



TriMech's
**SOLIDWORKS
PDM**

Hardware
Recommendations
Guide

Technical Support
1.888.TRIMECH (1.888.874.6324)
Support@TriMech.com

Rev: 21.0

Table of Contents

SOLIDWORKS and SW PDM System Requirements	5
Current Minimum PDM System Requirements:	6
Support for Virtual Environments	7
Server Components	8
Microsoft SQL Server	9
Microsoft® SQL Server Standard 2017 licenses models:	9
Client Types	10
SOLIDWORKS PDM Standard Client Types	10
SOLIDWORKS PDM Professional Client Types	10
SOLIDWORKS SW Client-Server Firewall Ports	11
SOLIDWORKS PDM Deployment Scenarios	13
Medium Office Network	13
Large Office Network	13
WAN Connected Offices	14
SOLIDWORKS PDM Web2	15
Data Management Product Matrix	19
System Examples and Recommendations	20

This Page is Intentionally Blank

This Page is Intentionally Blank

SOLIDWORKS and SW PDM System Requirements

Topics to consider when exploring the System requirements for SOLIDWORKS PDM, one of our Professional Services Team Solutions Engineers, can guide you through this potentially complex topic and break it down into buckets for clarity.

- Total access number of users / Functions
 - Editors
 - Contributors
 - Viewers
- Single-Site vs. Multiple Site
 - Archive Service Replication
- Single Server vs. Split Server
 - Services split onto multiple server's vs. combined into one: SQL, Archive/Database Service, SolidNetWork License Manager
- Processor
- Operating System
- Microsoft SQL Licensing
- Memory
- Storage
 - Type
 - Size

SOLIDWORKS and SW PDM System Requirements (con't)

Current Minimum PDM System Requirements:

SOLIDWORKS Products for Windows

	SOLIDWORKS 2019 (EDU 2019-2020)	SOLIDWORKS 2020 (EDU 2010-2021)	SOLIDWORKS 2021 (EDU 2021-2021)
Operating System			
Windows 10 (64-bit)	✓	✓	✓
Windows 7 SP1 (64-bit)	✓	✓ (End of Life: SW 2020 SP5)	✗
Virtual Environments	(see table on page 7)		
Hardware			
Processor	3.3 GHz or higher		
RAM	16 GB or more PDM Contributor or Viewer: 8 GB or more		
Graphics Card	check SW website for list of certified cards and drivers		
Drivers	SSD drives recommended for optimal performance		
Software			
Microsoft Excel and Word	2013, 2016, 2019 (SW2019 SP2)	2013, 2016, 2019	2016, 2019
Antivirus	<ul style="list-style-type: none"> Use a trusted antivirus product. Keep your antivirus product updated to the latest version. Stay updated with the latest antivirus definition/signature file (This defines the known current vulnerabilities and exemptions). Consider creating exemptions for SOLIDWORKS file types and folder locations to improve SOLIDWORKS file based runtime performance such as File Open/Save/Save As and PDM Vault Checkin/Checkout. If you encounter install or runtime errors or warnings from your antivirus product, first check the SOLIDWORKS Knowledge Base for known issues or contact your SOLIDWORKS reseller. 		

SOLIDWORKS and SW PDM System Requirements (con't)

SOLIDWORKS Server Products

	SOLIDWORKS 2019 (EDU 2019-2020)	SOLIDWORKS 2020 (EDU 2020-2021)	SOLIDWORKS 2021 (EDU 2021-2021)
Operating System			
Windows Server 2019	✓ (2019 SP3)	✓	✓
Windows Server 2016	✓	✓	✓
Windows Server 2012 R2	✓	✗	✗
Windows Server 2012	✗	✗	✗
SQL Server			
SQL 2019	✗	✓	✓
SQL 2017	✓	✓	✓
SQL 2016	✓	✓	✓
SQL 2014	✓	SQL 2014 SP3 required	SQL 2014 SP3 required (End of Life: SW 2021 SP5)
SQL 2012	✓	✗	✗

Support for Virtual Environments

Use this information to ensure you are always working with a SOLIDWORKS supported and optimized system for hardware, operating system, and Microsoft products.

Virtualization Environment	SOLIDWORKS 2018 (EDU 2018-2019)	SOLIDWORKS 2019 (EDU 2018-2019)	SOLIDWORKS 2020 (EDU 2018-2019)
VMware vSphere ESXi	6.0	6.5	6.7
VMware Workstation	9	14	15
Microsoft Hyper-V	2012	2016	2019
Parallels Desktop, Mac	10	14	14
Citrix XenServer	6.2	7.4	7.6

Notes:

1. SOLIDWORKS and eDrawings require a GPU for optimal performance in a virtualized environment. SolidWorks has tested and certified graphics cards for virtualized environments. For a complete listing, check Certified Cards and Drivers.
2. SOLIDWORKS Composer is not supported in virtualized environments.

