Agile e6.0.2

Hardware Sizing Recommendations for Agile e6.0.2

CONTENTS

Chapter 1
Introduction

This manual is intended to help you sizing an Agile e6 installation and gives information on the different programs and services running Agile e6 and the optimization of the service performance and security.

It describes the following topics:

- ❑ Agile Architecture
  Describing the individual components of the process model and standard installation types for a single or multiple site.

- ❑ Sizing Agile e6
  Giving information on the recommended CPU, hard disk etc. requirements for the different Agile e6 components.

> **Note:** If you need more information on the Agile e6 Architecture, refer to the *Agile e6 Architecture* manual.

Chapter 2

Agile e6 Architecture

Agile e6 Process Model

This chapter gives a brought overview of the Agile e6 Architecture to familiarize you with the components which you will find in the Hardware Sizing chapter.

For a detailed description of the Agile e6 Architecture refer to the *Agile e6 Architecture* manual.
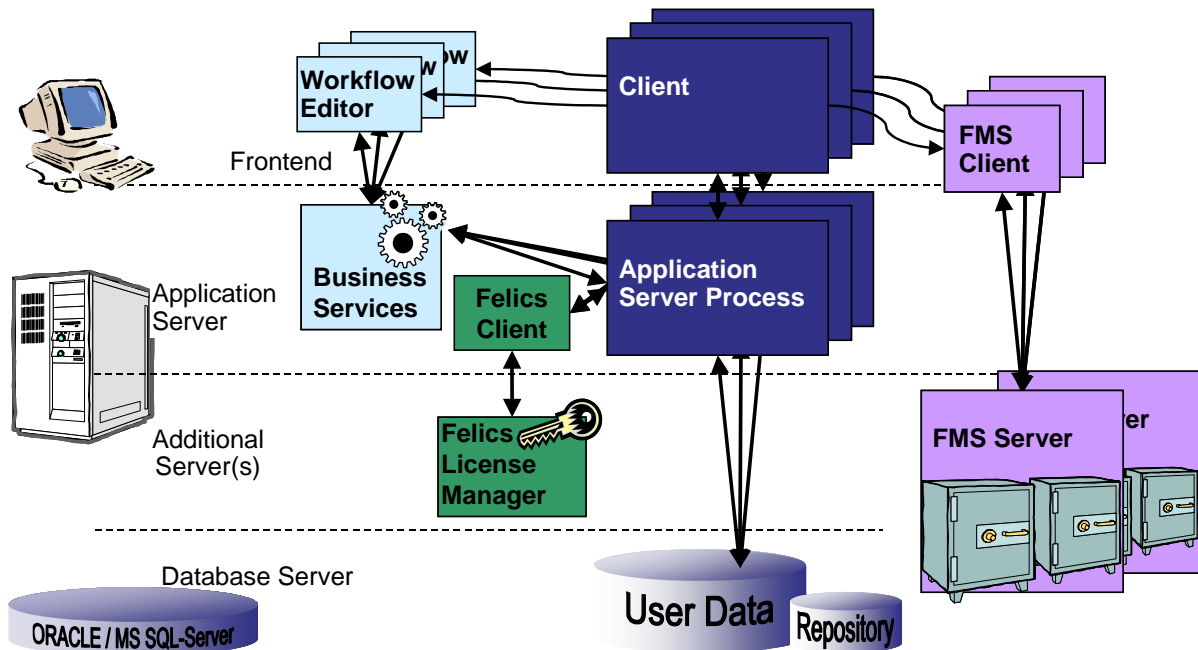
- ❑ **Level 1 — Database Server**
  Agile e6 can utilize an Oracle database. The database does not only store the user data but also the repository containing the meta data.
  In a distributed environment the database can be fully replicated.

- ❑ **Level 2 — Application Server**
  The application server runs the Agile e6 Server processes and thus provides the Agile e6 functions like document management, version management, release management etc. As well as extended functions like BOM operations, variant management etc.
  The functionality is provided by Compiled userexits and database stored procedures for appropriate tasks.
  The application server is driven by the repository.
  See Level 4 – Others for other services on this level.

- ❑ **Level 3 — Clients**
  With Agile e6, multiple types of clients are available, serving the different needs of casual users and power users.

- ❑ **Level 4 — Others**

- FileServer
  The File Management System (FMS) itself is a client-server architecture and checks-in/-out documents from/to the user's computer. Files are managed in the vault whereas the user's computer does not require direct access to any of the vaults
  For replicating distributed files a rule-based file replication is available.

Level 1 — Database Server

The database server is the machine running Oracle, storage of the user and meta data.

Level 2 — Application Server

- ❑ Application Server
  Machine running the e6 Server processes. These processes perform the major business logic. One process serves one user.

