

System requirements Manufacturing Execution System fabMES

The Manufacturing Execution System fabMES try to lower the hardware requirements, even on high volume data processing. It uses optimized software algorithms to process and evaluate a big amount of data in short cycle times. This will reduce the hardware costs and give you space for up scaling the system.

1 Database server

1.1 Hardware

The hardware requirements depend on the usage of the system:

- Which software modules will be used?
- How many data will be recorded in which intervals?
- How many evaluations on data will be processed?

The hardware design depends also on your expected system availability:

- How is your production process affected by a system loss?
- How much time for system recovery is acceptable?
- How much time for database recovery is acceptable?

The following minimum requirements in the table below are defined without any redundancy. We recommend you to calculate your expected data volume and discuss your system configuration with your MES provider. Please specify also your expected system availability. We are pleased to consult you to find the right hardware configuration.

1.2 Operating system

The database server can use a Microsoft Windows operating system or Linux. All operating systems supported by MySQL are possible. We recommend the usage of Linux on high performance requirements because of the improved power of MySQL on Linux systems.

1.3 Database

The database needs a MySQL license. The company Oracle offers different version of MySQL database:

- MySQL Community (GPL license), free of charge and without support
- MySQL Standard, with support
- MySQL Enterprise, with support and additional administration features
- MySQL Cluster – not yet supported by fabMES

You can find an overview of all commercial MySQL versions on this website:

<http://www.mysql.de/products/>

The version MySQL Cluster is not yet supported by fabMES. An adequate version for a typical database usage is MySQL Standard.

1.4 Summary

Hardware	Minimum	Recommended
Processor type	Dual Core	Quad Core
Processor clock rate	2 GHz	2,66 GHz
Processor quantity	1	1
Main memory	8 GB	32 GB
Hard disk RAID Level	0	1 or higher
Hard disk interface	SATA	SAS
Hard disk storage capacity	100 GB	discuss the requirements
LAN	100 MBit	1000 MBit
Operating system	Windows XP (32 Bit) or higher	Linux (64 Bit)
Database	MySQL 5.5 Community	MySQL 5.5 Standard

2 Client computer

2.1 Hardware

You can use a normal office personal computer as fabMES client. If you like to use the client for evaluation of a big amount of data, you should prefer a client with better hardware settings.

There are no special requirements for hard disk capacity. The fabMES client has a size of approx. 30MB and needs some MB for temporary data. The temporary data will be periodically deleted and don't grow over the time.

2.2 Operating system

fabMES expects a licensed Microsoft Windows operating system with version XP or higher. Because of the expired support of Windows XP, we recommend the usage of Windows 7.

2.3 Additional software

The fabMES client needs a Microsoft .Net environment with version 3.5SP1 or higher. Beginning from Microsoft Windows 7, the .Net environment is a part of Windows and don't needs to be extra installed.

You also need a MySQL .Net connector for database access in a current available version. The connector is not a part of fabMES software but can be installed with the automatic software distribution.

2.4 Special configurations

fabMES is designed as a distributed system. The software clients use a trigger system to inform other clients about process or status changes. This reduces the network traffic and

database load because the clients don't need to ask for changes any time. The trigger system is based on small UDP packets between the clients and the license server.

For this reason you need to open the incoming UDP ports 5000-5010 in the client firewall.

2.5 Summary

Hardware	Minimum	Recommended
Processor type	Single Core	Dual Core
Processor clock rate	1,3 GHz	2 GHz
Processor quantity	1	1
Main memory	2 GB	4 GB
Hard disk RAID Level	-	-
Hard disk interface	SATA	SATA
Hard disk storage capacity	100 GB	200 GB
LAN	100 MBit	1000 MBit
Operating system	Windows XP (32 Bit) or higher	Windows 7
Microsoft .Net	3.5SP1	3.5SP1
MySQL .Net-Connector	6.9.5	6.9.5

3 Background processes / services

fabMES uses background services to offer some functions without user login. For example:

- License server
- Process data monitoring
- Automatically data interfaces
- Alarms
- Regular and scheduled tasks

The hardware requirements for the computer who runs the services are the same as a normal fabMES client. It's possible to install more than one service on a computer.

We provide these services as Windows service applications who need at minimum one Windows computer. There are two possible kinds of service installations:

3.1 Central services

Every service will be installed on a central (high-) available server. You can also use the database server if you running the database with Windows.

3.2 Distributed services

As an alternative type of installation you can distribute the services to many client computers. A central customizing organizes which computer should run which tasks. For a better availability, you can assign one task to more than one client computer. fabMES control which client is available and run the tasks. In this scenario, you can use the normal client computers to run the services with a high availability.

4 Software installation /distribution

The fabMES client will be distributed with Microsoft ClickOnce installation. For the installation you need a readable (not writeable) shared network directory for all MES user.

The user can install the software by self with two mouse clicks. For software updates, only copy the new version to the network share. The clients will recognize the new version and update automatically.

The automatically update with new software versions is also possible for the background services.

5 Backup

The customer is responsible for the execution, monitoring and check of periodical backups. Different backup concepts are possible and depending on the data volume and expected maximum recovery time in case of system faults. We are pleased to support you on creation of a suitable backup concept for your system configuration and possibilities of MySQL database.

The backup should contain the following software and data:

System	Software / Data
Database server	Operation system and MySQL software (system backup)
Database	Complete data storage space
Client computer	fabMES client backup not necessary (new installation is easier and faster)
Background services	Service installation (if you run background services on database server, already included in system backup)
Software distribution (shared network directory)	Software directory

Beside a daily backup of a consistent database snapshot (complete data backup), you should also save the transaction log in desired intervals (for example 5-15 minutes). With the transaction log you can restore the database near to the fault event without any data losses. Depending on existing hardware and backup concept, you can save the transaction log directly to a backup medium.