Server Components

The SOLIDWORKS PDM software uses a client/server architecture that employs several server components and three client components. This document describes these components in detail before discussing the features of the most common combinations.

The primary server and client components are as follows:

Microsoft SQL Server

- The SOLIDWORKS PDM Professional file vault database must be hosted on SQL Server 2019, 2017, 2016, or SQL Server 2014 Service Pack 3 or later.

Microsoft SQL Server Express

- The SOLIDWORKS PDM Standard file vault database must be hosted on SQL Server 2014 Express Service Pack 3 or later.

SOLIDWORKS PDM Database Server

- The database server periodically polls SOLIDWORKS PDM databases for updates such as notifications, local view refresh, replication schedule updates, and index server changes. It also manages data import and export rules.

SOLIDWORKS PDM Archive Server

- The archive server hosts the physical files stored in a file vault and manages users and their credentials.

SOLIDWORKS PDM Webserver

- The Web server provides access to a file vault from the Internet or an intranet.
- Optional Installation Components (SOLIDWORKS PDM Professional Only)

SolidNetWork License Manager

- The SolidNetWork License Manager manages licensing of SOLIDWORKS PDM.
- If you already have a SolidNetWork License Manager installed for SOLIDWORKS, you can use it with SOLIDWORKS PDM. Ensure that it is updated to the SOLIDWORKS PDM release version.

Microsoft SQL Server

	SOLIDWORKS 2019 (EDU 2019-2020)	SOLIDWORKS 2020 (EDU 2020-2021)	SOLIDWORKS 2021 (EDU 2021-2021)
Operating System			
Windows Server 2019	✓ (2019 SP3)	✓	✓
Windows Server 2016	✓	✓	✓
Windows Server 2012 R2	✓	✗	✗
Windows Server 2012	✗	✗	✗
SQL Server			
SQL 2019	✗	✓	✓
SQL 2017	✓	✓	✓
SQL 2016	✓	✓	✓
SQL 2014	✓	✓ SQL 2014 SP3 required	✓ SQL 2014 SP3 required (End of Life: SW 2021 SP5)
SQL 2012	✓	✗	✗

Microsoft® SQL Server Standard 2017 licenses models:

- Server+CALs licenses
- Core-based licenses

Server+CALs Licenses

- When software is installed, a server license is required for each running instance.
- Client Access License (CAL): A CAL is not a software product; instead, it is a license that gives a user or device the right to access the server, one CAL per defined user.

Core-Based Licenses

- When a server software is installed, a server processor license is required for each processor.
- Unlike the Server+CALs licensing model, the Core-based model license CPU cores being used and do not have restrictions on the number of users that have access to the data.
- With the Core-based model, customers do not need to purchase additional client access licenses (CALs) to access the SQL Server software.
- 25 or more users

More information about the different Microsoft® SQL Server packages and license options can be found here:

<https://www.microsoft.com/en-us/sql-server/sql-server-2017-pricing>

The guide helps understand the various options around Microsoft SQL Server. The licensing guide also describes the different Microsoft SQL licenses models: Server+CALs licenses & Core-based licenses.

Client Types

SOLIDWORKS PDM Standard Client Types

Each computer accessing the SOLIDWORKS PDM Standard file vault must have one of the following clients installed:

SOLIDWORKS PDM Standard CAD Editor

- Supports working with SOLIDWORKS, DWG/DXF format, Microsoft Word, and Microsoft Excel files.
- All file formats that Office plug-in handles behave in the same way in SOLIDWORKS PDM Standard except Preview.

SOLIDWORKS PDM Standard Contributor

- Supports working with SOLIDWORKS, DWG/DXF format, Microsoft Word, and Microsoft Excel files.

SOLIDWORKS PDM Standard Viewer

- Allows read-only access to file vaults; a user cannot add or modify (check out, check-in, update values) files.

SOLIDWORKS PDM Professional Client Types

Each computer accessing the SOLIDWORKS PDM Professional file vault must have one of the following clients installed:

SOLIDWORKS PDM Professional CAD Editor & Web

- Supports working with all file types, including enhanced management and previewing of CAD formats such as SOLIDWORKS. CAD add-ins allow users to access SOLIDWORKS PDM Professional from within the CAD application.
- Web: Remote users can use the WEB client to search the vault and perform essential functions to enable remote work processes.