- ❑ Web Presentation Services
  The Web Presentation Service gives users access to PLM functionality through their web browsers. It manages web sessions for users and creates the DHTML they use to interact with the Agile e6 Server. Based on a servlet engine (tomcat) it provides a user interface for Agile e6. The Front-end (Internet Browser) only show the WebClient, the servlet engine performs the GUI logic.

- ❑ Business Services
  Carry out the business logic for the Workflow, including Watchdog, Permission Manager and Notifier. The Java Application Server (Jboss) provides this service. It is connected via ECI-Socket to the Agile e6 process and on the other side via JDBC to the database.

- ❑ Java Daemon Controller
  Admin tool for the Java Daemon

- ❑ Felics Client
  Requests licenses from the license server for a client process.

- ❑ DataView Daemon:
  Starts Agile e6 processes for the Windows client

- ❑ JAVA Daemon:
  Starts Agile e6 processes for the Presentation Service

- ❑ Oracle Client Software

Level 3 — Clients

- ❑ Windows Client:
  Native Windows Client (DataView Client)

- ❑ Java Client:
  Java Client for UNIX and Windows Systems

- ❑ Web Client
  Using an Internet Browser as WebClient front end (Internet Explorer or Mozilla)

- ❑ FMS Client
  Communicate the Agile e6 process and perform tasks managed by the Agile e6 process. Transfer files from local disk to the FileServer and back. The FMS Client runs in the background.

Level 4 — Other Services

❑ Web File Service
Provide an http interface for the FileServer. The WebClient (Internet browser) requests the Web Fileservice for a special file. The Web File Service checks out the file from the FileServer and transfer it to the browser.

❑ Felics License Manager
Hold the license database, lock and release licenses

❑ FMS Server
Store the files onto local disks and release files to the FileServer client

❑ View Café Server
Provides access to view many types of electronic documents and drawings stored within Agile e6, without the need for the original authoring system.

Installation Scenarios

Different installation types are possible depending on how many sites will be involved. Before sizing the hardware, you need to define your installation scenario that defines what hardware is used how many times on how many different sites.

Single Site Installation

For single site installations, the number of users is defining the installation type. It is differentiated between

❑ Small Installations — 40 users

❑ Medium Installations — 80 users

❑ Large Installation — 120 users

Small Installation

The simple installation has all server components on a single machine. The following components are recommended for this installation:

❑ 1 Database Server and 1 Application Server on one machine

❑ 1-2 CPUs

❑ FileServer on the same or another machine

❑ Operating System Windows
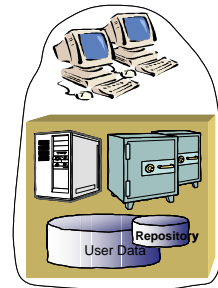
Medium Installation

For the medium installation, the server components are installed on several machines. The following components are recommended for this installation:

❑ 1 Database

❑ 2. Application Servers or several CPUs

❑ Separate FileServer installation

❑ Operating System Windows and Unix
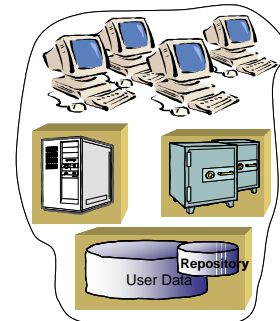
Large Installation

The large installation for more than 120 users is scalable to serve large installations. The following components are recommended for this installation:

- ❑ Database (Cluster) and several CPUs
- ❑ 1 – n Application Server with several clusters
- ❑ Separate Fileserver installation
- ❑ Operating System: Unix
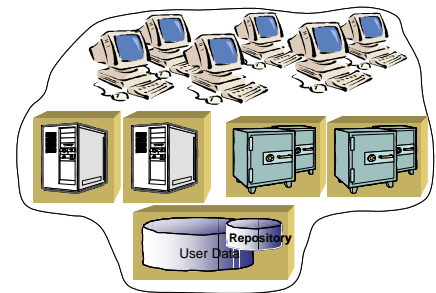
Multiple Sites Installation

Depending on the profile of a site, different types of replication/distribution are possible:

- ❑ Central installation with local clients
- ❑ Central installation with local clients and distributed file management
- ❑ Fully replicated environments with distributed file management and replicated database (Oracle only)
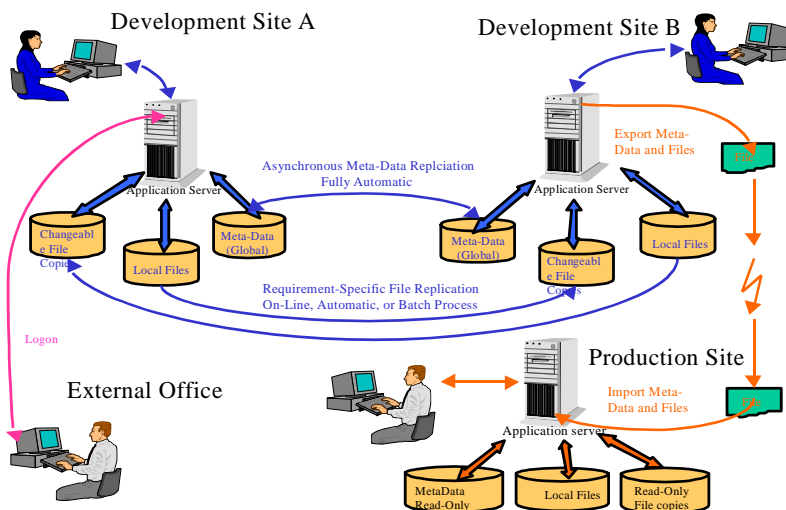
Central installation with local clients

