

Project phases and technical preparation using PLMJobManager

History of this document:

| No. | Date | Who | Change | Details / Description |
|-----|------------|-------|---------------|---------------------------------------------------------------------------------------------|
| 01 | 19.02.2011 | J.Fes | First version | Josef Feuerstein |
| 02 | 05.05.2011 | J.Fes | Extended | add Info: TcPrompt for NX target version required |
| 03 | 31.10.2011 | K.Sch | Extended | Required diskspace. |
| 04 | 31.10.2011 | K.Sch | Update | Layout update |
| 05 | 25.01.2012 | J.Fes | Extended | add Details defining SQL Server |
| 06 | 22.07.2012 | J.Fes | Extended | Update for MSSQL Server 2012 |
| 07 | 06.08.2015 | J.Fes | Extended | configuration SQL Server |
| 08 | 31.03.2016 | J.Fes | Update | OS Requirements 64 bit / .NET Framework 4.5 |
| 09 | 16.08.2016 | J.Fes | Update | OS Required free diskspace JobClients add details SQL Server versions |
| 10 | 06.07.2018 | J.Fes | Update | Translate to English version |
| 11 | 11.07.2018 | J.Fes | Update | add Intro and merge project info into document Now document can be used for any projects |
| 12 | 14.01.2020 | J.Fes | Update | db_owner roll need to be set for User: PLMJobManager at Database |
| 13 | 20.11.2023 | J.Fes | Update | OS Systems + Hardware Requirements for JobServer / JobClients |

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1 Introduction

This document describes:

- How company addPLM – GmbH is working on customer projects.
- Details about Technical project preparation and customer requirements

2 addPLM – GmbH delivers:

2.1 Oure Software PLMJobManager:

The software PLMJobManager is a generic software specialised for the mass data processing of PLM data. PLMJobManager configures, controls, evaluates and monitors the processes.

The process is using command line tools that has been created and delivered by the software manufacturer Siemens or other software Vendors. In individual cases, the customer provides self-programmed tools.

The customer is generally obligated to check the results by sampling.

All-important process data are archived by our system and are available for future analysis.

In many processes an additional verification of the results is ensured by additional result checks.

2.2 Oure Services:

We analysing the customer project needs and creating based on this needs an individual effort estimation and a suitable offer.

The description below shows how we in general are working together with the customer on their projects.

3 General course of a project:

3.1 Phase I Analysis

- Customer creates information about the required process and the amount of data to be processed
- A workshop may be held to identify and discuss the requirements
- Based on the information, we create an effort estimation and an offer
- The customer discusses the offer with us

In case we are charged

3.2 Phase II Test-System

- Installation of our software at the customer
- Configuring the processes with the customer
- Test the processes and check / evaluates results together with the customer
- We do ongoing document the process and process results
- After successful testing we processing all data or a specified quantity mound of data
- We monitoring the processes
- We analysing the process and creating a documentation including detailed results and process statistic
- Finally, we presenting and discussing process results with the customer
- Goal is to get a clear view about the process results bevor going to production phase

In this case the customer evaluates the test phase with OK and he gives his OK for the productive stage:



3.3 Phase III Prod-System

- Transfer and installation and configuration from the 'Test-System' to the 'Prod-System'
- Configuring the processes for the 'Prod-System'
- Test the processes and check / evaluates results together with the customer
- We do ongoing document the process and process results
- After successful testing we processing all data need to be processed
- Monitoring the processes
- Analysing the process and creating a documentation including detailed results and process statistic
- Finally, we presenting and discussing process / project results with the customer



4 Technical project preparations

The following technical requirements and preparations need to be delivered by customer:

- Teamcenter Test-System Need to be available.
- Computer for PLMJobManger - JobServer is required.
- Computer(s) for PLMJobManger - JobClient is required.
please check how many computers are calculated
- Microsoft SQL Server for PLMJobManager Database is required.
- Admin rights are temporary needed for software installation
Example: install SQL Server/Net 4.5 FrameWork
- JobServer and JobClients need to have Dot.Net 4.5 FrameWork installed.
- Diskspace on network share for software and JobLog files (more details see on next pages)
- Sufficient disk space for the TC volumes (usually requires around + 30 percent).

Note:

The respective components can be combined on one or more computers. However, it is important to note that the components have sufficient CPU memory and disk space resources.

The JobServer and the JobClient software do not require any installation. The software is located on the network share and is started from there.

All required components are included on the installation's medium (USB-stick/download).

4.1 Teamcenter Test-System

The Teamcenter Test-System must have a migrated copy of the productive db with the entire Volume data.

Note:

It is important to ensure that the Teamcenter database and the volume data are copied at the same time and therefore correctly.

If there are discrepancies between the database and the volumes, it is expected that the required file objects will not be available. This causes errors in during process or when trying to open the data via NX.

4.2 Microsoft SQL Server Database

The PLMJobManager uses an MS SQLServer database for the data storage of the configuration and the process data of the JobServer.