SOLIDWORKS PDM Professional Contributor & Web

- Supports working with all file types, including CAD files. However, the CAD add-ins are not supported on this client type.
- Web: Remote users can use the WEB client to search the vault and perform essential functions to enable remote work processes.

SOLIDWORKS PDM Professional Viewer

- Allows read-only access to file vaults; the user cannot add or modify (check out, check-in, update values) files or use CAD add-ins.

SOLIDWORKS SW Client-Server Firewall Ports

Windows Servers have built-in firewalls activated by default. These can restrict network access to applications requiring connections over the TCP/IP interface.

The archive server uses TCP port 3030 to communicate with the clients. This port must be fully opened in the firewall for a SOLIDWORKS PDM installation to accept incoming connections. If the port is not opened, the archive server is not available.

Recommendation: Allow inbound traffic on the corresponding UDP ports to allow the servers to broadcast (announce themselves) on the network. For example, by showing the name in a list for users to attach to a server from a client.

To allow the SQL server to communicate with clients, you must open TCP ports 1433 and 1434.

To check out a client license, you must open ports 25734 and 25735 on the SolidNetWork License Server.

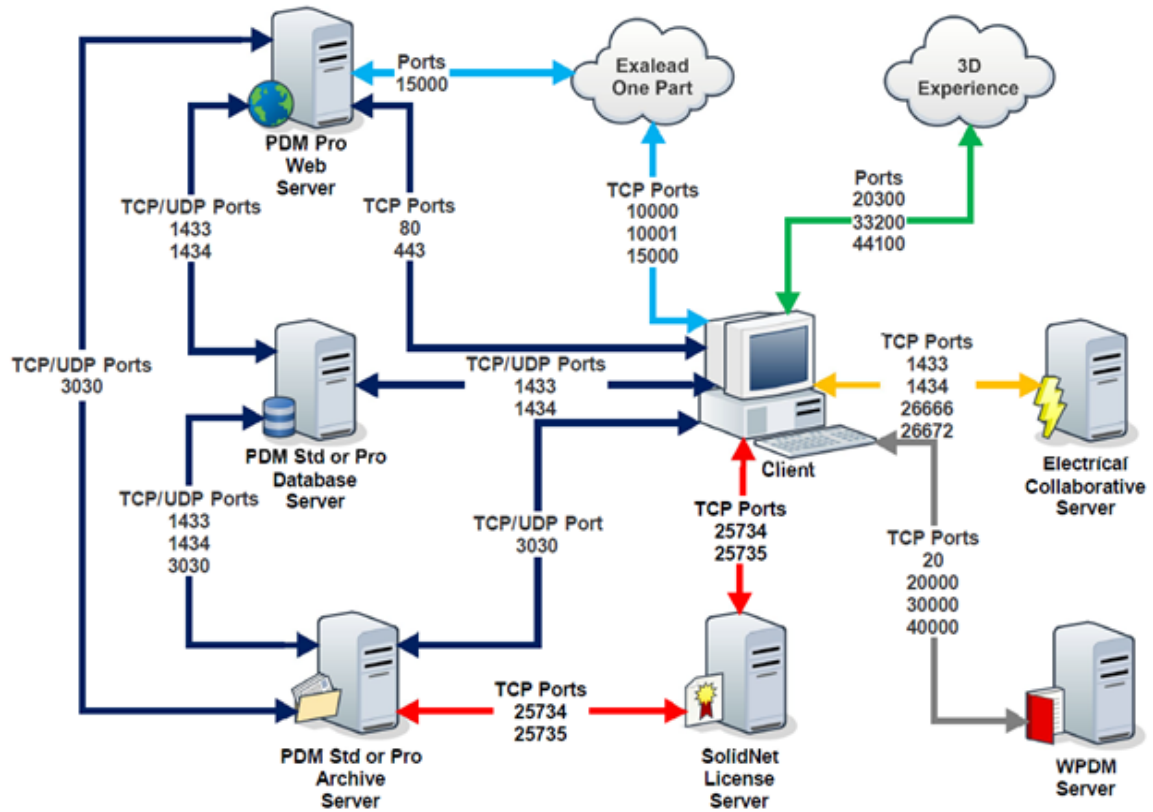
This table summarizes the ports that must be reachable. You open the firewall ports on the listening/receiving side.

