**1. ABCD installation**

**1.1. Available installation versions**

ABCD version 1.2t or 2.0 comes in the following versions :

1. non-assisted installation package for Windows : this is a ZIP-file containing all necessary files, which simply need to be unzipped into the root of (one of your) harddisk(s), e.g. C:\ or D:\. Since it includes both Apache and PHP with their own ABCD-specific configuration files, after simply unzipping it should normally work ! Apache and PHP both come with their own configuration files (httpd.conf and php.ini) where port 9090 is activated to allow ABCD running next to possible other running Apache installations. Only for some specific uses, e.g. when there is a need to install additional extensions for PHP, it will be necessary to do some editing (of e.g. php.ini).

ABCD installations from this package which will use the Advanced Loans module (EmpWeb) need to additionally unpack the most recent EmpWeb....zip package, where an extra main subfolder in \ABCD will be created and some additional files will be added to the ABCD Central directory.

As from version 1.2transitional (and v2.0) ABCD comes also with the YAZ-module (for Z39.50 shared cataloging) enabled and active, but in some cases where the pre-installed YAZ is not compatible with the exact Apache-version (e.g. there are thread-safe and non-thread-safe versions, differently compiled), manual editing will be necessary. For YAZ we refer to a dedicated set of instructions in the YAZ-chapter of this manual.

Summing up, the extra non-standard PHP-extensions coming with this installer are YAZ, APC, XSL and GD. For manual installations of ABCD these modules have to be added to the PHP configuration, meaning : downloading the extension's DLL, copying them into the 'ext'-folder of your PHP and activating (or adding) the lines in php.ini in the format 'extension=', e.g. 'extension=yaz.dll'.

After adding extensions in PHP always Apache has to be restarted for the extensions to be loaded.

1. installation wizard for Windows : this is a self-installing executable which will first unpack the main folders of ABCD (including Apache and PHP) and then present a series of dialog boxes to create the correct configuration files. This requires mainly following the dialogs and instructions of the installer itself. This installer allows installation anywhere on the hard-disk, as defined by the user, with any specified http-port (default suggestion is 9090), responsible institution name, default language and OPAC-catalog.

This installer creates the main configuration files based on the options given in the dialog boxes :

* config.php for the Central module (in htdocs/central)
* iah.def.php for the iAH module (in htdocs/iah/scripts) for paths and index.php (in htdocs/iah) for default database and language
* bvs-conf-def.php for the Site (in htdocs/site) for default language and paths.

Remember that these files are simple text-files which can also be edited directly under your OS (Operating System) with a file-manager and a text-editor (e.g. Notepad for Windows or nano for Linux).

This version of ABCD comes with a 'cache optimizer' for PHP : APC pre-installed, i.e. as an extension php\_apc.dll in the folder ABCD/php/ext and listed in the list of extensions in php.ini.

This version also comes with EmpWeb Advanced Loans pre-configured, only leaving Java and MySQL to be installed separately. So this installer is the easiest and most complete ABCD-package.

**Table 1. The ABCD Installer for Windows**

|  |  |
| --- | --- |
|  |  |

1. non-assisted installation package for Linux : this is a .tar.gz archive for Linux systems which should be unpacked into the Linux file-system, depending on its organisation (definition on where such applications can be put). If the correct access-rights are granted (with the appropriate Linux-commands such as chown and chmod) ABCD can be installed, like in Windows, under the file-system root '/'. In Linux systems the assumption is that Apache and PHP are installed separately (e.g. with the dedicated tool like apt-get or Synaptic), so the package only contains the proper ABCD files in the 'www'-directory. Configuration of Apache (in /etc/apache2) with a virtual host (in /etc/apache2/sitesenabled) is to be done manually by someone who understands the configuration of Apache.
2. A Debian package, either for 32 or 64-bits, which has to be downloaded and then installed using the '*dpkg -i*' command in the terminal console. Since Ubuntu and Linux Mint are highly Debian-based we tested installation in these OS'es successfully, in addition to the Debian Wheezy (7) environment. The installation script of this package will check some dependencies and consequently install ABCD in the default (new) location for Linux :
* all scripts will go inside a 'www'-folder as a subfolder of a folder ABCD, which in itself is a subfolder of **/opt** .
* all databases will go inside a 'bases'-folder as a subfolder of a folder ABCD, which in itself is a subfolder of **/var/opt**. A symbolic link to this bases-folder will be present in /opt/ABCD/www, as the module 'secs-web' necessitates the bases-folder to be a subfolder of the www-folder. Check this and if not present, create the link yourself with the command, given from the terminal when in the directory '/opt/ABCD/www' : " ln -s /var/opt/ABCD/bases . " (note the . (dot) at the end !).

The installation will check if there are already databases in the directory /var/opt/ABCD, and only if NOT so, it will copy the folder 'bases\_examples' to /var/opt/ABCD. So this means that existing databases in that directory won't be over-written. The directory (or folder) 'bases\_examples' remains available anyway in the directory /opt/ABCD/www and using the (new) feature of multiple database-directories (see infra) one can easily switch from e.g. demo-databases to operational databases.

Make sure that your htdocs-directory has the access rights of '775' (full access except writing to non-members of the owner group) and the bases-directory (/var/opt/ABCD and /opt/ABCD/www/bases\_examples) the rights of '777' (full access to everybody). Setting access rights in Linux is done by issuing the following commands at the terminal prompt from the level in which the directory to set is present :

(note : sudo is only for Ubuntu and Mint, in Debian use 'su', -R is to involve all subfolders recursively)

sudo chmod -R 775 htdocs

sudo chmod -R 777 bases

The 'ownership' of the files has to be put to the name under which your Apache is operating, mostly 'www-data', with a command like :

chown -R www-data:www-data ABCD

A package for RedHat-based systems (Redhat, Fedora...) is in the planning but not yet ready as of the writing of this manual.

