The DMFAS Programme

DMFAS 5.2

Hardware, Software and Training Requirements

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(Updated 10 July 2001)

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Introduction

This document contains information about:

- Recommended hardware for workstations and servers running DMFAS 5.2 both in a single user and in a network environment.

- Necessary software that has to be installed before DMFAS 5.2 can be installed, both in a single user and in a networked environment. It will describe the type of software to be purchased and the type of software which is included with the DMFAS 5.2 (e.g. runtime version of Oracle).

- Recommended training for DMFAS users and the database administrator.

NB! This document will be updated when necessary to take into account changes and developments in information technology. Moreover, the precise requirements for each institution to run the DMFAS will depend on the individual situation (number of users, number of loans, etc.). It is therefore important to contact the DMFAS Programme **before** ordering equipment and/or software, to insure that the latest and most appropriate specifications are used.

The prices indicated in the document may vary depending on changes in Oracle's pricing policy.

1. Hardware

Naturally, more RAM, bigger disks and screens etc. than listed in the column *Recommended* below might give even better performance and more flexibility.

1.1 Workstation (Single-user and Network)

Component	Minimum	Recommended
BUS	PCI/ISA (or PCI/EISA)	
CPU[1]	Pentium III 750 MHz	Pentium III up to 1.0 GHz
Hard disk	10 Gb E-IDE or SCSI, 11 ms	20 Gb E-IDE or Ultra 160/m SCSI
CD-ROM	32 speed	48 speed or faster
Memory (Workstation in network) Memory (Single user)	128 Mb SDRAM, possibility to upgrade to 256 Mb	Up to 1 GB RDRAM
Screen/Video adapter	8 Mb RAM, 15" SVGA 0.28 dot pitch 1024 * 768 Non Interlaced, Low Radiation, Energy Star, min 80 Hz refresh rate	Up to 32 Mb RAM, 17" SVGA 0.26 dot pitch 1280 * 1024 Non Interlaced, Low Radiation, Energy Star, min 90 Hz refresh rate
Backup streamer[2]	Digital tape streamer with the same capacity as the total disk space.	
Mouse	Windows compatible	
NIC[3]	Network card supported by the network installed. 100 Mbps for best performance.	
PC in general	Plug and Play ready (for Windows 95/98/NT/2000), Flash BIOS, service available locally.	

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[1] Any 100% Intel compatible processor, such as AMD or Cyrix, can be used as well, given that they deliver equal or better performance.

[2] If DMFAS 5.2 is **not** installed on a network.

[3] If DMFAS 5.2 is installed on a network.

1.2 Server[4]

Component	Minimum	Recommended
BUS	PCI/EISA	
CPU[5]	Intel® Pentium® III 750 MHz, with the possibility to provide dual-capable Intel® Pentium® III processors	Up to four Intel® Pentium® III processors from 750 MHz to 1.0 GHz.
Hard disk[6]	2 x 9 Gb SCSI, 9 ms	3 x 18 Gb Wide SCSI or Ultra 2 SCSI, 9 ms with data striping through RAID 5
CD-ROM	32 speed	48 speed
Diskette drive	1.44 Mb High Density	
Memory	512 Mb	Up to 1 Gb
Screen/Video adapter	15" VGA screen[7]	
Backup streamer	Digital tape streamer with the same capacity as the total disk space.	
NIC	Network card supported by the network installed. 100 Mbps for best performance.	
PC in general	The PC should be a tower model and have server architecture, with possibility to install more disks and more memory. A possibility to lock the keyboard and power button could be an advantage.	

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[4]The server configuration is based on a Windows NT 4.0/ 2000 or Novell NetWare 4.X or 5.X server running ORACLE 8i, and functioning as a printer server and backup server. Additional memory and disk space might be needed if other programs are installed. Hardware specifications for servers running another network operating system should have equal performance and capacity.

[5] Any 100% Intel compatible processor, such as AMD or Cyrix, can be used as well, given that they deliver equal or better performance. It is also possible to use other processors for the server, under the condition that it is supported by the NOS to be used, that Oracle RDBMS can run under it, and that Windows clients can connect to it.

[6]For better performance, it is important to have at least two SCSI hard disks on the server.

[7] This assumes a NOS (Network Operating System) with a character based server interface such as Novell 4.X or 5.X. If a GUI (Graphical User Interface) is used, such as with Windows NT/2000, a bigger screen, is recommended.