Listening and Receiving	Communication Originating From				
	Client	Archive Server	Database Service	SQL Server	Web Server
Client					
Archive Server	3030	3030	3030		3030
Database Server					
SQL Server	1433/1434	1433/1434	1433/1434		1433/1434
SNL Server	25734/25735				25734/25735

Microsoft disables outbound filtering by default. However, your administrators may have created outbound rules that restrict traffic to applications that are approved on your organization's network. If a SOLIDWORKS PDM client or replicated server cannot reach the SQL server or Archive server, make sure that the network administrator has not restricted access to the server ports in the Windows firewall settings.

SOLIDWORKS SW Client-Server Firewall Ports

Here is an overview of most Ports used by the Solidworks Suite for Software.

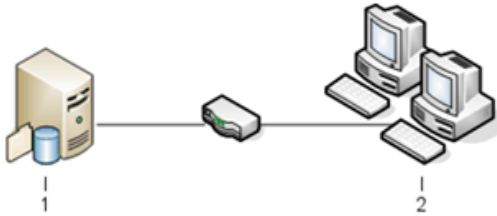


SOLIDWORKS PDM Deployment Scenarios

The deployment of SOLIDWORKS PDM components depends on the size and type of organization where SOLIDWORKS PDM is used.

Medium Office Network

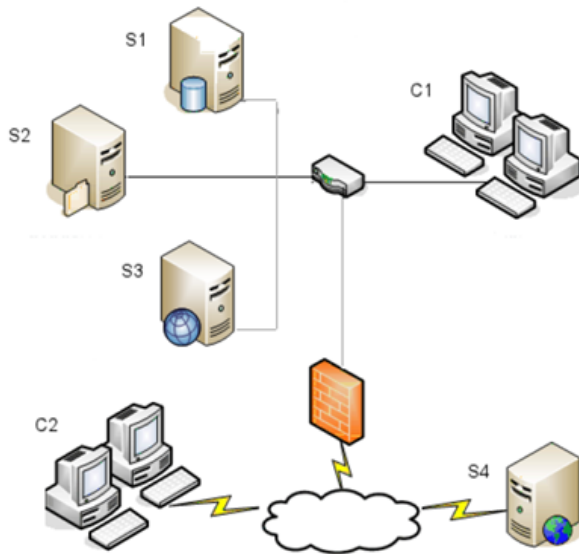
A server running SQL Server for SOLIDWORKS PDM Professional or SQL Server Express for SOLIDWORKS PDM Standard hosts the archive server, database server, and SNL server. Windows workstations installed with the SOLIDWORKS PDM client attach to the server.



- 1 SQL, Database, SNL, and Archive Servers
- 2 Clients

Large Office Network

One server running SQL Server hosts the file vault databases and the database server. One server hosts the archive server, and another server hosts the SNL server. Workstations installed with the SOLIDWORKS PDM Professional client attach to the servers. A Web server allows access over the Internet using SOLIDWORKS PDM Web clients.



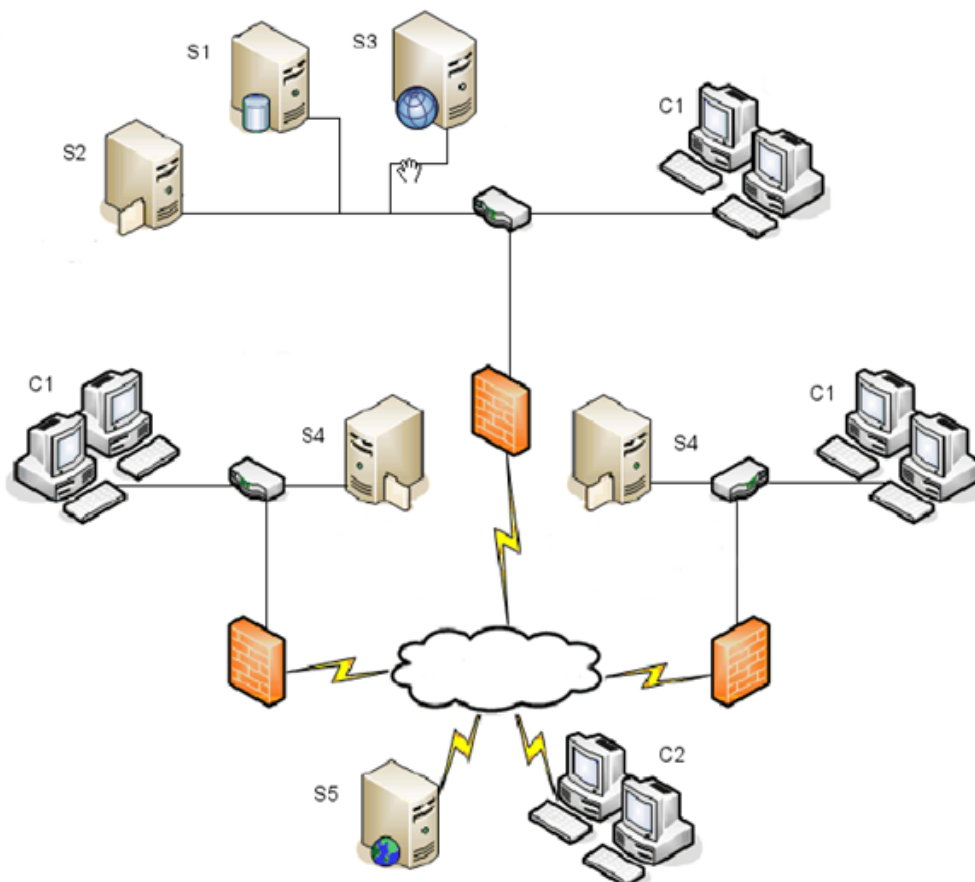
- | | |
|--------------------------|----------------|
| S1 SQL, Database Servers | S4 Web Server |
| S2 Archive Server | C1 Clients |
| S3 SNL Server | C2 Web Clients |