**1.2. Installation issues**

This section deals with some specific installation issues for ABCD. In principle the installation is quite straightforward, either involving simply unpacking the downloaded archives into their proper folder (e.g. in Windows the root of a disk-drive) or correctly running the installation wizard (in Windows) or installing the Debian-package. Since ABCD has several totally different components, installation by definition encompasses quite some potential pitfalls. Three main reasons can be given for the installation to be complex :

1. ABCD is a combination of several software technologies : ISIS-databases, ISIS-scripts and ISIS-formats, a webserver, PHP-scripting, plus (in the case of the advanced Loans module) some JAVA and MySQL parts;
2. being web-based, which means a web-server has to be installed and special measures have to be taken about access rights : in principle the whole world - with access to the WWW - can interfere.
3. ABCD will be installed in quite different situations, varying from a simple stand-alone (even non-networked) PC up to servers in big networks with a webserver and often also PHP-scripting services already pre-installed.

Currently the installation packages can come in two types :

1. a full package, containing all ABCD-proper files plus the Apache webserver and PHP-scripting engine.

In this situation an archive (.zip or .tar.gz) needs to be unpacked into a root-folder of the file system (which can be any operating system in which Apache/PHP and ISIS can run). After unpacking there will be a dedicated folder for Apache, another one for PHP, a cgi-folder (to contain the web-accessible executables) and a 'documents' folder (in Apache called ' htdocs') which acts as the homepage of the ABCD-application.

* Apache comes with a pre-defined configuration file (httpd.conf in the conf subfolder of the Apache folder for Windows and in the /etc/apache2/conf directory in Linux) which defines the following specific parameters :

| **Apache parameter** | **Explanation** |
| --- | --- |
| ServerRoot "/ABCD/apache2.4" | the directory from where Apache runs |
| LoadModule php5\_module "/ABCD/php/php5apache2\_2.dll" | this instruction activates the capability of Apache to run PHP-scripts |
| AddType application/x-httpd-php .php | this instruction identifies the PHP-scripts as an application type |
| Listen 9090 | the port used by ABCD, the default http-port being 80, but in order to avoid interference with other existing http-applications, if so desired, a different port can be used, e.g. 9090. In case of using a different port-number, some adjustments will have to be made in the ABCD\_start.bat script and in some OPAC-URL's. The installation wizard automates these changes. |
| PHPIniDir "/ABCD/php" | The folder from where PHP is running |
| DocumentRoot "/ABCD/www/htdocs" | The root-folder for all the files which are part of the application itself, so the ' homepage' (which is in fact : index.php in this folder). |
| ScriptAlias /cgi-bin/ "/ABCD/www/cgi-bin/" | The folder in which Apache will allow executables to run from instructions in the web-pages. As from version 2.0 subfolders of this cgi-bin folder can contain several other subfolders for specific versions of CISIS to be used, e.g. the Unicode or BigISIS versions. |
| NameVirtualHost localhost:9090 | This instruction introduces a 'virtual host' with a name (in this case : localhost) running to its own port (in this case : port 9090). |
| <VirtualHost localhost:9090>.... </VirtualHost> | The actual definition of the variables for this *virtual host*. A typical implementation defines the DocumentRoot and ScriptAlias, each time followed by some permissions definitions for the folder defined, e.g. :**DocumentRoot "/ABCD/www/htdocs**"**ServerName localhost****DirectoryIndex index.htm index.php homepage.htm****<Directory "/ABCD/www/htdocs">****Options Indexes FollowSymLinks AllowOverride None****Order allow,deny****</Directory>****ScriptAlias /cgi-bin/ "/ABCD/www/cgi-bin/"****<Directory "/ABCD/www/cgi-bin">****AllowOverride None****Options None****Order allow,deny****Allow from all****</Directory>**Note that one can also create a 'virtual host' file in the 'extra'-folder of the apache-conf folder, with the same contents and 'included' into the main httpd.conf file with the instruction :**Include conf/extra/httpd-vhosts-abcd.conf** |

* PHP comes with a predefined configuration in php.ini.

The complete list of required PHP-modules can be derived from this command for the Debian Linux-environment :

**apt-get install apache2 libapache2-mod-php5 libxml2-dev libapache2-mod-proxy-html libpng12-dev libjpeg62-dev zlib1g-dev libtidy-dev libxslt1-dev curl php5-dev php-pear libyaz-dev php5-gd php5-xmlrpc php5-xsl**

**PHP settings and php.ini**

Since ABCD uses PHP throughout with some additional PHP modules (YAZ, XSLTProcessor, GD...) Pear should be installed within the PHP- installation and some extra modules need to be copied into the PHP 'extensions' folder : php\_yaz.dll, yaz.dll, yaz3.dll (these two serve the Z39.50 function of ABCD cataloging), iconv.dll, libxm2l.dll, libxslt.dll (for the XSLT Processor). The PHP-extensions folder needs to be present in the system's path environment variable (in Windows e.g. : go to 'My Computer (right-click) | Properties | Advanced | Environment Variables | System variables and edit the Path variable by adding, if not present : ';C:\ABCD\php\ext'). Also make sure your php.ini (in \ABCD\php) has the extensions mentioned here commented out (i.e. remove the leading ';' to activate the extension).

extension=iconv.dll

extension=iconv.dll

extension=libxml2.dll

extension=libxslt.dll

extension=yaz3.dll

extension=php\_yaz.dll

Be careful with possible other php.ini files existing, e.g. in \Windows or \PHP as these might disturb your ABCD-PHP. A PHP-test option is available with ABCD at the URL : http://localthost:9090/info.php. We are specifically interested in the following section below, where XSL and YAZ should be mentioned as running - if not check your path-environment variable and all paths again, as well as the 'extensions' section of your php.ini !