The central installation with local clients is frequently implemented and allows a simple, centralized management with worldwide access.
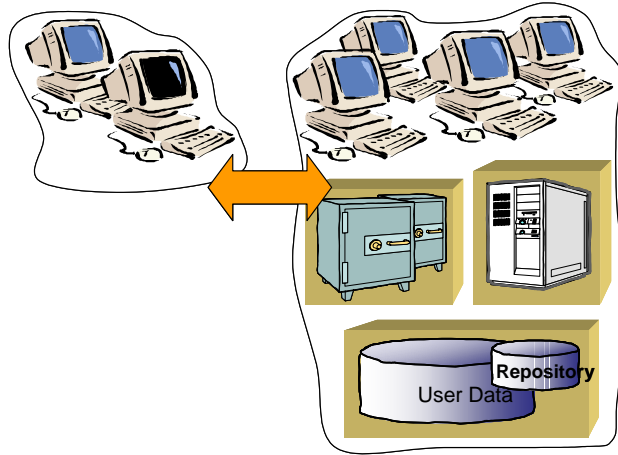
All services besides the client are installed on one central site and accessed via network.

Distributed File Management

Distributed file management means that Clients and Vaults are installed locally on several sites and one central application server and central installation is available. Files are (partially) distributed/ replicated. This leads to an improved availability of managed files.
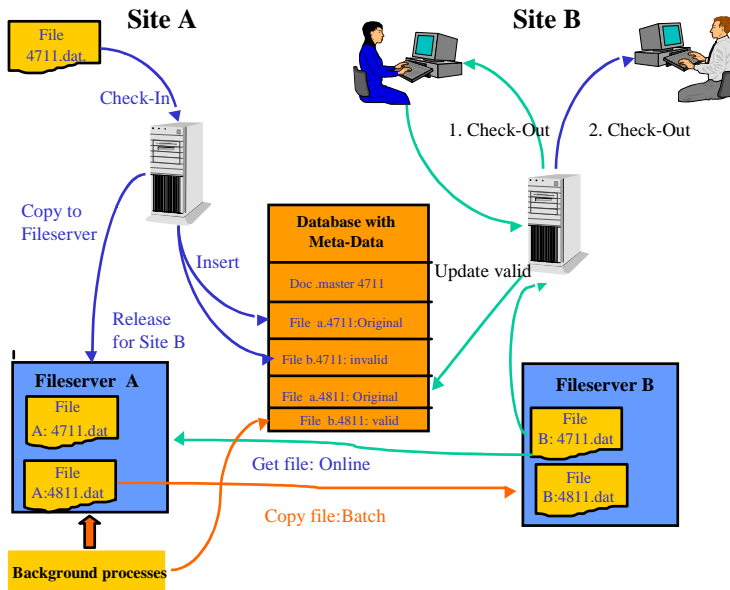
Fully Replicated Database

With a fully replicated database, separate application server are installed on each site. Each site has a full installation with database, application server, file server and files can be replicated via DFM. The meta data is replicated based on features of the database system via asynchronous symmetric replication (Oracle)
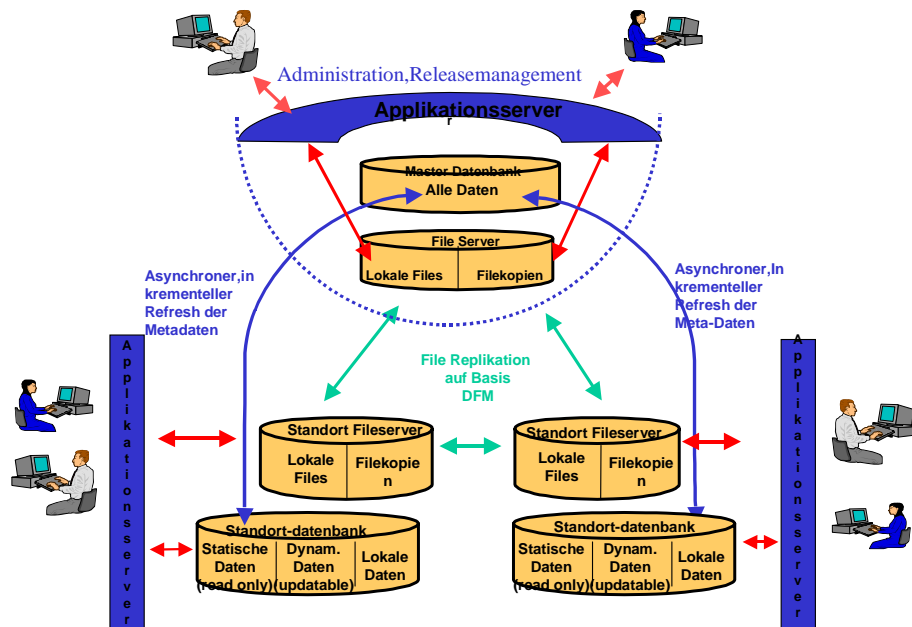
Note: This solution requires Oracle Enterprise edition.