SOLIDWORKS PDM Deployment Scenarios (con't)

WAN Connected Offices

One main server running SQL Server hosts the central database server. A second server hosts the archive server, and a third server hosts the SNL server. Each WAN office has a server hosting a local archive server with a replicated file vault archive.

Workstations installed with the SOLIDWORKS PDM Professional client attach to their local archive server and the central database server.

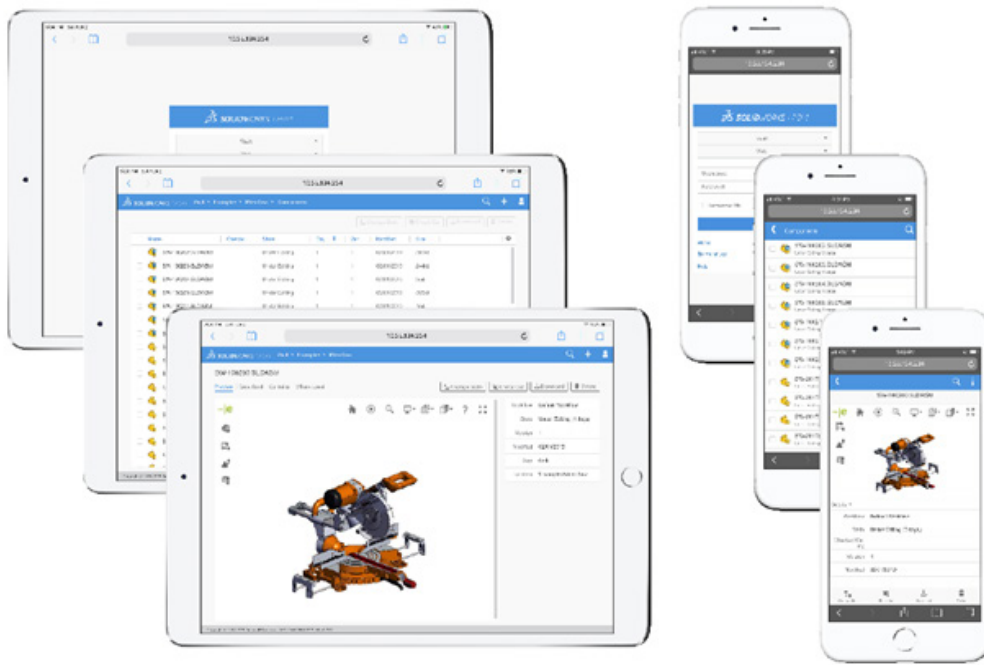


- | | | | |
|----|---|----|-------------|
| S1 | SQL, Database Servers | S5 | Web Server |
| S2 | Archive Server | C1 | Clients |
| S3 | SNL Server | C2 | Web Clients |
| S4 | Archive Server with Replacated File Vault | | |

SOLIDWORKS PDM Web2

The Web2 client is a Web client that lets users connect to a SOLIDWORKS PDM Professional vault from most devices with an internet browser. Web2 client is beneficial for external and internal users who are not connected to their office network or have an unsupported operating system.