1.3 Printer

Component	Minimum	Recommended
Type	Windows compatible laser printer	Windows compatible laser printer
Format[8]	A4 (210 mm x 297 mm) for laser	A4 (210 mm x 297 mm), recto-verso and A3
Language	PCL5e or newer	PCL5e or newer and Postscript
Compatibility	Windows 95/98/NT/2000[9]	
Capacity	8 ppm	12 - 16 ppm
Resolution	300 dpi	600 dpi

1.4 Accessories

UPS	For the server (and if necessary for the workstations).
Hub or, even better, a switch	For connecting the server, workstations and printer. If 100 Mbps network cards are used, assure that the hub also supports 100 Mbps.
Cables	For connecting the server, workstations and printer. If 100 Mbps network cards are used, assure that the cables also support 100 Mbps.
Diskettes	HD 1.44 Mb.
Tapes	For the streamer(s). The number of tapes is dependent of the backup strategy.
Cartridges	For the printers.
Paper	For the printers.

2. Software

Note that for single user installations, Oracle Database software in the **Server Software** section below is also needed, as the database server software has to be installed on the computer to be used with DMFAS.

2.1 Server software

2.1.1 Network operating system (for a network installation)

Any Network Operating System that supports the Oracle8i RDBMS (Relational DataBase Management System) and can use Windows workstations (see "Workstations" below) as clients is accepted. Up-to-now, DMFAS 5.2 has been installed under NT 4.0/2000 Server, NetWare 5 and Unix. The DMFAS programme in Geneva uses NT 4.0. Newer versions of Oracle RDBMS will not run under NetWare 3.12, NT Workstation 3.51 nor under SCO UNIX 5.0.4b. For installations with either of these three network operating systems, it is therefore strongly recommended to install NT 4.0 or later, Novell NetWare 4.11/5.0 or another version of UNIX.

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[8] All **standard** DMFAS 5.2 reports fit on A4 (210 mm x 297 mm) in portrait or landscape orientation. For country specific or customised reports, a printer with capacity for larger paper sizes gives more flexibility.

[9] Printer drivers must be available for the operating system to be used on the workstations.

2.1.2 Oracle Database software (for network and single user installations)

DMFAS 5.2 has been targeted for a platform using Oracle's RDBMS7 version 8i.

In a **single user installation**, *Oracle8i Personal Edition* will be used.

For a **network installation**, two RDBMS products are available, *Oracle8i Standard Edition* or *Oracle Enterprise Edition*. The recommended product to buy for a smaller installation is the *Oracle8i Standard Edition* because of its favourable price. Through its distributed option, this product also provides asynchronous (at given intervals) data replication in the form of "snapshots". As a guideline it can be pointed out that, up-to-now, all data replication in DMFAS 5.2 installations has been catered for by the *Oracle7 Workgroup Server*. However, there are currently two reasons that would justify purchasing the more expensive *Enterprise Edition*. Firstly, the *Enterprise Edition* is the only version of the database that currently supports row level security, a feature which allows access to specific loans or other data to be restricted to particular users; this is an advanced but optional security feature which will be available with DMFAS version 5.2.1 and 6. Secondly, if synchronous (instant) data replication between institutions is needed, then the Oracle Enterprise Edition should be selected.

For network installations Net 8 is also needed.

2.2 Client software

2.2.1 Operating system

Either Windows 95/98 or Windows NT 4.0. Note that Windows 98 is not certified for Oracle Developer 1.6, but UNCTAD has so far not encountered any problems with this combination. UNCTAD is also in the process of testing the DMFAS 5.2 software under Windows 2000. Therefore it is not recommended to use it as the client operating system until UNCTAD can certify the use of this software.

2.2.2 Oracle client software

Only the licence for Oracle Discoverer for Windows 95/98/NT – one per workstation – has to be purchased. All other Oracle client software needed to run DMFAS 5.2 will be delivered with DMFAS 5.2. The section below contains additional information about these products.

Developer/2000
The executable version of DMFAS 5.2 has been compiled with version 1.6 of Oracle's *Developer/2000* tools for the Windows 95/NT environment. No other compiled version of DMFAS 5.2 is currently available. The corresponding runtime versions of Oracle's *Forms and Reports* that are needed to run the compiled version of DMFAS 5.2 are provided free of charge by the DMFAS programme with each country installation.

Oracle Discoverer/2000 for Windows 95/98/NT
Major parts of the DMFAS 5.2 reporting facilities have been designed to use Oracle's *DataBrowser 2.0*. UNCTAD distributes this version with the installation of DMFAS, but the user institution must first have purchased a licence from Oracle for the use of the *Oracle Discoverer User Edition* and, for purchases being made after January 2001, the *Oracle Discoverer Administrator Edition*. The latter product is purchased as part of the *Internet Developer Suite*.

2.3 Prices and licensing

The following table provides prices in USD as of January 2001, based upon a Pentium 800Mhz server and 5 users. These prices are subject to change in accordance with Oracle's policy.