The php.ini file contains a few more settings which need to be checked for ABCD to run correctly :

* register\_globals = On (default = Off)
* extension\_dir = "/ABCD/php/ext" (or adjust to the real path to your ABCD installation)
* default\_charset = "iso-8859-1" (default = not active)
* extension\_dir = "/ABCD/php/ext" => defines the extensions directory
* extension=yaz4.dll and extension=php\_yaz.dll are listed in the => are added in the 'Dynamic Extensions' section in order to allow the YAZ-module for Z39.50 to work
1. an ABCD-only package, requiring Apache (or another web-server) and PHP already being installed. This is the default option for installation of ABCD in a Linux environment, because Linux expects the Apache and PHP packages to go into their own dedicated folders with the configuration into the directory /etc.

In this case the assumption is that at least some expertise is available to understand the existing web-server installation and PHP configuration. Using 'aliases' for the ABCD-installation and cgi-folder, which can be put in a virtual host configuration file, ABCD can be installed anywhere inside or outside the existing home-folder for the web-server. So only the cgi-folder and htdocs-folder is included into this package. System managers should refer to the Apache and PHP manuals in case they are not sure about how to proceed with this type of installation.

A dedicated installation tool, i.e. a 'wizard', has been created as part of the ABCD-software for Windows, but in essence still doing the same as described above, only after collecting some parameters for installation (like which disk to use, which port etc.) the wizard will create the correct configuration files for the different modules of ABCD as well as for Apache and PHP-configuration. For Debian Linux (including Ubuntu and Mint) there is a '.deb' (Debian) package, which can be simply installed with the command (as super-user) : 'dpkg -i abcd\_2.0\_amd64.deb' (in this case we use the 64-bits installation package).

Alternatively one could also use prepackaged installations like EasyPHP or WAMP (for Windows) / XAMP (for UNIX/Linux). Again in this case Apache and PHP (and MySQL) will be automatically installed and the ABCD cgi-bin and htdocs folders have to be moved into the existing folder-structures (of Apache) and php.ini has to be edited.

1. Installation of ABCD in a pre-configured WAMP or XAMP environment.

Combinations of Apache and PHP, mostly also with MySQL, are distributed as 'WAMP' or 'XAMP', 'EasyPHP' etc. with additional tools to facilitate configuration and maintenance (starting/stopping servers e.g.). ABCD can work as embedded into such an environment, but care has to be taken to do it properly. We discuss the principles under here, but note that since these packages also change now and then, it can never be a final 'full instruction'.

Normally WAMP comes with its own full installer executable (or .msi file) which indeed installs the Apache webserver, MySQL (server and client) and PHP. On top of that WAMP offers – and this is a major added-value – a ‘WAMP-manager’ icon in the taskbar from where not only all the services can be (re-)started or stopped, but also the main settings for all three services can be accessed and managed. E.g. php.ini (PHP settings) and httpd.conf (Apache webserver configuration) and my.ini (settings for MySQL) are directly accessible, also version information for all three servers is available and direct access is given to phpMyAdmin.

A standard installation of ABCD contains not only the ABCD-scripts and databases (in the www-folder) but also a folder for Apache and a folder for PHP. After configuring ABCD correctly as instructed under here with WAMP, both the PHP and Apache folder in principle can be removed from the ABCD-installation.

1. Configuring Apache webserver with virtual hosts

The example configuration discussed here is for a typical installation on disk C: with a MySQL version of 5.1.53 - change this for more recent versions.

Please note that Apache settings are case-sensitive !

The main solution we propose is to configure Apache webserver, as part of WAMP, with virtual hosts settings. This requires two steps, supposing the installed Apache version is 2.2.17 (change when appropriate to your actual version !) :

1. Including the virtual-hosts settings file and moving the virtual host settings from the basic settings :

a. open (with any text-editor, e.g. Notepad) the file \wamp\bin\apache\Apache2.2.17\conf\httpd.conf

b. remove (or de-activate by putting the ‘#’ comment sign in front) the following statements, since we don’t want to keep them in the basic configuration for all applications :

Listen 80

DocumentRoot "c:/wamp/www/"

ScriptAlias /cgi-bin/ "cgi-bin/"

c. remove the ‘#’ before the ‘include’ statement in the following section towards the end, in order to activate the statement and make the virtual hosts configuration active :

# Virtual hosts

Include conf/extra/httpd-vhosts.conf

d. save the file httpd.conf

1. Edit the virtual hosts settings in the file extra\httpd-vhosts.conf (with any text-editor) in order to make it contain the following two sections, one for the default host with port 80, one for the ABCD-dedicated port 9090 :

a. Create the two virtual hosts with their resp. ‘listening port’ :

NameVirtualHost \*:80

Listen 80

NameVirtualHost \*:9090

Listen 9090

b. Define the settings for default virtual host by adding the following lines :

<VirtualHost \*:80>

ServerRoot "c:/wamp/bin/apache/apache2.2.17"

DocumentRoot "/wamp/www/"

<Directory "c:/wamp/www/">

Options Indexes FollowSymLinks MultiViews

AllowOverride all

Order Deny,Allow

Deny from all

Allow from 127.0.0.1

</Directory>

ScriptAlias /cgi-bin/ "cgi-bin/"

<Directory "cgi-bin">

AllowOverride None

Options None

Order allow,deny

Allow from all

</Directory>

PHPIniDir "c:/wamp/bin/php/php5.3.4"

</VirtualHost>

c. Create a section for the ABCD-port 9090 virtual host, by adding the following lines :

<VirtualHost \*:9090>

ServerRoot "c:/abcd/apache2.4"

DocumentRoot "/ABCD/www/htdocs"

<Directory "c:/ABCD/www/htdocs/">

Options Indexes FollowSymLinks MultiViews

AllowOverride all

Order Deny,Allow

Deny from all

Allow from 127.0.0.1

</Directory>

ScriptAlias /cgi-bin "/ABCD/www/cgi-bin/"

<Directory "/ABCD/www/cgi-bin/">

AllowOverride None

Options None

Order allow,deny

Allow from all

</Directory>

#PHPIniDir "/ABCD/php"

# next 2 lines are only for ABCD EmpWeb

ProxyPass /empweb/ http://localhost:8080/empweb/

ProxyPassReverse / http://localhost:8080/

</VirtualHost>

d. Save the httpd-vhost.conf file and re-start your Apache service (the easiest way is to use the WAMP-manager icon and go to the Apache ‘restart service’ option).