The Web2 client has two user interface layouts. On desktop and laptop computers, it uses a large screen layout. On tablets, mobile phones, and other small devices, it uses a layout designed for a small screen.



ios android

The Web license comes with each CAD Editor, Contributor, or Universal license. You can dynamically preview SOLIDWORKS files in the following supported browsers without loading plug-ins:

- Microsoft Internet Explorer
- Google Chrome
- Microsoft Edge
- Mozilla Firefox
- Apple Safari



The preview quality for other common file types is more like viewing the file in its native application. Web2 client lets users browse folders, view file information and thumbnails, search, and change file states.

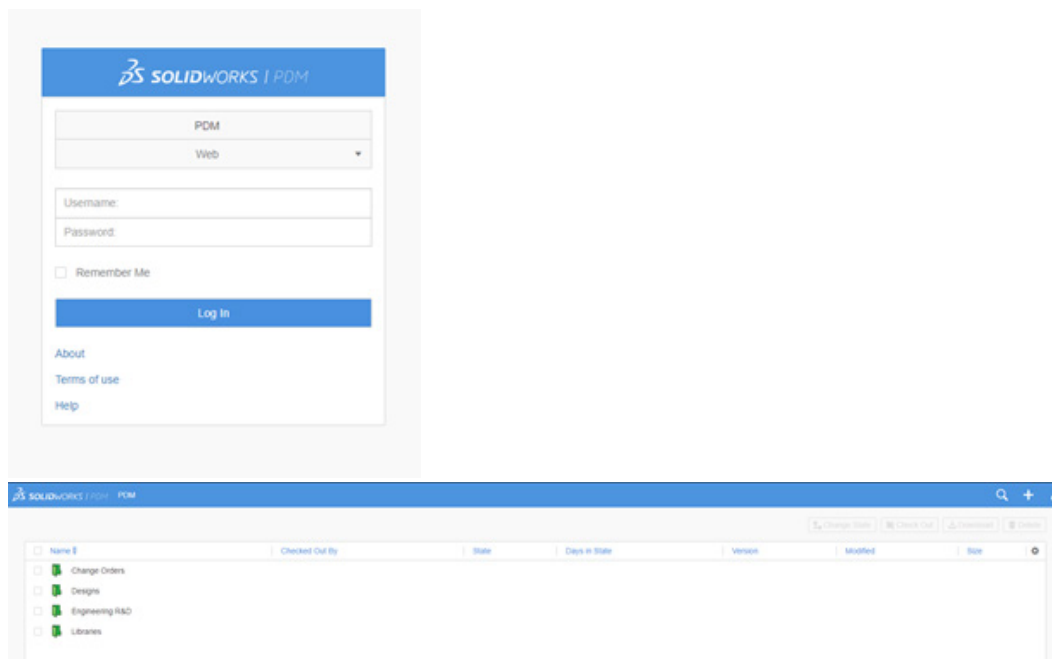
SOLIDWORKS PDM Web2 (con't)

Some advantages of Web2 client over the existing Web Client:

- •Viewing capabilities for many file types such as PDF, Word, Excel, and PowerPoint
- •Browser independence
- •No client installation requirements
- •Transition action support such as setting revision variables

Other capabilities include:

- Quick searching and viewing of vault data
- A mobile version for small handheld devices like smartphones
- The ability to preview multiple file types
- Thumbnail previews of SOLIDWORKS files when accessed via the mobile version
- The ability to open SOLIDWORKS files with the eDrawings application for iPhone, iPad, and Android
- Contains and Where Used information
- State change capabilities
- Editing capabilities



SOLIDWORKS PDM Web2 (con't)

SOLIDWORKS PDM - PDM - Design - Project 0001 - DesignData

Name	Checked Out By	State	Days in State	Version	Modified	Size
Components						
367 Timing Sprocket.SLDPRT		Under Editing	85	1.1	05/06/2020	2mb
4240 Spreader.SLDASM		Approved	876	9.19	11/07/2017	3mb
4240 Spreader.SLDORW		Approved	876	8.18	11/07/2017	593kb
Arm.SLDPRT		Approved	876	6.16	11/07/2017	329kb
Handle Assembly.sldasm		Approved	876	7.17	11/07/2017	1mb
NEW ROD END.PDF		Approved	887	2.12	04/18/2016	22kb
NEW ROD END.SLDORW		Approved	887	3.13	10/06/2017	229kb
NEW ROD END.SLDPRT		Approved	85	4.14	05/06/2020	189kb

