEME FileSizePartDataSC AS PARTITION FileSizePartFN TO([PRIMARY],  
[PRIMARY]);
```

```
CREATE PARTITION SCHEME FileSizePartFileSC AS PARTITION FileSizePartFN TO([FILES],  
[BIGFILES]);
```

```
CREATE CLUSTERED INDEX IDX_size ON [dl].[File](filesize) ON FileSizePartDataSC(filesize)
FILESTREAM_ON FileSizePartFileSC;
```

```
GO
```

```
-- Activation of partition copy files instead of moving them. Delete old ones
```

```
CHECKPOINT
```

```
GO
```

```
sp_filestream_force_garbage_collection
```

```
GO
```

### Second script: Transfer large files

Once the first script has been run, you must run the following script to transfer the large files that were previously in the other filegroup.



Note: This script should only be executed by your database administrator (DBA) or by an IT resource who understands the implications of the script. Depending on how many large files there are to transfer from the current filegroup to the newly added one, this operation may take a long time. Therefore, the script should be executed when the server usage is at its lowest.

```
-- Compute size of new files
```

```
UPDATE [dl].[File] set filesize = DATALENGTH(filedata) WHERE filesize IS NULL
```

```
GO
```

```
-- Delete old occurrences of file copied
```

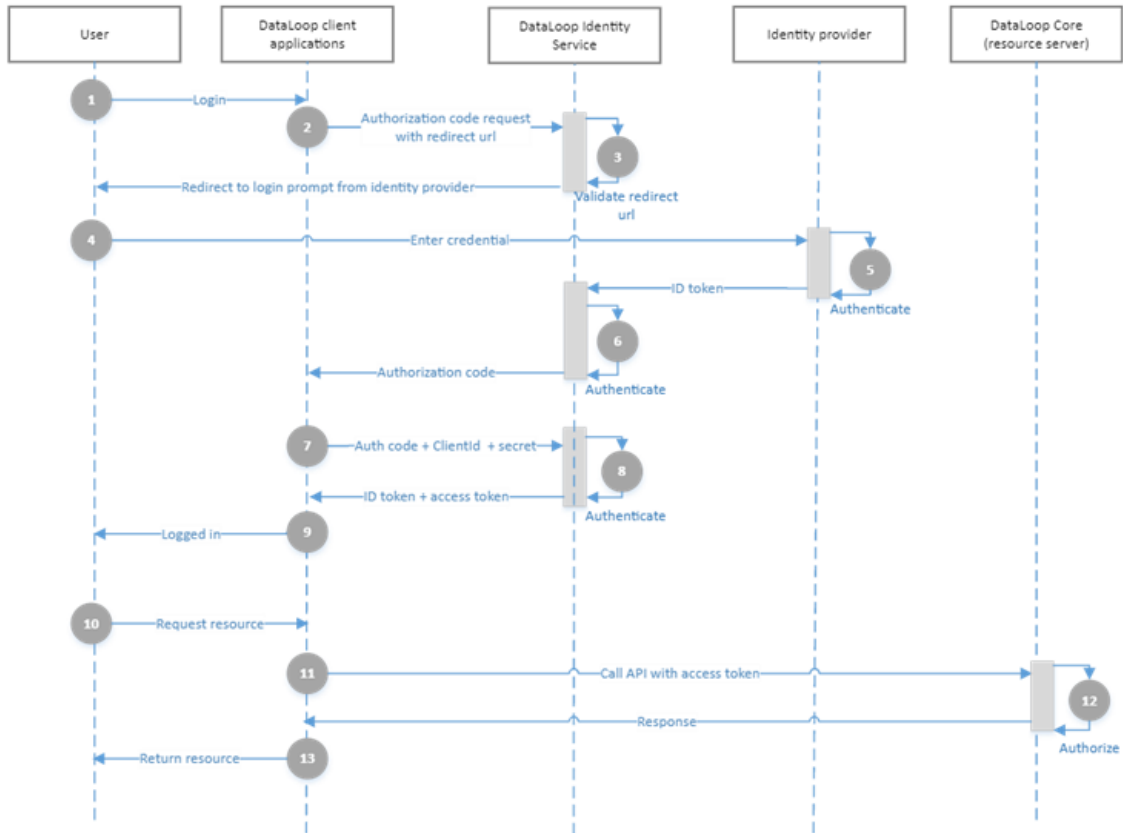
```
CHECKPOINT
```