1. Configuring PHP

a. It is – most unfortunately – not possible to refer to 2 different PHP-settings by including the directive ‘PHPIniDir’ twice (or more) in the virtual hosts settings. Apache will only observe the first one and report the second one as an error. So one can either leave that directive into the basic configuration file httdp.conf or put it into one (and only one) of the virtual hosts sections of the httpd-vhosts.conf file :

PHPIniDir "c:/wamp/bin/php/php5.3.4"

One could put such statement e.g. before closing the virtual-host section (</VirtualHost>).

b. Add the php-extensions which ABCD needs but are possibly not yet active in WAMP, by removing the leading ‘;’ or adding if not yet present in the section of the file ‘php.ini’ (in WAMP with PHP5.3.4 you will find this in C:\wamp\bin\php\php5.3.4) labeled as ‘Dynamic Extensions’ :

;;;;;;;;;;;;;;;;;;;;;; ;

Dynamic Extensions ;

;;;;;;;;;;;;;;;;;;;;;;

extension=php\_gd2.dll

extension=php\_pdo.dll

extension=php\_pdo\_mysql.dll

extension=php\_xsl.dll

extension=php\_yaz.dll

c. Other php.ini settings could be slightly different in between WAMP and ABCD, but after some testing we didn’t find them to be really important for either ABCD or WAMP, but rather ‘fine-tuning’ settings.

d. Copy the here added extension DLL’s from your ABCD-php extension directory (folder) to the one of WAMP, probably being resp. \ABCD\php\ext and \WAMP\bin\php\php5.3.4\ext.

Beware : don’t copy existing ABCD-extensions over existing WAMP-extensions, only add non-existing ones !

Warning : if the PHP version is indeed different, you will need to download the correct versions for the WAMP-PHP configuration. If e.g. your ABCD PHP is using version 5.2 but WAMP is using 5.3, you will have to load the correct versions for version 5.3, as that is the one we will be using.

Since WAMP installs its own MySQL server (in the folder \WAMP\bin\mysql) with its data-folder inthere as a subfolder, you might – but only if you use MySQL for the ABCD EmpWeb Advanced Loans module – have to reconfigure your MySQL configuration, i.e. the following directives might need to be edited in order to refer to the MySQL-folder used when installing MySQL for EmpWeb :

basedir=c:/wamp/bin/mysql/mysql5.1.53

log-error=c:/wamp/logs/mysql.log

datadir=c:/wamp/bin/mysql/mysql5.1.53/data

This file ‘my.ini’ also allows to set the port (default =3309) and password/login to access your MySQL.

1. Restart all services to test the new set-up. If you have done all previous steps correctly, it should be possible to open both default port web-applications, e.g.

[http://localhost/phpMyAdmin](???)

and ABCD-port9090 applications :

[http://localhost:9090/](???)

**1.3. Directory structure : folders and files**

After installation of ABCD the following folder structure will be created (in this case EmpWeb is included) :

As can be seen, 3 (or 4 if EmpWeb is included) sub-folders have been created in the main folder /ABCD. The standard folders are resp. :

1. apache2.4

The Apache folder contains the currently latest version of the Apache web-server software, which is in fact only one of many important softwares developed by the Apache Software Foundation. By default the Apache webserver is installed in another base-folder (e.g. in Windows : C:\Program Files\Apache Software Foundation\Apache2.2) and network-managers will probably have installed Apache on their server(s) according to their own preferences, but when installed from the 'full ABCD-package' Apache will run - with its configuration file httpd.conf adjusted for this situation - from \ABCD\Apache*xx*.

1. php

THe PHP folder contains the current version of the PHP scripting software. Again, as with Apache, in many instances this software will be installed in its own right, e.g. in C:\PHP, or often also as part of a combined package containing Apache, MySQL and PHP, e.g. with EasyPHP or WAMP-server. When installed as part of ABCD however PHP will run from here with the necessary adjustments done in the main PHP-configuration file php.ini.

1. www

The www folder contains the whole ABCD system, which is subdivided in 4 folders :

1. **bases**

The bases folder contains the databases of your ABCD installation, which one dedicated subfolder (with many subfolders in its turn) for each database. When an additional database is copied or created using ABCD, the system will create such a dedicated extra subfolder here. A typical list of database-folders in the /bases folder looks as follows :

As can be seen, many databases exist (but not as many as there are tables in a relational setup, since ISIS does not practice 'normalisation' into related tables), some of them - e.g. marc, biblo, dblil - are models coming with the installation of ABCD, others - in this case e.g. 'doaj' and 'isadg' - are created by ABCD in the author's installation only, while finally others are serving specific modules of the library system, e.g. 'providers' and 'purchaseorder', are used for the acquisitions module, 'suggestions', 'reserve', 'suspml', 'trans' and 'users' are used for the Loans Module. So each ABCD-bases folder will be different according to the actual databases used.

A special database is the database 'acces' which holds the users (with their login data) and their access-rights (authority level) to the databases.