SOLIDWORKS PDM - PDM - Design - Project 0001 - DesignData

4240 Spreader.SLDORW

Preview | Data Card | Bill Of Materials | Contents | Where Used | History

Change State | Check Out | Download | Delete

Workflow	Engineering
State	Approved (876 days)
Version	8.18
Comment	No
Modified	11/07/2017
Size	593kb
Location	DesignProject 0001 DesignData

SOLIDWORKS PDM - PDM - Design - Project 0001 - DesignData

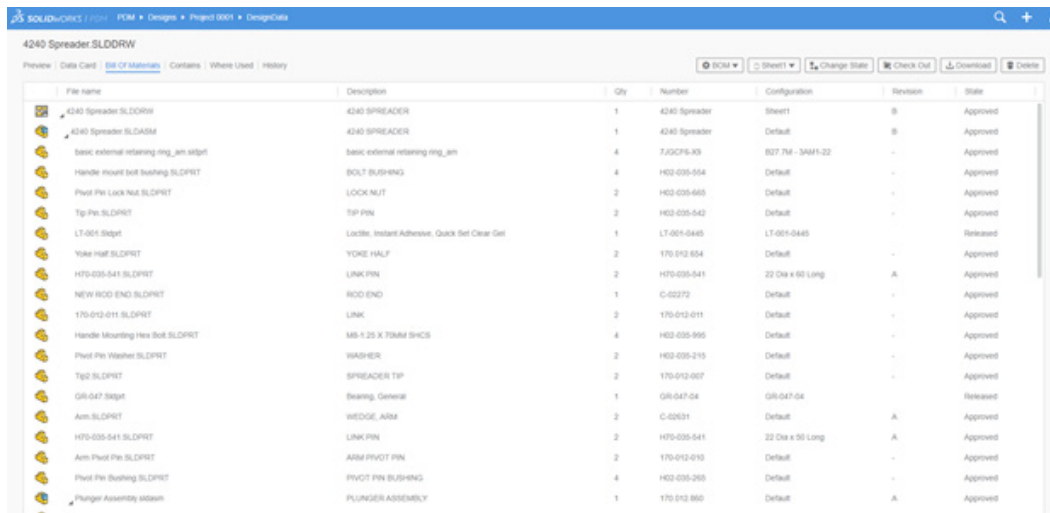
4240 Spreader.SLDASM

Preview | Data Card | Bill Of Materials | Contents | Where Used | History

Change State | Check Out | Download | Delete

Workflow	Engineering
State	Approved (876 days)
Version	9.19
Comment	No
Modified	11/07/2017
Size	3mb
Location	DesignProject 0001 DesignData

SOLIDWORKS PDM Web2 (con't)



File name	Description	Qty	Number	Configuration	Revision	State
4240 Spreader.SLDDRW	4240 SPREADER	1	4240 Spreader	Sheet1	B	Approved
4240 Spreader.SLDASM	4240 SPREADER	1	4240 Spreader	Default	B	Approved
Basic external retainer ring.sldprt	Basic external retainer ring_asm	4	7-GCF6-83	807.7M - 3MM-22	-	Approved
Handle mount bolt bushing.SLDPRT	BOLT BUSHING	4	H02-035-054	Default	-	Approved
Pinot Pin Lock Nut.SLDPRT	LOCK NUT	2	H02-035-665	Default	-	Approved
Tip Pin.SLDPRT	TIP PIN	2	H02-035-042	Default	-	Approved
LT-001.Sldprt	Locite, Instant Adhesive, Quick Set Clear Gel	1	LT-001-0445	LT-001-0445	-	Released
Yoke HMF.SLDPRT	YORK HALF	2	170-012-004	Default	-	Approved
H79-035-041.SLDPRT	LNK PIN	2	H79-035-041	22 Dia x 60 Long	A	Approved
NEW ROD END.SLDPRT	ROD END	1	C-02272	Default	-	Approved
170-012-011.SLDPRT	LNK	2	170-012-011	Default	-	Approved
Handle Mounting Hex Bolt.SLDPRT	M6 x 25 X 70MM SHCS	4	H02-035-995	Default	-	Approved
Pinot Pin Washer.SLDPRT	WASHER	2	H02-035-210	Default	-	Approved
Tip2.SLDPRT	SPREADER TIP	2	170-012-007	Default	-	Approved
GR-047.Sldprt	Bearing, General	1	GR-047-04	GR-047-04	-	Released
Arm.SLDPRT	WEDGE ARM	2	C-02631	Default	A	Approved
H79-035-041.SLDPRT	LNK PIN	2	H79-035-041	22 Dia x 30 Long	A	Approved
Arm Pinot Pin.SLDPRT	ARM PIVOT PIN	2	170-012-010	Default	-	Approved
Pinot Pin Bushing.SLDPRT	PIVOT PIN BUSHING	4	H02-035-265	Default	-	Approved
Plunger Assembly.sldasm	PLUNGER ASSEMBLY	1	170-012-060	Default	A	Approved