Chapter 3
Sizing Agile e6

General Recommendations

When sizing the hardware for an Agile e6 installation, keep in mind to

❑ Use scalable hardware as you might want to add additional users and functionality in the future. The memory, disk space and CPU should be larger than needed for the initial installation.

❑ Check the specific restrictions of the selected Operating system. Especially Windows server have specific behavior

Note: The Agile e6 server should not be domain controller, e-mail, print and file server in addition

Note: A Windows machine should not run out of physical memory. The server gets sever problems, when this happens. Especially the Oracle database will crash if the instance tries to allocate additional memory and no physical memory is available.

Before sizing the Agile e6 environment, go through the checklist in the appendix to set up your specific installation scenario.

General Database Server Sizing

Small databases (dump size) are usually fast. The more data is in use, the slower the application performs and the more resources are needed on the DB server.

In general, the DB-instance uses less CPU than the Agile e6 server process (30:70 or 40:60).

The database performance is defined by four parameters:

1. Number and performance of CPU.
2. Main memory used for the database.
3. Disk I/O.
4. Client – Server connection speed.

Network

We recommend 100 MBit or 1 Gbit for the Application server.

Essential is the speed of the connection, not the throughput. 100 Mbyte LAN only define the throughput. If the connection is heavily loaded the elapsed time for each IP packet is high and the connection slow.

The connection to the Application Server should never be via a WAN.

If database and application are on the same machine, the connection is faster than on separate machines.

If data is shared between databases via replication, the network load will be at least 512 kbyte. During upgrade or initial synchronization, a considerable higher network load is to be expected (>= 512 to 1024 kByte). For database replication 25% more CPU power, more memory (>50 MB) is needed. Additional Oracle server processes (ca. 10 connects) perform the replication work.

Note: Replication is available for Oracle databases only

Sizing the Oracle Database Server

For a description of the database templates see the *Agile e6 Administration Manual.*

Database Template	Number of Users	Tablespace in Gigabyte		Memory in Megabyte
		Min	**Max**	
Laptop	Not for production	1	16	250
Test	Not for production	1.6	16.2	400
Small	40	2	16.5	450
Medium	80	5	16.5	1500
Large	120	8	25	1500
Huge	150	8	25	1800

Note: To use performance improvements of native PL/SQL compilation, a C+ compiler must be installed on the database server.

The following table gives an overview on the required disc space depending on the selected template for the data files of the database.

Template / Tablespaces	plm_laptop min – max size (MB)	plm_test min – max size (MB)	plm_prod_small min – max size (MB)	plm_prod_medium min – max size (MB)	plm_prod_large min – max size (MB)	plm_prod_huge min – max size (MB)
EDB	25 - 1950	100 - 1950	300 - 1950	1500 - 1950	3000 - 6000	3000 - 6000
EDB_IDX	25- 1950	100 - 1950	300 - 1950	1500 - 1950	3000 - 6000	3000 - 6000
EDB_LOB	5 - 1950	5 - 1950	5 - 1950	5 - 1950	5 - 1950	5 - 1950
EDB_TMP	1 - 1950	5 - 1950	5 - 1950	5 - 1950	10 - 1950	10 - 1950
EDB_TMPIDX	1 - 1950	5 - 1950	5 - 1950	5 - 1950	10 - 1950	10 - 1950
SYSTEM	400 - 800	500 - 800	500 - 1000	500 - 1000	500 - 1000	500 - 1000
SYSAUX	210 - 500	210 - 1000	210 - 1000	210 - 1000	210 - 1000	210 - 1000

Template Tablespaces	plm_laptop min – max size (MB)	plm_test min – max size (MB)	plm_prod_small min – max size (MB)	plm_prod_medium min – max size (MB)	plm_prod_large min – max size (MB)	plm_prod_huge min – max size (MB)
TEMP	100 - 2000	500 - 2000	500 - 2000	1000 - 2000	1000 - 2000	1000 - 2000
TOOLS	1 - 200	1 - 200	1 - 200	1 - 200	1 - 200	1 - 200
UNDOTBS1	200 - 2000	200 - 2000	200 - 2000	200 - 2000	200 - 2000	200 - 2000
USERS	1 - 200	1 - 200	1 - 200	1 - 200	1 - 200	1 - 200

CPU

The database scales very good over multiple CPUs.