Another special database-folder is the folder 'par' is not a database folder but it holds the .par files for each database known to ABCD. A .par file actually is a small text-file (so it can be edited by any TXT-editor like Notepad) with on each line the full path reference to parts of the database concerned. E.g. a typical .par file for ABCD, but with also added references to 'copies' and 'loanobjects' and 'trans' (in order to be capable to retrieve information from these databases from PFT's for MARC) looks like this :

marc.\*=%path\_database%marc/data/marc.\* prologoact.pft=%path\_database%www/prologoact.pft prologo.pft=%path\_database%www/prologo.pft epilogoact.pft=%path\_database%www/epilogoact.pft epilogo.pft=%path\_database%www/epilogo.pft autoridades.pft=%path\_database%marc/pfts/pt/autoridades.pft isisac.tab=%path\_database%marc/data/isisac.tab isisuc.tab=%path\_database%marc/data/isisuc.tab STW=%path\_database%marc/data/marc.stw copies.\*=%path\_database%copies/data/copies.\* copies.pft=%path\_database%copies/pfts/pt/copies.pft inven.pft=%path\_database%copies/pfts/pt/inven.pft loanobject.\*=%path\_database%loanobjects/data/loanobjects.\* loan.pft=%path\_database%loanobjects/pfts/pt/loan.pft trans.\*=%path\_database%trans/data/trans.\*

Each element gets, after the equation sign, its path in the file-system. As can be seen, variables taken from the PHP Environment can be used, in this case %path\_database%, which is substituted by the real pathname as defined in the main configuration file config.php (see infra).

While normally all elements, referred to here, belong to the database in question, elements of other databases should also be added if they are used in 'REF'-statements of the formats used in this database, since ISIS will have to know where to locate such external database element if called from a format - and will look for its path here ! So in this example marc.par copies, loanobjects and trans references were added.

[NEW] As from v2.0 ABCD will also accept, as did Micro CDS/ISIS for DOS and WinISIS before, the file '**syspar.par'** which contains references for all databases, so esp. when some databases are referenced to from different other databases, e.g. 'copies' and 'loanobjects', they can be put here.

An example syspar.par looks like :

maxmfnrl=800000 marc.\*=%path\_database%marc/data/marc.\*loanobjects.\*=%path\_database%loanobjects/data/loanobjects.\* prologoact.pft=%path\_database%www/prologoact.pft epilogoact.pft=%path\_database%www/epilogoact.pft

In this example the first line is a special one : .par files can also contain instructions for the CISIS-database technology, in this case defining the maximum length of records to 800Kb (which only makes sense when using one of the 'FFI'-type versions with large records up to 1Mb).

[new] Another innovation in version 2.0 is the use of the file 'dr\_path.def' into the proper database folder of the bases-folder. For the database concerned it gives the 'root'-folder to denote where the 'documents repository' (dr) for that database will be stored. E.g.

ROOT=c:/abcd/www/bases/biblo/dr/

indicates that for the biblo-database whenever files will be uploaded to be linked to from records in this database, the browser will start (as 'root') from this folder, where the pictures, PDF's etc. will be stored, or in selected subfolders hereof. The browser function for this also allows the creation of sub-folders (but only at a 'lower' level) to contain specific files in order to allow a good organisation of the repository.

1. **cgi-bin**

The cgi-bin folder contains the executables which ABCD will call from its web-pages and which therefore should be authorized to run by the webserver (Apache) using the CGI-protocol. This is what the 'ScriptAlias' instruction in the Apache configuration actually is for. In the case of ABCD the main executable is the wxis.exe ISIS-server, which does the main part of the job. Some other CISIS-tools are however also included for specific tasks.

The wxis-modules subfolder here contains scripts (with .xis extension) for the wxis-server, while the 'gizmo' folder contains some small ISIS-databases which define strings to be substituted by another one, e.g. for changes due to different environments used (DOS/ASCII, Windows/ANSI, WWW/XML.

As from version 2.0 ABCD allows the use of dedicated special versions of CISIS to be used for any specific database. For this to work the name of the database has to be added in a separate line of the file 'abcd.def' (in ABCD/www/bases), followed by '=' and the name of the special version, e.g. for the Digital Library database 'diglib' one could define 'ffi' to be the special version (with large records) to be used as follows :

diglib=ffi

A typical cgi-bin folder then looks like this :

As can be seen in this case a folder 'ffi' and a folder 'unicode' have been added to allow databases with large records and with Unicode charactersets (see infra) to be used. One has to obtain the available CISIS-versions by downloading them from the BIREME-website ([http://http://reddes.bvsaude.org/projects/cisis/browser/trunk/utl/](http://reddes.bvsaude.org/projects/cisis/browser/trunk/utl/))

1. **htdocs**

The htdocs (we use the traditional Apache 'hypertext documents' folder name) is the 'home-folder' of the web-site served by the ABCD-Apache server. So therefore it contains all the software elements (except the basic external technology such as Apache and PHP and the Java-based EmpWeb module for advanced loans) specifically produced for ABCD :

As can be seen, the main parts of the ABCD-suite can be identified here : Central, iAH, Secs-Web and Site. Since ABCD is a 'suite' of different functions, each one has its own homepage, i.e. the 'index.html' file located in the appropriate subfolder.

The main starting script is present within this homepage folder : index.php (which is the default home-page indeed, allowing the URL of ABCD only to refer to the server-part) and the [new] 'what.php' script for including the info contained into the file 'abcd.def', such as the institution's name, version info and URL-references for the footer-part of the ABCD-screens. Some more scripts are located at this level : homepage.php and inicio.php are the starting pages, which read into memory the main configuration parameters defined in config.php (or config.loans.php for the Loans module). [!!] If EmpWeb with its 'mySite' functionality is installed, additional initial scripts will be found here too : iniciomysite.php, homepagemysite.php, photoproxy.php and empwebavailibility.php (see the documentation on EmpWeb).

The main folders of the ABCD-system in the htdocs-folder are briefly described below here :

1. bases

Here for each database (in a dedicated subfolder) external files linked to from the records in the database, e.g. full-text PDF's or images, can be stored. Since this folder is 'under' the htdocs-folder, i.e. the DocumentRoot of the web-server, ABCD can access it easily, but (as from version 2.0) the 'dr\_path.def' file also allows defining other folders, also outside the DocumentRoot for this purpose. E.g. the user images can be stored here in a subfolder 'users', so the photos of the user will be shown whenever a loans-system user is presented.