The web client does not support:

- Use of templates
- Use of API add-ins
- Use of CAD add-ins
- Viewing history details of files and folders
- Administering the file vault
- Running reports
- Viewing a Bill of Materials (PDM vs. SW)

Data Management Product Matrix

Standard Options	PDM Professional	PDM Standard	Windows Explorer	SharePoint	DropBox*
Secure Access	•	•	•	•	•
Find Files	•	•	•	•	•
File History	•	•	•	•	
Revision Control	•	•			
Version Control	•			•	•
Scalability	•			•	
Custom Configuration	•			•	
Find MetaData (Properties)	•	•		•	
Hierarchical File Reference (Non CAD)	•			•	
Full Document Preview (Non CAD)	•		•	•	
Distributed Design Teams	•			•	
Remote Access	•		•	•	•
Automated Approval Process	•			•	
Notifications (SMTP)	•			•	
Audit Trail	•			•	
Document Approval Process (ECO, ECN, ect...)	•			•	
Open and Flexible Interface	•				
Automated PDF Generation per Approval	•	• (SW Only)			
Bill of Materials					
BOM Scheme (MFG, Parts List, ect...)	•				
Multi-Department View and Approval	•				
Computed	•				
Export Functionality	•				
Import/Export File Properties	•				
Drawing Reference	•				
CAD Intergration					
Hierarchical File Reference (CAD)	•				
Bi-Directional Mapping of Properties	•				
Full Document Preview (CAD)	•	•			
Contains Reference	•				
Where User Reference	•				
ToolBox/Hardware Library	•	•			
SOLIDWORKS	•				
DraftSight	•				
PTC Pro/Engineer Wildfire	•				
Creo Elements/Pro	•				
Creo Parametric	•				
AutoCAD	•				
Autodesk Inventor	•				
SolidEdge with Synchronous	•				
Structure					
SQL Backbone	•	• -SQLite			
SQL Software License	•				
SQL CAL License	•				
Multi-Site Replication	•				

* Native Functionality

System Examples and Recommendations

Scenario: Medium Office Network

Site:

- Single-Site Deployment (No Archive Replication)

Physical or Virtual Server:

- Physical On-Premise Server

Single Server:

- Microsoft SQL Service
- SOLIDWORKS PDM Database / Archive Service
- SolidNetWork License Manager

Users:

- 14 Connections Points
- (7) Seven CAD Editors
- (2) Contributors
- One Viewer 5 Pack

TRIMECH Data Migration Service (DMS):

- No Current Data migration Planned

Data:

- SOLIDWORKS
 - Parts, Assemblies, and Drawings
 - Some Assemblies will have potential for 10k Parts
- Microsoft Office 2013, 2016 and 2019, PDF's

Scenario System Recommendations

Processor

- 3.3GHz or faster
- Please reference Microsoft SQL Licensing as the licensing model is a driving factor processor/core set up.
 - Microsoft® SQL licenses models:
 - Server+CALs licenses
 - Core-based licenses

System Examples and Recommendations (con't)

Operating System:

- Windows Server 2016
- Windows Server 2019 (Recommended)

Memory (RAM)

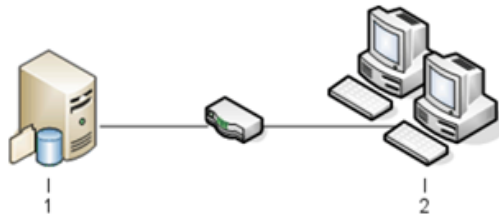
- 24 GB (With the option for growth as needed)
- Database Software
- Microsoft SQL Server Standard 2017
- Microsoft SQL Server Standard 2019

Storage

- In General, a hard drive with fast I/O speeds should be used. (7200,10,000 or 15,000 RPM)
- Drive 1: 500 GB OS, PDM Services, SQL Server/Databases (Ideally a Solid State Drive if possible)
- Drive 2: 2TB For File Archive Storage

Server Setup

- A server running SQL Server for SOLIDWORKS PDM Professional and also hosts the archive server, database server, and SNL server. Windows workstations installed with the SOLIDWORKS PDM client attach to the server.



- 1 SQL, Database, SNL, and Archive Servers
- 2 Clients