Database Template	Number of CPUs
Laptop	1
Test	1
Small	1
Medium	2
Large	2 - 3
Huge	>3

When database replication is used, at least one more processor is needed and the capacity of all processors should be 30% higher.

Memory

For Oracle the memory consumption is determined by the init-parameters, which can be defined dynamically in the init-file (init<SID>.ora) and the selected template.

To increase database performance, we recommend equipping the machines with more physical memory than necessary.

Server memory for Oracle 10g:

❑ 6 MB per connected user

❑ RAM size (depending on the database size)

Note: The more memory is allocated for the database the less disk i/o is necessary. Sort, read and writes are buffered in the database memory.

Database Template	Number of Users	Memory in Megabyte (by Oracle database)	Memory in Megabyte (max memory used)
Laptop	Not for production	250	250
Test	Not for production	400	400
Small	40	450	800
Medium	80	1500	2100
Large	120	1500	2500
Huge	150	1800	3000

Note: The maximum memory values have to be increased if the expected number of concurrent sessions exceed the number defined for the template)

Hard disk

Write intensive parts of the database (undo, redo log, temp) and system swap or page file have to be on separate disks. The database software vendors recommend using different disks for the database and the operating system to avoid any impact on the database. Each service (file service, swap, etc) which uses disk I/O can affect the database performance.

As I/O is most critical to the database, it is recommended to use four to six physically separate disks or an equivalent performing controller base RAID shelf (RAID 0/1) exclusively for the database. Add a separate disk for the operating system. RAID 5 has to be used for archived redo log files.

Data file	Contents	RAID Level
edb.dbf	Table data	1/0
edb_idx.dbf	Index data	1/0
edb_lob.dbf	LOB data	1/0
edb_tmpidx.dbf	Temporary index data	1/0
edb_tmp.dbf	Application temporary data	1/0
temp.dbf	Temporary database tablespace	1/0
undo.dbf	Undo database tablespace	1/0
system.dbf	SYSTEM tablespace	1/0
sysaux.dbf	SYSAUX tablespace	1/0

Data file	Contents	RAID Level
tools.dbf; users.dbf	Tablespace for small user's and tool's data	10
Archived redo log files	Archived redo logs needed for db recovery	5
control01.dbf, control02.dbf, control03.dbf	Database control files	1/0 (a separated disk for each copy)
Redo01-05.log	Database redo log files	1/0

The database server needs enough free disk space for:

❑ Database backups (database exports (hot backup) and file image backup (cold backup))

❑ Database logs (Oracle server generated logs, SQL-Server log file)

❑ Case of emergency: complete image backup (db files)

❑ Copies of the database dump for production, training, development, testing, upgrade, etc

The productive Oracle database runs in archive log mode. The backup strategy includes a backup of all database files (cold backup) and the archive logs produced during backup. In addition Oracle exports are performed daily (hot backup).

For the archive log, provide disk space six times the size of the dump to have enough reserves. The database will stop when the disk space for the log is used up.

> **Note:** Regularly (once a week) old archived logs have to be copied to a tape.

It is recommended to have the last database backup (both hot and cold) on the server machine, in order to reduce the recovery time.

If the database raises a media error (defect of file), recovery has to be performed using the cold backup that is kept on the server machine. Depending on the time, existing data files (damaged) need to be copied to a temporary location, to ensure that it could be rolled back to the point of crash if db recovery failed and needs to be performed again.

Calculate with the size of two cold database backups to have enough disk space for the recovery process. Do not use the free space for file storage. In case of emergency, you will not be able to recover your database in time.

	Factor	*	Single Size	=	Total
DB dump size			1		
Data files	3	*	1	=	3
Cold backup	2	*	3	=	6
Hot backup	2	*	1	=	2
Archive log files	6	*	1	=	6
Oracle 10 g Software		*			4

	Factor	*	Single Size	=	Total
Oracle Server logs		*			3
Operating system		*			1
Swap		*			2,5
Total					27,5

The database server needs at least 28 GB disk space at the beginning.

Database growth has to be monitored over time and actions to be taken if more space if needed (e.g. after 6 months)

Sizing Microsoft Sql Server

To boost connection turn around time, the Named Pipes protocol should be disabled on the client side.

Using dynamic ports complicates connecting SQL Server through a firewall because the port number may change when SQL Server is restarted. This would require changes to the firewall settings. To avoid connection problems through a firewall, configure SQL Server to use a static port.

In some environments, setting the "minimum memory per query (in KB)" parameter (which can be found by right-clicking on the server node, Memory tab) to a value of 4096 results in a better performance.

Since SQL server stores table row versions in tempdb database (using READ_COMMITTED_SNAPSHOT standard isolation level for e-series databases), consider to tune the tempdb database for environments with high transactions load – like placing its data file on different hard disks / own RAID controller etc.