Product	Purchase	Maintenance per year
Oracle8i Standard Edition	800 USD for 5 users.	176 USD
Oracle8i Enterprise Edition	16,200 USD for minimum UPU of 27.	3,564 USD
Oracle8i Personal Edition	375 USD for 1 user.	200 USD
Internet Developer Suite(iDS) for Windows 9X/NT	3,995 USD. Only one licence is needed. It brings one licence for Forms Developer, Reports Developer and Jdeveloper.	900 USD
Discoverer Plus for Windows 9X/NT	765 USD. Covers 1 user/workstation.	175 USD

Table 1, Prices of Oracle products

2.3.1 Maintenance Agreement

For every Oracle product license bought, it is possible and recommended to obtain a maintenance agreement with Oracle. Depending on the type of maintenance support purchased, this agreement may cover hot line telephone support and on-site support. In addition, a maintenance agreement automatically gives the right to a free upgrade of the Oracle product in question. For these reasons, it is always recommended that a maintenance agreement be made.

3. Update from DMFAS 5.0 to DMFAS 5.2

For institutions upgrading from DMFAS 5.0 to DMFAS 5.2, the following upgrades might be required to be able to run DMFAS 5.2.

Product	Remarks	Needs action by the client organisation?
Workstations' Operating System	DMFAS 5.2 is compiled with 32-bit software and will therefore **not** run on Windows 3.x. It is essential for all the DMFAS workstations to be running on Windows 95/98 or Windows NT.	Yes, if there are DMFAS workstations running on Windows 3.x.
Oracle Discoverer/2000 User Edition and, for purchases made after January 2001, Internet Developer Suite	If your organisation has a maintenance contract with Oracle, then Oracle will provide the upgrade from Discoverer/2000 1.3.2 for Windows (16-bit) to Discoverer/2000 for Windows 95/98 or NT (32-bit) free of charge. If not, one licence of Discoverer per workstation should be purchased.	Yes, Discoverer 1.3.2 for Windows (16-bit) has to be upgraded to Discoverer/2000 for Windows 95/98/NT (32-bit)
Oracle Developer/2000 Release 1.6.1 for Windows 95/98/NT runtime versions of Forms and Reports	UNCTAD will provide the upgrades at the time of installation of version 5.2. Note that this does not include Oracle Browser.	No
Oracle database server	DMFAS 5.2 will run on 7.1 or later. However, we highly recommend installing version 8i as new releases of DMFAS will use the new functionality of new Oracle products. If your organisation has a maintenance contract with Oracle, then Oracle will provide the upgrade free of charge.	Recommended but not obligatory
Network Operating System	DMFAS 5.2 will run on Novell NetWare 3.12 or Microsoft Windows NT Server 3.51. However, we recommend Novell NetWare 4.11/5.0 or Microsoft Windows NT 4.0/2000 server in order to support later releases of Oracle software.	Only if the organisation needs or wants to upgrade
Hardware	In general no particular changes to hardware are required. However, upgrades to existing workstations currently running Windows 3.x may be needed in order to run Windows 95/98/NT efficiently.	Only if the organisation needs or wants to upgrade

4. Training

It is the policy of the DMFAS Programme that if DMFAS 5.2 is installed on a network**, the expertise for administering and maintaining the network should already exist at the installation site**. Consequently, the following text concentrates on other training activities that need to be carried out before DMFAS 5.2 is installed. Normally, training activities of this type are conducted locally by a software vendor, technical institute, etc. The relevant training modules are:

1. **Training in the use of Windows**; This is the only training component that is obligatory. Since DMFAS 5.2 is based on Windows, a sound knowledge in the Windows interface, functionality and navigation is required. Some basic training in this area may also be given by the DMFAS team during the installation mission for DMFAS 5.2, but normally this training should be obtained locally. It is usually worth while to combine the Windows training exercise with training on word processors and spreadsheets e.g. MS Word and Excel.

2. **Introductory training in Oracle Browser**; This part would concern users working with the data entry or report preparation activities of DMFAS 5.2. It should include report preparation with Oracle's DataBrowser.

3. **Training in Oracle Database Administration**; This training component would concern only one or two selected staff members who would be responsible for the Database Administration part of the DMFAS 5.2 installation. This training, building on the above introductory training, should at least include: i) the physical structure of the Oracle RDBMS; and ii) administration and maintenance of Oracle8i.

As mentioned above, the only mandatory training component is point 1 above, i.e., *Training in the use of Windows*. However, if facilities and financing are available, the inclusion of the above local training components 2 and 3 is also recommended. Finally, it is worth mentioning that training in the use of DMFAS 5.2 and in some relevant Database Administration tasks will also normally be carried out during system installation.