Boundary condition : At least SQL Server 2008 R2 must be available

Note : Versions 2008//2008 R2// 2012 // 2014 // 2016 have been used so far

The customer must provide the following:

- A computer for installing Microsoft SQL Server 2014 Express 64bit (software is included on installation media)
- or -**
- Use an existing Microsoft SQL Server version of the customer. In this case, a blank database must be provided for the PLMJobServer db.

4.3 Recommendation for the sizing of the JobServer SQL database:

Background:

Because the JobServer application uses the JobManager SQL-DB extensively, it is necessary to use a reasonably fast database system. The reason for this is that the jobs are created dynamically and therefore high-frequency queries and data updates must be made in the database.

The increasing demand for resources results from the fact that more clients are used for job processing with increasing amounts of customer data. This means that the data polling frequency increases, which also takes into account that a larger amount of data is queried.

This circumstance increases the resource demand on the DB side with increasing database size. The greatest impact on performance is generated by the max memory used, as well as the number of CPU's/processor cores used by the database system and the performance of the hard disk system on which the JOBMGR. DB resides.

According to our experience, the following guidelines can be applied:

- The SQL Server Express versions can be used up to ~ 300,000 NX datasets
- Over 300,000 NX datasets should use the SQL Server standard versions (e.g. 2008 R2)
- With high mass throughput we recommend the use of SSD disk systems for filing the database files and a memory of min 16 GB on the SQL Server system

The Express versions limit the maximum resources for:

DB file size max: Main memory Max: CPU's and processor cores.

Overview of Express versions (last update 06/2018):

| Version: | Max. DB Size (GB) | Max. Memory | Max. CPU's | Max Prozessor - cores |
|----------------------------|-------------------|-------------|------------|-----------------------|
| MS SQL Server 2016 Express | 10 GB | 1 GB | 1 | 4 |
| MS SQL Server 2017 Express | 10 GB | 1 GB | 1 | 4 |
| MS SQL Server 2019 Express | 10 GB | 1 GB | 1 | 4 |
| MS SQL Server 2022 Express | 10 GB | 1 GB | 1 | 4 |

Conclusion: The express versions are sufficient according to our experience in installations up to 300,000 datasets. However, for installations over 300,000 datasets, these are not sufficient due to resource constraints.



4.4 Configuration SQL Server

Software versions:

- up to 300,000 dataset's SQL Server Express SQL Server Express 2012 or later
- more then 300,000 dataset's SQL Server 2008 R2 or later

Hardware:

- SQL Server should have min 16 GB memory
- SQL DB file on internal SSD (Optimum)

SQL Server Basic configuration:

- Protocol: TCP/IP
- SQL Server Authentication (login via user/password)
- Suggestion: **User:** PLMJobManager **PW:** \$Edc4rfv
- Full authorization on JobManger DB instance
→ db_owner roll need to be set for JobManger Db User
- Settings:
SET COLLATE =Latin1_General_CI_AS
SET RECOVERY= SIMPLE

4.5 Computer for the JobServer

The JobServer is used to configure the settings for the Process. The JobServer also organizes the JobProzesse (via. Job control) and generates and transfers the JobPakete to clients.

Hardware requirements:

- Min 16 GB memory more is better
- Min 50 GB free hard disk space on the local disks
- Min 1 CPU with 4 Cores

Software requirements:

- Win10-64 BIT -//- Win11-64 BIT (testing)
- WinServer 2012 – WinServer 2016 – WinServer 2019
- Installed .Net Framework 4.5

4.6 Computer for the JobClinet

The JobClients is used to process the Jobs. The JobClient receives the JobPakete from the JobServer, processes it (executes the NX process) and sends the result back to the JobServer.

Note: The customer must take care that the systems used are suitable for the use of TC and NX. It is ideal to use certified hardware, operating system and software.

Hardware requirements:

- 64 Bit System
- min 16 GB even more memory is better 32 GB 64 GB
- By default, we use for each process 1 core.
- We calculate for each process 4 GB RAM
Note: sizing is depending on complexity and size of CAD Data
- min 25 GB free diskpace on local drive.
- min 50 GB free diskpace on local drive hosting fccCache

Software requirements:

- Win10-64 BIT -//- Win11-64 BIT (testing)
- WinServer 2012 – WinServer 2016 – WinServer 2019
- Installed .Net Framework 4.5
-



- TC Prompt for NX target version must be available.
- Note: A "TC 2tier client" must be available.

4.7 Network Share:

All software components scripts, logfiles and documents are stored on the network. These are centrally managed there. The following resources should be available on the network:

- 1 GB Disk space for the installation of the PLMJobManager in the network.
- Provide disk space for storing logfiles.
Calculation of the Disk space: approx. 500 MB per 100,000 datasets.
- Hint: The logfiles can also be moved to an alternative directory.

4.8 Backup recommendations:

The customer is responsible to back up his data to provide a full functional recovery of data and systems. The backup should be available for 1 year after the process has been completed.

The above recommendation is strongly recommended for productive processes.