CPU / Memory

The database scales very good over multiple CPUs.

To increase database performance, we recommend equipping the machines with more physical memory than necessary. In addition only available (and free) memory should be configured for SQL Server. To avoid dynamic memory allocation, min limit should be equal to max limit, otherwise SQL Server has to do allocation operations during the statement execution phase. The maximum should be lower than the OS limit.

> **Note:**   The more memory is allocated for the database the less disk i/o is necessary. Sorts, read and writes are buffered in the database memory.

Number of Users	Number of CPUs	Minimum Memory for MS Windows in MB	Minimum Memory for SQL Server in MB
20	1	512	256
40	1	768	512
80	2	1536	1024
160	4	>=3096	>= 2048

Hard disk

Write intensive parts of the database (transaction logs, tempdb) and system swap file have to be on separate disks. The database software vendors recommend using different disks for the database and the operating system to avoid any impact on the database. Each service (file service, swap etc.) which uses disk i/o can affect the database performance.

As I/O is most critical to the database, it is recommended to use 4 to 6 physically separate disks or an equivalent performing controller base RAID shelf (RAID 0/1) exclusively for the Database. Add a separate disk for the operating system.

The following table shows the e-series standard file size settings:

File	Initial size	Max size	Growth
plm	24 MB	450 MB	1 MB
plm_edb	30 MB	2 GB	5 MB
plm_idx	28 MB	2 GB	5 MB
plm_lob	2 MB	2 GB	5 MB
plm_tmp	2 MB	2 GB	5 MB
plm_tmp_idx	2 MB	2 GB	5 MB
plm_log	70 MB	2GB	1 MB

Disk Space for Database

The following example shows how to calculate hard disk space for a typical SQL Server database with **1 GB data files**.

❑ Operating System (e.g. 4 GB)

❑ Swap space (e.g. 4 GB)

❑ SQL Server Software (e.g. 1 GB)

❑ Data files (e.g. 1 GB)

❑ Transaction Log files (e.g. 1GB)

❑ Daily database backups (e.g. 7 GB)

❑   Daily transaction log backups (e.g. 4*7 = 28 GB)

❑   Case of emergency: backup files (e.g. from tape, 5 GB)

❑   Copies of databases for production, training, development, testing, upgrade (e.g. 7 GB)

❑   After media error: copy of all existing SQL Server data and log files (e.g. 10 GB)

❑   Additional free space (e.g. 20 GB)

The backup strategy includes a complete daily backup of all database files and transaction log backups. Provide enough disk space for the transaction log backups, (depending on transaction load of the database), at least four times the size of the dump for each backup day to have enough reserves. No DML statements may be executed when the disk space for the transaction log is used up.

It is recommended to have at least the last database backup on the server machine, in order to reduce the recovery time.

Do not use the free space for file storage. In case of emergency, you will not be able to recover your database in time.

In this example, the database server needs at least **90 GB disk space** at the start.

Database growth has to be monitored over time and actions to be taken if more space if needed (e.g. after 6 months)

Application Server

Sizing Application Servers

CPU

One CPU 1 GHz class should be able to support up to 50 active concurrent users. This can differ a lot depending on how our customers use the application. However, most response time problems come from a slow DB, DB-connection, poor customizing and programming.

> **Note:**   Additional CPUs are needed for using Enhanced Change Management.

Memory

50MB Physical memory for each concurrent user. For frequent use of complex functions like BOM (structure size) copy etc. requirements are considerably bigger.

Add at least 200 MB for the operating system.

For bigger installations (100 users), UNIX could be the preferred server operating system — but this is a decision made by the system administration.

We recommend a maximum of 150 concurrent users for Database and Agile e6 on one Windows2003 Server.

NBL cluster will be needed if there are more concurrent users or UNIX systems.

To reach this values it must be a Windows 2003 Server Installation with more than 2GB main memory (when operating system is installed) and the registry must be modified. A standard Windows 2003 Server Installation without modifications can serve 50-60 users.

Hard disk

>512MB. Provide enough Disk Space for Agile e6 Programs, and several environments including loader and log files.

Temporary not used memory is paged out. Many of the Agile e6 processes will be inactive, because the user works on different software (CAD, office). Or memory allocated for big reports is not currently used. The Agile e6 server needs enough swap space or page file for the inactive memory pages.

3 * RAM: RAM < 500 MByte

2 * RAM: 500 < RAM < 2000

1 * RAM: RAM > 2000

Use the operating system manual to define the swap space. Some operating systems have maximum sizes for the swap space. Compared to Windows, Unix will have more swap space but less main memory.

Network

The Agile e6 process holds one database connection and general one client connection. The database connection has 10 times the through output and much more round trips thus a fast network connection especially to the DB server is necessary (no WAN).