```
GO
```

```
sp_filestream_force_garbage_collection
```

```
GO
```

# Appendix E: Authentication sequence for a DataLoop user from an identity provider

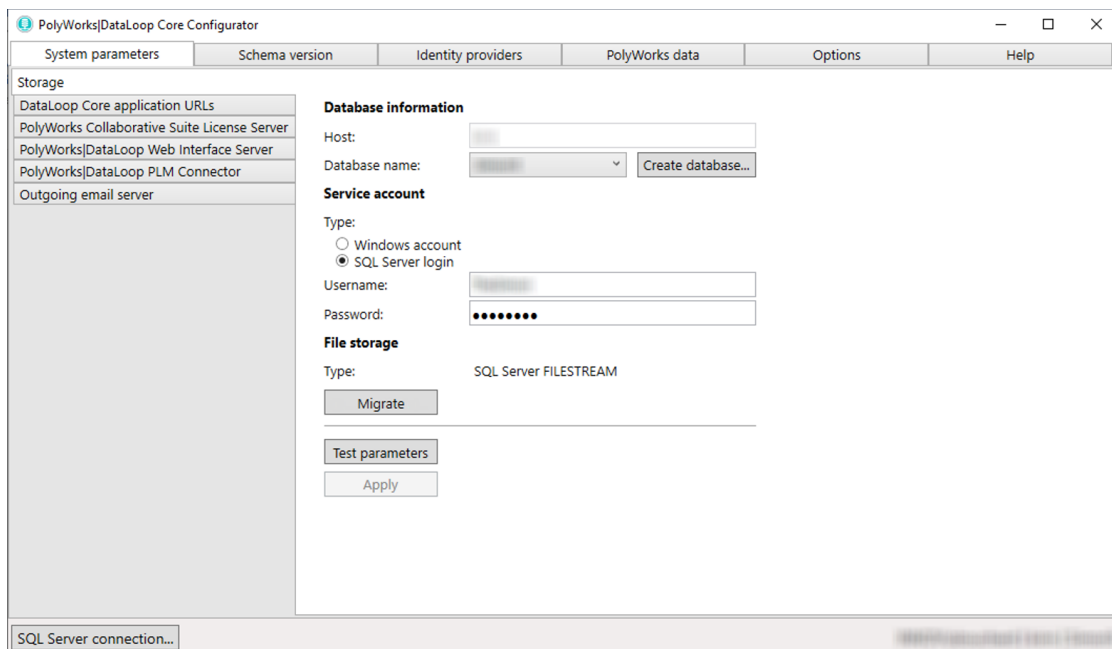


# Appendix F: Migration to cloud file storage

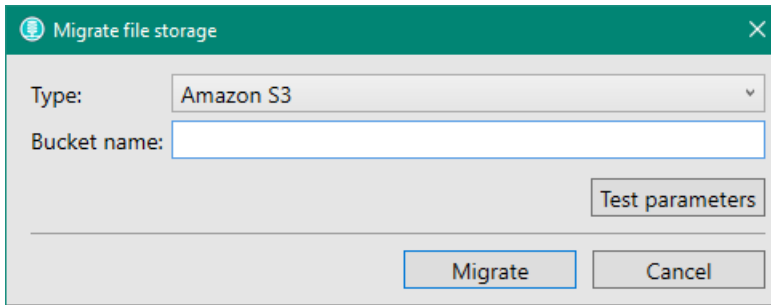
An existing database using FILESTREAM can be migrated to the cloud file storage method. Note the following:

- The bucket or container must be configured before starting the operation. For more information, see [Section 4.2 Cloud storage](#).
- The migration process can require several hours, but PolyWorks | DataLoop remains usable for the whole duration of the operation.

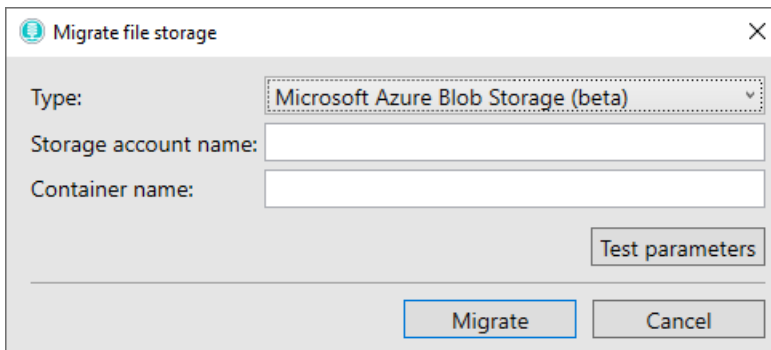
## Migration



1. On the **Storage** page of the System Parameters tab, click **Migrate**. The Migrate file storage dialog box is displayed.



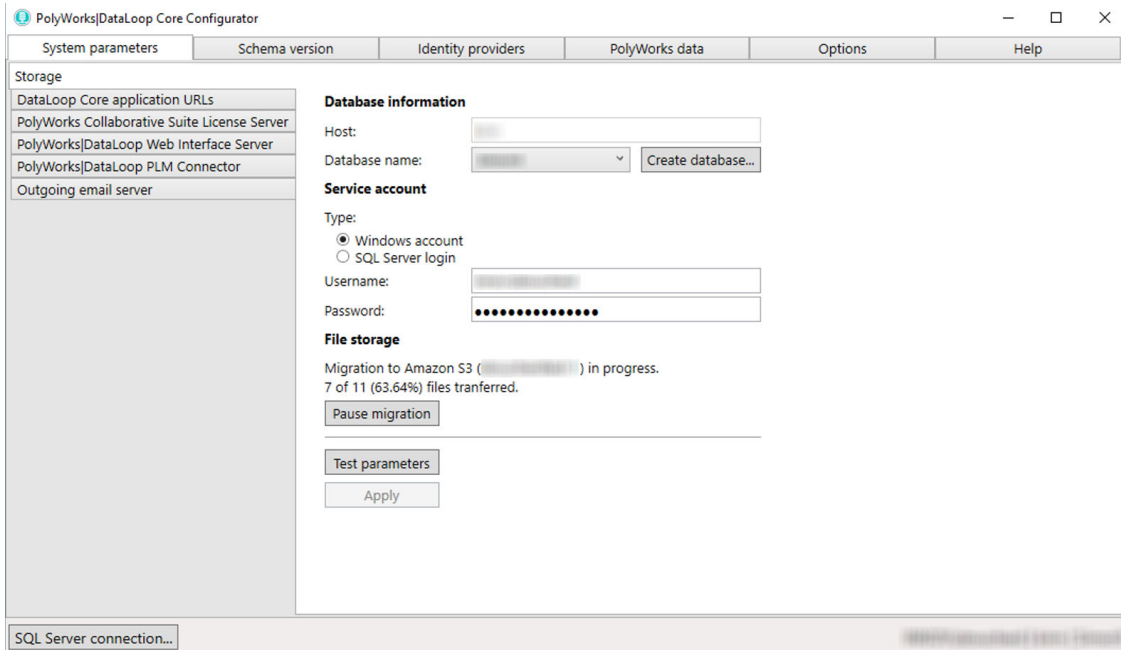
2. For **Amazon S3**, select **Amazon S3** in **Type** and enter the name of the configured bucket in **Bucket name**.



For Microsoft Azure Blob Storage, select **Microsoft Azure Blob Storage** in **Type**, then write the name of the configured storage account in **Storage account name**, and enter the name of the configured container in **Container name**.

3. Click **Test parameters**. If everything is working correctly, **Successful** will be displayed.

4. Press **Migrate** to launch the migration and close the dialog box. The progress of the migration is displayed on the Storage page of the System Parameters tab.



5. If the migration needs to be paused at some point, click **Pause migration**.
6. When the files are all migrated, a notification is displayed to invite you to finalize the migration. On the Storage page of the System Parameters tab, click **Finalize migration**.

Storage space on the database is freed and the migration process is completed.