1. central

This is indeed, as suggested by the name, the 'central' part of the system where most of the database administration and many core-activity scripts of the software are included. We will therefore deal with the important subfolders contained in here :

**The basic configuration file for Central : CONFIG.PHP**

The parameters defined in this crucial file 'config.php' are, without fixed order, amongst others (see also the discussion on this in the first section of the ABCD Central modules discussion in Chapter 2) :

* $open\_new\_window : if 'on' (Y) a new main ABCD browser window will be opened
* $context\_menu : if 'on' (Y) right-clicking will issue a menu with e.g. a 'back'-button (beware : going 'back' artificially without following the ABCD software's buttons could result in trouble !)
* $config\_date\_format : the format for date-values, e.g. "DD/MM/YY"
* $app\_path : the name of the folder in which the Central module is installed, by default this is 'central'
* $inventory\_numeric : if 'Y'(es), leading zero's (at the left side) of the barcode (or identifier) of copies will be automatically removed to make it a numerical value
* $max\_inventory\_length : the fixed number of positions for the value of the barcode; missing positions will be filled with zero's, e.g. with value 6 the barcode 456 will be changed into 000456
* $max\_cn\_length : same as max\_inventory\_length but for the Control Number of the catalog records
* [new] $log="Y"; When put as 'Y'es, and given a subfolder 'log' exists in the www/bases-folder (as it has to be 'writable' by the software), ABCD will log all operations into a text-file for later analysis. For each single day a separate text-file (named as 'log\_yyyymmdd.log' will be created containing the date/time and operator info followed by all URL's sent by ABCD Central as instructions to the engine, e.g.

\*\*Friday 1st of March 2013 12:04:31 PM Operador: abcd /central/dataentry/inicio\_main.php /ABCD/www/htdocs/central/dataentry/wxis/login.xis IsisScript=/ABCD/www/htdocs/central/dataentry/wxis/login.xis&base=acces&cipar=\abcd\www\bases\par/acces.par&login=abcd&password=adm&path\_db=\abcd\www\bases\&cttype=s

* $db\_path : the path to the folder where the databases are stored
* $msg\_path : the path to the folder where the message database (lang) and the online help-pages are stored; by default ABCD takes for this path the $db\_path, so that for all databases the same msg\_path can be used
* $img\_path : default folder for all files containing images or texts (e.g. PDF) referenced to in the records for this database; this default can be changed in the file 'dr\_path.def' in each database-folder
* [new] ABCD takes the dedicated CISIS-version, $cisis\_ver, if not the default one, from the 'abcd.def' file (in the main databases folder) with the following code in this config.php :

$cisis\_ver="";

if (isset($arrHttp["base"])){ if (isset($def[$arrHttp["base"]])) $cisis\_ver=$def[$arrHttp["base"]]."/"; }

* $Wxis : the path to the executable, i.e. the ISIS-server, called directly with the GET-method.
* $wxis\_URL : the URL for the ISIS-server, which can be left empty in order to not use the CGI-calls but rather the direct executable calls from PHP. This method uses the 'POST' protocol of HTTP allowing much longer URL's and is therefore preferred. If present, this method will be given priority over the use of the direct Wxis-call as defined in the variable $Wxis. So leave it empty if you don't want the POST-method to be used with the $Wxis-variable. E.g. :

$wxisUrl="http://localhost:9090/cgi-bin/$cisis\_ver"."wxis.exe";

Also note the use of the right Apache-port and the *$cisis\_ver* variable into the URL but also the path of wxis.exe.

* $xWxis : path to the wxis scripts
* $lang : default language
* $lang\_db : default language for the database administration module
* $institution\_name : the name of the responsible institution is no longer (as in v1) defined here but is now taken from the file 'abcd.def' in the main databases-directory
* $FCKEditorPath : the path to the HTML editor built-in into ABCD
* $FCKConfigurationsPath : the path to the HTML editor configuration
* MD5 : use of encryption for passwords (1) or not (0); WARNING : if changing this value all existing passwords will no longer be valid and have to be re-assigned !
* $dirtree=1: show (1) or hide (0) the icon that gives access to the exploration of the bases-folder; some network- or server-managers will not allow such function on their system !

The remaining folders here deal with one specific function or module of ABCD by storing the PHP-scripts with lots of additional elements (images and style-sheets for the webpages etc.) : acquisitions, dataentry, dbadmin, loans, odds, statistics and usersadm.

The names of the folders are sufficiently self-explanatory in these cases except for the [new] new ODDS-service : online document delivery service.

Here we would only like to underline the presence of a module 'database administration' which allows creation of any ISIS-structure to deal with any type of textual data, allowing ABCD to be more flexible than most other systems and more than just a library system.

Special folders, not dedicated to specific functions in ABCD-Central, are the following :

* common : in here there are some crucial php-scripts which are needed by all modules, e.g. 'header' and 'footer', but also 'wxis-llamar.php' (which allows using either the cgi-method of calling executables (safer) or direct executable calls from PHP (faster). The institutional\_info.php script defines the name of the resonsible institution of the ABCD-installation, which will be called upon in many pages.
* documentacion : obviously this folder contains scripts to deal with the online-help functions of ABCD.
* images : contains small images used in many pages (mostly .png and .gif)
* css : contains the Cascading Style Sheets used in this central part of ABCD
* lang : contains for each module a script to facilitate language switching or reverting to the default '00'language
1. iah

iAH is the original name of the **interface for a**dvanced web- for end-user searching ( **'h**arvesting') of BIREME which acts as the OPAC of ABCD.

1. secs-web

This module allows ABCD to offer advanced serials management tools within the web-environment : **Se**rials **C**ontrol **S**ystem.