Web Presentation Services

The Presentation Service should run with the Agile e6 Server on the same machine. It is possible to run the Presentation Service on a separate machine but this is not normally needed.

CPU

Needs three times more CPU power per connect than the Agile e6 server process. The Tomcat servlet engine only works on a single CPU. More Presentation Service environments (tomcat) can make use of multi CPU servers. The connection TCP port is then different.

Memory

Additionally needed for this service.

20 MByte + n * 6 MByte

n= number of users (connects)
6 MB per connect
20 MB as base size

The minimum size for the Presentation Service despite the calculation is 128 MB. The JAVA virtual machine starts with a maximum memory of 256 MB (java -Xmx256m). Raise the value if necessary.

Example:

    12 users
    20 MB + 12*6MB = 92 MB
    => recommended size is 128 MB

Example:

    30 users
    20 MB + 30*6MB = 200 MB
    => recommended size is 200 MB

Hard disk

Agile e6 installation plus 10 MB per WEB environment

Network

The Presentation Service needs a fast connection to the Agile e6 Server. It is recommended, that the Agile e6 processes for the Presentation Service are running on the same machine.

Sizing Business Services

The Business Service is installed in conjunction with the Agile e6 Server (Application Server). The Business Service is activated, when Workflow is enabled. It is possible to run the Business Service on a separate machine.

The business service includes the following services:

- ❑ Workflow
- ❑ Configurator
- ❑ Permission Manager

CPU

Depends on the Workflow activities. The Jboss only works on one CPU. No additional CPU power necessary to calculate.

Memory

Additionally needed for this service.

- ❑ Windows — 30 MB + Concurrent Users * 2 MB
- ❑ Unix —: 70 MB + Concurrent Users * 2 MB

The Java Application Server is configured with a maximum of 300 MB (java –Xmx300m). This value sets the maximum size of the JAVA virtual machine and can be modified. If you use the above formula please add sufficient reserves (min size 128 MB).

> **Note:**   The Permission Manager uses an cache which can grow up to 1GB.

Hard disk

Agile e6 Server installation requires no extra disk space

Network

> The Business Service opens an ECI connection to the Agile e6 server process and a JDBC connection to the database.

Sizing the License Manager

License Agents have to be installed on each Application Server machine. If you use DFM (Distributed File Management) a Felics Agent is necessary on the FileServer machine.

Oracle offers a cluster solution (Real Application Cluster) were several servers are working on the same database. But general the database exists once and only one server is working with the database (Database Server). This is the single point of failure and you are advised to install the Felics License Service on this machine.

You can install as much PLM-Servers as you want. Each Agile e6 server process allocates licenses via the Felics agent on the central Felics license server and it has no influence if the license request comes from one or from several servers. The number of concurrent users and modules used concurrently are limited through the License server.

Oracle does not have a license mechanism like a license key or license server. The Oracle parameter "processes" in the init.ora limit the number of Oracle processes. The value must be higher than the number of concurrent users plus the Oracle background processes (8). Raise this parameter if you add Agile e6 licenses.

There is an option to run Agile e6 AppServer and FMS on the same machine as FMS requires mainly I/O and Agile e6 mostly requires CPU. You will have to consider that they share Network throughput on this machine.

Agile e6 can be integrated to most of currently available IP-Based fail over solutions. Sizing for this will differ according the needs of the fail over software, usually requires a second identical machine sharing APP or DB disks via Dual SCSI to a separate Disk (usually RAID) shelf. All PLM services are installed and run on both machines, except the database, which is managed by the cluster software.

Sizing Clients

This chapter describes the sizing of all three clients:

- ❑ Windows Client
- ❑ Java Client
- ❑ Web Client

For more information on the Agile e6 clients refer to the *Agile e6 Architecture Guide*.

CPU

The size of the CPU depends on your operating system.

We recommend the following values:

Operating System	Min CPU Speed (in MHz)
Windows XP	1000
Windows 2000	1000
Windows 20003	1000
UNIX	500

Memory

Memory required for the different clients is about:

- ❑ Windows Client: 12-25 MB
- ❑ Java Client 18-30 MB
- ❑ WebClient: 20-30 MB

We recommend the following values:

Operating System	Min RAM Size (in MB)
Windows XP	256

Windows 2000	512
Windows 20003	512
UNIX	512

Hard disk

An Agile e6 installation requires about 180 MB disk space.

Network

> **Note:** When sizing the network, consider the network load produced by the client and for file transfer when using the FileServer.

Windows or Java Clients produce an average of about 2,5 up to 4 Kbytes (10 to 32 kByte) network load. This means that an 64kByte ISDN Line can support 2 up to 3 or 4 connected Agile e6 Users depending how frequent and intense they are using the system and if they are not transferring any additional data e.g. Documents or Drawings.

For the WebClient a 256 kByte connection will usually not be under full load. A 128 kByte connection reacts slower and 64 kByte connection is possible but the performance decrease is obvious.

20 times more information is sent to the WebClient (browser) than received back.

Add Network load according to expected documents and drawings etc. shared via WAN. You can check existing WAN connections for already existing network loads.

File transfer uses the total capacity of a network connection. If a network line is under heavy load the elapsed time of the IP-packages is long. Make sure to enable a fast file transfer (< 10 sec) as the connection will slow down during file transfer. The network connection must have enough spared bandwidth.

Others

Sizing FMS Servers

There are no special requirements for the Agile e6 FileServer. The machine should not swap and enough free memory should be available for file buffer. The throughput of the FileServer is determined by the network connection. In normal case the possible disk I/O is higher than the throughput of the network interface. For the FileServer identical operating system versions are used as the Agile e6 Server. It is not necessary having the same operating system as the client. You can install on mixed operating systems.

❑ Clients are Windows or UNIX or both

❑ FileServers are Windows or UNIX or both

CPU

No special requirements. CPU is needed for the TCP/IP stack and File I/O

Memory

At least 512 MB for a dedicated server.

The process themselves allocates 1 MB. Each connection uses main memory to buffer the transmission. So enough free memory should be available.

If the WebClient is used, it is advised to install the Presentation Service, with include the WebFileService on this machine. Therefore at least 1024 MB are needed. Without WebFileService 512 MB are ok.

Hard disk

The FileServer installation needs 1 MB of disk space. Estimate the necessary disk space for the stored documents.

- ❑ How much disk space will be necessary the next month and years?
- ❑ What is the concept to raise disk space and backup volume?
- ❑ Is it possible to add new disks to the system?

The FileServer stores the files in vaults. An electronic vault is a directory and its contents. One directory is limited by the partition size. The maximal capacity of an electronic vault is the size of the partition. If the vault is running out of disk space you can create a new vault on a second partition or you have to shift the vault to a bigger partition. The directory must be moved to the bigger partition with preserved file permissions (Windows!!) and the vault definition must be changed in the PLM System.

Agile only support local file systems. File systems in particular NFS commit the file write in a state where the file is still in the file cache and not completely written on the remote server. If the FileServer machine crashes in this situation the file is corrupt. If Storage systems (SAN,..) are utilized you have to exclude this issue. This is the same security reason, why a database only uses local file systems.

A RAID5 shelf is recommended for security and capacity reasons.

Network

A fast connection to the PLM client reduce time to store and load files. The Network is the bottleneck of the FileServer. The disk system is generally faster than the network and CPU load is not high on the server. If clients are in different network segments you can use more than one network card or use multiple FileServer. But the vault definition only has one hostname (IP-address) and can only be reached over one network card.

You can combine the FileService with the Agile e6 Server, Business Service and the Presentation Service. The FileService needs primarily disk I/O, while the other services needs CPU. There will be a load if big files are checked in or out and network load is high during transmission.

Batchjobs

Batch jobs are often necessary for plotting or file conversion (XML-> PDF, CATIA->STEP). To perform the conversion the CAD software and Agile e6 must be installed on the machine. The operating system is then identical to the CAD-machines. Identify the machines for the batch jobs:

- ❑ Dedicated server
- ❑ On each CAD-Workstation
- ❑ On the Agile e6 Server

If the CAD Workstations are used as PLM-Servers, this will reduce the memory and CPU consumption on the central servers. This is often used on UNIX boxes.

Sizing View Café

ViewCafé Server

CPU

Pentium II 500 MHz or better (recommended Pentium III)

- ❑ Windows 2000, Windows 2003 Server, Windows XP
- ❑ RedHat Linux 7.2

Memory

256 MB RAM or more

Hard Disk

2 MB free disk space for installation, 50 MB or more for temporary files

ViewCafe Client

CPU

Pentium 200 MHz or better

- ❑ Windows 98/ME, Windows 2000, Windows 2003, Windows XP
- ❑ Sun Solaris 2.6 or higher
- ❑ Linux
- ❑ AIX
- ❑ HPUX
- ❑ Mac OSX

Memory

64 MB RAM or more (recommended 128 MB for optimum 3D performance)

Hard Disk

25 MB free disk space

Chapter 4
Appendix

Checklist

Are there different sites, locations?

- ❑ Central sites with local clients
- ❑ Sites with distributed file management
- ❑ Sites with replicated databases

Count for every site:

	Value
Number of concurrent users?	
How many concurrent users are using the Web-, Java- and/or Windows-Client?	

How many users work with one of the following modules		Value
	Workflow	
	Enhanced Change Management	
	Configurator	
	Cooperation Partner	
	Multi project access rights	
	Permission manager	
	2d or 3D CAD	
	Data Exchange Suite	
	ViewCafé	

How are the LAN/WAN connections?

	Value
Transfer rate	
Transfer speed (Router, Frame relay, VPN,..)	
Connection costs (leased line, dial in line, flat rate)	

Band width available for Agile e6	
Stability	