1. site

Finally the 'Site' module combines advanced OPAC searching (with meta-search possibilities) with a 'portal' service, offering the search option within an environment of other networked information resources and communication with users. The structure and the contents of this portal can be edited online with a built-in ABCD Content Management System.

1. **EmpWeb** (only if installation of EmpWeb was added !)

This folder contains most but not all files necessary to run EmpWeb, i.e. the Java Jetty server and the Java scripts. EmpWeb however additionally needs also added scripts in ABCD Central (this allows the Advanced Loans to be compatible with the built-in Loans system of ABCD) and - since it uses an SQL-database for storing the transactions - an installation of one of the common SQL-databases (MySQL, PostGres, Oracle...), which needs to be done separately - use the installation instructions for the SQL-solution chosen. A separate part of the ABCD Manual deals with EmpWeb as it is quite different from the rest of the system.

**1.4. Access rights**

In both modern Windows versions as in all Linux-based OS's folders and files have 'properties' which allow control of who can do what with these files. In Linux this security policy has been maintained from the beginning in a more strict way than in Windows : folders and files belong to a specific user ('owner') and for each of three categories (the user, his group or 'others') it can be defined whether the file (or folder) is 'readable' (r), 'writable' (w) and 'executable' (x). These properties can be set at the Linux command-line with the commands 'chown' (change the owner) and 'chmod' (change the modus). In Windows one can 'right-click' on any folder/file and find these properties in the Properties|Security tab with options to change them.

To keep things simple - but network-managers might prefer to go into more refined access-right policies - we suggest the following settings :

* the database-folder (in Windows : \ABCD\www\bases, in Linux : /var/opt/ABCD/bases) gets the setting '777', meaning everybody can read and write the databases;
* all the other folders, i.e. \ABCD\www\cgi-bin|htdocs|temp, should be readable by everybody but writable only by the owner or his group : '775'.

In Windows users might only be confronted with the problem that as from Vista on, Windows will apply some more rigid access rights control, meaning that files outside the 'home'-folder for users, i.e. not in the C\users\*username* (sub-) folders don't have full access rights. To change these (as we prefer ABCD to be installed in a root-folder instead) one should use the following options :

* right-click on the folder in which your ABCD-installation is put
* select 'properties' (mostly the last option in the pop-up menu)
* select the 'security' tab
* click on 'edit'
* select the 'users' category
* - tick the box for 'full' access for this category in the lower part of the window.

If ABCD was installed in a subfolder of the 'users' folder, no need for this.

This is equal to setting access-rights to '777' in Linux, which we recommend for the bases-folder.

**1.5. Migrating from older versions**

When installing ABCD (version 1.2t or 2.0) on a computer/server where there is already a running ABCD system, special precautions have to be taken. This chapter will give the main instructions to be considered, but remember that ABCD can be installed in an almost unlimited number of configurations : WIndows/Linux, with or without pre-installed Apache and PHP, on any hard-drive (C:, D: ... or in Linux : in /var, /opt etc). So always the system manager has to check carefully for any local variations.

**1.5.1. Installation in Windows with existing ABCD-folder**

By default ABCD in Windows was installed in a root-folder named 'ABCD'. If this is not the case, please change all references to \ABCD to the path indicating the correct path for your installation.

In principle, ABCD v1.2t and 2.0 are compatible in the sense that databases from earlier versions can fully be kept in the newer versions : the Master and XRF files but also the Inverted File files are exactly the same. The newer versions only offer extra features which are then not used in the older versions. So, as far as the databases are concerned - and this involves all files in the 'data' subfolder of each ABCD-database (e.g. \ABCD\www\bases\marc\data for the MARC21 database) - it suffices to keep a copy of these files somewhere else and re-copy them into the same folder after installing the new version. If the existing database was locally created with another name (and doesn't appear in the list of database-folders in \ABCD\www\bases), this is even not necessary since the database files won't be deleted or overwritten.

Some more files to backup for later merging into existing ABCD-files are :

* ABCD\www\bases\abcd.def (if it already exists, depending on your installed version) with institution name, special CISIS-versions for specific databases, path to the mx-executable, header- and footer info (like version, links)
* ABCD\www\bases\lang.tab : the list of languages used in your installation
* ABCD\www\bases\bases.dat : the list of databases used in your installation

Still in principle the module iAH (OPAC) will only be affected if the installation path has changed. Check the paths in the .def files for each of your OPAC-databases, which can be done from within ABCD Central using the 'Configure database in IAH' option of the 'Update database definitions' of the main Central menu. The Secs-Web module only uses relative paths in its scripts from where it is started and therefore is not affected.

The ABCD Site however uses a fully new version of the BVS-Site technology and therefore needs more interventions to preserve compatibility. This issue is discussed in a separate section under here.

**1.5.1.1. migration of ABCD Central**

In addition to the principles described above, for migrating the ABCD Central module to the new version 1.2t or 2.0, please consider the following.

**1.5.1.1.1. bases.dat**

The main measure to be taken, as far as the databases are concerned, is to keep a copy of your file 'bases.dat' (in \ABCD\www\bases) and merge it into the new one of the new installation, by adding/deleting lines in the file directly with a text-editor. There is a way to do the same from within ABCD : the option 'list of available databases (bases.dat)' in the 'update database definitions' option of the main Central menu, for those who don't have direct access to the physical file bases.dat on the server.

**1.5.1.1.1.1. changes in FDT's and worksheets**

In ABCD, differently from previous ISIS-implementations, the worksheets are integrated into the Field Definition Table, however keeping the possibility to create and use several worksheets for specific purposes, e.g. specific document types. As such the FDT can be considered to be a 'repository' of fields to be used (or not, due to the flexibility philosophy of ISIS) with their corresponding HTML-representation in web-pages.E.g. a repeatable subfielded field (a 'group') can be represented in the worksheet as a table, where each subfield is a column and each occurrence is a row in the table. As we will see later on, many additional possibilities have been created in this area for data-entry, e.g. fixed length subfields, character counter etc.

The new version of ABCD has reduced the number of field-types but expanded the list of possible data-entry HTML-elements for worksheets. No manual changes are necessary to be made : when opening an old FDT the software will correctly interprete the old elements and even save as new elements when the FDT or worksheet is saved again in the new version. So users might prefer to review all of their FDT's and FMT's by opening them and saving them again, to make sure all of them have been upgraded to the new standard.

**1.5.1.1.1.2. configuration files**

As mentioned above, the ABCD configuration files (1 per module) contain mainly definitions of paths of the installation and some default values for language and databases. This means, from the perspective of migration from an older to a newer ABCD-installation, that possibly some changes have been made in existing configuration files, which will be lost after installing the new version. Therefore we recommend keeping copies of the following files in order to be allowed to merge any changes in the old files into the new ones :

* ABCD\www\htdocs\central\config.php
* ABCD\www\htdocs\site\bvs-site-conf.php
* ABCD\www\htdocs\iah\scripts\iah.def.php and ABCD\www\htdocs\iah\index.html
* (in case already existing) abcd.def in ABCD\www\bases
* (in case already existing) db\_path.dat in ABCD\www\htdocs

**1.5.1.1.2. the database folders**

Finally the databases themselves, all grouped together in one folder with the name of the database concerned, should be secured as far as they have been changed by local use. Just make sure you have backups (the easiest way is to simply re-copy the database-folder somewhere else) for each non-demo database. After installation of the new version you can then copy the folder back into the bases-folder of the new installation, add the name of the database into the file 'bases.dat', if necessary change the path into the corresponding .par file (in the par -folder of the bases folder) and that should suffice to allow the use of your database in the new installation.

More sophisticated possibilities exist now by using the new feature of multiple bases-folders, e.g. you could keep the demo-databases in one folder and your operational ones into another one, and have both folders referenced to in the (new) file 'db\_path.dat' in the htdocs folder.

E.g. your file 'db\_path.dat' with the following two lines (for a typical Windows installation) :

\ABCD\www\bases\|Demo

D:\library\bases|Operational

would allow, by selection of the first option in the login-screen, the use of the demo-databases, while the second option would give access to the real (operational) bases of the library.

**1.5.1.2. ABCD Site**

As mentioned above, ABCD from v1.2t on, uses a new version of the BVS-Site technology : version 5.3.1.

The configuration for correct reference to the paths of flies of the ABCD OPAC Site is done by editing the file /www/htdocs/bvs-site-conf.php.

Then the following steps need to be performed carefully :

1. copy the files from the old folder */htdocs/site/local/*  to the new ABCD installation, same folder
2. copy your parameters for images and stylesheets in the folders htdocs/css and htdocs/images from the old to the new installation
3. copy the database 'site' from the old ABCD bases-folder to the new bases folder. This will preserve existing links to e.g. OPAC's and other resources.

Finally enter the Site Administrator submodule of ABCD-Site, by entering the URL (supposing port 9090) :

http://localhost:9090/site/admin/

In this new version the default or demo user and the password are: User: admbvs Password: adm@bvs

Check all links and adjust if necessary the paths in the configuration dialog windows.

Enter each one of the components which form your site, request to edit them and proceed to save them again. This will cause the components to be generated for the new version, creating the necessary .html and .ini files replacing those which come in the installation package. Each time you save a component, verify with “Preview” to see whether the conversion has been done. If your component does not appear, press Ctrl+F5 because sometimes the cache memory can cause a mistake.

Some more advanced XML-based features (e.g. RSS-feeds) might need being redone fully because of incompatibilities of the new XML-parser used in this version.

**1.5.2. Installation in Linux with existing ABCD-installation**

The same principles as for Windows apply to installation in Linux, however with one difference : the default directory of ABCD-installation has changed from /var/www to /opt. This means that - unless for some reason your ABCD is already installed in the /opt directory - your old configuration will not be affected by installing the new one and in fact they can co-exist, even using both bases-directories with selection of either one in the (new) login page of ABCD Central.

Normally it suffices to copy files which are specific for your ABCD-installation (see the list of files mentioned above for Windows, as they are the same) into the new installaton folder. E.g. remember to copy the 'Site' database folder from old to new to preserve the contents of your Site, and the CSS and Images folders for preserving the style and graphical presentation.

**1.5.3. Migration of existing ISIS-database(s) into ABCD**

ABCD Central provides an easy way to migrate existing ISIS-databases to ABCD : it is one of the three options when creating a new database. So by selecting 'Create from WinISIS database' in the first screen when having selected the 'create database' option of the main ABCD Central module, ABCD will guide you to migration with the following steps :

* copy the FDT from the existing ISIS-database
* copy the FST from the existing ISIS-database
* copy the default PFT from the existing ISIS-database

after which ABCD will automatically all initial folders and files for the new database. Check the results for errors or warnings however to make sure the creation of the empty database has been successful.

What then remains is 1) to 'fill' the database with the records from the existing database and 2) re-index the full database. The first job is done by 'importing' ISO-records (to be created by your existing ISIS application) from the 'utilities' submenu of ABCD-Central once having entered into the database, and in the same utilities menu you will find the option 'full inverted file generation' to fully re-index your database.

However in case of larger databases, the http-protocol with its overhead in client-server communication and time-outs (as defined in the case of ABCD by the php.ini settings), we strongly recommend using command-line operation for such job, which results in a much faster execution of the steps but requiring direct access (e.g. through ssh) to the server machine and its database-folders. These commands are discussed later on in this manual, but we are also working on a new 'utilities' page in which the commands can be created interactively from the ABCD-webpages while still being executed directly in the OS command-environment to preserve the speed.